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HW-9922

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R

REPOSITORY PNL

COLLECTION Atmospheric Releases

BOX No. N/A

FOLDER N/A

#1 - H. A. Winne, Schenectady
#2 - Zay Jeffries, Pittsfield
#3 - C. G. Suits, Schenectady
#4 - R. C. Muir
#5 - C. N. Gross
#6 - A. B. Greninger
#7 - F. R. Creedon
#8 - Office of Hanford Directed Operations
Attention: C. Shugg, Manager
#9 - Office of Hanford Directed Operations
Attention: C. Shugg, Manager
#10 - Office of Hanford Directed Operations
Attention: C. Shugg, Manager
#11 - Office of Hanford Directed Operations
Attention: C. Shugg, Manager
#12 - Office of Hanford Directed Operations
Attention: C. Shugg, Manager
#13 - 700 File
#14 - 700 File
#15 - 700 File

May 28, 194[illegible]

CLASSIFICATION REVIEW FOR DECLASSIFICATION BUT LEFT UNCHANGED

By [illegible] JKB

Date [illegible]

U. S. AEC Division of Classification

HANFORD WORKS

MONTHLY REPORT

APRIL, 1948

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GENERAL SUMMARY

Operation of both D and F Piles continued normally at 275 MW except for one extended outage of each pile to permit removal of a portion of the concrete block wall across the top rear edge, allowing a more uniform upward expansion. A total of 37 batches were processed through the Canyon Buildings and 36 through Concentration and Isolation with an average material balance of 98.7 and average waste losses of 2.5%.

Preparations for startup of 100-B are well under way. Reactivation work started on April 28 and requisitions for personnel required to operate the area on a 40-hour week basis have been placed. It will be necessary, however, to start the operation by placing some groups on a 48-hour week until additional personnel can be obtained.

Exclusive use of lead-dipped 4" uranium slugs in the piles started on a production basis on April 4. The batch of 4" slugs reached the Separations Plants during the month.

Operation of the D Pile at concentrations of carbon dioxide far above the present 25% is permitted by new calculations on reactivity transients. The concentration will be maintained at 25% until it is demonstrated that the present high rate of consumption of carbon dioxide does not indicate a hazard.

A major simplification of segmented discharging operations was produced. The new proposal, which eliminates all remotely-controlled devices on the inaccessible rear face, is rapidly being developed.

Data on the corrosion of Van Stone joints have indicated that cold working, externally applied electromotive forces, and the composition of gaskets and nozzles are unimportant. Attention is being centered on the effect of hairline cracks, which are now regarded as the probable initiators of the pits which constitute the most serious corrosion problem.

The principal maintenance problem at the moment is replacement of the 42" effluent line at 100-F on which work was started in April.

Progress on 200 Area contamination problems included completion of installation of stainless steel fans and duct work and installation of scrubbers in dissolver "off gas" lines in the 200-East Area. The scrubbers appear to remove 40 to 50% of the nitrous oxide and nearly all of the radio-iodine. Efforts are also continuing to reduce the amount of active mist entrained in ventilation air drawn through the process cells.

Technical supervision of all uranium rolling for Hanford was continued with three 300 Area Plant Assistance men assigned in pairs to cover this work at Ft. Wayne, Indiana, and Lockport, New York. Quality was satisfactory, and rod diameter was reduced from 1.5" to 1.45" late in the month. Rustless Iron and Steel at Baltimore made a trial rolling on April 2, but subsequently decided not to bid for this work. Annealing of all rolled rod prior to machining was continued, with the Metallurgy Laboratory checking control samples.

[redacted]

Interest strengthened in a "duplexing" rod fabrication process (oversize gamma extrusion followed by 400-650° F alpha rolling to size), when the first samples prepared in this fashion showed a recrystallized grain size similar to that of regular alpha rolled rod. Immediate fabrication of sufficient duplexed metal to evaluate process variables and furnish slugs for pile exposure is being initiated. Meanwhile, attempts to alpha extrude bare billets in the 300 Area press continued unsuccessful, and Revere was contacted relative to making further trials at their Detroit plant.

Dr. Shields Warren, director of biology and medicine, and Dr. G. Failla, consultant for the A. E. C., visited the Project for consultation with the Medical and Health Instrument Divisions, in regard to the problem of stack gases. Dr. S. T. Cantril, consultant, was also present for these discussions. All agreed that all harmful particles or mists must be removed before reaching the outlet of the stack even though the cost be considerable. Dr. Warren approved the method of attack here and both he and Dr. Failla expressed the belief that the possibility of harmful effects to Plant personnel as a result of continuing operations as at present for a period of three to six months was extremely remote. Both stressed the need for reasonable haste in solving the problem.

As of April 30, 1948, Hanford Works had operated 84 consecutive days without a time-losing injury. The frequency rate on this date had been reduced to 0.38 for the year.

On April 25, 1948, the 100-F Area completed its third consecutive year without a lost-time injury.

On April 23, 1948, a battalion of Army personnel from Fort Lewis arrived at the Works for the purpose of carrying out practice defensive maneuvers within the Plant perimeter.

[redacted]

[redacted]

STAFF

General Manager	R. C. Muir
Assistant General Manager	R. S. Neblett
Assistant to the General Manager (Technical and Educational Matters)	W. I. Patnode
Assistant to the General Manager (Budgets and Expense Control)	J. R. Rue
Assistant to the General Manager and Manager of Service Divisions	G. G. Lail
Department Comptroller	F. E. Baker
Counsel	L. F. Huck
Community Manager	E. L. Richmond
Manager, Design and Construction Divisions	F. R. Creedon
Manager, Manufacturing Divisions	C. N. Gross
Manager, Technical Division	A. B. Greninger
Manager, Health Instrument Division	H. M. Parker
Manager, Medical Division	W. D. Norwood, M.D.

[redacted]

FORCE REPORT
APRIL 1948

	Non-Exempt		Exempt		Total	
	3-31-48	4-30-48	3-31-48	4-30-48	3-31-48	4-30-48
Management	4	7	13	15	17	22
Design	147	222	118	124	265	346
Construction	177	313	261	299	438	612
"P" Department	240	252	55	55	295	307
"S" Department	243	253	60	58	303	311
Technical	352	388	210	215	562	603
Power	405	402	86	85	491	487
Maintenance	699	634	77	78	776	712
Project Engineering	121	70	52	50	173	120
Electrical	237	225	41	41	278	266
Instrument	146	153	44	44	190	197
Service	1643	1801	263	270	1906	2071
Transportation	683	669	62	61	745	730
Medical	374	381	78	81	452	462
H. I. Department	181	192	76	76	257	268
Accounting	603	496	55	59	658	555
TOTAL	6255	6458	1551	1611	7806	8069

Note: This report does not reflect the new organization, which was effective 4-8-48. New assignment personnel will be shown on next months report.

PERSONNEL DISTRIBUTION - APRIL 1948

	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Area	Total
MANAGEMENT										
Clerical	-	-	-	-	-	-	-	-	15	15
Total	-	-	-	-	-	-	-	-	7	7
	-	-	-	-	-	-	-	-	22	22
DESIGN DEPARTMENT										
Exempt Employees	-	-	-	-	-	-	-	-	124	124
Non-Exempt Employees	-	-	-	-	-	-	-	-	120	120
Clerical	-	-	-	-	-	-	-	-	102	102
Total	-	-	-	-	-	-	-	-	346	346
CONSTRUCTION DEPARTMENT										
Exempt Employees	-	-	-	-	-	-	-	-	299	299
Non-Exempt Employees	-	-	-	-	-	-	-	-	178	178
Clerical	-	-	-	-	-	-	-	-	135	135
Total	-	-	-	-	-	-	-	-	612	612
"P" DEPARTMENT										
Supervisors	1	14	14	-	-	18	-	-	8	55
Operators	10	38	39	-	-	153	-	-	1	241
Clerical	-	2	2	-	-	5	-	-	2	11
Total	11	54	55	-	-	176	-	-	11	307
"S" DEPARTMENT										
Supervisors	-	-	-	20	26	-	1	-	11	58
Engineer on Assignment	-	-	-	-	-	-	1	-	-	1
Operators	-	-	-	94	130	-	11	-	2	237
Clerical	-	-	-	4	9	-	-	-	2	15
Total	-	-	-	118	165	-	13	-	15	311

	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Areas	Total
TECHNICAL DEPARTMENT										
Supervisors	-	5	-	5	10	35	-	-	9	64
Chemists-Engineers-Physicists-Jr. Technologist & Metallurgists	-	10	14	10	9	129	-	-	19	192
Laboratorians and Analysts	2	12	30	32	59	103	-	-	-	238
Clerical	-	1	1	1	2	22	-	-	16	42
Others	0	2	5	4	11	45	-	-	-	67
Total	2	30	50	52	91	334	-	-	44	603
POWER DEPARTMENT										
Supervisors	7	22	21	6	10	-	4	6	9	85
Operators	41	93	92	24	35	8	-	17	59	369
Clerical	1	2	2	-	1	-	1	-	1	8
Others	2	5	5	3	4	4	-	-	2	25
Total	51	122	120	33	50	12	5	23	71	487
MAINTENANCE DEPARTMENT										
Supervisors	1	4	11	6	15	8	11	-	21	77
Engineers	-	-	1	1	1	2	-	-	1	6
Mechanics	11	34	68	46	96	61	88	-	105	509
Clerical	-	1	3	2	3	-	2	-	10	21
Others	1	4	7	8	19	14	30	-	16	99
Total	12	43	91	63	134	85	131	-	153	712
PROJECT ENGINEERING										
Supervisors	-	-	-	-	1	-	-	-	12	13
Engineers	-	-	-	-	5	1	-	-	29	35
Drafting Personnel	-	-	1	-	6	3	-	-	34	44
Clerical	-	-	1	-	1	-	-	-	11	13
Others	-	-	1	-	2	-	-	-	12	15
Total	-	-	3	-	15	4	-	-	98	120

	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Area	Total
ELECTRICAL DEPARTMENT										
Supervisors	1	2	3	2	2	2	18	-	6	36
Electricians	7	9	16	13	11	13	59	-	32	160
Clerical	-	-	1	1	1	1	3	-	2	9
Others	1	1	2	1	4	5	34	-	13	61
Total	9	12	22	17	18	21	114	-	53	266
INSTRUMENT DEPARTMENT										
Supervisors	1	3	5	2	4	7	-	-	7	29
Engineers	-	-	-	1	-	10	-	-	7	18
Mechanics	4	15	15	12	15	33	-	-	5	99
Clerical	-	1	2	1	2	3	-	-	6	14
Others	1	2	3	2	4	16	-	-	9	37
Total	6	21	25	18	25	69	-	-	33	197
SERVICE DEPARTMENT										
Supervisors	13	7	7	10	8	13	15	45	152	270
Patrolman	47	61	64	71	100	73	14	75	111	616
Laundry Operators	-	-	-	-	2	-	-	-	4	6
Inspectors	5	4	4	4	4	-	3	5	4	33
Janitors	2	5	5	9	11	12	-	219	47	310
Clerical	-	-	-	-	-	-	59	38	146	243
Others	39	3	-	3	14	14	-	52	468	593
Total	106	80	80	97	139	112	91	434	932	2071
TRANSPORTATION DEPARTMENT										
Supervisors	6	2	2	2	2	2	8	-	37	61
Drivers (Based on Areas Served)	13	23	27	27	43	34	26	-	63	256
Mechanics	10	2	1	-	3	-	1	-	79	96
Trainmen	5	4	4	4	4	-	-	-	8	29
Laborers	3	11	4	4	12	9	-	-	59	102
Clerical	-	1	1	1	-	1	1	-	27	32
Others	17	12	7	6	24	3	7	-	78	154
Total	54	55	46	44	88	49	43	-	351	730

	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Areas	Total
MEDICAL DEPARTMENT										
Physicians	-	-	-	-	-	-	12	-	20	32
Dentists	-	-	-	-	-	-	-	-	10	10
Technicians	-	1	-	-	1	-	1	-	30	33
Clerical	1	-	-	2	-	1	-	-	95	99
Others	5	2	2	4	3	3	16	4	249	288
Total	6	3	2	6	4	4	29	4	404	462
H. I. DEPARTMENT										
Supervisors	-	1	3	4	8	13	-	-	5	34
Engineers	1	3	6	17	9	6	-	-	-	42
H. I. Inspectors	-	3	8	24	9	20	-	-	-	64
Clerical	-	-	-	-	1	2	-	-	3	6
Others	-	10	8	16	46	30	6	-	7	122
Total	1	17	25	61	72	71	6	-	15	268
ACCOUNTING DEPARTMENT										
Supervisors	-	-	-	-	-	-	-	-	59	59
Clerks	1	5	7	6	7	7	-	-	260	293
Telephone & Teletype Operators	-	-	-	-	-	-	-	-	47	47
Others	-	-	-	-	-	-	-	-	156	156
Total	1	5	7	6	7	7	-	-	522	555
GRAND TOTAL	259	442	526	515	808	944	432	461	3682	8069

NOTE: This report does not reflect the new organization, which was effective 4-8-48. New assignment personnel will be shown on report next month.

ARRIVALS AND DEPARTURES OF EXEMPT PERSONNEL
APRIL 1948

ARRIVALS

Name	Department	Physical Arrival	Orgin
Lewis F. Huck	Management	4-1-48	Trf.Pittsfield
Paul R. Baird	Construction	4-28-48	New
Clarence M. Benz	Construction	4-2-48	New
Amos W. Bradley	Construction	4-1-48	New
Edwin H. Carter	Construction	4-1-48	New
Thomas W. Colby	Construction	4-14-48	New
James J. Dalton	Construction	4-19-48	New
Edward B. Finn	Construction	4-27-48	New
Joseph W. Fitzpatrick	Construction	4-19-48	New
Stanley C. Frost	Construction	4-22-48	New
Raymond A. Gander	Construction	4-22-48	New
Donald E. Graham	Construction	4-14-48	New
Charles S. Grigor	Construction	4-27-48	New
Roy M. Gwinn	Construction	4-6-48	New
Albert H. Hatch	Construction	4-20-48	New
Warren R. Headley	Construction	4-12-48	New
Francis L. Llewellyn	Construction	4-26-48	New
Thomas F. Mangold	Construction	4-26-48	New
James W. Mercke	Construction	4-6-48	New
Carl H. Nelson, Jr.,	Construction	4-16-48	New
Wallace L. Oliver	Construction	4-21-48	New
Charles P. Ogston	Construction	4-26-48	New
Spencer D. Patterson	Construction	4-6-48	New
Asa E. Poinsett	Construction	4-9-48	New
Hurschel A. Power	Construction	4-27-48	New
Elmer C. Ragains	Construction	4-19-48	New
Frank (NMN) Ranahan	Construction	4-6-48	New
Alan C. Renn	Construction	4-12-48	New
Thurston H. Rieder	Construction	4-12-48	New
Karl B. Schmidt	Construction	4-28-48	New
Billy J. Shell	Construction	4-19-48	New
Earl W. Slusher	Construction	4-19-48	New
Thomas C. Steen	Construction	4-28-48	New
Edwin S. Staples	Construction	4-19-48	New
Delbert W. Stinson	Construction	4-5-48	New
Joseph E. Svoboda	Construction	4-23-48	New

ARRIVALS

Name	Department	Physical Arrival	Orgin
Gilbert C. Unger, Jr.,	Construction	4-29-48	New
Nolan E. White	Construction	4-12-48	New
George J. Alkire	Technical	4-8-48	New
Hal C. Rathvon	Technical	4-19-48	New
Willian W. Chamberlain	Service	4-13-48	New
Joseph H. Grier	Service	4-22-48	New
Dr. Robert E. Chase	Medical	4-21-48	New
Charles E. Liddington	Medical	4-8-48	New
Wendell T. Pope	Medical	4-26-48	Re-emplcy
John Paul Holmes	Accounting	4-26-48	Trf.Schenectady

DEPARTURES

Name	Department	Physical Departure	Orgin
Lloyd B. Erickstad	Design	4-19-48	Resigned
Tom Eugene Burnham	Construction	4-9-48	Resigned-Better job.
Lloyd G. Jones	Construction	4-2-48	*
Milton C. Wait	Construction	3-19-48	*
C. R. Bennett	"S" Department	4-23-48	Resigned-another position
F. E. Wilkinson	"S" Department	3-31-48	Trf-Pittsfield
Harvey F. Matthiesen	Technical	3-31-48	Resigned
James F. Walker	Technical	4-9-48	Resigned-another job.
David D. Whyte	Technical	3-31-48	Resigned-Housing.
W. E. Green	Transportation	4-12-48	Resigned

* Removal from roll.

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P DIVISION

APRIL - 1948

I. GENERAL

The D and F Piles operated at 275 M.W. throughout April except for scheduled outages. Each operating area had an extended outage to remove a portion of the brick from the wall which runs across the rear edge of the top of the unit and to replace the vertical neoprene seal between the front face and the experimental side shields. This program is described in detail under Mechanical Experience. The B-Pile was maintained in standby condition with a water flow of 10,150 g.p.m. The 100 Area discharge rate continued at 60 tons per month.

The exclusive use of lead dipped 4" slugs fabricated from alpha rolled or alpha extruded metal was started effective April 1.

Work was started April 12 in the 300 Area on a program of decanning 160 tons of 8" gamma extruded triple-dip canned pieces which were not considered good risks for pile operation. The slug recovery operation was placed on a 2 shift per day schedule on April 19 to expedite this work so that the metal can be recast and rolled at the earliest moment.

The 300 Area canning production of 90 tons was governed by the receipt of rolled rods. At month end a backlog of about 30 tons of rolled rods was on hand.

II. ORGANIZATION AND PERSONNEL

In conformance with the general reorganization of the General Electric Company Nucleonics Program on April 9, the P Department became the P Division of the Manufacturing Divisions.

Number of Employees on Payroll - April

Beginning of Month:	295
End of Month:	308
Net Increase:	13

A total of nine clerical personnel were transferred on April 5 from the Accounting Division to the P Division as follows:

P Division

100-F Area - 2
100-D Area - 2
300 Area - 5*

* One male clerk of this group was transferred to the Construction Division on April 19 and was replaced. Two new clerical personnel were hired for the 300 Area and are awaiting clearance.

One Chief Operator from 100-D Area was transferred to the 300 Area, and two experienced 300 Area operators were transferred to the 100 Areas in preparation for the 100-B Area startup.

Four new operators were hired and assigned to the 300 Area.

H. L. Henry, Assistant Chief Supervisor, Process Control Group, was transferred to 100-D Area.

H. E. Berg, Shift Supervisor, was transferred from 100-D Area to the 300 Area.

R. G. Swift and B. E. Dalton completed their training periods and were assigned as Shift Supervisors to the 300 Area.

III. AREA ACTIVITIES

PILE SUMMARY	PILE B	PILE D	PILE F
Time Operated (%)	-	74.6	75.8
Operating Efficiency	-	72.8	71.9
*Power Level (M.W.)	0	275	275
*Inlet Water Temperature (°C)	9.3	7.4	8.2
*Outlet Water Temperature (Maximum °C, 10 tubes, .240" zone)	9.4	48.0	54.1
Number of Scrams	0	0	0
Number of Purges	0	1	1
**Helium Consumption (cu. ft.)	32,406	75,258	71,530
Metal Discharged (tons)	0	38.8	19.2
Inhours Gained (this month)	0	1	12
*Inhours Poisoned	-	358	288
*Inhours in Rods	-	63***	65

*Month end figures.

**High helium consumption attributed to purging required following neoprene seal replacement work.

***Twenty-five inhours of this attributed to the use of carbon dioxide in the gas circulating system.

P Division

PILE BUILDING

Outage Breakdown:

Date of Outage	Scheduled Metal Discharged	Scheduled Maintenance	Unscheduled	Length of Outage (Hours)
4-4-48*	D			23.7
4-4-48*	F			23.7
4-5-48**	D Area shutdown to discharge temporary poison column			1.4
*4-11-48***	D	D		136.6
4-11-48*	F			23.2
4-17-48	D Area shutdown to discharge temporary poison columns			4.0
4-25-48***	F	F		127.5
4-27-48	D			19.0

*These shutdowns were scheduled on consecutive Sundays to allow special tests on the B.P.A. system.

**The length of the allowable shutdown time on 4-4-48 was insufficient to complete the work load; an extended shutdown was required necessitating a subsequent shutdown on 4-5-48 as indicated.

***Extended outage for brick removal and seal replacement.

Operating Experience

A number of Special Request samples were processed during April; details of their irradiation may be found in the Technical Section of this report.

Production Tests having operational significance during the month are reported below:

105-75-P (Exposure of 4" Slugs)
Two tubes of 4" slugs were successfully discharged at 250% of normal concentration at F Area.

105-80-P (Measurement of Slug Temperatures)
Tube No. 2679-F, containing a thermocouple slug and 16 pieces of regular 8" metal, was discharged normally on April 11 at twice normal concentration.

105-119-P (Effect of Fabrication Temperature on Blistering)
A total of 26 tubes containing various combinations of alpha and gamma fabricated metal, both lead dipped and triple dipped, was discharged on April 4 and 11 at D Area with no difficulty. Twenty-six tubes containing similar

material were discharged at F Area on April 26. Difficulty was encountered in discharging six of these tubes as detailed under Mechanical Experience.

105-168-P (Replacement of Pile Helium Atmosphere with Carbon Dioxide)
The percentage of carbon dioxide in the D-Pile atmosphere was maintained at 25% except during the extended shutdown of April 11-16.

105-180-P (Irradiation of an Experimental Beta Slug)
A second experimental beta type slug was discharged without difficulty from the center of dry tube No. 1481-F on April 27.

105-180-P, Supplement A (Irradiation of a Beta Slug)
Tube No. 1481-F was replaced with a new tube having no front Van Stone to allow for expansion. The tube was then charged with a Beta slug on April 29.

105-183-P (Radiation from Uranium Slugs)
On April 25, the special shielded plug was removed from the front end of Tube No. 1366-F and a uranium slug shielded by a single lead dummy was moved to a position 14-3/4" from the front face shield. A maximum reading of 54 mr/hr was obtained four inches from the biological shield. A maximum beam of 4 mr/hr (uncorrected) was observed through the lead dummy.

Two additional bismuth columns were charged at F Area making a total of 24.

The filter capacity tests at Buildings 183-D and 183-F were continued during April.

Two fringe tubes which had been previously damaged and two fringe tubes which were being used with special rear aluminum nozzles were removed from service at F-Pile making a total of 78 such tubes.

Mechanical Experience

All horizontal and vertical safety rods are in satisfactory operating condition at month end. Considerable work was done at F Area on vertical rods as follows:

Rod guides were re-aligned on rods Nos. 11, 13, 14, 20, 27, 31, and 33. A new tip was installed on rod No. 30 and the original tip from No. 31 was reinstalled following buffing of the tip and rod guide.

Rods Nos. 10, 13, 14, 15, 20, 21, 26, 30, 34, 37, and 38 failed to enter their thimbles by from $\frac{1}{4}$" to $2\frac{1}{2}$" on the April 25 shutdown.

It was determined that the bottom of the thimbles contained very fine iron dust which could only be partially removed by a magnet. A program for removal of this material is being formulated.

At D Area vertical rods Nos. 11 and 16 were satisfactorily loosened and all vertical rods were again treated with rust preventive oil. The periodic pneumatic testing of the rod thimbles was completed.

Horizontal rod "A" at F Area was found to have several deep scratches on April 30 and it was given a coating of Aqua-Dag. Adjustment of the hose reel tension on No. 5 rod at F Area relieved the binding previously encountered.

A layer of brick was removed from the wall between the top of the unit and the discharge face at D Area from April 11-16 and at F Area from April 25-30. This work was done to allow equal upward expansion of the top shields. A canvas curtain was installed over the front of the opening to avoid ventilation disturbances, and lead brick was placed behind it to reduce radiation from the rear face during discharge operations. During the same shutdowns the front vertical neoprene seals at the experimental side shield were replaced because of excessive stretching. Considerable difficulty was experienced at F Area in obtaining a proper fit.

Difficulty was experienced at F Area in discharging 8 tubes. Special equipment and extensive oiling were required on April 25 to discharge Tubes Nos. 1078, 1166, 2785, 3483, 3570, and 3770, all containing metal irradiated in accordance with Production Test 105-119-P. Regular metal charges in Tubes Nos. 2681 and 3576 also required special equipment for discharging. Forces up to 3000 pounds per square inch were necessary to move the charges in Tubes Nos. 1166 and 3576. Tube No. 3576 was damaged and it was filled with dummies prior to replacement. Tube No. 1166-F and Tube No. 1481-F, which was used for Production Test 105-130-P, were replaced during the April 25 shutdown with tubes of the type intended for DR pile.

The 0.175" orifices in Tubes No. 1090-F and 1190-F were replaced with 0.200" orifices and Tubes Nos. 0985-F, 1086-F, and 1288-F were changed from 0.200" to 0.240" orifices on April 25 to relieve high temperature startup conditions.

Work was started on the installation of the new sewer line between Buildings 105 and 107 at F Area. The sewer line from Buildings 105-B to 107-B was laid bare at three points with one slight crack being visible. Further investigation will be made.

The voids under the floors of the 105-F Building were filled with clay and cement thus completing this work which was brought about by underground water leaks.

During routine flushing of the fly's eye at 100-B Area, the 1" plate-glass

outer lens disintegrated with considerable force. It appears that the glass was under internal strain. Plexiglass has been installed in all 100 Areas at this location and the use of this equipment has been limited to emergency work only.

The check valves in the A, B, C, and D risers at F Area were tested and found to operate satisfactorily.

A manometer traverse was made on Tube No. 4574-D on April 14 concurrently with transit surveys of the discharge and experimental faces and the unit top.

Pile Development

Work continued by the Process Control group on the development and evaluation of possible rear face charging machines. Extensive study by the same group reveals that considerable helium economies can be realized by modifying certain operating techniques during shutdowns. Essentially, the change which has been adopted as standard involves addition of helium makeup until the graphite temperature has cooled to equilibrium. Then a small helium flow is fed directly into the system.

The north retention basin at Building 107-D was pumped down and the known leaks were treated with P & B paint thus stopping six of the nine leaks.

In the south section of the Building 107-B basin, which was treated with chlorine in April, it was observed that the algae are dead but no marked peeling from the walls has yet resulted. Calcium hypochlorite, used in the north section of the basin, killed the algae much more rapidly than did the chlorine and with smaller quantities. Further observations are in progress.

GAS PROCESSING BUILDING

The first car of 99.8% purity helium was unloaded at Building 110-F without purification, thereby saving about 15,000 cubic feet of helium.

SPECIAL HAZARDS

Continued surveys of the experimental side top neoprene seal indicated a reading of 29 mr/hr as compared to 17 mr/hr in March. Film surveys show the beam to be about 30 inches in width.

The lead bricks placed on the discharge area side of the openings cut in the wall across the unit top do not give adequate shielding and will be replaced with sheet steel.

300 AREA - METAL FABRICATION

Production Statistics:

P Division

Production for the month of April was as follows:

Billets Produced	63 Tons
Billets Extruded	0 Tons
Rods Machined	131 Tons
Acceptable Pieces Canned	90 Tons

Melt Plant

The casting yields were as follows:

	% Yield		
	March	April	To Date 1948
Billet	69.1	73.7	71.1
Solid Metal	85.2	89.1	87.5

Operation was on a three-shift, five-day week schedule throughout the month. The use of solid scrap only as charge material was made standard temporarily to reduce the crucible breakage which results from the use of briquettes. This condition will be relieved during May when additional crucibles are received.

On April 1 the No. 4 coil in the B furnace began arcing after two hours and thirteen minutes of heating. The power was shut off immediately and the crucible charge was poured. An inspection of the furnace revealed no reason for the arcing.

On April 12 the No. 3 coil in A furnace arced. After the furnace was opened for inspection, it was found that a definite arc had occurred across the top of the coil and had burned a small hole in the coil lead. The coil was repaired in position and all coils were cleaned. The furnace was operated again on April 13 and the No. 2 arced on the first run. No apparent reason was found. After the coils were cleaned the furnace was operated without further difficulty.

The power input was reduced from 112 to 100 KWH on April 2. This was done to determine if a lower power input would decrease the carbon content of the billets produced. Difficulty was encountered in pouring as a result of what appeared to be incomplete melting of the crucible charge. The pouring stream was slow and fan shaped. The power input was gradually increased until a normal pour was reached. Satisfactory results were obtained at 108 KWH and this power input was maintained for the balance of the month.

Extrusion, Outgassing, and Machining:

Extrusion, Machining, and Billet Yields were as follows:

7

P Division

		% Yield (4" A's)		
		March	April	To Date 1948
Extrusion		--	--	93.9
Machining	(Extruded Rods	79.0	--	79.3
	(Rolled Rods	66.0	66.5	66.4
Billets		73.7	--	--

The annealing temperature for rolled rods was reduced from 1110°F ± 20° to 1020°F $^{+30^{\circ}}_{-20^{\circ}}$ on April 6. It was found that the grain structure was satisfactory in the lower range which offered an operational advantage by controlling the tempreatures well below the maximum temperature of the alpha range.

Lots 586, 587, and 588, which were annealed at 1000°F on April 14, were found to be under-annealed. This was not reported until April 22 and the lots had been processed through canning. The canned pieces have been set aside and samples have been taken for metallographic examination to determine if sufficient annealing occurred during canning to gain the desired grain characteristics.

Seventy receptacle slugs 5.00" ± 0.10" in length, 1.353" $^{+.001"}_{-.002"}$ in diameter, and having 21/32" axial holes drilled through them were machined. They were processed from alpha rolled rods in conformance with Metal Fabrication Request No. 35.

Four shipments of rolled rods were received in April. Two hundred and eleven rods were received April 7, 116 on April 14, and 661 on April 23, from Joslyn Steel Company, Fort Wayne, Indiana. The fourth shipment, containing 633 rods, was received from Simonds Saw and Steel Company, Lockport, New York, on April 14.

The machining yield continued to be low on rolled rods primarily as a result of the larger diameter as compared with extruded rods. Some difficulty has been encountered in machining rolled rods due to the irregularity of rod diameters. Solid scrap has increased as a result of some sections of rods being very porous and failing to clean up to 4" "A" specifications.

Chip Recovery and Oxide Burning

The Chip Recovery yield was as follows:

% Yield		
March	April	To Date 1948
90.4	88.9	89.4

Chip Recovery operated 15 eight-hour shifts and processed 37,561 pounds of briquettes in April.

P Division

The Chip Recovery press was shut down for repairs twice during the month. On April 2 it was necessary to resurface the bed plate and replace the insert which had cracked. On April 23 the insert cracked again and was replaced with a softer steel faced with studite.

The material burned in the oxide burner was as follows:

Weight Out - Lbs.		
March	April	To Date 1948
6042	6473	22084

The oxide burner was operated on a daily schedule.

Canning Operation

The canning yield was as follows:

% Yield (4")		
March	April	To Date 1948
90.2	83.6	87.1

Canning rejects, by cause, were:

	% Total Canned (4")		
	March	April	To Date 1948
Non-Seating	4.6	9.5	5.2
Marred Surface	1.1	1.0	1.2
AlSi on Outside of Can	.7	2.0	1.5
Frost Test	1.2	1.6	1.6
Bad Welds	.8	1.3	1.3
Miscellaneous	1.4	1.0	2.1
	9.8	16.4	12.9

The difficulty from non-seating, discussed last month, was encountered again throughout this period. A Brown recorder was substituted for the Micromax in the AlSi thermal analysis apparatus in an effort to improve reproducibility of results. The trials in which the Brown was used were unsatisfactory and the instrument is now being remodeled to improve sensitivity. Chromel-Alumel lead wire has been received and plans are being made to replace all furnace thermocouple lead wires as soon as possible. It has been observed that a number of rolled slugs having very small longitudinal surface cracks have a frosty appearance after being preheated in the Pb bath. This also has contributed to non-seating. A study of the possible causes for this condition is currently being made.

P Division

Work was resumed on the recovery phase of Production Test No. 313-94-M, "Development of Lead Dip Process" on April 13. The purpose of this phase of the test is to develop a process for recovering canned rejects by the lead dip process to supplement the standard chemical recovery process. Results thus far indicate that recovery can be accomplished by piercing a hole through the base of the aluminum can, preheating the reject in the lead bath for thirty seconds, then removing from the bath and using special tongs for removing the can from the slug. The slug can then be agitated in the AlSi layer on the lead bath for three seconds, transferred to the AlSi canning bath, agitated in the bath for three seconds, and recanned in the regular manner.

One piece each of Special Request 77 and 78 (radium chloride) were successfully canned after the mushroomed bottoms on the pieces had been spun down to the correct diameter. Seventeen pieces of Special Request No. 63 (Uranium enriched with U_{235}) were canned. Four pieces failed to pass the bubble test before canning and will be returned to the vendor.

A total of 2,211 poison slugs was canned during the month.

Recovery Operation:

	% Recovered		Average Wt. - Lbs.	
	April	To Date 1948	April	To Date 1948
Z Slugs	66.9	74.0	3.912	3.909
X Slugs	22.0	17.9	3.851	3.853
Rejects	11.1	8.1	--	--
	100.0	100.0		

The recovery of all gamma extruded 8" triple dip canned pieces (160 tons) was started on April 12. These pieces are being converted to solid scrap for remelting. On April 19 the operation was placed on a two shift per day basis.

Inspection and Testing

Autoclave rejects were as follows:

March	April	To Date 1948
0.49/M	0.51/M	0.47/M

Twenty autoclave failures occurred during the month; six of these were completely destroyed.

The "As Received" quality of cans, caps, and sleeves inspected during the month was as follows:

P Division

	% Useable (4")		
	March	April	To Date 1948
Aluminum Cans	93.3	83.7	88.3
Aluminum Caps	98.9	95.0	98.1
Steel Sleeves	72.4	82.1	75.8

The final inspection results on the 9880 "commercial grade" aluminum cans received last month was as follows:

	Number	Percent
Accepted	5297	53.6
Rejected	4583	46.4

The breakdown of rejects was as follows:

	Number	Percent
Marred Outer Surface	1694	17.1
Mandril	77	0.8
Thick Bottom	2368	24.0
Thin Wall	444	4.5

305 Area Test Pile

This unit was operated on a one-shift five-day week schedule in April, making 82 tests on canned slugs, 55 on billet eggs, 470 on graphite bars, and the following additional tests on special work requests:

Request Number		Number of Tests
19	To determine whether rubber knee pads used in Construction contain elements poisonous to piles.	2
20	To obtain absorption cross-sections of samples of horizontal rods for new pile construction.	6
21	To determine accurately the quality of four "Finished" bars for use as standards.	16
22	To irradiate and then count the irradiations from a sample of Lithium Hydride.	2

All routine canned slug and graphite tests were made in April using two two-minute drifts rather than two three-minute drifts.

Four bar testing was adopted as standard procedure for all routine graphite tests on April 5. Previously two bar tests were run on the

CS, KS, and KC types of graphite and single bar tests on all "Finished" graphite. In addition, the number of sample bars from each heat has been reduced from twenty-two to sixteen. Based on the above it now appears that the present operating schedule for the test unit will be adequate to cover all tests scheduled in the coming months.

The classification of graphite bars was changed from the E, D, H, M, and P classes to the following on April 17:

Grade	Δ ih Range
Red	less than + 0.08
Blue	+ 0.08 to 0.20
White	+ 0.20 and above (+ 0.20 to 0.60 for "Finished" only)
Green	+ 0.60 and above for "Finished" only

After testing, all sample bars are stamped conforming with the above Δ ih ranges and in accordance with the following table to facilitate the handling at the 101 Building.

Type of Graphite	Grade of Graphite			
	Red	Blue	White	Green
CS	R-1	B-1	W-1	G-1
KS	R-2	B-2	W-2	G-2
KC	R-3	B-3	W-3	G-3

Note:

All "Finished" graphite falling into the white grade is identified by WF plus the number.

Development Work

On April 9 a test was made to determine the value of helium as a cooling medium to reduce the melt furnace cooling cycle. The furnace temperature was reduced to 785°C in one hour and forty minutes. On April 19 B furnace was purged with 535 cubic feet of helium fifteen minutes after pouring the final charge. In one hour and ten minutes the furnace was cooled to 780°C. The normal time required to cool the furnaces to 800°C without helium is approximately two hours and fifteen minutes. It is evident that the cooling cycle can be decreased appreciably through the use of helium but its use does not appear to be economical at the present time.

P Division

An additional attempt was made to determine the feasibility of alpha extrusion with present process equipment on April 9. The press was equipped with a container having a diameter of 4.650" and a shear-face three hole die. The first billet was preheated for seventy minutes at 1150°F in the rotary furnace. It extruded about 3/8" at a pressure of 1000 tons; the second billet was preheated for two hours and ten minutes at 1150°F; only 3/4" of rod was extruded. The third billet was preheated two hours at 1150°F and one hour at 1180°F. Approximately 3½" of rod was extruded.

It is now planned to make an additional trial using a bell-mouthed triple hole die and a polished container to determine if friction can be sufficiently reduced to extrude in the alpha range.

An operator's suggestion to increase the steel sleeve length so that the aluminum can would be 1/8" shorter than the sleeve was accepted. This type of can and sleeve assembly eliminates the flared mouth of the canned piece, which results from crimping the can in the shorter sleeve, and subsequently eliminates the cut-off saw operation. In addition, it will decrease rejections of canned pieces for AlSi on the outside of can and the possibility of marred surfaces in handling pieces at the cut-off saw.

JE Maider

S DIVISION

APRIL 1948

OPERATING SECTION

I. GENERAL

Thirty-seven batches were started in the Canyon Buildings during April, and thirty-six were processed through the Concentration Buildings and the Isolation Building. The average purity for the completed charges was 98.8%.

The material balances for T and B Plants averaged 99.7% and 97.5%, respectively, for a combined average of 98.7%. Waste losses for the two plants averaged 2.5%.

Canyon and Concentration Building Production Performance Data — (4/1/48 — 4/30/48, inclusive)

	B Plant	T Plant	Combined
Number of charges started	18	19	37
Number of charges completed	17	19	36
For completed charges:			
Percentage of starting product in waste			
This month	2.7(a)	2.3(a)	2.5
Last month	2.6(b)	2.2(b)	2.4
Cumulative to date	5.2(c)	5.2(c)	5.2
Percentage of starting product recovered			
This month	94.8	97.4	96.2
Last month	101.7	99.3	100.5
Cumulative to date	97.1	95.6	96.4
Percentage of starting product accounted for			
This month	97.5	99.7	98.7
Last month	104.3	101.5	102.9
Cumulative to date	102.3	100.8	101.6
Gamma decontamination factor (log.)			
This month	7.78	7.61	7.67
Last month	7.65	7.59	7.62
Cumulative to date	7.31	7.27	7.29

(a), (b), (c): Include waste from processing recycle. The recycle wastes are estimated as: (a) 0.025%—T Plant; 0.026%—B Plant. (b) 0.011%—T Plant; 0.008%—B Plant. (c) 0.16%—T Plant; 0.0050%—B Plant.

S Division

Isolation Building Performance Data (4/1/48 – 4/30/48, inclusive)

	% of Incoming Product			
	Prepared for Shipment	Recycle	Losses	Material Balance
Average for this month	94.7	6.00	0.12	100.8
Average for last month	93.9	4.67	0.05	98.6
Average to date	96.4	4.00	0.11	100.5

II. ORGANIZATION AND PERSONNEL

Number of employees on payroll:

Beginning of month	303
End of month	308
Net increase	5

Remarks: The changes which occurred in the S Division during the month of April are listed below ——

5 Terminations (2 Monthly Roll, 3 Weekly Roll)
3 Transfers to other divisions (2 Monthly Roll, 1 Weekly Roll)
14 Transfers from the Accounting Division (All Weekly Roll)
1 New Hire (Weekly Roll)

Changes in supervisory organization:

C. R. Bennett, Supervisor—in—Training, resigned April 23, 1948.

F. E. Wilkinson, Supervisor—in—Training, was transferred to another location, effective March 31, 1948.

W. B. Reed, Area Supervisor, 200 East Area, resigned April 30, 1948.

L. F. Hardy, Area Supervisor, 200 West Area, was transferred to the 200 East Area to replace W. B. Reed.

K. C. Vint, Chief Supervisor, and H. W. Huntley, Senior Supervisor, were transferred to the Design and Construction Division, effective April 13, 1948

III. AREA ACTIVITIES

PRODUCTION PERFORMANCE

T and B Plants

Volume Reduction — Production Test 221—T—B

Evaluation of Production Test 221—T—B involving the reduction of process volume at the end of the extraction step, by reducing the amount of product

cake dissolving acid, for the purpose of reducing the waste storage space requirements for first and second cycle wastes, reducing essential material consumption and shortening the time required to process a run through the Canyon and Concentration Buildings, was started during the month with a ten percent volume reduction which was effected on run T-8-04-D-13. The test will proceed on the basis of incremental reduction, with thorough evaluation at each stage.

Section 13 Scavenger Reduction

First cycle byproduct precipitation procedures were standardized during the month, effectively concluding Production Test 221-B-5 (precipitate washing), and 221-B-6 (scavenger reduction). Conditions adopted in the T Plant are the use of 50 percent of the original weight of cerium and zirconium scavengers; 50 percent of the original amount of hydrogen peroxide used in cake removal; and a 3000 pound water slurry wash of the precipitate in the precipitator followed by two 500 pound water displacement washes of the precipitate after its transfer to the centrifuge. Recycling of the first cycle product precipitate water wash into the Section 13 precipitator will be discontinued because of somewhat erratic byproduct waste losses which have been attributed to its use. Average waste loss for the month was 0.88 percent.

At B Plant, standard conditions adopted are the same as those listed above, except that scavenger consumption remained at 25 percent of the original amount in order to permit the evaluation of the use of an increased amount of oxidant before increasing the amount of cerium and zirconium scavengers to 50 percent. Average waste loss for the month was 0.98 percent.

Processing of 4 Inch Slugs - B Plant

The first dissolver charge using the four inch slugs was processed during the month. Operation of the dissolver during the coating removal and dissolving of the metal proceeded normally, except that approximately nine hours and twenty-five minutes were required to dissolve the first cut, which is about four hours longer than normal.

Section A Byproduct Cake Removal - T Plant

Production Test 224-T-11, "Bismuth Phosphate Byproduct Removal with Water or Water-Nitric Acid Combination", was continued throughout the month. Continued efforts were directed toward procurement of representative water slurry samples; some improvement was noted but truely representative samples have not yet been obtained.

Section B Activation - T and B Plants

The present fluoride product cycle in the Concentration Buildings requires three centrifugations with a resultant cycle of approximately thirty hours which, with normal outage time, limits the capacity of the Concentration Buildings to twenty to twenty-one batches per month.

To shorten this cycle by the elimination of the third centrifugation would result in an additional waste loss of approximately 0.5 percent per batch processed. For this reason Section B in the 224-T and B Buildings is being put into parallel operation with Section E, thereby reducing the effective cycle for the fluoride product step to approximately fifteen hours.

WASTE DISPOSAL

T and B Plants

Cribbing of Second Cycle Wastes

At T Plant, 360,000 gallons of second cycle waste supernate were cribbed from the X-105-T tank during the month, making available increased space for the storage of first cycle waste.

At B Plant, the jetting of second cycle waste from X-112-B to the crib is in progress. At month-end a total of 314,000 gallons has been removed from the tank.

Additional second cycle cribbing will be dependent upon the underground movement of the cribbed activity, as indicated by the comprehensive soil sampling program being carried on by the H.I. Division.

Crib and Tile Field - 221-B Cell Drainage Water

Work on Project C-225 which covers the installation of a crib and tile field for handling the cell drainage water from 221-B was started during the month. At month-end, the excavation for the crib and tile field and 75 percent of the tie line trench has been completed. The crib has been installed but not backfilled.

241-TX Tank Farm - Project 163

Tank construction by the subcontractor continues to progress satisfactorily. Sixteen steel tank bottoms are in place and eleven steel tank sides have been erected. X-ray inspection of welds on six tanks is in progress, and the gunite has been applied to one tank.

In the General Electric phase of the work, the 154-TX diversion box has been completely poured and the installation of piping is in progress at the 155-TX diversion box. Catch tanks at both the 154-TX and 155-TX diversion boxes have been set in place, lines connected, hydrostatic tests completed, and backfill started. The piping between the 154-TX and 155-TX diversion boxes is 95 percent complete, and 90 percent hydrostatically tested. Welding and setting of piping from the 155-TX diversion box to the 151-U and 152-U diversion boxes is approximately 50 percent complete. Excavation of the trench from the 155-TX diversion box to the fence at the subcontractor's area was essentially completed, and the excavation of the stubs at the 221-U Building was started.

Waste Status

The status of the Waste Storage Areas on April 30, 1948, is shown in the following tables:

B Plant

Bldg. 241 Tanks	Waste	Percentage Full			Reserve Capacity in Batches to Process			
		B	C	BX	B	C	BX	Total
x101,2.3	Metal	100	100	25.6	0	0	200	200
x104,5,6	Metal	—	100	0	—	0	269	269
x201,2,3,4	Metal	0	100	—	—	0	—	—
x107,8,9	1st Cycle	100	70.7	0	0	99	338	437
x110,11,12	1st Cycle	—	100	—	—	0	—	—
x104,5,6	1st Cycle	—	—	—	—	—	—	—
x104,5,6	2nd Cycle	98.0	—	—	9	—	—	9
x110,11,12	2nd Cycle	80.2	—	0	90	—	454	544

T Plant

		T	U	TX	T	U	TX	Total
x101,2,3	Metal	100	100	—	0	0	—	—
x104,5,6	Metal	—	60.9	—	—	106	—	106
x201,2,3,4	Metal	0	0	—	—	37	—	37
x107,8,9	1st Cycle	100	0	—	0	338	—	338
x110,11,12	1st Cycle	—	99.6	—	—	0	—	—
x104,5	1st Cycle	67.1	—	—	74	—	—	74
x104,5,6	2nd Cycle	—	—	—	—	—	—	—
x110,11,12	2nd Cycle	75.1	—	—	114	—	—	114
x106	2nd Cycle	100	—	—	0	—	—	0

MECHANICAL PERFORMANCE

14–3 to 15–8 Trench Jumper — T Plant

A leak in the trench jumper of the 14–3 to 15–8, first decontamination cycle product waste line, developed. Replacement was made with a similar jumper from 221–U. A new jumper, now being fabricated, will be installed in U Plant.

Repair of Precipitator Tank Jacket — T Plant

The leaks in the jacket of the former Section 14 precipitator tank removed from service several months ago were repaired during the month. The tank is now installed in the precipitator position in Section 18–L.

S Division

15-8 Agitator Replacement - T Plant

The agitator on the first cycle waste neutralization tank failed and was replaced during the month. Radiation levels did not permit inspection of the unit although a broken reducing gear shaft is suspected.

Filters - Development Section 231 Building

Five of the six filters over the hoods in the development section of the building, which has been assigned to the 234-5 development group, were replaced with filters containing the C.W.S. 197-54-303-C, type 6 filter media. The filter for the sixth position is being fabricated.

SPECIAL HAZARDS

Stack Gas Contamination

The four electrically driven stack fans in the operating plants have now been replaced with fans equipped with stainless steel ducts. Stainless steel ducts for one steam fan have been fabricated and will be installed at 291-B early in May.

As reported last month, C.W.S. type 6 filters have been installed on all cell ventilation ducts in the 221-B and 221-T Canyon Buildings. For the first three days after the installation the activity, as indicated by filter samples taken at the stacks, decreased by a factor of 50 to 100 but later increased to the extent that the filters are not considered to be effective. One possibility is that sufficient air is being drawn through the air tunnel drain to the deep cell to offset the effect of the filters. An adaptor and filter assembly has been installed on the tunnel drain but results are not yet available.

During the week ending April 25, 1948, a scrubber was installed in the dissolver off-gas line on the 4-5L dissolver in the 221-B Building. This is a two and one-half foot by fifteen foot column packed with ten feet of one and one-quarter inch Raschig rings. Very preliminary results indicate that the scrubber removes 40 to 50 percent of the nitrous oxides, and perhaps as much as 99 percent of the active iodine. The second scrubber is complete and will be installed on the 3-5L dissolver in the 221-B Building as soon as possible. Two other scrubbers for installation in the 221-T Building are being fabricated.

The design of the filter boxes to be installed in the tank vent lines in the 224 Buildings is complete. Fabrication of the boxes which will be equipped with type 6 C.W.S. filters has been started.

As suggested by Dr. Langmuir during his recent visit, the entrainment of mist and particles from the process cells and vessels may be controlled by limiting the amount of air flow through the process cells. During the past week the cracks between the cell and trench blocks in the 221-T Canyon Building were temporarily sealed. The floor drains in the several

non-operating cells which were left open to provide ventilation of the deck were sealed to prevent entrance of air into the operating cells via the cell sewer. Preliminary results indicate that the activity in the stack gases has been reduced by a factor of three and that visible specks have been virtually eliminated.

Engineering work involving the development of permanent equipment and methods for efficient decontamination of the stack gases is actively underway. A small electrostatic precipitator has been purchased for delivery May 15, 1948. A scrubbing unit (1500 cfm) of the Rotoclone type has been ordered. Other types of gas purification methods are being considered and particle size studies are progressing.

It has been agreed that the best means of coping with ground contamination is through fixation of the particles by means of a cover crop. Dr. A. L. Hafenrichter of the United Stated Department of Agriculture, Portland, advises that the natural grass which had previously been removed by grazing sheep is growing back and that it should provide adequate cover within the next year.

METEOROLOGICAL SECTION

The responsibility for the operation and maintenance of the Meteorological facilities is to be transferred to the Health Instrument Division as of May 1, 1948.

A total of ninety forecasts were issued to the T and B Plants during April, with an average accuracy of 82.8 percent. In addition, sixty 24-hour forecasts were issued to other divisions, with an average accuracy of 79.7 percent.

General weather conditions for April are shown below:

Minimum air temperature (4 feet)	28°C on 4-26-48
Maximum air temperature (4 feet)	76°C on 4-15-48
Mean air temperature (4 feet)	49.3°C
Maximum hourly wind velocity at 200'	48 MPH (SW)
Mean velocity at 200'	10.7 MPH
Maximum hourly wind velocity at 50'	46 MPH (WSW)
Prevailing wind direction (8 point compass)	NW
Prevailing wind quadrant	W
Total precipitation	0.95 inches
Number days precipitation occurred	12
Number days snow	2
Number days fog	1
Clear days	3
Cloudy days	13
Maximum relative humidity	96
Minimum relative humidity	22

S Division

DESIGN AND CONSTRUCTION CONSULTANTS SECTION

Redox

During April, key Redox personnel of the Technical and S Divisions were transferred to the Design Engineering Division for the purpose of injecting technical and operating experience and background into the latter organization. K. C. Vint was assigned to the New York Kellex Office as Project Engineer, and H. W. Huntley was assigned to the Redox Layout group as Section Engineer. Coincidental with this reorganization, the S Division assumed the responsibility of operating the projected Redox Test Plant under the technical direction of the Redox Development group of the Technical Division. R. S. Bell's assignment as Contact Engineer for the Main Redox Plants was expanded to include the Test Plant as well.

During the period rapid strides were made by the Process and Layout groups of the Design Engineering Division in modifying and simplifying the General Electric process flowsheets for the Test Plant. The release of these revised flowsheets to the Kellex Corporation in May will permit the development of practical and firm design for this facility.

Area Laundry

During April a revised study and estimate for the proposed 200 Area protective clothing laundry facility was submitted to Management for approval by the Design Engineering Division. The revised estimated cost of this building was $700,000, as compared to the $1,500,000 initially submitted. This was made possible through a critical appraisal of the initially submitted building layout in terms of essential requirements.

A site location for the laundry in the 200-W Area was selected in the event the facility is to be constructed.

POWER DIVISION
APRIL 1948

GENERAL

As a result of the coal strike it was necessary to transfer approximately 3,250 tons of coal from the F Area storage to the miscellaneous areas to supply burning requirements.

On April 14 and 15 capacity tests were conducted on the export water system between the D Area, and E and W Areas. Valuable flow characteristics of the system were determined from the test.

PERSONNEL AND ORGANIZATION

No. of employees on payroll	April
Beginning of month	491
End of month	489
Net decrease	2

The indicated decrease in personnel resulted from the hiring of two operators, transfer of six clerical employees from the Accounting Department to the Power Division, the termination of four operators and transfer of four from Power to other departments.

100 AREAS

The north section of the B Area retention basin was chlorinated with HTH at the request of the "P" Division on April 2, to kill algae growth.

Lay up of refrigeration equipment in F Area was completed, with the exception of the replacement of damaged labyrinth seals in Nos. 1, 2, and 3 units.

Filtration plants in both D and F Areas have continued normal operations with ten filters in service in each area; however, a slight increase in loss of anthrafilt has been noted as a result of more frequent backwashing.

On April 16 an expansion joint ruptured on the process water line in the demineralizing plant in D Area. A delay, resulting from difficulty in isolating the break, caused the tank room to be flooded. Several pump motors were water soaked and have been removed for drying out. Since the break occurred in a stub end off the main by-pass line, it was blanked and the line returned to service.

The ten million gallon reservoir in the F Area was drained for inspection April 26. Considerable tumbleweed were found on screens to filter supply pump flume and removed.

Power Division

The deaerator in B Area power house was removed from service, all vent condenser tubes replaced, and returned to service April 6.

The preliminary work for extension of filtration plant in D Area is in progress by Design and Construction. An 8-inch sewer line has been re-located, and excavation completed for railroad crossing encasement for water lines on the south end of the building.

200 AREAS

All tubes were replaced on the York air conditioning unit evaporator in the control laboratory building in the "B" Area on April 22.

On April 27 a 3-inch connection was made to the 8-inch sanitary water main near the Isolation Building for the Construction Division's use.

300 AREA

On April 3 and 8-inch water connection was made to the sanitary system to supply the new elevated water storage tank.

Construction of the No. 3 well was completed, the well tested, and connected to the area water system on April 26.

A larger chlorinator for the water supply system was placed in service April 21.

700 AREA

It was necessary to replace 160 feet of defective 10-inch water main north of the Administration Building.

1100 AREA

The Nos. 2, 3, 4, and 5 Village irrigation system were put into service after extensive repairs and replacements caused by housing construction.

All irrigation stations and systems are now in service.

On April 30 the new 30-inch force main from the sewerage lift station to the disposal plant was placed in operation. The end of the 30-inch gravity line, being laid between sewerage lift station and North Richland, was tied into the lift station on April 25.

MISCELLANEOUS POWER AREAS

All farm irrigation water pumping equipment in the vicinity of Vernita and Hanford, and the refrigeratien plant at Vernita, were transferred to the sub-contractor on April 19. The Power Division was released from the operating responsibility and property accountability of this equipment.

POWER DIVISION STATISTICS

From April 1, 1948

Through April 30, 1948

			AREAS		
			100-B	100-D	100-F
RIVER PUMP HOUSE (Building 181)					
River stage	Feet above sea level	(max)	393.4	384.5	371.0
		(min)	385.6	378.2	364.5
		(avg)	387.9	380.0	366.4
River temperature	avg. °F		44.0	43.3	43.0
Water pumped to Reservoir	gpm avg. rate		12701	38011	34403
Water pumped to Refg. Condensers	gpm avg. rate			0	0
RESERVOIR (Building 182)					
Water pumped to Filter Plant	gpm avg. rate		12050	31540	30475
Water pumped to Condenser System	gpm avg. rate		632	3737	3334
Water pumped to Export System	gpm avg. rate		19	2734	594
	gpm normal rate		3347	3347	3347
Chlorine added at No. 1 inlet	pounds		7687	13764	7000
FILTER PLANT (Building 183)					
Filtered water to Power House	gpm avg. rate		103	294	243
Filtered water to Process	gpm avg. rate		10422	27788	27385
Filtered water to Fire & Sanitary	gpm avg.		82	120	136
Chlorine used in Water Treatment	pounds		1155	1606	6000
	ppm avg.		1.95	1.33	1.10
Lime used in Water Treatment	pounds		15421	44500	41000
	ppm avg.		3.55	3.9	3.7
Coagulant used in Water Treatment	pounds		59118	170500	185000
	ppm avg.		13.6	15.0	16.9
Raw Water pH	pH avg.		7.74	7.91	8.0
Finished Water pH	pH avg.		no analysis	7.41	7.44
Alkalinity, M. O. - Raw	ppm avg.		56	59.6	60
Finished	ppm avg.		52	54.1	54
Residual Chlorine - Settled	ppm avg.		.29	.17	.25
Finished	ppm avg.		.06	.13	.16
Iron - Raw	ppm avg.		.43	.61	.47
North Clearwell	ppm avg.		no analysis	.025	.02
South Clearwell	ppm avg.		No analysis	.030	.02
Hardness - Finished	ppm avg.		67	73.0	72
Turbidity - Raw	ppm avg.		23	21.4	17
Filtered	ppm avg.		No analysis	0	0
REFRIGERATION (Building 189)					
Refrigeration produced	Tons per day			0	0
Temperature, Process Water In	avg. °F.			-	-
Temperature, Process Water Out	avg. °F.			-	-

Power Division

From April 1, 1948

Through April 30, 1948

			100-B	100-D	100-F
POWER HOUSE (Building 184)					
Steam generated - Total		M pounds	29198	101571	86840
Average rate		lbs./hr.	40609	141267	120779
225 psi Steam to plant (est.)		M pounds	25644	88421	76066
15 psi Steam to plant (est.)		M pounds	51	961	353
Coal consumed		Tons	1973	7468	5870
Coal in storage (est.)		Tons	18984	35872	32244
DEAERATOR PLANT (Building 185)					
Water flow		gpm avg. rate	10172	27498	27135
Chemicals consumed:					
Sodium Silicate		pounds	74015	202520	202320
Dichromate		pounds	7285	19100	22400
Chemical Analysis:					
pH		pH avg.	7.64	7.63	7.70
Dichromate		ppm avg.	No analysis	1.90	2.0
Silica		ppm avg.	No analysis	5.84	5.6
Dissolved Iron		ppm avg.	.02	.023	.02
Free Chlorine		ppm avg.	.09	.121	.14
PROCESS PUMP ROOM (Building 190)					
Total water pumped		gpm avg. rate	10137	27323	26960
		gpm normal rate	10137	31427	30646
Water temperature		avg. °F.	48.7	46.0	46.3
VALVE PIT (Building 105)					
Chemicals consumed:					
Solids		pounds	0	1500	1900
Chemical analysis:					
A, B, C, & D Headers					
	Standard limits				
pH	7.5 - 7.8	pH (max)	7.70	7.70	7.70
		(min)	7.76	7.50	7.60
		(avg)	7.64	7.63	7.65
SiO_2		ppm (max)	6.0	6.5	6.5
		(min)	5.0	5.0	5.0
		(avg)	5.3	6.1	5.7
$Na_2Cr_2O_7$	1.8 - 2.2	ppm (max)	2.2	2.0	2.1
		(min)	1.8	1.8	1.9
		(avg)	1.9	1.87	2.0
Iron		ppm (max)	.03	.04	.04
		(min)	.01	.02	.01
		(avg)	.02	.026	.02
Chlorides		ppm avg.	1.7	1.53	1.2

Power Division

From April 1, 1948

Through April 30, 1948

	Unit	200 Areas	
		200-E	200-W
RESERVOIR (Building 282)			
Raw water pumped	gpm avg. rate	1605	1741
FILTER PLANT (Building 283)			
Filtered Water Pumped	gpm avg. rate	426	387
Chlorine Consumed	lb.	223	206
Alum Consumed	lb.	2700	2370
Chlorine Residual - Sanitary Water	ppm	.64	.64
POWER HOUSE (Building 284)			
Steam Generated - Total	M lb.	18262	26992
Steam Generated - Ave. Rate	lb./hr.	25399	37541
Coal Consumed (Est.)	tons	1338.5	1775.8
Coal in Storage (Est.)	tons	11064.5	14901.5

		300, 700, 1100 Areas		
		300	700	1100
POWER HOUSE (Buildings 384 and 784)				
Steam Generated - Total	M lbs.	9400	20529	
Steam Generated - Avg. Rate	lb./hr.	13056	28512	
Coal Consumed - Total (Est.)	tons	606.5	1480.	
Coal in Storage (Est.)	tons	983.5	3782.	
SANITARY AND FIRE SYSTEM (1100)				
Well water pumped - Total	gal.			136,416,000
Well water Per Day	gal./day			4,547,000
Well water	gpm avg. rate			3,158
Chlorine Residual	ppm			0.2
SEWAGE TREATMENT PLANT (1100 AREA)				
Total Sewage Treated	gal.			62,200,000
Sewage Treated Per Day	gal./day			2,073,000
Sewage Flow	gpm avg. rate			1,440

MAINTENANCE DIVISION

APRIL, 1948

GENERAL:

There was one sub-major injury in the Maintenance Division on April 8 when a mechanic in 200 West Area strained his back lifting a speed reducing gear unit

Work started in 100-B Area on April 28 toward reactivating the equipment which has been laid up, and preparing the area for resumption of production.

Minor Construction started April 20 to install a new process sewer line between Buildings 105-F and 107-F to replace the present line which is leaking badly

Minor Construction also took over from the 200 Area Maintenance group the construction of the new process waste line system in 200 West Area in connection with the T_X Tank Farm.

Construction work was completed on the 3745-A Building in the 300 Area which is now ready for installation of the X - Ray equipment.

In order to relieve the overcrowded conditions in the 703 Administration Building, about two-thirds of the 707 Change House was remodeled to provide office space. The washing facilities were retained and sealed off from the office section. Accommodations for about forty office workers were provided in this manner.

The installation of a freight elevator in the 703 Administration Building was completed during the month.

ORGANIZATION AND PERSONNEL:

Number of employees on roll	April
Beginning of month	705
End of month	702
Net decrease	3

WORK ORDER SUMMARY:

Area	Backlog Man-Days 5-1-48	Men on Roll	Backlog Days 5-1-48
100	3270	126	26
200	4798	169	28
300	978	75	13
700	2002	112	18
M.C.	8203	118	69
	19251	600	31 (Average)

2 Maintenance Division

The total backlog decreased from 28,663 to 19,251 during the month and the average number of days to complete all work dropped from 47 to 31. This decrease in load was due to two trends, one was to turn construction-type work over to sub-contractors and the other was to eliminate as much new work as possible by reviewing old work orders and limiting authorized signatures.

100 AREAS:

The far front vertical rubber expansion joint in the 105-D and 105-F units was stretched to a critical dimension due to expansion and was replaced with a new rubber expansion joint. Additional material was provided to take care of future expansion. The five foot thick concrete block and brick wall across the top of the units originally had a cork expansion joint through it to allow for expansion. The cork joint did not function properly and repairs were made by removing two rows of concrete brick and a layer of cork. The wall now has a six and one-half inch open expansion joint in it. A strip of canvas was installed over the opening to keep the building air system functioning properly. Lead bricks were used along the rear face edge of the wall opening to provide shielding.

The old catch boxes used at A, B, and C discharge chutes in the 105-F unit were removed, and a new type aluminum sheet gate was installed. The gates are easier to operate and more storage space is gained in the space that the boxes occupied. Process tubes #1481 and #1166 were replaced with 105-DR tubes. An air cylinder was installed on #9 exhaust fan to control the air supply. This single installation has proven very satisfactory and may be the answer to correct damper control. The floor in the accumulator room instrument shop and work area corridor was raised to its original elevation by pumping mud beneath the floor with a Koehring mud jack.

An additional lime line was installed on the west side of Building 183-F through the flumes. This allows cleaning of each line separately and also allows flushing.

The manufacture of nine horizontal rods for 105-DR was carried on during the month.

Two new bellows assemblies were made for the Design Division. The original welded construction was replaced by using Neoprene rings in the packing gland arrangement.

200 AREAS:

The installation of the #2 replacement exhaust fan at the B Canyon Stack Building has been completed. This fan is equipped with stainless steel duct work, of which the discharge portion may be removed independently by remote means, also the entire unit may be so removed.

Numerious inspections, changes, and additions were made to the B Cell equipment piping in the Concentration Buildings to place them in operating condition. These cells had formerly been held in stand-by condition.

3 Maintenance Division

The skimmer in F-22 centrifuge, "T" Area Concentration Building, failed in service. It was replaced with an improved reinforced design.

All sample room and centrifuge balcony floors were repainted, in "B" concentration Building, to control contamination.

An improved design oil separator was installed on the Freon system of the air conditioning units, in the control laboratories of T and B Areas.

Redesigned filters using the special chemical warfare media were fabricated and installed in the Isolation Building. These filters serve the technical laboratory section of this building.

The steam line support poles that have failed at the ground line are being replaced. Treated poles are being used as replacement.

Three-inch chamber walls thirty-seven feet long were fabricated and installed in thirteen locations in the East Area Waste Tank Farms, for determining sludge levels.

Two dissolving off-gas scrubbers were fabricated in the shops and installed in the "B" Canyon in connection with the stack gas decontamination program.

300 AREA:

The large drying cabinet for use in the canning area was completed.

A special three - hole extrusion die was made and installed on the Watson-Stillman press. The press failed to extrude through this die at the required temperatures and an additional experimental three-hole die containing some modification has been made and will be tested about May 5. The container liner has also been ground and polished to make extrusion easier. In addition, four new one-hole dies of slightly larger than normal bore diameter are being fabricated. These will be used to extrude rods prior to rolling if the test proves satisfactory.

The painting in Building 3717 Instrument shop has been completed and at present considerable painting of the steel inside of Building 313 is in progress.

The five ton bridge crane for the 314 Melt Plant has been received and will be installed during the coming month.

Experimental work and changes to the Demonstration Unit have continued to be of considerable volume in the 321 Building.

700 AREA:

All sections of the Village irrigation system are repaired and in operations.

The 200 feet of thin wall ten-inch sanitary water main between 713 and 722-C Buildings was replaced with schedule 40 tarred steel pipe. This completed the replacement of the ten-inch water main from 729 Building to the 702 Building.

4 Maintenance Division

The interior painting program at the Kadlec Hospital is fifteen percent complete.

Extensive changes to various offices in the 703 Building were made to accommodate additional Goloral Electric and A.E.C. personnel. The remainder of the blueprint equipment was moved from the 703 Building and set up in the 760 Building.

The 712 A and B huts were revamped to make them burglar proof for security reasons. This involved replacing screens with glass windows and installing metal window guards. All doors were reinforced and steel plates were placed over the locks to prevent illegal entry.

The panel sections of Celotex were cut, painted and installed on the suspended ceiling frames of the 722 Combined Shops Building.

PROJECT ENGINEERING DIVISION

APRIL 1948

GENERAL

The Project Engineering Division has as its responsibility design, studies, project proposals and related engineering duties connected with authorized requests for work emanating from the Hanford Works Plant.

Prior to April 1st a Reproduction Section was a part of this division, but on that date due to the fact that the major share of the reproduction work was done for the Design Division, the entire Reproduction Group, consisting of 2 supervisors and 55 weekly employees, was transferred to the Design Division so that a more direct control of reproduction and distribution of prints could be exercised by the group initiating the work.

ORGANIZATION AND PERSONNEL

	April
Number of employees on Payroll	
Beginning of Month	171
End of Month	115
Net Decrease	56

The force as of April 30, 1948, is as follows:

Superintendent	1
Asst. Superintendent	1
Asst. Area Engineer	3
Engineering Group Leaders	4
Engineers Assignment	38
Foreman	1
Total Supervision	48
Draftsmen	21
Jr. Engineers	7
Estimators	4
Jr. Draftsmen	16
Clerks	2
Jr. Clerks	1
Helpers	6
O.M.O.	2
Stenographers	8
Total Weekly	67
GRAND TOTAL	115

Project Engineering Division

PRESENT STATUS OF WORK

Projects, Suspense Codes Authorized and Under Construction

100 AREAS

Project Number		% Phys. Complete	Date Auth	Est. Cost
C-172	Dismantling of Equipment in Demineralization and Deaerating Plants	4	8-19-47	$ 486,000
C-184	Experimental Animal Farm	0	10-27-47	286,000
C-213	Fire Protection Riverland Shop	0	1-13-48	8,200
C-222	Dismantling Unoperated Equipment in 105 Valve Pits	4	2-10-48	4,000
C-238	Effluent Sewer Line 105 F to 107 F	1	3-26-48	207,000
C-247	Can Opening Facilities	100	- - - -	7,000
	TOTAL Estimated Cost 100 Area Projects			$998,200

200 AREAS

C-120	Divert Second Cycle Waste From X-110 (Now awaiting results of H. I. Studies on Soil Sampling)	98	1-15-47	134,200
C-133	Special Test Wells 200 E & W Part II Awaiting Approvals	94	1-30-47	180,600
C-160	H. I. Shaft at 241 B	99	7-14-47	19,000
C-163	Additional Waste Storage and Tie Lines - 200 W (G.E. Portion only Subcontract not included)	47	7-25-47	500,000
C-166	Additional Nitric Acid Storage Facilities	100	7-2-47	57,000
C-171	Alterations to Six Periscope Assemblies	40	8-6-47	7,200
C-192	Biology Laboratory	0	2-3-48	590,000

Project Engineering Division

Projects, Suspense Codes Authorized and Under Construction (Cont.)

200 AREAS

Project Number		% Phys. Complete	Date Auth.	Est. Cost
C-193	Alterations to Existing Lighting System 272-E-W	100	9-20-47	$ 6,600
C-216	Addition to Building 2707EA	55	2-2-48	4,170
C-225	5-6 Waste Disposal to Ground	5	- - - -	34,000
SC 10155	Physical Testing Equipment	70	- - - -	- - - -
SC 10225	Stack Filtration Facilities 200 E & W. Additional phases contemplated	33	- - - -	- - - -
	TOTAL Estimated Cost 200 Areas Projects			$1,532,770

300 AREAS

C-127	300 Area - Increased Capacity of Telephone Exchange (Elect. Div. will procure and install equipment)	0	5-12-47	30,000
C-142	Metal Casting Facilities Parts I & II	96	4-7-47	188,000
C-189	Building 3745-A X-Ray Fac.	83	8-20-47	22,000
C-207	Fire Alarm System for Building 3706 and 3717	10	11-19-47	5,450
C-219	Construction of Additional H. I. Instruments	0	1-27-48	97,200
C-220	Optical Building and Elect. Shop 3708 - 300 Area	15	1-30-48	81,900
C-223	3703 Office Building Unit for Technical	0	3-1-48	93,000
C-227	Conversion of Offices to Labs. Bldg. 3796 & 3707-C Change House	2	3-15-48	429,000

Project Engineering Division

Projects, Suspense Codes Authorized and Under Construction (Cont.)

300 Area

Project Number		% Physs. Complete	Date Auth.	Est. Cost
C-237	Nine Tube Mock Up Bldg.	15	4-12-48	$ 26,000
	TOTAL Estimated cost 300 Area Projects			$ 972,550

700 - ADMIN. & GENERAL PLANT AREAS

C-138	Bldg. 702 - Automatic Dial Exchange (Elec. Div. will procure & install equip.)	3	5-12-47	470,500
C-144	Additional Telephone Cables - Richland (Material partly received, but no installation work started)	0	5-12-47	45,000
C-148	Combined Maint. Shops 700 Area Parts I & II	91	6-25-47	188,000
C-149	Expansion of Printing Shop 717 Bldg	100	7-23-47	16,000
C-175	Bldg. 703 Freight Elevator	90	7-29-47	9,400
C-177	115 KV Power Line through Richland. Parts I & II (Field work to Construction Div.)	0	8-14-47	1,167,000
C-195	Radio Communications for R. R. Dispatching	33	10-15-47	34,000
C-196	Electrical Distribution Hdqts. Bldg & Conversion of 2713 E to Garage	0	10-10-47	162,400
C-202	Gate House & Parking Lots - 700 Area at Stevens Dr. & Swift Blvd.	80	11-7-47	31,500
C-209	Two Story Addition to Bldg. 703	92	12-3-47	140,000
C-214	Rehabilitation of Plant Railroad	1	2-18-48	3,214,000
C-217	Addition to Bldg. 760. (Field work to be completed by Const.Div.)	0	2-24-48	113,300

Project Engineering Division

Projects, Suspense Codes Authorized and Under Construction (Cont.)

700 - ADMIN. & GENERAL PLANT AREAS

Project Number		% Phys. Complete	Date Auth	Est. Cost
C-229	Office Machine Repair Shop Hutment 722-L	0	3-26-48	$ 3,700
C-243	Painting and Improved Lighting Building 721	0	4-5-48	5,300
	Total Estimated Cost for 700 Admin. & General Plant Areas			$5,600,100

1100 AREA

C-134	Richland Village Dust Control & Landscape Program 1947 to June 1948	51	12-19-46	250,000
C-146	Irrigation Extensions - Village	86	3-28-47	90,000
C-157	Revisions to Kitchens - All "E" Type Houses	100	6-12-47	15,960
C-158	Air Conditioning All Dorms Except W-4 & W-13	32	7-28-47	136,800
C-164	Construction & Expansion of Parking Compounds - Village	0	6-27-47	50,900
C-182	Install Sidewalks, Curb & Gutter West Side Geo. Wash. Way, Gillespie to Abbott Streets (Field work turned over to Const. Div.)	0	8-19-47	26,800
C-186	Overhead Doors - 1131 Garage	0	8-26-47	5,500
C-194	Air Conditioning Richland Theater	100	10-1-47	7,000
C-210	Automatic Traffic Signals - Rich.	0	3-4-48	7,900
C-224	Transformer Station for Bakery Addition - Foodstore "A"	100	2-13-48	4,000
C-242	Installation of Mail Boxes - All Dorms	0	4-5-48	5,600

6.

Project Engineering Division

Projects, Suspense Codes Authorized and Under Construction (Cont.)

1100 AREA

Project Number		% Phys. Complete	Date Auth	Est. Cost
C-245	Remodeling of Tract House L-859	0	4-15-48	$ 7,000
	TOTAL Estimated Cost 1100 Areas Projects			$607,460
	TOTAL Estimated Cost for Active Approved Projects All Areas			$9,711,080

Projects Being Routed for Authorization

E.R.No.			Estimated Cost
A-416	(C-218)	Patching and Seal Coating of Village Streets	$ 78,600
A-453		Roof Replacement - Domestic Water Reservoir - Richland	78,700
A-467	(C-251)	Remodeling of Bldg 722-A and Erect two Hutments for the Elect. Div.	23,300
A-470		Seal Coating of 36 Miles of Plant Highway	75,000
A-481		Painting of 514 Permanent Type Houses - Richland	124,250
925	(C-148)	Combined Maintenance Shops Bldg 722 Part II. Additional Funds	17,300

PROJECT ENGINEERING - AREA REPORTS

Status of Engineering Study & Design Work in Progress During Month of April

E. R. No.	100 AREAS	% Engineering Complete
A-1004	Downcomer Design 105-F	20
A-1006	Dry Air Supply to Test Holes	25
A-1012	Physical Bend and Tension Testing Machine	80

Project Engineering Division

Status of Engineering Study & Design Work in Progress During Month of April (Cont.)

E. R. No.	100 AREAS	% Engineering Complete
A-1034	Alterations to Bldgs 186 and 185	15
A-1044	Outlet Charging Device	50
A-1046	Spectrometer Mount	60
A-1048	Revise Gas Circulating System Bldg. 105	50
A-1051	Remove Equip. in Valve Pits Bldgs. 105 B&F	50
A-1052	Study 2nd Effluent Sewer Line 105 F to 107 F and Recommend New Installation	70
A-1054	Design Roller Flanging Device for Van Stone Joints	40
A-1055	Design and Estimate a Radiation Shield for Top Far Side of 105 D and F	25
A-1057	Prepare Project for Earth Crib 100 B & F	0
	200 AREAS	
2279	Prepare Project for Regasketing Facilities 221-T & B	72
2285	"B" Jet Assembly	75
2288	25 Additional Special Test Wells	85
2287	Study Rail Alignment of 200 N Cranes	70
2299	Stack Alignment Survey 291 T, B (Long Term)	100
2305	Study & Recommend Facilities & Procedure for Working Diversion Boxes	95
2309	Water Supply & Plumbing - 622 Bldg. Project Being Prepared	90
2326	Mark Grade on Steam Line Supports 200-W	0
2327	Study Possibility & Redesigning Connector Head to Simplify Gasket Changing	70
2333	Study and Recommend Outer Roller Bearing for 30 Ton Crane - Report Prepared	90

Project Engineering Division

Status of Engineering Study & Design Work in Progress During Month of April (Cont.)

E. R. No.	200 AREAS	% Engineering Complete
2339	Design Bracing for Stand Pipes - High Water Tanks	100
2343	Design Equipment Decontamination Station for Small Items 221B	95
2344	Design Equipment Decontamination Station for Small Items 221T	95
2353	Crane Alignment & Rail Elevation 221T	70
2354	Design Sampler to Simplify Sampling 221	95
2355	TX Waste Storage	45
2360	Prepare Project to Build an Addition to 222U - Cancelled	100
2363	Revise Trombone Type Sampler 221-B	0
2368	Study & Recommend a Means of Preventing Steam Cell Piping From Creeping Through a Concrete Wall	30
2369	Prepare Project to Install Manifold Outlet Piping Tank Baffles to Permit Future Use of Remaining 3-200 Series Tanks for 224-T and B Waste	90
2371	Design Canyon Decontamination Sink & Piping 221 T and B	95
2372	292-B Annex to Scrubber Facilities	60
2373	Design Safety Shower for G Cell 224-T	10
2374	Estimate Cost of Providing Parallel Operation of "B" & "E" of "G" & "F" Cells, 224-T	0
2375	Adapt "Q" Smith Sampler Principles to 221 Bldg. Sampler Compartments	0

Project Engineering Division

Status of Engineering Study & Design Work in Progress During Month of April (Cont.)

E. R. No.	200 AREAS	% Engineering Complete
2376	Cathodic Protection to Underground Waste Lines (Survey work and As-Built Drawings)	90
2378	Design Precipitator Tanks with Longer Life Jackets 221 T & B	70
2380	Study Sanitary Septic Tank & Tile Field Overload Conditions at 200 E & W Process Areas	10
2381	Design Acid Supply Tanks & Piping for 222B	50
2387	Piping Changes E-I-Y Tank 224-T	30
2389	Air Conditioner - 622 B uilding	50
2393	Steam Jet with Remotely Removable Features	0
2395	Prepare Project for Bismuth Subnitrate Preparation Facilities	90
2397	Specify 1-1/2" Pipe from Car Spot to 181 Tank 211T	50
2398	Industrial Burial Ground 221 T & B	30
2399	Redesign Poppy Carriage 221 T & B & 231	10
2400	Maintenance Hoist for Cranes 221 TUB	10
2401	Maintenance Hoist for Cranes 212 NPR	10
2402	Gib Crane Over Axelson Lathe 272-E	60
2403	Revision of 222 T & B Control Labs.	2
2404	Coal Supply Survey and Volume Est.	100
2405	Canyon Trench Jumper Nozzle No. 42 Sect. 13L to No. 74 Sect. 14R - 221B	100
2406	Provide and Erect Temp. Office Bldg Near 231-W. Project Proposal Being Prepared	90

10.

Project Engineering Division

Status of Engineering Study & Design Work in Progress During Month of April (Cont.)

E. R. No.	300 AREAS	% Engineering Complete
A-3019	Housing for X-Ray Machine	97
A-3036	Designs for Construction Optical Instruments Bldg. 300 Area	80
A-3042	Design Air Filters for Building 3706	80
A-3044	Designs for Conversion of Bldg. 3706 Offices to Labs.	80
A-3046	Study Procurement of New Chip Recovery Press	100
A-3047	Nine Tube Mock Up Building	100
A-3050	Make a Design Study of Rolling Mill for 300 Area	1
A-3051	Make a Design Study of New Extrusion Press for 300 Area	4
A-3052	Prepare Recommendation for Permanent Office Space in 300 Area	60
A-3053	Prepare Project for Bldg to House Meters Group and Records	5
A-3054	Prepare Project for Frame Addition to the Existing 300 Area Garage and Grease Pit	75
A-3055	Design Lifting Device for Timing Clocks Bldg 313	0
	700 ADMIN. & GENERAL PLANT AREAS	
828	B ldg 702 - Automatic Dial Exchange	95
883	Coal Pile Survey - 700 Area & 300 Area	100
887	Coal Pile Survey - 100 B, D, & F	100
923	Improvement of Air Conditioning System Bldg. 703	30

Project Engineering Division

Status of Engineering Study & Design Work In Progress During Month of April (Cont.)

E. R. No.	700 ADMIN. & GENERAL PLANT AREAS	% Engineering Complete
925	Combined Maintenance Shops - Bldg 722	93
941	Experimental Animal Farm	45
962	115 KV Power Line Through Richland	65
963	Biology Laboratory - Transferred	5
972	Survey Effluent Lines 100 B & D Areas	90
973	Elec. Dist. Hdqts. Bldg. Substation 251 & Conversion of Bldg. 2713 E to Garage	28
997	Deodorizer for Building 706	5
A-401	Telephone Cable Layout - Bldg. 720	20
A-409	Telephone Cable Layout for Bldgs. 703, 705, 760 and 770	0
A-420	Rehabilitation of Plant Railroad	22
A-428	Design & Estimate for Office Machine Repair Shop Hutment 722-H	50
A-429	Electrical Work - Bldg. 3708	30
A-432	Addition to Bldg. 760	95
A-438	Design for Badge Assembly Machine for Construction Security	10
A-445	Electrical Design for Bldgs. 3706, 3703, 3707	70
A-451	Layout for Concrete Work 321 Bldg.	85
A-452	Expansion of Main Plant Telephone System	4
A-459	Lighting of Maintenance Shops. Bldg 3722	30
A-463	Electrical Drawings for Charging Device	35

Project Engineering Division

Status of Engineering Study & Design Work In Progress During Month of April (Cont.)

700 ADMIN & GENERAL PLANT AREAS

E. R. No.		% Engineering Complete
A-464	Metering of Power - All Process Areas - Cancelled	0
A-467	Remodeling of Bldg. 722-A and Erection of Two Hutments for Elect. Div.	8
A-468	Illumination Tests - 716 Garage	0
A-469	Electrical Work - Bldg. 222U	10
A-470	Seal Coating of 36 Miles of Plant Highway	95
A-471	Study of Road Improvements on Route 2 at Hanford	95
A-474	Study for Grass Seeding - 200 Areas	20
A-475	Reinforce Floor - 703 Bldg.	100
A-476	Electrical Work - 2705 Z Bldg.	0
A-477	Electrical Work for Precipitator 200 Area	0
A-478	Lighting Rooms 244, 246, 2417 and 2246 703 Building	0
A-479	Exhaust Fans and Ducts 703 Building	100
A-483	Improvement of Adm. Bldgs. 1704 B, D, & F and 2704 E & W	0

1100 AREAS

785	Cafeteria - Air Conditioning - Cancelled	55
812	Irrigation Extensions - Village	90
841	Richland Dust Control & Landscape Program	77
896	Construction & Expansion of Parking Compounds - Village	61

Project Engineering Division

Status of Engineering Study & Design Work In Progress During Month of April (Cont.)

E. R. No.	1100 AREAS	% Engineering Complete
920	Air Conditioning All Dorms except W-4 & W-13	75
958	Design for 5 Ton Overhead Crane - 1131 Garage	0
A-411	Oil Burner for Hospital Incinerator	0
A-412	Automatic Traffic Signals - Richland	30
A-416	Patching & Seal Coating of Village Streets	90
A-422	Air Conditioning Transient Quarters - Cancelled	7
A-426	Electric Heating - Wiring - M. S. Warehouse	25
A-437	Design Steel Columns in Basement - Richland Lutheran Church - Cancelled	25
A-453	Replacement of Roof - North Reservoir - Rich.	50
A-455	Renovation of Tract House L-859	10
A-456	Improvement of Van Gieson St. Perkins Ave. to Yakima River Bridge	80
A-462	Alterations to 3 Drawer Fish Box - Rec. Hall	0
A-465	Fuel Oil Storage Facilities - Richland Airport	0
A-466	Remodeling of Warehouse 5 and 6 - Richland Transferred to Study Group	0
A-472	Study of Improvement for Richland Airport	3
A-473	Fire Alarm Connection at Jefferson and Sacajawea Schools	0
A-481	Painting of 514 Permanent Type Houses in Richland	100

ENGINEERING STUDIES GROUP REPORT

Studies Completed This Month

14.

Project Engineering Division

Studies Completed this Month (Cont.)

E. R. No.		Date Completed
4335	Maintenance of Roof - Kadlec Hospital	4-10

Studies Added this Month

4337	Village Survey	4-2
4338	Tire Recapping and Repairing	3-5
4340	Warehouse Renovation	3-23
4341	Transportation Consolidation	4-12

Active Studies

		% Complete
4296	Oil Reclamation Survey	75
4310	J. I. Abrasive Equipment	90
4318	Packing & Gasket Standards	15
4324	Lubrication Survey - 300 Area	75
4326	Use of Inhibited Oil in Turbines	75
4327	Maintenance of Pitched Roofs	80
4330	J. I. Penn. & Worthington Compressors	10
4331	J. I. Boiler Feed Pumps & Turbines	90
4332	J. I. Ruggles Klingeman Control Valve	90
4333	Stainless Steel Control	55
4336	Review Oil Coding System	0
4337	Village Housing Survey	75
4338	Tire Recapping & Repairing	10
4339	Standard Sign Catalog	20

15.

Project Engineering Division

Active Studies

E. R. No.		% Complete
4340	Renovation of warehouses No. 5 and 6	10
4341	Transportation Consolidation	10

BACKLOG SUMMARY

	Work On Hand 3-31 Estimated Man Days	Work Completed 4-30 Estimated Man Days	Work on Hand 4-30 Estimated Man Days
Studies	115	100	124
Proj.& Design	8,679	1,836	10,833
TOTAL	8,870	1,936	10,957

16.

ELECTRICAL DIVISION

APRIL, 1948

GENERAL

Work Order Summary:

Area	Work on Hand March 28		Work Completed to April 25		Work on Hand April 25	
	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days
100-B	13	46.5	16	37.5	7	35.0
100-D	20	33.3	28	71.2	14	72.9
100-F	11	10.7	42	86.7	15	59.4
200-E	69	189.1	75	164.1	26	117.1
200-W	69	170.5	70	137.8	47	137.0
300	24	259.7	32	115.7	32	257.4
700	46	301.8	75	256.6	28	134.1
Distribution	193	12,802.7	195	11,784.4	115	3,445.1
Telephone	24	2,436.1	15	328.3	18	2,817.5
Minor Const.	29	1,221.0	17	524.7	22	904.6
Total	498	17,471.4	565	13,507.0	324	7,980.1

The work order backlog shows a sharp decrease for the month, mainly in the backlog pertaining to distribution. This is due to transfer of line and substation construction of the 115 KV project to the Construction Division for subcontracting. The net reduction amounts to 9500 mandays. Had the 9500 days not been removed, the month end total would have been 14,945 mandays for the Distribution Section instead of 3,445 and, hence, other work backlog for the Distribution Section has actually increased by the amount of 14,945 less 12,802 or 2,145 mandays for the months.

The attached load chart for the peak day of the month, April 6, shows a total of 48.1 MVH peak for the entire Project, including a non-coincidental 18.5 MVH demand for the 66 KV system. The actual 66 KV peak was 19.5 KW as indicated for the same morning of April 6. The seasonal decline which should have occurred during the month did not appear because it has been outweighed by power demands resulting from increasing construction activity. The peak of 48.1 for April compares with 48.3 coincidental peak for the previous month.

On Project C-177, 115 KV system, all high tension line prints, profiles, and specifications have been approved. All construction work has been turned over to the Construction Division, and the Electrical Division will be concerned only with necessary modification to Village feeders and final connections as well as similar work for the 300 Area. Completion of studies pertaining to reconnection of Village feeders is now expected for May 15.

Preparation for invitations to bid and expediting of materials on order is now the responsibility of the Construction Division.

In accordance with last month's report, authorization has been received to employ additional Linemen, Groundmen and Helpers in an effort to reduce a backlog of line

and substation work, and it is to be emphasized that at the time the authorization was requested the transfer of work pertaining to the 115 KV system from the Electrical to the Construction Division had been anticipated, and that the increasing backlog of other work still makes it necessary that the authorized hiring be accomplished as soon as possible. Up to this time only a very few applications for this work have been received.

The Electrical Standards Committee throughout the month was mainly concerned with approval for grounding standards and with the establishment of a means of getting the standards into the hands of interested parties. It has been agreed to publish this information in the form of a standards handbook, Electrical Division section, to be distributed in accordance with an approved mailing list. The first mailing will be made in May and will be continued thereafter as standards are adopted.

The agreement reported last month as pertains to a division of responsibility between the Construction and Electrical Divisions has been subjected to some modification as well as the addition of detailed procedure instructions. It is expected that the final form will be approved by all interested parties in the near future. Meanwhile, the agreement is tentatively in force.

In co-operation with the Design Division, studies were made during the month relative to blackout control for the new work areas, carrier relaying for the additional stations for new areas on the 220 KV loop, and the economics of a possible relocation of substation A-8 in consideration of new construction in the vicinity of the 200 Areas. We understand that in line with the results of the study, it has been decided that station A-8 will not be relocated.

The Electrical Division Safety Handbook has been completely revised under the direction of a departmental committee and the revision is now being studied for final publication.

During the month, in accordance with established procedure, a review of the latest rating sheets was made with the individual concerned and such personal discussions are approximately 50 percent complete. This applies to exempt personnel only.

A statement was prepared for Management outlining the functions of the Electrical Division, indicating the scope of operations, detailing the present organization and assignment of personnel, and finally indicating the larger projects for which the Electrical Division is also the operating division.

ORGANIZATION AND PERSONNEL

There were no men hired during the month, but one Electrician terminated voluntarily.

Mr. R. B. Britton was appointed Area Engineer, Electrical Division, for the 200 Areas. This new appointment was occasioned by the construction program since the 100 Areas will now need the full attention of the Area Engineer formerly responsible for the 100 and the 200 Areas.

Mr. B. J. Willingham was appointed Assistant Area Engineer responsible for the telephone system. This appointment is actually an up-grading of former position of Shift Engineer because of increased responsibility under the expansion program.

Electrical Division

Effective April 5, five Stenographers, previously assigned to the Electrical groups in the areas, were transferred permanently to the Division.

Number of employees on payroll:	April Exempt	Non-Exempt
Beginning of month	41	220
End of month	41	225
Net increase		5

AREA ACTIVITIES

1. 100 Areas

A. 100-B Area

The 60 ampere lighting feeder switch at Riverland was replaced with a 100 ampere switch to provide for the installation of additional lighting facilities in the Roundhouse. A 1000 watt reflector type floodlight was installed at each end of the Roundhouse and larger pumps were installed in existing fixtures.

Two lights were installed on the outside of the 183 Head House wall to illuminate the chlorine tank storage rack.

Six fluorescent light fixtures were installed in the H.I. office in the 105 Pile Building, and two fluorescent lights were installed in the 105 Instrument Shop.

B. 100-D Area

A light was installed on the chlorine tank structure at the 182 Reservoir Building inlet house to provide illumination for making header connections during the night shifts.

The 183 Head House office phone (voice powered) was removed from the building phone system and connected into the area inter-building system, similar to the installation in the 100-B and 100-F Areas.

Three 400 HP motors and related cubicles were disconnected and removed from Chemical Treatment Building 186 and delivered to Subcontractors for new water system south of North Richland. Also, two 300 KVA, three phase, 2300/440 volt transformers and a 350,000 CM cable circuit were sent to the 300 Area for new temporary substation. Two 50 KVA, 2300/440 volt transformers were installed open delta to supply the necessary 440 volt requirements in the 186 Building.

On April 16, a low pressure expansion joint in the main supply line in Building 186 ruptured and flooded the pump room. This necessitated the removal of the four remaining 400 HP pump motors for servicing and drying out.

Electrical Division

105-D Pile Building:

(a) The "D" elevator cab positioning switch installation was completed.

(b) Electrodes and necessary auxiliary equipment for anodizing circuits were made up for the Technical Division.

(c) The motion indicator circuit conduit located on the rear face of the pile was relocated at the request of the Maintenance Division.

(d) Five conductors were installed from the center of the back face to the far side zero level for use on the pneumatic electric position indicator.

Overhead lines at 107 Building were cleared to permit Subcontractors construction work.

C. 100-F Area

Project C-238 relating to the construction of new effluent lines from 105 Building to 107 Building has been started. Conduit has been installed for the relocation of the 105 Building emergency generator.

A low pressure chlorine annunciator alarm was installed on the chlorine system at 182 Refrigeration Building.

A temporary repair was made on a 35 ampere circuit breaker in the Cabinetrol in Building 183 Head House. A new breaker has been ordered as a replacement.

105-F Pile Building:

(a) The solenoid operated dampers in the 105 Fan Room were replaced by solenoid controlled, air operated dampers. This should eliminate the excessive number of solenoid failures we have experienced on these dampers due to mechanical binding not allowing the solenoids to seat properly.

(b) A one HP D.C. motor with its Thymotrol control was removed from the valve pit and installed in the inner rod room for a special test at the request of the Design Division.

(c) Control room lighting was rearranged to eliminate glare from the control panel instruments. Considerable improvement was noted.

(d) Design Change No. 60, covering the revision of shim rod control circuits, was completed.

(e) The annunciator circuit was removed from the safety circuit control switch and put on a separate switch in the electrical equipment room saflex panel. This allows the annunciator to remain energized during shutdowns when the safety circuit is de-energized.

(f) Clock outlets were installed on the X level and top of the unit.

(g) The voltage of the temperature monitor battery eliminators was raised

On April 10 at 1:50 P.M., breaker E6-X4 in Substation C6-S5 tripped out. It was reclosed and tripped again at 2:00 P.M. after which it was reclosed and remained closed. The design does not permit starting more than one large fan motor at a time.

Overhead lines at 107 Building were cleared to permit Subcontractors construction work.

D. Hanford

Eight assorted distribution transformers, no longer required, were removed, inspected, and delivered to the transformer pool.

Antenna pole, no longer required, was removed from Fire Station.

As the water system in Hanford is no longer required, the transformer bank of three 100 KVA transformers was dismantled and removed from service and was delivered to the transformer pool.

The Pistol Range at Hanford was cut over from the 2300 volt feeder to the new 7200 volt line constructed from Hanford. Two 50 KVA transformers were changed out in order to make the cutover.

2. 200 Areas

A. General

The temporary cathodic protection of stainless steel piping in the 241-T Area continues in a satisfactory manner as evidenced by periodic half cell potential readings taken at the cathodic risers.

Similar temporary cathodic protection has now been applied to the stainless steel piping extending from the "U" Building to and including the "U" Area Tank Farm. This protection of the "U" Area was placed in operation on April 23, 1948. While additional cathodic connections are desirable and expected to be made at the 151 and 152 diversion boxes in the "U" Area, a fair degree of protection is now being provided with the existing cathode and anode connections.

Thus, we may consider that cathodic protection has been applied to all of the original pipe lines of the "T" and "U" Areas, including the tie line between the two areas; occasional interruptions to the temporary wiring must be expected but not for long duration.

Additional experimental work relative to obtaining further knowledge of stainless steel corrosion was continued during the month.

Fence lights in the 231 Area have been discontinued.

B. 200-E Area

The stack fan in Building 291-B relayed at 2:25 A.M. on April 11, 1948. The steam fan which floats on the line picked up the load with no result in damage. This trouble was caused by voltage dips resulting from the tests conducted by the Bonneville Power Administration on this date.

A timing device was installed on the bunker coal belt in the 284 Building. This timer was installed to give the actual time coal is carried on the belt to provide the Power Division with the necessary information to accurately estimate the amount of coal used.

Due to Technical Division additional power requirements in the 292-B Building, it was necessary to change the 50 KVA lighting transformer to a 75 KVA transformer. The service to the 292-B Building was increased to a 100 ampere service. The 50 KVA transformer which was removed from service was contaminated. The "S" Division decontaminated this transformer, and it was released by the H.I. Division for transformer pool.

A welding receptacle was installed at the 154 and 155 diversion boxes in the 241-BX Area.

C. 200-W Area

A new Public Address System from Patrol Headquarters to the 231 Building.

A 3 KVA transformer bank was installed at the Badge House for new construction in the area.

The transformer bank at the 272 Building was increased from 75 KVA to 100 KVA.

Conductors for evacuation signal in the 271, 224 and Gate House were installed.

A "T" tap was connected to 13.8 KVA line for a new branch to 241-TX Tank Farm installed by Subcontractor. The line was energized April 27 to supply a new 1000 KVA construction bank in this area.

Installation of flood lighting at 241-T has been completed.

Overhead lines in 221-U were cleared to permit digging ditch by Subcontractor.

Sixteen spans of telephone drop wire as well as an additional 15 KVA transformer were installed to serve the Subcontractor's construction area.

A 26 pri telephone cable was strung to the 231 Building.

Thirty-five hundred feet of telephone drop wire was run from Guard Tower to 231-TX Construction Badge House.

In order to provide additional lighting transformer capacity at 241-TX, two 75 KVA transformers were installed in parallel and the 100 KVA transformer formerly installed was removed.

3. 300 Area

A. Flashovers occurred during the month in Building 314 on the coils in both "A" and "B" furnaces. It is believed that the probable cause was crucible failure since packing metal more loosely has provided relief.

B. In an effort to prevent any failures from flashovers, which might be caused by accumulation of material on the coils, a cleaning schedule has been established.

C. Two degreasers in Building 313 developed element failure. Repairs were completed without loss of production.

D. Under Project C-187, Scale Up Tank Farm 321, electrical installation has proceeded according to schedule and is 98 percent complete. Three explosion proof conduit fittings have not been received from suppliers, and substitute will be improvised on temporary basis. Completion of remaining work is contingent on progress made by other divisions.

E. Load studies indicate that 66 KV/2300 volt 750 KVA station B3S4 has been overloaded on peaks during the last few months and that 66 KV/440 volt 2000 KVA station B3S5 is lightly loaded (65 percent of capacity at peaks). In consideration of the planned 2300 volt load to be added (some in the near future), and the fact that the 115 KV station may not be available for service until 1950, a project was prepared (addition to C-177) as a temporary expedient for moving two 300 KVA 440/2300 volt step up transformers from 186-D to 300 Area to provide additional 2300 volt power from 440 supply in station B3S5.

F. Distribution changes have been planned, and all work is under way to make final cut-in during planned outage for May 8.

G. A new two-pole substation was constructed for additional buildings in the southwest section of the 300 Area. Also, new service was provided for the X-Ray Building in this area.

H. In order to provide clearance for the 3707-C Building, overhead 2300 volt lines were re-routed over the 66 KV poles to the 300 Barricade.

I. To provide service for the 3703 Building at the 300 Area, it was necessary to extend primaries and construct two-pole transformer setting consisting of one 50 KVA and one 5 KVA transformers.

J. Fire alarm circuits were re-routed in this area in order to include the 3703 Building.

K. To provide service to the two wells on the east side of the 300 Area, it was necessary to run eleven spans of primary and construct a two-pole transformer setting with three 25 KVA transformers mounted on it.

L. To provide clearance for the erection of the new water tower in the 300 Area, it was necessary to re-route 2300 volt primary lines which have also been restored to normal during the month upon completion of the erection of the tower.

4. North Richland (3000 Area)

A. Lightning arresters were installed on the 5000 KVA transformer bank at the 3000 Area. Additional taps were cut into the secondary bus of this transformer on all five line circuits so as to provide connection for oil circuit breakers and bypass disconnect switches. Four of these oil circuit breakers are to be connected by Construction at a later date, one having already been installed.

5. 700-1100 Areas

Work of re-routing 7200 volt feeders in the 700 Area in order to provide clearance for the addition to the 760 Building was completed during the month. Along with this work, the 7200 volt power and lighting feeders were combined on one circuit with an alternate feed to the 700 Area from line D1-L4. The only work left in connection with this is the installation of sectionalizing switches in the 700 Area.

Fire alarm service was provided to 761 and 762 Buildings during the month.

In order to provide three-phase service for the womens dormitories in Richland, it was necessary to install two additional 5 KVA and one 10 KVA transformers in this area.

Due to additional cooking ranges being added in the Commercial Bus Depot in Richland, it was necessary to increase the transformer bank feeding this service from two 10 KVA to two 15 KVA and one 25 KVA transformers.

Fire alarm circuits were extended six spans in order to provide service to the 722 Hangar.

Transformer setting consisting of one 7.5 and one 5 KVA transformers was constructed to provide service to the new Richland Plumbing and Heating Building.

A 10 KVA transformer setting was constructed and two spans of secondary run to the new housing contractor at Wright and Longfitt Streets.

Richland line crews constructed a two-pole transformer setting consisting of three 37.5 KVA transformers and constructed three spans of primary to provide service to the new aggregate plant located south of the Riding Academy.

6. Transmission and Distribution

In future reports, this section will pertain to work performed by line maintenance and substation crews of a general nature or not associated with one specific work area. In the latter cases, significant work performed will be included in the report of total work for that area.

Arrangements were made for Critical Power Grade Y for full eight hour days (two) April 4-11 due to oil circuit breaker tests at Grand Coulee.

Special labor crews continued Osmose treatment of pole butts with the following work accomplished during the month:

13.8 KV lines from A-8 to 200-E and W	219 poles
Fence lighting circuits, 200-E and W	497 "
Richland Village Distribution System	313 "
Total	1029 "

One hundred and thirty-two bad order poles were replaced in the 2.3 KV line from 200-N Area to 213 Area and BY Station.

Four bad order poles were changed out in the 100-D Area.

8

Electrical Division

The "T" tap was completed to 66 KV Hanford-Yakima line to provide construction power to 100-H Area.

The 3000 KVA transformer, 66/7.2 KV, installed for construction power in 100-H Area was given a complete inspection and test and found to be in good operating condition.

Due to low voltage condition in the 200 Areas taps on the 15,000 KVA transformer at Station A-8, they were raised five percent during the month.

The transformer shop in the 200-E Area overhauled and tested forty distribution transformers, nineteen of which were for Construction transformer pool.

During the month, the following radio equipment work was done:

Two-way mobile units installed	21
Two-way mobile units removed	14
Mobile units serviced	85
Mobile units overhauled	66
Stationary units serviced	5
Stationary units overhauled	1

Station WUGN-3 was moved to new building in Pasco.
Station WUGN-4 was moved to new Patrol Headquarters in Richland.

Power Supply Interruptions

Date	Area	Circuit Affected	Duration	Remarks
		230 KV		
There were no unscheduled interruptions during the month.				
		66 KV		
April 1	Richland	D1-L1 in E Housing Area	1 hr.	6.9 KV primary broken by Const.
April 8	Richland	Line D1-L12	42 min.	Bulldozer broke pole
April 8	Richland	D1-L12 from D1-12X100	2 hr. 7 min.	Bulldozer caused blown fuse D1-12X10C
April 8	Col. Camp	REA Line	1 hr. 39 min.	Cause unknown
April 12	Col. Camp	REA Line	12 min.	Cause unknown
April 21	Col. Camp	REA line to Col. Camp, Station 7	33 min.	Cause unknown
April 23	Hanford	Ringold line from D6-X8	7 hr. 30 min.	Line down
April 26	Col. Camp	REA Line	7 hr. 15 min.	Wire down

7. Telephone Group

A. Planning and scheduling of exchange equipment and trunk cable has received joint study by the Electrical, Project Engineering and Construction Divisions. System planning has been crystallized with some modification to previous plans to reflect more recent construction schedules. Engineering is being completed for one 600 line exchange to serve the 200 Areas and one 400 line exchange to serve White Bluffs and 100-D, F and H Areas. Plans are proceeding to expand capacity in the 300 Area to 400 lines.

B. Installation was completed of a 13 quad trunk cable between the Richland telephone exchange and the North Richland telephone exchange.

C. Emergency telephone service was provided to the new mens dormitories pending installation of cable which will permit individual service in these dormitories.

D. Material was provided for construction to install cable in the "E" housing area and telephone service was established in this area.

E. Change was completed of the 1500 series residence telephones from individual service to two-party lines.

F. Two additional teletype circuits were placed in service to the Pasco exchange.

G. One additional foreign exchange circuit was placed in service to Spokane, making a total of two to Spokane.

H. Full appearance on Richland switchboard on positions 13 through 18 is fifty percent complete.

I. Cutover of twenty-one composite dial trunks from Richland exchange to North Richland exchange was completed.

J. Faults were repaired in cable No. 7 near corner of Delafield and Davenport Streets, and near the corner of Wright and Lee Streets. Damaged sheath on same cable was repaired at terminal No. 3.

K. Vacant lines on the Richland telephone switchboard as of midnight, 4-30-48, are as follows:

1500 series	23
Available for office assignment	37
Available for residence assignment	44

L. Cable was provided for approximately 70 percent of the requirements for White Bluffs Area.

M. Hardware, messenger wire, and 33,000 feet of 27 quad cable were delivered to Construction for installation for additional trunking between BY Tandem Office and White Bluffs.

Electrical Division

N. During the month, the following telephones were moved:

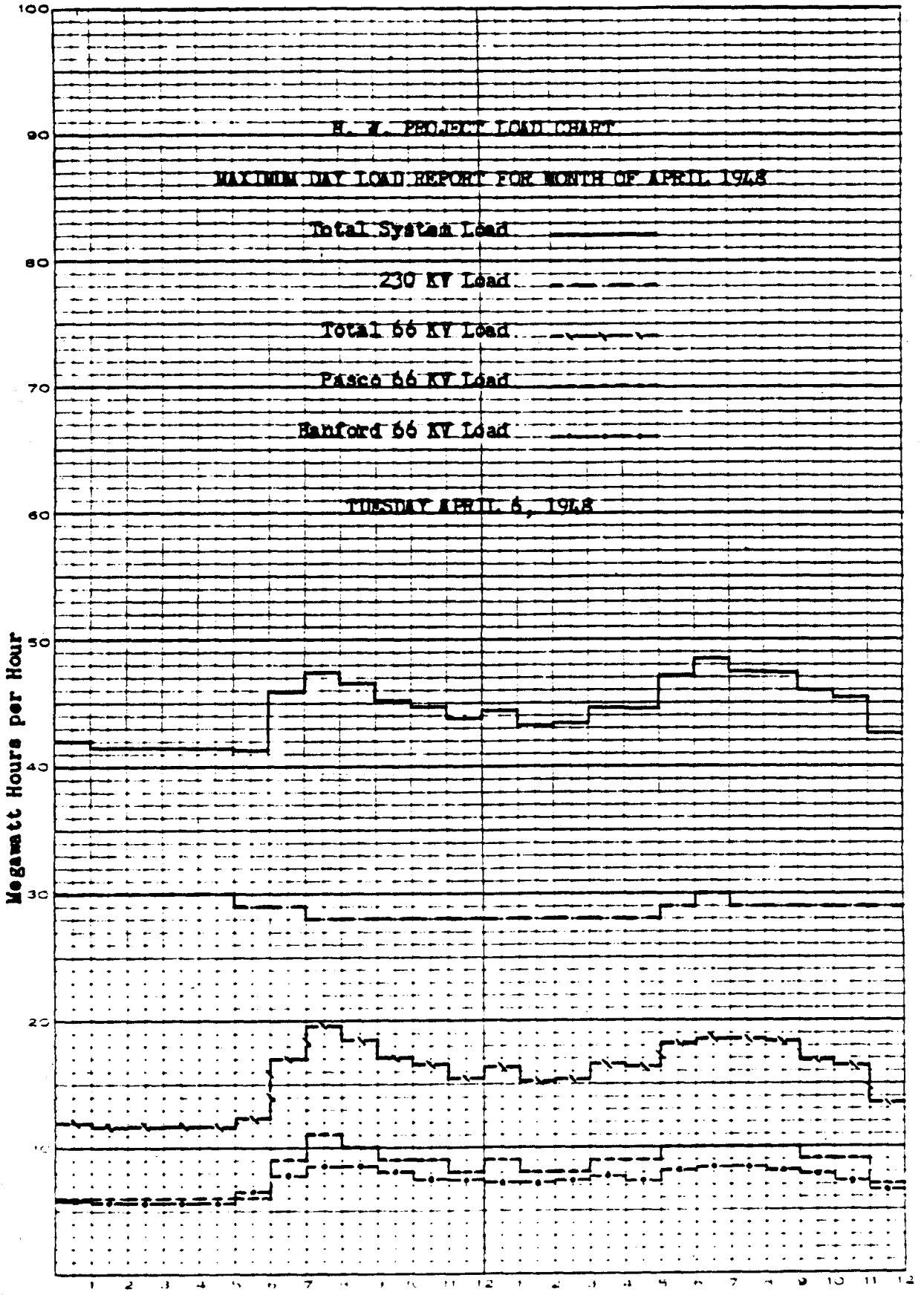
	Installed	Removed
All work areas	33	17
Richland	553	432
North Richland	102	37
White Bluffs	40	4
Total	727	490

POWER STATISTICS -- ELECTRICAL DIVISION
FOR MONTH ENDING APRIL 30, 1948

ITEM	ENERGY - MW HRS. March	ENERGY - MW HRS. April	MAX. DEMAND - KW March	MAX. DEMAND - KW April	LOAD FACTOR - % March	LOAD FACTOR - % April
230 KV SYSTEM						
A-2 Out (100-B)	2,790	2,720	4,800	4,900	78.1	77.1
A-4 Out (100-D)	7,040	6,630	11,800	12,200	80.2	75.5
A-6 Out (100-F)	6,330	6,310	11,600	11,700	73.3	74.9
A-8 Out (200 Areas)	2,340	2,200	3,700	3,800	85.0	80.4
TOTAL OUT	18,500	17,860	31,900**	32,600**	-	-
MIDWAY IN	18,621	18,028	30,400*	30,400*	82.3	82.4
Transm. Loss	121	168	-	-	-	-
Per Cent Loss	0.6	0.9	-	-	-	-
66 KV SYSTEM						
B1-S1 Out (Richland)	3,066	2,476	6,500	5,400	63.4	63.7
B1-S3 Out "	2,589	2,120	5,600	4,600	62.1	64.0
B1-S2 Out "	2,827	2,592	5,549	5,086	68.5	70.8
B3-S4 Out (300 Area)	457	408	792	780	77.6	72.6
B3-S5 Out "	318	316	1,280	1,000	33.4	43.9
B1-S4 Out (North Richland)	1,142	1,272	2,016	2,419	76.1	73.0
B7-S10 Out (White Bluffs)	-	105	-	855	-	17.1
Hanford Out	262	307	500	500	70.4	85.3
TOTAL OUT	10,661	9,596	22,237**	20,640**	-	-
Hanford In	5,142	4,347	18,100*	9,500*	38.2	63.6
Pasco In	5,803	5,475	15,200*	14,800*	51.3	51.4
TOTAL IN	10,945	9,822	33,300**	24,300**	44.2	56.1
Transm. Loss	284	226	-	-	-	-
Per Cent Loss	2.6	2.3	-	-	-	-
PROJECT TOTAL						
230 KV (Item 5)	18,500	17,860	31,900**	32,600**	-	-
66 KV (Item 15)	10,661	9,596	22,237**	20,640**	-	-
TOTAL OUT	29,161	27,456	54,137**	53,240**	-	-
230 KV (Item 6)	18,621	18,028	30,400*	30,400*	82.3	82.4
66 KV (Item 18)	10,945	9,822	33,300**	24,300**	44.2	56.1
TOTAL IN	29,566	27,850	48,300*	48,100*	82.3	80.4
Transm. Loss	405	394	-	-	-	-
Per Cent Loss	1.4	1.4	-	-	-	-

* Coincidental Demand
** Non-Coincidental Demand

Average Power Factor - 230 KV System--99.5
Average Power Factor - 66 KV System--95.9


H. W. PROJECT LOAD CHART
MAXIMUM DAY LOAD REPORT FOR MONTH OF APRIL 1948
Total System Load
230 KV Load
Total 66 KV Load
Pasco 66 KV Load
Hanford 66 KV Load
TUESDAY APRIL 6, 1948
Megawatt Hours per Hour
100
90
80
70
60
50
40
30
20
1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12

INSTRUMENT DIVISION

APRIL 1948

GENERAL

The Instrument Division originally planned to have approximately 12,000 feet in the proposed new Technical Building. Present plans indicate that a facility adjacent to the 3717 Building would prove to be more convenient and make better use of our existing machine shop and Optical Building Facilities. It is anticipated that a project proposal requesting approximately 7,000 square feet will be issued. This space will accommodate the 300 Area Maintenance, Portable Instrument Shop, and the Development Division.

The number of Construction Division work orders listed in our shops is increasing to the extent that it may require six day operation of our machine shop by midsummer.

Work Order Summary:

	Work on Hand Apr. 1		Work Completed in Apr.		Work on Hand Apr. 30	
Area	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days
100-B	11	17.7	15	21.1	2	8.6
100-D	54	129.5	57	85.4	23	296.6
100-F	49	136.4	43	42.6	30	134.3
200-E	19	17.2	31	40.3	28	20.3
200-W	44	164.9	91	161.1	16	141.3
300	158	1615.4	168	1258.7	71	2703.9
700	48	66.9	57	72.4	26	44.0
Totals	383	2148.0	462	1681.6	196	3349.0

Organization and Personnel

Number of employees on payroll:	April
Beginning of month	190
End of month	197
Net Increase	7

Reasons: Eight clerical personnel were transferred to this Division from Accounting. One employee terminated, a voluntary quit.

100 AREAS (Reference Report No. HW-9698)

Project C-172 - Dismantling of Demineralization and Deaeration Facilities

Loss of head indicators are being removed from 186-D for use in the expansion of 183-D.

Instrument Division

Estimates and plans for the activation of 100-B Area have been submitted. It will be necessary for the small crew of eight men to work six day weeks if the unit is to be ready by July 1, 1948.

On April 9, 1948 the plate glass of the "Fly's Eye" observation station in 100-B disintegrated with considerable force. Two employees of "P" Division, who were cleaning the glass, narrowly escaped serious injury. Investigation following the incident failed to establish the cause. The plate glass has been replaced with 1" Lucite sheet, and a procedure has been written for the care of the "Fly's Eye."

200 AREAS (Reference Report No. HW-9699)

Project C-163 - Waste Line Thermocouples

All lead wire has been received; about 25% of the electrical fittings have been received. Thermocouples have been installed at all stations between the 221-T Building and the #155 Diversion Box with the exception of the stations nearest the 221-T Building where pipes are incomplete. This involves 56 of the estimated 200 thermocouples needed. Future installation will be dependent upon receipt of necessary electrical fittings.

Section B of Concentrations Buildings 224-T and 224-B were put in service this month. All instruments were calibrated and put in service.

A column for scrubbing the off-gas from dissolver tank 3-5L in Separations Building 221-B was installed and put in operation. The instrumentation provided indicates liquid seal at the bottom of the column, differential pressure across the scrubber, and rate of flow of scrubbing water.

300 AREA (Reference Report No. Hw-9619)

Project C-219 - Additional Health Instruments

The prototypes of the C.P. Survey Meter and the C.P. Juno are completed and have checked satisfactorily. These units do not use a vacuum chamber, which in the past has been a maintenance problem.

In the hope that a commercial version of the C.P. Survey meter might be modified to fulfill the H. I. requirements, an SU-I Survey meter produced by the Tracer Laboratory Inc., has been received and tested. This instrument is not satisfactory from the standpoint of stability, sensitivity, and rigidity.

Design Section

Several designs have been completed during the past month. They include:

1. Redesign of the C.P. Juno for H. I. Division.
2. Redesign of the Vac-Sniff for H. I. Division.
3. Redesign of Standard A.C. Chamber for H. I. Division.
4. Redesign of Film Marking Device (Perfograph) for H. I.
5. Design of mercury level indicating device for Technical Division.

Instrument Division

Maintenance Section

The shop maintaining portable health instruments was moved to Building 301-A this month. This move was necessary to relieve the congestion in Building 3717-A and provide more space for the portable maintenance group.

Development Section

Pile Motion Indicators

The prototype pneumatic-electric motion transmitter was installed on the rear face at 100-D Area. Tests show the unit to be satisfactory, and additional units will be constructed for 100-DR and 100-H.

C.P. Survey Meter Revisions

The prototype of this meter has been calibrated and field checked. Performance is satisfactory. A new type switch eliminates most of the difficulty formerly encountered from switching transients, and the circuit has been altered to use any tube rather than having to pick special tubes to fit the circuit.

Optical Section

The design of a Portable Periscope for Design and Construction Divisions was completed. The Zero Level Periscope is nearly finished.

The plate glass in two Fly's Eye viewers was replaced with plastic windows. The third will be changed when a shut down permits.

700 AREA (Reference Report No. HW-9700)

Standards Section

The demand for correct time is increasing, and a better time standard is needed to improve performance. The time signal from Station WWV is not always audible so a pendulum clock, which is not too reliable, is used as a secondary standard. Inquiries have been sent out for a new clock.

A section on the new Safety Circuit Controller has been written for the Instrument Manual.

Tube Section

Production Report - 5 Mica Window Tubes
8 Thin Walled Glass Tubes
6 Proportional Counters
1 Boron Coated Chamber

Two low voltage mica window tubes were received from Amperex. These tubes show good promise as they are exceptionally well designed and have fair characteristics for low voltage tubes.

DESIGN AND CONSTRUCTION - INSTRUMENT ACTIVITY

100 Areas (Reference Report No. HW-9702)

Design 100-DR

The B.G.S.T. Temperature Measuring system is being revised to eliminate the difficulties which were encountered in the previous installations. Design changes should be complete by May 15, 1948.

Order has been placed with Valley Iron Works of Yakima, Washington for the Main Control Desk steel panel. Delivery is promised for June 1, 1948.

The electrical supply system for instruments will employ a D.C. motor driven alternator for normal service and a constant voltage transformer connected to the B.P.A. system for emergency standby. To prevent a shutdown due to voltage failure of the instrument supply, a high speed throw-over breaker will be installed. Change-over will require 15 cycles.

Design 100-H Area

The order for the Main Pumping Station flow metering and control equipment was placed with the Republic Flow Meter Company. However, the overpressure control equipment was ordered from Bailey Meter Company.

The proposals submitted by Republic, Bailey, and Hagan for the combustion instrumentation and control were received. The purchase of Bailey equipment was recommended because of the advantage of this system even though it is not the least expensive.

Construction 105-DR

Fifteen of the Beckman micro-microammeters have been tested by the 100 Area Operations Instrument Division and all have been found satisfactory. This instrument appears to be considerably more stable than the original models.

Work is progressing on the modification of the existing panels in 190-D, 183-D, and 182-D to accommodate the new instruments for 105-DR.

Redox (Reference Report No. HW-9701)

Scale-Up Construction

Instrumentation phases of the Scale-Up construction program are progressing satisfactorily. Panel board assemblies are approximately ninety per cent complete. Location of instrument facilities for the column enclosure is closely following the erection of process equipment and piping. Leak testing of lines and unit calibrations are being completed as the installation progresses.

All material requisitioned from outside vendors has been received.

Redox - Kellex Corporation

Several possible methods of determining the phase of flowing process fluids were investigated in the 321 Instrument Shop. Results of these studies are being compiled for reference to the Kellex group.

An Instrument Division representative visited the New York office of the Kellex Corporation to discuss methods of instrument application.

An additional Assignment Engineer was added to the Redox Instrumentation program during the month.

234-5 Building

The purchase of process instrumentation is progressing within a few days of schedule. Some delays are being encountered where design is changed after a requisition has been placed.

TRANSPORTATION DIVISION

MONTHLY REPORT

APRIL 1948

GENERAL

Absenteeism in the Transportation Division for the month of April was 1.59%. This was an increase of .20% over the month of March.

Following is the April Work Order Summary for the Mechanical and Labor Section.

Groups	Work on hand March 28 No.of Orders	Work on hand March 28 Estimated Man Days	Work completed April 25 No.of Orders	Work completed April 25 Estimated Man Days	Work on hand April 25 No.of Orders	Work on hand April 25 Estimated Man Days
All Area Labor and Repair	114	11,476.2	152	1,668.0	76	10,930.8
700-1100 and Railroad Labor	*135	* 2,884.1	132	1,714.9	135	4,194.9
Riverland Railroad Repair	4	4.8	8	23.0	2	15.5
700-1100 Repair	201	543.9	275	846.4	63	114.1
Total Labor and Repair	454	14,909.0	567	4,252.3	276	15,255.3
* Transferred	89	5,242.5	to Village Public Works backlog.			

ORGANIZATION AND PERSONNEL

Effective April 19, 1948, the 10:12 p.m. to 6:48 a.m. Shift at the 716 Garage, which was established in May of 1947, was discontinued. Operation of this facility reverted to a two shift schedule from 6:12 a.m. to 2:48 p.m. and 2:12 p.m. to 10:48 p.m. five days a week Monday through Friday.

W. E. Green, Shift Foreman, resigned effective April 12, 1948.

No requisitions for weekly salaried personnel were issued to increase the force during the month of April. Force of the Transportation Division was decreased by 15 and the total force as of April 30, 1948, was 730.

Number of employees on payroll		April
Beginning of month		745
End of month		730
Net decrease		15
Terminations	10	
Transferred to other Divisions	4	
Removed from roll	5	
Total	19	
New Hires	4	
Net decrease	15	

Force of Morrison-Knudsen, Track Maintenance Subcontractor, decreased by seven and the total force as of April 30, 1948, was 98.

OPERATIONAL ACTIVITIES

1. Railroad Operations

Railroad operations continued in a routine manner with all train movements being effected as scheduled. There was a substantial decrease in commercial tonnage as only 2,976 cars were handled during the month compared with the record high of 5,238 in March. However, the major portion of this decrease can be accredited to the coal strike, temporary curtailment of lumber shipments and certain other construction materials.

Track ballast movements from Station Susie to the new batch plant at White Bluffs were completed.

Distribution of railroad ties, rail, and other track supplies was made by one train crew four days each week throughout the month from May Junction to the 300 Area and on the low line between 100-F and May Junction.

2. Repairs

Rebuilt motors and reconditioned radiators were installed on Motor Cars 10-E-3662 and 10-E-3666. Also the clutches and brake rigging were repaired. A reconditioned transmission was installed in Motor Car 10-E-3663.

The passenger coaches for Construction workers have been inspected for mechanical defects and are presently undergoing adjustment and repairs.

A new fuel pump assembly was installed on the #1 engine, locomotive 39-3722. The water pump was overhauled on the #1 engine, locomotive 39-3719. Cylinder heads were tightened and zero-lash adjusters were adjusted on locomotives 39-3721 and 39-3724.

A hydrostatic test on the air receivers of locomotive 39-3725 disclosed that there were leaks in the seams. Receivers were removed from engine and sent to 200-West Maintenance Shop for necessary welding.

3. Track Maintenance

Railroad track maintenance continued in a routine manner throughout the Areas by Division forces and outside the Areas by Subcontractor's forces with the following items of interest.

a. Most of the power driven equipment to be used in completing Project C-214 has arrived and is presently being made ready for operation. Additional track tools are arriving. Notice of projected allocation of steel to this Plant should make possible the use of new rail in completing the re-lay program.

b. Arrangements to move the Track Maintenance Subcontractor from Benton City to the Columbia Camp are virtually complete and the supplementary agreement to this contract is in preparation.

c. Grading for May Junction Revision is approximately 50% complete.

2)

d. The Railroad Track Maintenance Subcontractor performed the following work:

1) Unloaded and distributed 30,000 ties
2) Unloaded and distributed 14 cars of 100 pound rail
3) Unloaded six cars of tie plates
4) Renewed and tie plated 8,000 cross ties
5) Constructed 500 feet of temporary spur, Mile Post B-29

AUTOMOTIVE OPERATIONS AND REPAIRS

1. Automotive Operations

a. The extent of automotive equipment usage is indicated by the monthly total mileage of 1,293,018 for all types of vehicles.

b. Area and Village Local bus systems operated during the month as scheduled.

Effective April 1, 1948, one-half hour round trip service was established from all scheduled stops on the Richland, North Richland, and 300-Area Shuttle. This service is in effect five days a week Monday through Friday.

Effective April 20, 1948, a permanent bus route was established through North Richland for the Richland-North Richland Shuttle. This service is for employees living in North Richland who are working in Richland and is in effect six days a week, Monday through Saturday.

Effective April 20, 1948, expanded bus service on the Richland-North Richland Shuttle was established for employees living in Richland who are working in North Richland and is in effect three shifts daily seven days a week.

c. The extent of Area bus traffic is indicated by the monthly total passenger count of 105,153 and the extent of Village Local bus traffic is indicated by the monthly total passenger count of 62,761.

d. Off-the-Plant special automobile trips (company business and official visitors) totaled 220.

e. Miscellaneous automotive operations services including (a) Motor Pools (b) Inter-Area Shuttle Service (c) Inter-Area Freight, Mail, and Express Services (d) Towing and Wrecker Service were rendered during the month in a routine manner.

2. Repairs

This section received 462,638 gallons of gasoline, 178,821 gallons of Diesel fuel and 12,600 gallons of kerosene during the month for Project use.

LABOR ACTIVITIES

1. Roads and Street Maintenance

Construction of storm sewer along Stevens Drive required 65 tons of pre-mix material; 680 feet of 6" pipe and two 24" catch basins were installed.

Repairs and improvement to the 300 Area north and south parking lots required 443 cubic yards of 3/4" minus rock and 35 tons of pre-mix material. Repair to Village streets damaged by unusual weather required 200 tons of pre-mix material. Three thousand nine hundred tons of asphaltic pre-mix were stockpiled. Two hundred forty-seven street and road signs were repaired and installed.

2. Areas - Work in the Areas continued on a routine basis with the following items of interest.

a. 200-East

Project C-133 - Special Test Wells. Wells 361-B-6, 7, and 8 were completed at depths of 340, 332, and 348 feet respectively. Wells 361-B-9 and 10 were started and have present depths of 270 and 136 feet respectively. Footage on all wells drilled to date totals 8,288.

Project C-196, Work Order E-50561 - Move gas tanks and pumps from Transportation Garage to 2713-E Building is 20% complete.

Project C-214 - Rehabilitation of Plant Railroads. Work Order E-50132 - Building railroad cutoff at May Junction - Seventeen thousand five hundred cubic yards of fill were placed.

Suspense Code 10225, Work Order D-68265 - Furnish crane and operator to install filter and duct work at 291-B. This work is 75% complete.

Project C-228, Work Order C-69569 - Moving of Transportation facilities was completed.

b. 200-West

Project C-120 - Divert Second Cycle Waste Supernates to Ground. Two hundred and six post holes were dug and posts set for erection of climb proof fence defining the 241-T exclusion area.

Project C-163 - Additional Process Waste Storage. Work Order D-68001 - Inlets and outlets from 221-T Building to Diversion Box 154 is complete to fine grade. Work Order D-68002 - Sixty two cubic yards of concrete were procured from a subcontractor and placed in Diversion Box 154. Work Order D-68009 - Two steel tanks, 18' diameter, 48' length, weighing 17 tons each, were unloaded from railroad cars, moved to location, and placed in pits. Placement of 3,000 cubic yards of top soil backfill was required for cushioning and protection of tank coating. Work Order D-68010 - Approximately 3,000 feet of trench extending from Catch Tank 154 to Diversion Box 155 was backfilled requiring 70,000 cubic yards of earth. Work Order D-68013 - Four hundred and sixty-five cubic yards of concrete were procured from a subcontractor and placed in trench extending southward from Diversion Box 155. Six hundred encasement covers were delivered to strategic locations along this trench. Three cubic yards of concrete were placed in four special encasement covers.

c. 300-Area

Project C-189 - Structure to House 2 MEV X-Ray Machine. Block work was completed. Our portion of this project is 95% complete.

4)

Project C-227 - Conversion of Offices to Laboratories. One hundred and sixty-six man-hours were expended in breaking out 15 floors in the 3706 Building. Excavation for process sewer is 10% complete.

Project C-237 - Nine Tube Mockup and Building 305-A. Backfilling is 90% complete. Seventy cubic yards of concrete were placed. Excavation on process water line is 20% complete.

d. 700-1100

Project C-138 - Automatic Dial Exchange 702 Building. Approximately 191 cubic yards of concrete were placed in walls, floor slab, and dock footings. Backfilling is 65% complete.

Project C-177 - 115 K.V. Power Line to Richland plus Substation Facilities. Tract House K-793 was removed and the clearing of trees and vineyards is 50% complete.

Project C-202 - Gate House and Parking Lot, 700 Area at Stevens Drive and Swift Boulevard. water line is 95% complete. One hundred and ten cubic yards of concrete were placed in the catch basin, curb, and gutter. Fine grading and backfilling of curb and gutter is 99% complete.

Approximately 1,700 man-hours were expended during the month in preparing various lines of the Village Irrigation System for this year's use.

All ice houses including those in other areas were filled during the month.

Work Orders E-31352 and E-31360. Well G.E. 1100-4 was finished and has a completed depth of 191 feet. Well G.E. 1100-5 was started and finished during the month and has a completed depth of 80 feet. Footage on all wells drilled to date totals 595.

e. 3000 Area

Work Order E-31352 - Well G.E. 3000-4 was finished at a depth of 191 feet. Work Orders E-31353, E-31357, and E-31358 - Wells G.E. 3000-5, 6, and 7 were started and finished during the month and have completed depths of 110, 125, and 165 feet respectively. Work Order E-2237 - Wells 3000-A and B were started and have present depths of 48 and 36 feet respectively. Footage on all wells drilled to date totals 942.

Work Order D-68829 - Well 321-1 located four miles north of 300 Area was started and finished during the month at a depth of 117 feet.

EQUIPMENT CONTROL

1. One hundred sixteen units of equipment were transferred to the Construction Division on P.I.T.'s making a grand total of 384 vehicles transferred to date.

2. There are 343 units of equipment presently on order. No units were requisitioned during the month. One hundred and fifty four units were received and 25 units were cancelled on orders placed prior to April 1, 1948.

TRAFFIC SECTION

1. Effective at 7:00 a.m. March 16, 1948, the Interstate Commerce Commission removed gondola and hopper cars, while loaded with bituminous coal, from the punitive demurrage regulation of Service Order No. 775. Coal cars will now draw four debits instead of two before running into excess demurrage; however, it will not benefit us because ordinarily credits are earned on coal cars which offset debits on other cars, and now it will take three coal car credits instead of two to offset one debit accruing on other than coal cars.

2. As a result of a petition by the Southern Pacific Company to the Interstate Commerce Commission, Class and Commodity rates between California points on the Southern Pacific, Pacific Electric, and Visalia Electric Railroads and Kennewick, Washington, were made applicable to Hanford, Washington, effective April 12, 1948, when routed in connection with the Southern Pacific to Portland, Great Northern to Chehalis, then the Milwaukee Road. This applies only where no through rates are published to Hanford, Washington.

3. In line with a recent proposal, the North Coast Lines have secured approval to publish a rate of 37¢ per cwt. on Asphalt Siding from St. Helens, Oregon, to Hanford, effective April 5, 1948. This is a savings of 21.5¢ per cwt. or approximately $86.00 per car.

4. Effective May 14, 1948, the North Coast Lines published a rate of 50¢ per cwt. minimum 14,000 lbs. on furniture from Tacoma and Seattle to Hanford. This will effect savings of from 7.2¢ to 30¢ per cwt. of from $10.00 to $40.00 per car.

5. The Interstate Commerce Commission granted the railroads an additional temporary increase of approximately 4.2% to become effective May 6, 1948. Instead of the present 20% increase on the transportation charge, the new increase will be applied to the base rates, as follows, with certain exceptions where maximum increases are specified.

   30% within Eastern territory
   25% within Southern territory
   25% from, to, and within Zone 1 of Western Trunk Line territory
   20% within Western and Southern territories on the one hand and Eastern territories on the other hand

6. As a result of rate reductions secured from the carriers, there was a total saving in freight charges for the month of April amounting to $10,479.19. This makes a total saving to date of $296,906.65.

TECHNICAL DIVISIONS

APRIL 1948

May 1, 1948

SUMMARY

Pile Technology Division

It was discovered that rolled uranium warps seriously during pile exposure. Rolling minimizes surface distortion (blistering) but appears to enhance warping, which can be as bad. Warping is most pronounced in rolled, lead-dipped slugs. Rolled, triple-dipped slugs so far offer the best compromise between warping and blistering.

Operation of the D Pile at concentrations of carbon dioxide far above the present 25% is permitted by new calculations on reactivity transients. The concentration will be maintained at 25% until it is demonstrated that the present high rate of consumption of carbon dioxide does not indicate a hazard.

The purification of gas-baked carbon produces a graphite of high purity which is machinable with surmountable difficulty. This lead may open the way to a high-grade graphite of improved expansion characteristics, and is being developed further.

During the month, the purification process produced equally good graphite for the DR Pile from CS and from KC material. The resumption of regular CS production led to a setback in quality which is slowly being recovered. The reasons for the setback are under investigation. Meanwhile, allocation of graphite to the various zones of the DR Pile, and the size of the zones of this pile, are being maneuvered to provide maximum reactivity.

A major simplification of segmented discharging operations was produced. The new proposal, which eliminates all remotely-controlled devices on the inaccessible rear face, is rapidly being developed.

Data on the corrosion of Var Stone joints have indicated that cold working, externally applied electromotive forces, and the composition of gaskets and nozzles are unimportant. Attention is being centered on the effect of hairline cracks, which are now regarded as the probable initiators of the pits which constitute the most serious corrosion problem.

A trial run on the Schenectady "beta" experiment was completed satisfactorily. The can opener for highly radioactive experimental slugs was operated successfully, and will require no further development.

Separations Technology Division

In the Redox development program, scale-up facilities are nearing completion and detailed procedures are being drawn up for operation of the 16-inch column which should be placed in service about the end of the next month. Operation of the Demonstration Unit has continued along the line of investigating uranium feed materials from different sources. The anomalous behavior of dissolved uranium

salt, showing poorer mass transfer rates than dissolved uranium metal, is still not understood and studies are continuing. Comparisons are also being made between jacketed and unjacketed slugs as feed material and an effort is being made to establish the behavior of lead dip slugs in the dichromate-containing initial feed solution. Recycled uranium solutions, which will be the basis of operation in the scale-up unit according to present plan, exhibit an anomalous behavior similar to that of dissolved uranium salts and further information is required before a firm program of scale-up studies can be established. This problem is also receiving attention in the Research Section along with other studies on fission product chemistry, behavior of hexone under oxidizing conditions, development of Redox analytical procedures, and a study of physical properties in the various process systems. In the 200 Area, assistance has been given the Manufacturing Divisions in setting up process conditions for a series of runs to isolate Np^{237} from highly enriched metal. An active program continues on stack gas disposal, where the filters installed in the cell exhaust ducts have failed to reduce the amount of active particles being vented to the atmosphere. The next step in this program is to investigate the effect of reduced air flow through cells containing active material and initial work on this phase is under way.

Metallurgy and Control Division

Technical supervision of all uranium rolling for Hanford was continued with three 300 Area Plant Assistance men assigned in pairs to cover this work at Ft. Wayne, Ind., and Lockport, N. Y. Quality was satisfactory, and rod diameter was reduced from 1.5" to 1.45" late in the month. Rustless Iron and Steel at Baltimore made a trial rolling on April 2, but subsequently decided not to bid for this work. Annealing of all rolled rod prior to machining was continued, with the Metallurgy Laboratory checking control samples.

Interest strengthened in a "duplexing" rod fabrication process (oversize gamma extrusion followed by 400 - 650°F alpha rolling to size), when the first samples prepared in this fashion showed a recrystallized grain size similar to that of regular alpha rolled rod. Immediate fabrication of sufficient duplexed metal to evaluate process variables and furnish slugs for pile exposure is being initiated. Meanwhile, attempts to alpha extrude bare billets in the 300 Area press continued unsuccessful, and Revere was contacted relative to making further trials at their Detroit plant.

Realization that even small amounts of lead in canned slugs may prove very troublesome in the Redox process has added impetus to the study of canning process factors influencing slug lead content, and to consideration of means for avoiding the lead dip entirely.

Operations in the analytical control laboratories were routine except for continued expansion of the Redox control force, and the development of methods for their use.

Technical Divisions

GENERAL

D. H. Miller and C. E. Weber, of the Schenectady Research Laboratory, arrived on April 26 to assist the Pile Engineering Section with the "beta" experiment.

T. A. Read and W. S. Pellini, of the Oak Ridge National Laboratory, spent April 15 and 16 here in a study of the metallurgical aspects of uranium blistering.

Business trips of Technical Divisions personnel during April were as follows:

D. H. Curtiss returned from Schenectady on April 9, where he had consulted with Research Laboratory personnel on X-ray diffraction.

D. F. Shepard returned from Schenectady the first week in April. He had consulted at the Research Laboratory on Redox analytical problems.

R. E. Burns, D. W. Haught and L. M. Knights attended the Laboratory Design Conference on Waste Disposal which was held at Argonne National Laboratory on March 31 and April 2.

R. J. Schier spent April 2 at the Rustless Iron & Steel plant, Baltimore, Md., supervising an experimental rolling of uranium. T. S. Jones, R. D. McGreal, and R. Teats were assigned in pairs to supervise the production rolling program at Ft. Wayne, Ind., and Lockport, N.Y., which continued throughout the month. In the course of this work, Jones and Teats attended contract negotiation discussions in the New York A.E.C. offices on April 16 and 26, respectively. Teats and McGreal also visited the Electro Metallurgical casting plant at Niagara Falls on April 27-28, and the metallurgical laboratory at M.I.T., Cambridge, Mass., on April 29.

R. H. Beaton, J. M. Frame, H. H. Hubble and C. E. Kent visited the Kellex Corp., at New York City April 1-2 for discussions of the Redox design program. R. H. Beaton spent April 3 at Schenectady in further discussions of the Redox program with Knolls Atomic Power Laboratory people.

J. O. Ludlow, Technical liaison representative at the Kellex office in New York City, spent April 12-16 in Richland attending technical conferences on the Redox program held between General Electric and the Kellex Corp.

On April 12-13, R. S. Rosenfels and J. K. Figenshau visited the Radiation Laboratory at Berkeley, Calif., for consultation on hot laboratory design and remote control equipment.

J. B. Work and D. W. Pearce attended the American Chemical Society meeting at Chicago on April 19-23, during which time a number of employment interviews were held. C. W. J. Wende attended this meeting on April 19, 20, and 21, and visited Schenectady on April 22 and 23 for discussions of pile problems.

E. W. Rebol spent April 19-23 in Chicago, participating in a special conference on graphite quality and recruiting analytical development personnel.

C. P. Cabell addressed the American Society of Safety Engineers at Olympia, Wash., on April 20 on the subject, "Hanford Works from an Engineer's Viewpoint."

Technical Division

J. B. Work spent April 26-27 at the General Engineering and Consulting Laboratory in Schenectady on discussions of the 432 Project design being carried out there under the supervision of D. H. Marquis.

R. L. Moore spent April 26-27 at the Argonne National Laboratory on discussions of the Redox research program, attended the General Information Meeting at Brookhaven National Laboratory on April 28, and spent April 29-30 at the Knolls Atomic Power Laboratory attending the Redox Analytical Meeting held there.

O. H. Greager attended the General Information Meeting at Brookhaven National Laboratory, April 26-28, and spent April 29-30 in Schenectady reviewing the work there on Redox and the 432 Project.

W. R. Lewis, P. F. Gast, and U. M. Staebler attended the Information Meeting at Brookhaven National Laboratory on April 26-28. Lewis then visited Schenectady on April 29 and 30 for discussions on stress analysis problems. Gast and Staebler attended the meeting of the American Physical Society in Washington, D. C. on April 29-30.

C. W. Botsford spent the week of April 26-30 at Morganton, N.C. observing experimental runs on graphite purification.

C. G. Stevenson attended a meeting of project site librarians held by the A.E.C. at Brookhaven National Laboratory on April 26-28.

W. A. Briggs spent April 26 in New York interviewing prospective analytical personnel, April 27 in Rhaway, N.J., investigating equipment in use at the Merck & Co. Streptomycin plant, and April 28, 29, and 30 at the Knolls Atomic Power Laboratory participating in the Redox Analytical Meeting.

C. H. Ice spent April 26 through April 30 at the Knolls Atomic Power Laboratory reviewing Redox analytical methods and participating in the Redox Analytical Meeting.

R. J. Anicetti and W. M. Harty visited the Los Alamos Scientific Laboratory on April 28-30 for consultation on the 234-5 program.

ORGANIZATION & PERSONNEL

As part of the internal reorganization which accompanied the formation of the Nucleonics Department, early in April, the Technical Department became the Technical Divisions, with A. B. Greninger as Manager. The following three Divisions were created:

100 Technical Division - C. W. J. Wende, Head
200 Technical Division - O. H. Greager, Head
300 Technical Division - T. W. Hauff, Head

Functionally, these three Divisions are designated as follows: Pile Technology Division, Separations Technology Division, and Metallurgy & Control Division.

Technical Divisions

In the Chemical Development Section of the 200 Technical Division, R. B. Richards and A. R. Maguire were appointed Section Chief and Assistant Section Chief, respectively, following the transfer of R. H. Beaton and J. M. Frane to the Design Division on April 14. Thirteen other chemical engineers were involved in this same transfer, which was made in order that all Redox design activities might be consolidated in the Design Division.

Personnel totals in the three Divisions may be summarized as follows:

	March 31	April 30
100 Technical		
Pile Physics	23	23
Pile Engineering	13	14
	36	37
200 Technical		
200 Area Plant Assistance	17	17
Chemical Development	86	85
Chemical Research	17	21
	120	123
300 Technical		
Plant Assistance - Bldg. 313	7	5
Plant Assistance - Bldg. 314	4	4
Metallurgy Laboratory	16	16
Analytical Laboratories	347	367
Statistics	11	10
Information	12	14
	397	416
Administration	10	11
Totals	563	587

The increase of 24 in total personnel resulted from a net addition of 34 to the weekly roll, and a net loss of 10 from the monthly roll(due largely to the Redox design transfers noted above).

New hires may be summarized as follows: Chemical Development added three chemical engineers, three operators, and two clerical. The Analytical Section added eight chemists (one monthly and seven weekly), nineteen non-technical laboratory personnel, and two clerical.

One exempt chemist was transferred from the 200 Plant Assistance Section (234-5) to the Design Division, effective April 5.

Terminations and miscellaneous transfers accounted for the rest of the changes in personnel. Most of these occurred in the non-exempt roll. One chemical engineer and two male laboratorians resigned because of the delay in housing availability.

At month-end there were 3 exempt and 34 non-exempt personnel on the Technical rolls awaiting security clearance for classified work. Most of the latter were laboratorians in the Analytical Section.

Technical Divisions

200 AREAS PLANT ASSISTANCE

Canyon Buildings

Recent test runs at T Plant showed no significant improvement in the first cycle by-product precipitation waste losses when the cerium and zirconium scavengers were eliminated. Since decontamination through the Canyon Building for these runs was markedly affected, further attempts to eliminate scavengers have been abandoned. The amount of scavengers was increased from 25% to 50% of the standard quantity at T Plant with Run T-8-04-D-3. No significant effect on waste losses or decontamination was produced by this increase of scavengers. The process will be standardized with the increased quantities at both B and T Plants.

Since increased first cycle by-product waste losses had been recently experienced at B Plant when (according to standard procedures) the cake solution acid was first used as a precipitation tank flush, fifteen runs were processed with a small acid flush of the precipitation tank prior to each run. A return to normal procedure with Run B-8-04-F-2, however, resulted in a waste loss of 1.60%. Following Run B-8-04-D-11, a hydrogen peroxide-nitric acid flush of the precipitator was made, whereby 1.38% of a normal run and approximately 200 pounds of bismuth were cleaned out of the tank. Increased losses of 1.30% and 1.55% on Runs B-8-04-D-12 and D-13 respectively were obtained, however, when the normal cake removal procedure was used. Investigations are continuing.

Runs for the recovery of Np^{237} are planned at B Plant. The starting material for these runs will be the extraction waste of "Class C" material (approximately 400 g/t). The Class C product extraction will be made in Section 7; the waste will be processed in Section 8 and the neptunium extraction cake solutions will be stored until all of the Class C product clears the extraction section. The stored neptunium cake solution will then be processed following an acid wash. Approximately nine Class C material runs are anticipated from the six tons of metal charged. Np^{237} will be extracted from the metal waste of eight of these runs.

In preparation for these runs, the metal heel was removed from dissolver 3-5R by making a fourth dissolver cut with 4700 pounds of 60% nitric acid (normal operation is with 5000 pounds of nitric acid). A maximum specific gravity of 1.81 was attained after 30 hours of dissolving time (normally a specific gravity of 1.82 is reached in 6 to 10 hours). Four tons of Class C metal were charged into the empty dissolver for the first charging, and three cuts (three tons) removed. The second charging was two tons. It is planned to remove the Class C material in three cuts. Run B-8-05-F-5 will be the first run of Class C material.

Concentration Buildings

Reduction of the weight of the routine lanthanum fluoride by-product waste rework from 3500 pounds to 2500 pounds, previously tested at T Plant, was initiated at B Plant with Run B-8-03-F-15. Waste losses were unaffected.

It is planned to process the lanthanum fluoride product precipitation alternately in B and E Cells. Past operation has been in E Cell; the parallel operation is desirable, however, to effectively decrease the time cycle (presently 30 hours) without increasing product losses. A chemical run processed through B Cell at B Plant indicated no process difficulties. In processing Run B-8-04-F-2 in B Cell, however, the transfer of the product cake from the centrifuge to the metathesis tank (F-1) was incomplete. Investigation revealed that the difficulty was due to a dip tube of small diameter (1/4 inch) at the end of the process line in the F-1 Tank. The transfer has been satisfactory since this dip tube was removed. Difficulty in making this transfer was also experienced during a similar chemical run at T Plant. This operation is being investigated.

Isolation Building

Calibration checks of the P-1 tanks in Cells 3 and 4 revealed the calibration in use in Cell 3 to be correct while that of Cell 4 was found to be approximately 3% high. The new calibration was put in use starting with Run-T-8-03-D-16.

REDOX DEVELOPMENT

Demonstration Apparatus

Studies in the Demonstration Unit Columns during the past month have been directed toward (1) ascertaining the effects of stream introduction and feed-scrub mixing on column efficiency, (2) determining any differences in uranium mass transfer between IAF feeds prepared from UO_3 and dissolver metal, and (3) comparing the mass transfer behavior of IAF feeds prepared from jacketed and unjacketed uranium slugs. During the month seven runs have been completed in the 2-inch IA Column at very nearly 55% of flow sheet throughputs. Prior to the first run, the 3-inch feed Tee packed with 1/2-inch glass raschig rings was reinstalled in an attempt to provide improved feed-scrub mixing and thus give lower uranium waste losses than had been obtained previously with the column-size feed Tee packed with 3/16 i.d. Fenske helices. Operation resulted in an uranium H.E.T.S. value of 1.6 ft. with erratic waste losses averaging 3.2% of feed uranium. Uranium losses appeared to be approaching normal at the conclusion of the 47 hour run, however. A 44-hour run was then conducted with IAX entry below the spiral packing support through an inverted J rather than upwardly directed above the support.

An H.E.T.S. value of approximately 0.6 ft. was obtained with IAW waste losses averaging about 0.05% of feed uranium. Four runs were then conducted at 55% of flow sheet throughputs with feeds alternately composed of UO_3 and dissolver metal. Reproducible waste losses of about 12 - 14% of feed uranium were obtained with UO_3 feeds while dissolver metal waste losses averaged 0.1%. Uranium H.E.T.S. values averaged 3.3 and 0.85 ft. respectively. These mass transfer anomalies have been encountered previously with crystalline UNH feeds under comparable operating conditions. The evidence to date indicates that UO_3 or crystalline UNH would be undesirable for Scale-Up feeds.

To pursue this behavior further, a run was conducted with IAF feed prepared by concentrating a quantity of ICU recovered from a previous dissolver metal run. Anomalous behavior was again evident by average IAW uranium waste losses of 6% and an average Uranium H.E.T.S. value of 2.8 ft. Continuity of Scale-Up operation will depend on recycling of recovered dissolver uranium. The data point toward an alteration of mass transfer characteristics by the above recovery procedure. Further runs are scheduled in order to clarify this behavior.

Three 3-inch IA Column runs have been completed during the month at 55% of flow sheet throughputs. The column-size feed Tee packed with 3/16 i.d. Fenske helices was retained but IAX entry was altered as in the manner described above for the 2-inch IA Column. The runs varied in length from 33 to 41 hours. Pertinent data are summarized below.

3-INCH IA DEMONSTRATION UNIT RUNS

Run No.	Feed Origin	IAX Inlet Design (Inverted)	IAW Uranium Losses % of Feed U	Approx. HETS Ft.
2	Jacketed Slugs	0.18" i.d. J tube	23	4.0
3	Jacketed Slugs	8-hole nozzle, 3/16" i.d.	28	4.6
4	Unjacketed Slugs	8-hole nozzle, 3/16" i.d.	30	5.0

The introduction of the new lead-dip slug coating procedure has necessitated the use of unjacketed slugs until the quantity of lead entering the process and its effect on chemical behavior can be studied in a preliminary manner in the laboratory. The efficiency data indicate that further studies with enlarged feed mixing Tees must be carried out along with improved IAX distribution methods. Based on one run, there appears to be no difference in mass transfer between feeds prepared from unjacketed or jacketed uranium slugs. This behavior will be confirmed further.

Two 46-hour runs have been completed at 55% of flow sheet throughputs in the 1-inch IA Column to determine mass transfer differences between jacketed and unjacketed slugs. Uranium H.E.T.S. values of 0.7 ft. were obtained for each run.

Seven IC recovery runs have been completed in the 5-inch stainless steel column. Stable operation was evident for all runs. Removal of the 8 ft. spray section above the 10.5 ft. of 1/4-inch raschig ring packing produced ICW waste losses of less than 0.05% and uranium H.E.T.S. values of 2.5 ft. or less. Further shortening of the packed height is planned for the purpose of obtaining more accurate uranium H.E.T.S. values.

Equipment Development

During the month, clarity checks have been carried out to determine the efficiency of the Demonstration Unit IAF filters having immersion-type elements fabricated from Type G (0.0004 inch porosity) sintered stainless steel. IAF feeds having an initial clarity of about 75% transmission at 645 millimicrons

leave the filter with about the same clarity. Following three weeks of use, the filter plates were covered with a thin layer of black amorphous scum. On spectrographic analysis strong amounts of Si and Ti were obtained. The filter cake was found to be soluble in NaOH and insoluble in most of the common laboratory reagents. The lack of measurable clarity improvement with a G-type filter was confirmed in the experimental filtration test stand. Studies with a 27 sq. in. Type H filter (0.0002 inch porosity) indicated that rates of IAF filtration at 40 psi. pressure drop vary from an initial value of 0.1 gpm. (378 ml./min.) down to about 0.03 gpm. (113 ml./min.) over a filtration period of 1 1/2 hours. The average photometric clarity was increased from about 74 to 82%.

Additional equipment development services to the Demonstration Unit have consisted of (1) lengthening the interface dip tubes for the 2-inch and 3-inch IA Column, (2) preliminary shakedown tests with the controlling rotameter-Hammel Dahl flow control system, and (3) the completion of a 462 hour life test with an Eastern Industries centrifugal pump having a re-designed stuffing box containing shredded Teflon.

Seven runs in the 3-stage, 1-inch UNH Horizontal Extractor at 1000 RPM, a total throughput of 200 ml./min., and an organic to aqueous flow ratio of 1.4 resulted in uranium stage efficiencies varying between 53 and 56% for feeds prepared from either dissolver metal of CP crystalline UNH. The unit does not reveal the differences in uranium mass transfer previously encountered with these feeds in the 2-inch IA Demonstration Unit Column. Two 5 to 6 hour runs have been conducted to determine operational stability. During this time period, effluent uranium compositions varied no more than ± 2% and only 4 minor rate adjustments had to be made. Continuous sampling from the four interstage samplers at a rate less than 2% of the flow of either phase caused effluent uranium compositions to vary no more than ± 4%.

During the month, head-capacity characteristics have been completed with the G.E. Turbine pump at speeds of 2000, 2500, 3000, 3450, and 4000 rpm. Temperature studies with a completely blocked discharge at 3450 rpm. indicate that thermal equilibrium is attained at about 170°F. A temperature of 140°F. is reached when the pump discharge is throttled to a flow of 50 to 75 ml./min. at 3450 rpm. Redox Equipment Testing Report No. 1 (HW-9474) dated April 8, 1948 reports the progress on the G.E. Turbine pump to March 31, 1948.

A sample of Stalpic resin bonded to concrete has been received from the Chemical Proof Construction Company. This material when bonded to metal is resistant to solvent and HNO_3 solutions. Arrangements are being made to install test strips in the 321 building and Scale-Up tank farm. Space renovations are essentially complete and most of the equipment available for initiation of dynamic corrosion testing. Partial studies should begin during the early part of May.

Scale-Up Studies

During the month, microscopic and X-ray examination of prefabricated piping welds revealed inadequate weld metal penetration. This condition was corrected

by removal of the piping and rewelding by the Heli-arc repuddling technique. Scale-Up canyon construction will be essentially complete when the piping units are reinstalled. Canyon electrical and instrument installations are 80 - 85% complete. All ventilation duct work has been installed, and the CO_2 and water fog fire protection systems are essentially complete. Outside construction is nearing completion. All storage tanks have been installed and process piping and electrical work are more than 50% complete. Work on the waste disposal tanks and pump house is awaiting design details. The NH_4NO_3 storage hut is essentially complete. A 55,000 lb. car load of NH_4NO_3 has been received at the Umatilla Ordnance Depot, and 15,000 gallons of hexone are expected during the first week in May. Scale-Up Technical Data Letter SU-16 covering revision to instrument orifice specifications was issued April 30. A request has been made for design revisions to the Service Extractor agitators to provide water sealing to the stuffing boxes. Detailed procedures are now being drawn up for initial shakedown studies in the 16-inch IA Column. Preliminary information will be obtained on the transfer of HNO_3 between hexone and 8 M NH_4NO_3.

Process Laboratory

During the month, the experimental work for the following equilibrium studies has been completed.

1. Flow sheet counter-current batch equilibria for the system UNH - HNO_3 - $AL(NO_3)_3$ - Hexone - Water employing 12 extraction and 4 scrub stages. An $Al(NO_3)_3$ concentration of 1.3M in IAS was employed.

2. Static equilibria for the system 4 M NH_4NO_3 - UNH - HNO_3 - Hexone-Water (IA) and similar studies for the system UNH - HNO_3 - Hexone-Water (IC).

3. Simple multiple batch equilibria for the $Al(NO_3)_3$ system simulating the IA extraction and scrub sections with $Al(NO_3)_3$ IAS concentrations of 1.2, 1.3, and 1.4 M.

Investigations are being made to determine the possibility of crud or mass transfer effects which might result from the use of the new lead-dip slug bonding procedure. Any Pb remaining in the slug following coating removal may precipitate as the chromate during the feed oxidation step.

Laboratory filtration studies with glass and Saran cloth (National Filter Media Co.) indicated these materials to be less efficient than a Type "H" sintered stainless steel filter with typical IAF feed solutions.

Waste neutralization studies with IAW solutions containing $Al(NO_3)_3$ indicate that $Al(OH)_3$ re-dissolves when sufficient NaOH has been added to increase the pH to about 8. Technical Data Study No. 4 (HW-9475) dealing with equilibrium relationships for the IC system was issued April 9, 1948.

REDOX RESEARCH

Properties of Different Feed Solutions in Relation to Column IA Stage Heights

Attempts to determine the cause of the marked increase in uranium transfer stage heights observed when UO_3 or crystalline UNH is used as feed in place of dissolver metal have been continued. No significant correlation with disengaging times is apparent, separation of phases being as slow or slower for dissolver metal systems than for comparable systems derived from the other types of feed. A number of differences in composition of the different feeds have been established but none have as yet been proven responsible for the differences in column behavior. Considerable evidence continues to accumulate indicating that the effect may be due to adsorption phenomena on the packing surfaces. The alternate possibility of differences in the specific rate of transfer of uranium across the liquid-liquid interface is also being studied.

Zirconium Investigations

The use of glass wool for the separation of zirconium from HNO_3 solutions has been tested in a preliminary way. Using about 750 $cm.^2$ of surface area (0.5 g.) and tracer amounts of zirconium, 15 - 30% adsorption was found in 1 M HNO_3 solution after five minutes contact. In another experiment at 1 M HNO_3 with a 10 minute contact time 75% of the zirconium was adsorbed. When the acidity was reduced to 0.3 M HNO_3, 98% of the zirconium was adsorbed within five minutes. Since the species adsorbed on glass may not be solvent-soluble, it cannot be presumed from these data that a glass wool treatment would necessarily be of value in the Redox Process, however, such a treatment might offer a convenient way of isolating zirconium.

No substantial changes in the extractability of zirconium into hexone were noted on aging zirconium tracer in 0.3 and 1 M HNO_3 solutions at 25° and 75° for periods up to 94 hours.

Ruthenium Decontamination

Batch contact experiments indicate a moderately beneficial effect of chloride on ruthenium decontamination. Distilled Ru tracer was added to feed solutions of the compositions: (1) 1 M $Al(NO_3)_3$ - 0.5 M HNO_3 - 0.15 M HCL and (2) 1 M $Al(NO_3)_3$ - 0.65 M HNO_3. These feeds were each contacted with hexone which was then scrubbed with two successive portions of 0.1 M HNO_3 solution. Lower distribution ratios (hex./aq.) were obtained for the first system in all three contacts and the apparent over-all decontamination factor was higher by a factor of six. Comparable results were obtained when $Cr_2O_7^=$ was present in the feed solutions but very high phase disengaging times were noted for the chloride systems.

Hexone - Water Solubility Relations

The solubilities of hexone in water and water in hexone were run rather hastily some time ago to meet a deadline and reported in a previous issue of this series. These data did not agree with a report published by the Kellex

Corporation, dated April 9, 1948. To resolve this discrepancy, the work was repeated using a more accurate experimental procedure.

The earlier work was in error at the higher temperature due to venting of vapors. These would be enriched in the component present at the lower concentration. Such errors were eliminated by adding the weighed hexone and water to a glass bulb through a narrow constriction, cooling with dry ice, evacuating briefly, and sealing off the constriction prior to determination of a cloud point. The data so obtained indicate a range of 1.42 to 4.54 wt. % for the solubility of water in hexone at temperatures of 0 to 87.9° C. Comparison with these data indicates the earlier results to have been high by as much as 0.3 wt. % at the higher temperatures and the Kellex data low by an equal or somewhat greater amount. Repetition of the hexone in water work is not yet complete but results obtained to date also indicate the correct solubility values to be somewhat lower than originally reported.

Reaction Products in Waste Solutions

Methyl isopropyl diketone and 1,1-dinitroisobutane have been definitely identified as products of the reaction of hexone and 1 M HNO_3 - 8 M NH_4NO_3 solution at reflux temperatures. The former was established by comparison of the infrared spectrum with that of sythesized material and the latter by combustion analysis of the potassium salt. Apparently 6 - 10 g. of the diketone and about 20 g. of the dinitroparaffin are formed on refluxing 80 g. of hexone with one liter of 1 M HNO_3 - 8 M NH_4NO_3 for one hour following the end of the induction period. Qualitative analyses indicate that the reaction yielding the dinitro compound and the reactions resulting in organic acids all proceed through the same first step, the reaction of nitrous acid on the hexone to give what is presumably 2-methylpentanone-4-oxime-3.

Among the neutral oxidation products of the nitrous acid catalyzed reaction of nitric acid and hexone a material has been found which forms a heavy acetone-soluble tar on distillation. It has not yet been identified.

In the actual Redox waste solutions dichromate will be present in IAW and possibly in IIAW. Simulated IAW and IIAW wastes containing dichromate were allowed to stand six hours, boiled six hours, allowed to stand 18 hours and finally boiled 12 hours. The dichromate in the IAW solution was found to be 88% reduced after the first boiling period and 98% reduced after the second boiling period. Dichromate in the IIAW solution was 26% reduced after the first boiling period and 48% reduced after the second boiling period. Experiments to test reduction of dichromate on standing at room temperature only, showed 52% reduction in a IAW system after 19 days. Solutions obtained after boiling or long standing are dark brown in color and of foul odor. Hexone recovered from such solutions would probably be unusable.

Refluxing experiments with simulated IDW solutions containing hydrazine, which should inhibit a nitrous acid catalyzed reaction, showed no reaction after 12 hours of boiling.

Analysis for Plutonium in $Al(NO_3)_3$ Solutions

It has not been found possible to determine the plutonium content of a

solution containing $Al(NO_3)_3$ and $Na_2Cr_2O_7$ by the standard hydroxylamine - LaF_3 procedure. The LaF_3 precipitates obtained were purple and somewhat voluminous. Variations in LaF_3 and HF concentrations led to no improvement.

Another method tried involves reduction with hydroxylamine in acid solution, addition of lanthanum carrier, coprecipitation with $La(OH)_3$ in alkaline solution, dissolution of the precipitate in HCl and, finally, coprecipitation of Pu with LaF_3. This method gives ca. 95% yields with no dichromate present, but very low yields when dichromate is present. However, with dichromate present a yield of 90 - 95% appears to be possible when UNH is added to the alkaline system in sufficient quantity to overcome the complexing action of the excess of hydroxylamine and allow some $Na_2U_2O_7$ to be precipitated with the $La(OH)_3$.

The best method yet found for use in the presence of dichromate involves adding lanthanum and precipitating with NaOH prior to reduction. By this operation nearly complete separation from chromium as chromate is attained. The $La(OH)_3$ - $Na_2U_2O_7$ - $NaPu_2O_7$ precipitate is then dissolved in acid, reduced with hydroxylamine and the plutonium carried on LaF_3 with yields of 96 - 97%.

Equilibrium Data for $Al(NO_3)_3$ - UNH - HNO_3 - Hexone - H_2O Systems

Distribution ratio and physical property measurements have been made on about 90 equilibrated systems of the above components. Additional systems are being studied.

Although a direct relationship between disengaging times and pH is well established, it is found that an inverse linear relationship exists between HNO_3 concentration and interfacial tension.

It has been found that the property of a long disengaging time for an equilibrated system can almost invariably be correlated with a large difference between the true interfacial tension, measured by lifting a du Nouy platinum ring through the aqueous - hexone interface, and the apparent interfacial tension obtained by pushing the ring down through the interface. There is no correlation of disengaging times with the true interfacial tensions. These results suggest that unknown materials capable of adsorption at solid-hexone and/or solid-aqueous interfaces may influence the disengaging times.

STACK GAS DISPOSAL

Daily particle collection tests on Canyon ventilation air at both B and T Plants indicate the stabilization of filterable activity at levels approximately equal to those obtained in tests before the installation of the CWS filters in the Canyon Cells. A special filter containing CWS filter frames has been installed in the air vent between the cell containing the sump tank and the ventilation tunnel of the Canyon Building at B Plant. No significant change in filterable activity was observed in tests following this installation.

The covers of cells containing activity and of the pipe trench have been

sealed at T Plant. This was done to decrease the air flow through these cells. First filtration tests indicate that the filterable activity has been decreased by a factor of two to three times. Fewer active particles were collected in these tests. Further testing is required to substantiate these data.

A twenty-four hour test made with two CWS Type 6 filters in series resulted in the collection on the second filter, of approximately one-tenth of the activity found on the first. (The linear gas velocity through the filters in this test was approximately 20 times the nominal design rate). Two runs were made in which a fibre glass filter medium from the American Air Filter Company was tested in series with a Type 6 filter. These tests indicated that particles passed through the glass filter and that the binder material was rapidly decomposed with the separation of small quantities of oil. A CWS glass filter unit has been received. This filter will be tested in the near future.

A packed column, designed to scrub dissolver off-gas with water, has been installed in one dissolver cell (4-5L) at B Plant. Preliminary iodine collection tests, made during dissolving periods with the scrubber in operation, indicate efficient removal of iodine. Further testing will be required, however, to determine the effect of this scrubber on particle evolution and dissolver off-gas decontamination. A second packed column is being installed in an uncontaminated dissolver cell at B Plant. Following operational tests this scrubber will be transferred to the dissolver (3-5R) not yet thus equipped.

CWS filter units will be installed in the Concentration Building vent system. Design work has been completed. The first installation will be at B Plant.

A test run has been made with the silver reactor equipment designed for silver-iodine saturation studies. This equipment will be operated with dissolver off-gas enriched with cold iodine. Minor revisions were made as the result of the test.

PILE PHYSICS

Graphite Purification

Twelve purified bars have been produced omitting the usual graphitization step. The extruded bars, made with regular KC raw material, were gas baked, pitch impregnated, and then gas baked again. Following this they were purified in the usual way. The average dih for the twelve bars was 0.91 and the average density 1.65 gm/cc. The bars were more difficult to machine than ordinary graphite and four of them developed serious cracks during purification. This cracking was not unexpected and developmental work to eliminate it now appears worthwhile since high purity and satisfactory density can be obtained in this way. Samples from these bars are being exposed in the pile to determine their behavior under neutron bombardment.

Regular production heats of purified graphite tested during the month had an average dih of 0.85. About half of the material was made from CS stock

and half from KC. No significant difference was found between the two types. Occasionally a purified heat of relatively poor quality is received (dih 0.5 to 0.7). The source of these drops in quality is not definitely known. Irradiation of samples showed negligible amounts of chlorine but spectrographic analyses by National Carbon of resistor rods from these heats indicated abnormally large amounts of boron.

The possibility that the ash obtained from purified graphite may contain rare earths of large neutron absorption cross section is being actively investigated. Removal of such an impurity, if present, would give a further important increase in graphite quality.

Regular Production Graphite

Production of CS material was resumed after an interval during which only KC graphite was produced. The quality of the first heats in the new CS series was low, the dih for the 0 fractions of the first 14 heats averaging only 0.07. Later heats have shown some improvement. The vanadium impurity was found to be seven times the usual amount and boron analyses are in process. The raw material is presumed to be the source of the high impurity. Some higher quality heats of CS, produced earlier and previously allocated to the Red Zone of the DR Pile, have been upgraded so that the low quality CS will be used in the Red Zone instead.

Graphite Monitoring - Production Test 105-1-P

Orientation studies, by X-ray, on unexposed CS graphite indicate that about one-third of the crystals have their C-axis oriented in the direction of extrusion. In KC graphite less than 10% of the crystals are oriented in this way. These results are in complete agreement with the findings of the Pile Engineering Section, which indicate no significant change in the length of exposed CS bars as compared with a contraction of exposed KC bars.

Pile Control

The addition of carbon dioxide to the gas system of a pile increases the size of the reactivity transient associated with shutdown and startup because of the increase in graphite temperature. As a result, the minimum duration of a normal shutdown is increased and the maximum duration is decreased. Extrapolation of present information indicates that operation of the present piles at reduced power for 4 to 5 hours after startup will permit shutdowns of 23 hours duration with 100% carbon dioxide. Several hours would elapse between the return to a chain-reacting condition and the time at which the pile must be started up. This is based on operation at 275 MW. A similar situation is expected in the H Pile if operation at 400 MW is achieved.

Considerable difficulty has been experienced in obtaining a satisfactory boron-aluminum coat for the cooling tubes in the new horizontal rods. The heat transfer aspects of this are reported by the Engineering Section. The boron concentration in sample coatings has been determined by measuring the attenuation of a beam of thermal neutrons passing through the coating. Four

samples, prepared by varying the gas composition during flame spraying, all had nearly the same concentration, ranging from 21 mg/cm^2 to 24 mg/cm^2. This is only one-half the boron desired. These results are in good agreement with chemical analyses and with Test Pile results.

Reactivity Coefficients - Production Test 105-188-P

Power coefficient tests were performed at the F Pile on April 20 and at the D Pile on April 23. The latter test is the first to be made since carbon dioxide was added to the pile atmosphere. The data are under analysis.

Redox Safety

Calculations have been made of the critical masses and volumes of plutonium solutions and precipitates to assist the development of a flow sheet for the Redox process. The best known method of calculation has been found to give a critical mass considerably higher than the single measured value which is available. Therefore, considerable uncertainty is attached to the results of such calculations. Further efforts to resolve this discrepancy are in progress.

General

Test Pile results on samples of process tubing for the DR Pile were satisfactory from a reactivity standpoint. However, the tubes were 4% lower in density than tubes used in the present piles. Samples have been submitted to the Metallurgical Section for study.

The first generator of Xe^{135} intended for use in a production pile has been assembled and will be given preliminary tests in the Test Pile.

Reactivity

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

	D Pile	F Pile
In rods	63 inhours	65 inhours
In Special Requests		
within poison pattern	152	114
outside poison pattern	13	4
In Plant Assistance irradiations	20	0
In lead-cadmium columns	0	0
In bismuth columns	150	126
In dummy columns		
(including empty fringe tubes)	23	44
In xenon	512	524
In over-all coefficient	- 135	- 118
Total cold, clean reactivity	798	759

The D Pile lost 10 inhours and the F Pile gained 12 inhours during the month.

Technical Divisions

Status of Special Irradiations

The status of the Special Request program on April 30 is given below. Those items which were active during the month are marked with an asterisk. Items listed as completed last month will receive no further mention. The number under P. T. indicates the Production Test, series 105-P. The letter suffix after a tube denotes the pile. Under "Quality" the number of pieces, if given, will indicate that the material has been received. Under "Tube and Pile" the initials BTHD, BTHF, DTHF mean the piece is charged into the "B" Test Hole at the D or F Pile or into the "D" Test Hole at the F Pile. The suffix T will denote a tentative schedule which may be changed. The abbreviations ORNL and ANL after the request number refer to Oak Ridge National Laboratories and Argonne National Laboratories respectively; KAPL refers to the Knolls Atomic Power Laboratory, UCRL refers to the Radiation Laboratories at the University of California.

Req. No. & Source	Material	Quantity	Exposure	Charged	Tube & Pile	Discharged	Shipped	P.T.	ih absorbed
*3-3(ORNL)	Thorium	16 pcs.	120 da.	6/3/47	1579D	10/21/47	4/1/48	49-F	
*		16 pcs.	120 da.	6/3/47	3274D	10/21/47	4/1/48	49-F	
*		44 pcs.	120 da.	6/17/47	2374D	11/3/47	4/1/48	49-E	
*		32 pcs.	120 da.	6/17/47	1569D	11/3/47	4/1/48	49-E	
		24 pcs.	120 da.	7/2/47	2082F	12/2/47	--	49-F	
		24 pcs.	120 da.	7/2/47	1579F	12/2/47	--	49-F	
		16 pcs.	120 da.	8/5/47	2066D	1/6/48	--	49-F	
		20 pcs.	120 da.	8/10/47	3274F	1/11/48	--	49-F	
		22 pcs.	120 da.	9/2/47	2666D	1/6/48	--	49-F	
		27 pcs.	120 da.	9/2/47	2682D	1/6/48	--	49-F	
		32 pcs.	120 da.	9/16/47	3179D	2/16/48	--	49-F	
		27 pcs.	120 da.	9/9/47	2082D	2/3/48	--	49-F	
		18 pcs.	120 da.	10/21/47	1579D	3/2/48	-	49-F	
		18 pcs.	120 da.	10/21/47	3274D	11/18/47	--	49-F	
		20 pcs.	120 da.	12/2/47	2082F	--	--	49-F	18
		20 pcs.	120 da.	12/2/47	1579F	--	--	49-F	18
		18 pcs.	120 da.	12/8/47	3274D	5/4/48-T	--	49-F	19
		11 pcs.	120 da.	1/8/48	2066D	--	--	49-F	15
		11 pcs.	120 da.	1/8/48	2666D	--	--	49-F	15
		27 pcs.	120 da.	1/8/48	2682D	--	--	49-F	25
		16 pcs.	120 da.	1/8/48	3169D	--	--	49-F	17
		13 pcs.	120 da.	3/2/48	1579D	--	--	49-F	15
12-B(ANL)	Pu^{239}	540 mg.							
		1 slug	14 mo.	7/18/46	3378F	7/16/47	--	59	
		This request will be recharged -- 5/10/48							
13-3(ORNL)	Be_3N_2	250-	6 mo.					70-B	
*		2	6 mo.	2/4/47	1474D	8/5/47	4/1/48		
*		40	6 mo.	2/4/47	2066D	8/5/47	4/1/48		
*		40	6 mo.	2/4/47	2082D	8/5/47	4/1/48		
*		40	6 mo.	2/4/47	3169D	8/5/47	4/1/48		
*		44	6 mo.	2/12/47	3274F	8/10/47	4/1/48		
*		45	6 mo.	2/12/47	2666F	8/10/47	4/1/48		

Technical Divisions

Req. No. & Source	Material	Quantity	Exposure	Charged	Tube & Pile	Discharged	Shipped	P.T.	ih absorbed
13-4(ORNL)	Be_3N_2	35	6 mo.	2/12/47	1474F	8/10/47	--	70-C	
*13-5(ORNL)	Be_3N_2	26 pcs.	6 mo.	9/9/47	1474D	11/18/47	4/1/48	70-D	
		38 pcs.	6 mo.	9/9/47	3169D	11/18/47	--		
		30 pcs.	6 mo.	11/4/47	2374F	--	--		15
		30 pcs.	6 mo.	11/4/47	1569F	--	--		15
		19 pcs.	6 mo.	2/2/48	1569D	--	--		12
		19 pcs.	6 mo.	1/18/48	2374D	--	--		12
15-15(ANL)	LiF	19	3-4 wks	12/24/47	1569D	2/3/48	--	55-F	
		23	3-4 wks	12/24/47	2374D	1/18/48	--		
		8	3-4 wks	12/23/47	3179F	1/27/48	--		
		18	3-4 wks	12/2/47	3169F	1/27/48	--		
		8	3-4 wks	12/23/47	2682F	1/27/48	--		
		11	3-4 wks	1/27/48	3179F	2/24/48	--		
		11	3-4 wks	1/27/48	3169F	2/24/48	--		
		11	3-4 wks	1/27/48	2682F	2/24/48	--		
		15	3-4 wks	2/3/48	2082D	3/2/48	--		
		11	3-4 wks	2/24/48	2682F	3/24/48	--		
		8	3-4 wks	2/24/48	3169F	3/24/48	--		
15-16(ANL)	LiF	3	3-4 wks	2/24/48	3169F	3/24/48	--	55-F	
		11	3-4 wks	2/24/48	3179F	3/24/48	--		
*		15	3-4 wks	3/2/48	2082D	4/4/48	--		
*		11	3-4 wks	3/24/48	3179F	4/11/48	--		
*		11	3-4 wks	3/24/48	3169F	4/11/48	--		
*		11	3-4 wks	3/24/48	2682F	4/11/48	--		
*		18	3-4 wks	3/19/48	3179D	4/11/48	--		
*		11	3-4 wks	4/11/48	3179F	--	--		16
*		11	3-4 wks	4/11/48	3169F	--	--		16
*		11	3-4 wks	4/11/48	2682F	--	--		16
*		18	3-4 wks	4/11/48	3179D	--	--		23
*28-2(ORNL)	Iron	1 casing	2 mo.	2/16/48	BTHD	4/27/48	--	87-B	
*28-3(ORNL)	Iron	1 casing	2 mo.	4/27/48	BTHD	--	--	87-B	0
28-4(ORNL)	Iron	1 casing	2 mo.	--	--	--	--	87-B	
*28-5(ORNL)	Iron (Enriched)	1 casing	Indef.	4/4/48	BTHD	--	--	87-C	0
*28-6(ORNL)	Iron (Enriched)	1 casing	6 mo.	4/4/48	BTHD	--	--	87-C	0
29-5-10(ORNL)	P_2O_5	6 casing	60 dn.	--	--	--	--	96-B	
*40-Prelim.(KAPL)	Pu	2 slugs	1 wk.	3/19/48	1474D	4/4/48	5/3/48-T 148		

Technical Divisions

Req. No. & Source	Material	Quantity	Exposure	Charged	Tube & Pile	Discharged	Shipped	P.T.	ih absorbed
*40-3(KAPL)	Pu	3 slugs	2 mo.	1/18/48	2881D	3/19/48 #2) #6)	4/14/48	148	
						#5)	5/3/48-T		
40-4(KAPL)	Pu	3 slugs	4 mo.	1/18/48	3177D	--	--	148	5
*43(ORNL)	Stainless steel & monel	1 papoose	3 mo.	1/23/47	2666F	4/4/48	5/3/48-T	111	
*45(ORNL)	Gold	4 slugs	90 da.	12/23/47	2666F	4/4/48	5/3/48-T	131	
46(ANL)	Bi^{209}	1 papoose	4 mo.	12/23/47	2271F	--	--	126	0
47(ANL)	BeO	4 slugs	1-15 da.	12/21/47	3169D	1/6/48	1/14/48	127	
			1-30 da.	Has not been rec'd					
*			1-90 da.	12/23/47	2666F	4/4/48	4/14/48		
			1-180 da.	Has not been rec'd					
48(ANL)	BeO	4 slugs	1-15 da.	12/21/47	3169D	1/6/48	1/14/48	128	
			1-30 da.	Has not been rec'd					
*			1-90 da.	12/23/47	2666F	4/4/48	4/14/48		
			1-180 da.	Has not been rec'd					
49(ANL)	Graphite-U Oxide	4 slugs	1-15 da.	12/21/47	3169D	1/6/48	2/11/48	129	
			1-30 da.	Has not been rec'd					
*			1-90 da.	12/23/47	2666F	4/4/48	5/3/48-T		
			1-180 da.	Has not been rec'd					
*51(ANL)	Be	1 receptacle	2-3 mo.	1/6/48	1474D	3/19/48	5/3/48-T	133	
53(ANL)	Te	1 casing	4 mo.	1/27/48	BTHF	--	--	134	0
54(ORNL)	Cu-Be Alloy	1 slug	2 mo.	1/6/48	1474D	3/19/48	5/3/48-T	135	
55(ORNL)	Stainless Steel	4 slugs	6 mo.	2/16/48	1774D 1666D	--	--	130	1
56(ORNL)	Be-Cu Alloy	2 slugs	6 mo.	1/27/48	1368F	--	--	136	0
57(ORNL)	$CaCO_3$	3 casings	6 mo.	1/27/48	BTHF	--	--	137	0
58(ORNL)	Zinc	1 casing	6 mo.	1/27/48	BTHF	--	--	138	0
59(ORNL)	Antimony	1 casing	6 mo.	1/27/48	BTHF	--	--	139	0

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Technical Divisions

Req. No. & Source	Material	Quantity	Exposure	Charged	Tube & Pile	Discharged	Shipped	P.T.	ih absorbed
*60(ORNL)	KCl	7 casings	1-2 wks	2/16/48	BTHD	3/9/48	4/14/48	140	
*			1-1 mo.	2/16/48	BTHD	4/4/48	4/14/48		
			1-3 mo.	2/16/48	BTHD	--	--	140	0
			1-6 mo.	2/16/48	BTHD	--	--		
			3-1 yr.	2/16/48	BTHD	--	--		
61(ORNL)	Co_3O_4	1 casing	6 mo.	1/27/48	BTHF	--	--	141	0
*62(ORNL)	Al-U^{235} Stainless Be, U, Al	10 slugs	5-1 mo.	7 pcs 2/16/48 1 pc.		4 pc. 3/15/48	2 pcs. 4/14/48 2 pcs. to be shipped	145	
			5-5 mo.	4/25/48			5/3/48-T		
*63(ORNL)	Al-U^{235} Alloy	21 slugs	7-3 mo.	4/11/48	1671D	--	--	146	5
			7-6 mo.	4/25/48	2382F	--	--		
			7-12 mo.	5/10/48-T	--	--	--		
*64(ORNL)	Cu-Au Alloy	5 slugs	1-15 da.	4/11/48	2382F	4/25/48	--	142	
			1-30 da.	2/16/48	3179D	3/15/48	--		
			1-60 da.						
			1-150 da.	2/16/48	1774D				
			1-300 da.						
*65(ANL)	Li-Al Alloy	2 slugs	3-4 wks.	2/16/48	3179D	3/19/48	5/3/48-T	143	
66(ORNL)	U^{234}	2 casings	2&4 mo.	1 casing 3/9/48	BTHD	--	--	160	0
*67-76(ORNL)		Charged 2 samples of 68 and one of each of the other requests on 4/4/48.							1
*77(ANL)	Ra	1 slug	2 wks.	4/11/48	2382F	4/25/48	5/3/48-T	161	5
*78(ANL)	Ra	1 slug	2 wks.	4/11/48	2382F	4/25/48	5/3/48-T	161	
79(KAPL)	U^{235}	Preliminary work being done.							
*81(ORNL)	Zn	3 casings	1 yr.	4/25/48	DTHF	--	--	164	0
*82(ORNL)	Ni	1 casing	1 yr.	4/25/48	DTHF	--	--	165	0
*83(ORNL)	TiO_2	1 casing	6 mo.	4/25/48	DTHF	--	-	166	0
*84(ORNL)	$AgNO_3$	1 casing	1 yr.	4/25/48	DTHF	--	--	167	0
*87(ORNL)	WO_3	1 casing	6 mo.	4/25/48	DTHF	--	--	181	0

Technical Divisions

Req. No. & Source	Material	Quantity	Exposure	Charged	Tube & Pile	Discharged	Shipped	P.T.	ih absorbed
*88(ORNL)	Sn	1 casing	1 yr.	4/25/48	DTHF	--	--	181	0
*89(ORNL)	Cd	1 casing	6 mo.	4/25/48	DTHF	--	--	181	0
ANL-100	Be	5 casings	6-12 mo.	3/24/48	BTHF	--	--	176	0
ANL-101	U^{238}	1 recept'l	4-6 mo.		Slug is being canned.				
ANL-102	Cobalt	1 casing	2 wks.	5/12/48-T	--	--	--	192	
ANL-103	Rare earth Oxides	1 casing	-	--	--	--	--		
ANL-104	Gd	1 casing	--	--	--	--	--		
ANL-106	Graphite	2 casings	1 mo.	5/10/48-T	--	-	--	199	
UCRL-100	Pu	1 slug	1½-5 yrs.	5/10/48-T	--	--	--	-	
UCRL-101	Pu	1 slug	1½-5 yrs.	5/10/48-T	--	--	--		
UCRL-102	Pu	1 slug	1½-5 yrs.	5/10/48-T	--	--	--	-	
UCRL-103	Am	1 slug	2 yrs.	5/10/48-T	--	--	--	--	
UCRL-104	Pu	1 slug	1-3 yrs.	5/10/48-T	--	--	--	--	
UCRL-105	Am	1 slug	2 yrs.	5/10/48-T	--	--	--	--	

The following requests have been approved but the samples have not been received: ANL-105, ANL-107, ANL-108, ANL-109, ORNL-100, UCRL-106.

PILE ENGINEERING

Corrosion and Blistering of Slugs

Blistering of gamma extruded, lead dipped slugs continued to be serious and appeared to be getting rapidly worse at higher exposures. In consequence, all tubes containing this type of slug at exposures greater than 200 MD/t were discharged, leaving only three tubes of rolled, lead-dipped slugs available for higher exposures.

At month-end it was discovered that some of the 8-inch rolled, lead-dipped slugs, though still free of surface distortion, were quite badly warped and there was indication that one rolled, lead-dipped slug had galled in a tube being discharged after normal exposure. Irradiated slugs are being re-inspected for quantitative measurement of warp. Slugs in current production are only 4 inches long.

The irradiation of slugs charged under Production Test 105-91-P (rolled, triple dipped slugs) was completed with the discharge of eight tubes at normal product

concentration. Almost all of the 80 rolled pieces were slightly blistered and only one was moderately blistered; an abnormally large fraction (28%) of the companion extruded pieces was moderately blistered.

Corrosion of Van Stone Flanges

No evidence of corrosion was found on two sheets of 2S aluminum separated by asbestos gaskets and submerged in slowly flowing process water for a period of four months. These results indicate that corrosion of Van Stone flanges cannot be attributed to chemical concentration cells established in the vicinity of the gaskets.

Laboratory tests indicate that cold working of 2S aluminum does not affect the solution potential. In preliminary tests no effect on solution potential has resulted from anodizing the aluminum sample.

An external e.m.f. was used to increase the current flow between a Van Stone flange and an insulated nozzle by a factor of about fifty. After two months of operation the curved surface of the flange was etched but no pitting was encountered.

Seventeen newly-formed Van Stone flanges with aluminum gaskets, ten similar flanges equipped with aluminum outlet nozzles, and sixteen similar flanges with regular asbestos gaskets (controls) were all found to be in excellent condition after four to six months of operation.

The erratic nature of Van Stone flange corrosion is now attributed to the occasional formation of hair-line cracks during forming of the flange and it is believed that studies of proper forming techniques may solve the problem.

Corrosion of Vertical Thimbles

Borescopic examination of the No. 30 Vertical Rod Thimble of the F Pile showed the presence of a thick deposit of iron rust in the bottom of the thimble. This deposit apparently is several inches deep and prevents complete insertion of the rod into the thimble. It is assumed that the rust has been scraped off the rod and rod guide during repeated withdrawal from the pile. This condition, which seems to exist in a number of additional thimbles, occasions no operating inconvenience but could cause trouble if the brake mechanism on the vertical rods failed to operate during a scram.

Graphite Expansion

The carbon dioxide concentration in the D Pile atmosphere was maintained at a nominal value of 25% during the month. A progressive reduction in the consumption of carbon dioxide required to maintain this concentration is unexplained.

Removal of the cork between the pile and the concrete wall which separates the top of the pile from the discharge area permitted the top shield of the D Pile to rise 0.02 inches but did not result in any measurable movement of the top shield of the F Pile.

Measurement of Slug Axial Temperature (Production Test No. 105-80-P)

The thermocouple slug assembly in Tube 2679-F was discharged on April 10 after the metal had reached an exposure of about twice normal. The slug containing the thermocouple was slightly blistered.

Can Opener Facility

The can opener facility has been used to open seventeen receptacle slugs and five alpha-experiment slugs. The operation of the equipment is very satisfactory and no further development work is anticipated. In one instance difficulty was encountered in retrieving the sample from an opened alpha-experiment slug but a satisfactory procedure was developed.

Segmented Discharge

At month-end the proposal was made that hot slugs left in the tube should be returned to the pile by a steel tape operated from the front elevator instead of by a complicated, remotely controlled, rear-face charging machine. The tape would be pushed through the tube and a "gripper slug" would be fastened to the protruding end of the tape just before discharging the tube. This proposal has met with a great deal of favor and is believed to have rendered obsolete previous work on rear-face charging devices.

Development of New Control Rods

Measurements of the thermal conductivity of the flame-sprayed boron coating show that the present 0.08-inch coating thickness can be doubled without the development of excessive temperatures.

300 AREA PLANT ASSISTANCE

Uranium Melting and Casting

Investigation of the minimum energy input required to melt and pour a 550 pound uranium scrap charge composed of a 50:50 blend of briquetted turnings and solid scrap indicated that 108 KWH was the lower limit. It was planned to determine whether carbon pickup by the molten metal could be reduced by melting at this lower input instead of a nominal 115 KWH. However, when the decision was reached to remelt all gamma extruded rod and triple-dipped 8" slugs on hand in the area, the crucible charges were changed to all solid scrap and this investigation was temporarily suspended because solid metal charges require less energy to reach the pouring temperature 1315°C (2400°F). A similar investigation has been started on these all solid scrap crucible charges.

The trial of a graphite-water slurry as a substitute mold wash for Type C-3 carbonaceous cement resulted in a large amount of surface porosity on the cast billets. Zirconite mold wash, now on order, remains to be tried.

Density determinations reported by the analytical laboratories indicate that the oxidized rough surface layer ("bark") on billet egg samples appreciably affects this determination. With normal samples, the bark caused an error of as much as -0.17 gm/cc in this determination; with samples having unusually rough surfaces, the bark caused the reported density to be as much as 0.26 gm/cc too low. Since true metal density is more significant than billet density(as reported in the analytical summaries to date), consideration is being given to means for revising sample preparation accordingly.

Results of attempts by the Pile Physics Section to radiograph 21" long type B uranium billets using an irradiated 8" canned slug as a source of gamma rays indicate that this method is not feasible for routine inspection of billets, but that possibly satisfactory experimental radiographs might be made with an exposure of 3 weeks. In a letter dated March 31 from the AEC office of New York Directed Operations, it was reported that the Picatinny Arsenal was unable successfully to radiograph any of the 4-1/4" diameter Brookhaven billets with a 22 MEV Allis Chalmers Betatron as a source.

R. D. McGreal and R. Teats visited the Electro Metallurgical Company at Niagara Falls on April 27 and 28 to discuss and inspect their uranium melting and casting facilities.

Alpha Phase Rolling of Uranium

Rolling of uranium billets in the high alpha phase was continued during the month at Lockport and at Fort Wayne under the supervision of T. S. Jones, R. D. McGreal, and R. Teats from the 300 Area Plant Assistance Groups. The schedule of billets rolled during the month is as follows:

Approximate Quantity (Tons)	Dates Rolled	Site	Nominal Rod Diameter (Inches)
40	3/31-4/2	Lockport	1.5
16	4/3-4/5	Fort Wayne	1.5
50	4/10-4/14	Fort Wayne	1.5
30	4/17-4/20	Fort Wayne	1.5
60	4/19-4/22	Lockport	1.45

During the last 60 ton rolling at Lockport, 22 rods were finished to a nominal 1-7/16" diameter. Machining cleanup studies on these rods will determine the feasibility of using this smaller diameter to increase further the rod-to-slug yield.

On April 2, rolling of 12 uranium billets in the high alpha phase was tried at the Rustless Iron and Steel Division of Armco, at Baltimore, Md. These trials were arranged by the AEC, and were witnessed by R. J. Schier of 300 Technical. These billets were fabricated by guide round rolling, and reduction to 1-1/2" or 1-7/16" nominal diameter was achieved in the following 14 passes: 10 diamond, 1 flatting, 1 edging, 1 oval, and 1 round. A special attempt was made to finish these rods at a higher temperature than had been used to that time, and the finishing temperature was estimated to be 1150°F to 1200°F.

Although the surface quality of these Baltimore rods was at least equal to that being obtained in 21-24 pass rolling at Lockport and Fort Wayne, the structure of four typical rods contained peripheral zones of very coarse grains, due possibly to the critical strain induced in the light reduction from the oval to the round pass at this higher temperature. In view of this strucural uncertainty with maximum alpha temperatures, production rolling at Lockport and Fort Wayne was lowered to 1000°F billet preheat and 1050°F rod finishing.

Four 28" lengths of 1.75" diameter gamma extruded rod were rolled to nominal 1.5" diameter rods at Fort Wayne on April 12. Two of these rods were preheated to 400°F and two to 650°F, and reduction at these low temperatures proceeded quite satisfactorily. This combination extrusion-rolling process has been termed "duplexing." Based on the Metallurgy Laboratory's findings that these duplexed rod sections after annealing had a grain size similar to that of high alpha rolled metal, and therefore might reasonably be expected to compare favorably in the piles, a program has been initiated to duplex about 9 tons of billets to evaluate the process and determine the pile behavior of slugs canned from this metal.

T. S. Jones attended an AEC meeting with Rustless Steel (Baltimore) representatives in New York City on April 16. Rustless declined to contract for the production rolling of uranium for Hanford. R. Teats attended a similar meeting there on April 26 with representatives of the Simonds Saw and Steel Co. (Lockport). Simonds indicated that they might be willing to contract for this Hanford work, rolling uranium about one week each month.

R. D. McGreal and R. Teats visited M.I.T. on April 29 to discuss findings to date in the alpha phase rolling and extrusion experiments being performed there.

Alpha Phase Extrusion of Uranium

On April 9, alpha phase extrusion of three bare 4-1/4" x 13" uranium billets was attempted with the 1000-ton 300 Area press using a 3-hole extrusion die. This die was a sheer-face type similar to the standard single hole die used for gamma extrusion, but contained three 1.460" diameter holes spaced 120° apart on the face. Lead-in cones were not used.

These three bare billets were preheated electrically in the rotary billet furnace in an argon atmosphere. With a preheat temperature of 1150°F, only 1/4" and 3/4" of rod was extruded when two of the billets were tried. The third billet was tried with a preheat temperature of 1180°F, but even at this higher temperature only 2-1/2" of rod was extruded at 1000 tons pressure.

Although the extrusion ratio obtained with this die (3.4:1) was only one-half the 7:1 used heretofore with bare billets in 300 Area trials, friction between the billet and the container and the die was prohibitive. Another trial with the 300 Area press with bare billets will be made using a specially honed and burnished container, and a 3-hole bell-mouth die to determine whether the frictional forces can be reduced sufficiently to permit bare billet extrusion within the 1000-ton capacity of this press.

Telephone conversations were held with Revere Copper and Brass at Detroit, relative to their making two alpha extrusion runs for Hanford in their 200-ton press: (1) a 30-billet exploratory run to determine conditions for (2) a carload production run. They can make the 30-billet run with lead-bath billet preheating as soon as the required special container and dies can be fabricated. However, no furnace subsitute for the lead bath is now available. Their plans and schedule for this work are to be detailed to Hanford by letter.

Slug Machining

Machining cleanup studies were made on rods rolled to 1-1/2" diameter at Fort Wayne, and on 1-1/2" and 1-7/16" diameter rods experimentally rolled by Rustless Iron and Steel at Baltimore. The following conclusions were drawn:

(1) Rods rolled at Fort Wayne tended to run a few thousandths greater than the nominal diameter; those rolled at Baltimore were a few thousandths smaller than nominal.

(2) The 1-7/16" Baltimore rods cleaned up to greater diameters than would have been expected from the 1-1/2" rods rolled at Fort Waynne. In both cases the principal cause of failure to clean up to standard diameter was the presence of rod surface defects.

(3) Rods of 1-7/16" diameter having surface quality comparable to the two examined may be expected to yield approximately 95% satisfactorily cleaned slugs.

A rod rolled at Fort Wayne from a billet bearing a 3" pipe at the top was followed through machining to determine the effect of such billet defects upon rod quality. It was found that the billet pipe was extended during rolling, affecting the first seven slugs machined from this end even after approximately 3 inches had been cropped from the rod. The defects appearing in the slugs ranged from a pipe approximately 5/16" in diameter in the first slug cut, to cracks and laminations in the seventh slug.

Following the issuance of an interim report of Production Test 313-98-M, "Evaluation of Cutting Oils," the sample of Cim-Cool soluble oil which had been ordered earlier for evaluation in this same test was received. Chemical analysis of this oil, and of the powdered water conditioner recommended by the manufacturer for use with it, showed the concentrated oil to contain 0.04% boron (400 ppm) while the concentrated conditioner contained 9.8% boron. A 1:10 emulsion of the oil in conditioned water was found to contain 0.13% (1300 ppm) boron. Accordingly, it was concluded that the use of Cim-Cool in uranium slug machining would be impractical and that its further evaluation should be dropped. A final report on PT 313-98-M is being issued.

To compare the quality of rods produced by various rolling mills from billets supplied by various sources, arrangements have been made to keep an accurate account of the combined "natural" scrap (machine scrap rejected because of rod conditions) and total pickle rejects on all lots of rolled material for a thirty-day period. To date it has been possible to make the following comparisons:

(1) Rods rolled at Lockport from Electromet billets are somewhat superior to those rolled from Mallinckrodt billets. To produce one acceptable

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is missing

yield of acceptable cans might be proportionately increased. The possibility that the lower price of these commercial tolerance cans may permit their use with favorable economy in comparison to the specially fabricated cans now purchased for this purpose is to be determined. Production Test 313-102-M, "Evaluation of Four-Inch Commercial Tolerance Cans," covering a study of the quality of slugs made with these acceptable cans, is being issued.

Several lots of rolled uranium canned during the month have included slugs bearing very fine longitudinal pores, as mentioned above under "Slug Machining." Following pickle, slugs bearing such pores tarnish with great rapidity and when carried into the lead-dip bath become coated with a grainy deposit of high melting alloy whose spectrochemical analysis indicates it to be principally composed of uranium, aluminum, and silicon with smaller amounts of lead present. Such deposits interfere with insertion of the slug into the can, resulting in non-seat rejects. The evidence available to date points to the probability of inclusions in the original billet as being responsible for this defective slug condition.

Slug Inspection and Testing

A study covering the Frost Test and accessory equipment was completed with the preparation of eight primary standard void-bearing slugs and sixteen pilot slugs, the latter for use in regular production. A writeup is being prepared covering the principles of operation and calibration of this equipment.

Studies on the effect of lead in the bonding layer of lead-dipped slugs upon overall slug quality have been continued with no conclusive results yet obtained.

Special Request Work

The following Special Request pieces were canned, bubble tested, and disposed of as indicated below:

Special Request Number	Number of Pieces	Treatment	Label	Disposition
67	1	Crimp-close both ends	R-67-11-1	100-D
68	2	"	(R-68-13-1 (R-68-13-2	"
69	1	"	R-69-12-1	"
70	1	"	R-70-10-1	"
71	1	"	R-71-1-1	"
72	1	"	R-72-5-1	"
73	1	"	R-73-7-1	"
74	1	"	R-74-9-1	"
75	1	"	R-75-2-1	"
76	1	"	R-76-8-1	"
77	1	Unbonded can, weld	R-77	100-F
78		"	R-78	"
64	1	Crimp close	R-64-CuAu 4	"

Technical Divisions

Special Request Number	Number of Pieces	Treatment	Label	Disposition
63	21	Unbonded can with Pb discs	R-63-1 thru 21	Nos. 1,2,3,4,5,16,17 to 100-D; 6,7,8,9,10, 18 to 100-F; 10,11,12, 20,21 to 100-D; 13,14 15,19-Leakers, returned to Oak Ridge
62	1	Unbonded	R-62-Al-U-2	100-F
UCRL-100	1	"	C-104	100-D
UCRL-101	1	"	C-100	"
UCRL-102	1	"	C-101	"
UCRL-103	1	"	C-102	"
UCRL 104	1	"	C-105	"
UCRL-105	1	"	C-103	"

Miscellaneous

A new revised Process writeup, covering the canning, slug recovery, and chip recovery operations has been issued, to become effective May 1. This Process includes the necessary changes applicable to the lead-dip method of canning slugs.

Work was begun on the preparation of 70 alpha rolled receptacle slugs which are to be canned by the lead-dip process for use in long-term pile exposure where blistering would preclude the use of receptacle slugs made from gamma extruded metal.

A change has been effected in the design of special slugs used for attachment to "papoose" capsules. The new design provides for the use of standard four-inch alpha rolled slugs to be canned by the lead-dip process, using pre-drilled and threaded caps of suitable thickness. This will reduce considerably the expense and labor connected with the preparation of these slugs. Arrangements have been made to can a number of these special "papoose" slugs using the new design.

METALLURGY LABORATORY

Alpha Rolled Uranium

Samples taken from the second, third, sixth, and seventh carloads of rods alpha rolled at Fort Wayne were examined. Although the billets for the third, sixth, and seventh carloads were rolled at somewhat higher temperatures than previous runs, all the rod samples examined showed a variation in structure, either from lead to butt end or from rod to rod. There was a cold worked structure in the butt end of all the rods examined, and in some rods the cold worked structure extended the full length of the rod.

Sections taken from the cold worked portions of these rods were laboratory annealed for one-half hour at temperatures of 475°C, 500°C, 525°C, and 550°C with the following results:

Temperature	Average Grain Size	Remarks
475°C (887°F)	0.015 mm.	Some recrystallization; unstable and enlongated grains observed.
500°C (932°F)	0.020 mm.	Complete recrystallization; unstable grains observed
525°C (977°F)	0.025 mm.	Complete recrystallization; more stable grains observed.
550°C (1022°F)	0.030 mm.	Same as 525°C anneal.

Samples taken from six rods representative of the first production lot rolled at Lockport, N.Y. were examined. Three of these six rods showed completely recrystallized but unstable structure, two of the rods showed a cold worked structure throughout, and the other rod showed a variation in structure from the lead to the butt end. Four slugs made from portions of these rods which revealed a completely cold-worked structure were lead-dip canned and examined. The structure after the canning operation was completely recrystallized.

Sections taken from the lead and butt ends and from the middle portion of four rods alpha rolled by Rustless Iron and Steel at Baltimore, Md., on April 2 were examined macro- and microscopically. These rods were made with a special effort to finish rolling at temperatures above the recrystallization range, and thereby obviate annealing. Examination of the structures obtained showed very coarse grains in different amounts depending upon the section location in the rod. Some of coarse grain areas were confined to small areas near the surface of the rod, while others extended all the way through the cross-section of the rod. In general, the larger areas of coarse grain material were found toward the butt end of the rod.

Examination was made of the four short rods which had been gamma extruded to a nominal 1.75" diameter in the 300 Area and then rolled (at 400-650°F) to a nominal 1.5" diameter by Joslyn at Fort Wayne. The structure of these "duplexed" rods, as received, showed the effect of alpha rolling by considerable distortion and very heavy twinning in the large grains obtained from gamma extrusion. Samples removed from these rods were heat treated for one-half hour at temperatures of 500°C (932°F), 525°C (977°F), 550°C (1022°F), 575°C (1067°F) and 600°C (1112°F). Examination indicated that the samples heated to 500°C and 525°C were almost completely (95%) recrystallized, while those heated at 550°C and 575°C were completely recrystallized. The structure observed in samples heated at 600°C did not appear to be normal, and check observations are not yet complete. Two slugs made from unannealed rods were canned by the lead-dip process. The structure of samples removed from these slugs, except for a few scattered areas, showed complete recrystallization.

Schenectady x-ray data on alpha rolled uranium indicates that the (110) plane of uranium tends to be aligned perpendicular to the rolling direction. The normals to the (110) plane were reported to lie within 30 degrees of the rolling direction. Assuming all the (110) planes to be perpendicular to the rolling direction, and using the lattice expansion coefficients in the Project

Handbook, the linear expansion coefficient of alpha rolled uranium parallel to the rolling direction should be 18×10^{-6}. This value checks reasonably well with the values of 15×10^{-6} to 17×10^{-6} obtained in this laboratory. Samples of the "duplexed" rod are being sent to Schenectady for orientation study.

A report on the examination of alpha rolled uranium rods produced in the first trial by the Simonds Saw and Steel Co., at Lockport, N.Y. was issued as Document HW-9429, dated April 7, 1948.

Examination of Irradiated Uranium

A blower was received and assembly of the macro-etching hoods was completed. This ventilation equipment has been added for more positive control of the contamination resulting from the etching operation.

Attempts to vary the behavior of the etchant previously used by additions of H_2O_2 have been successful, due possibly to the rapid destruction of the H_2O_2 in the hot solutions. Re-etching of the first slug wafers with the same solution as previously used will be tried in order to check the results obtained originally. Other electrolytic macro-etching techniques are being studied for possible future use.

An interim report on Problem Assignment 3-M, which covers the examination of irradiated uranium, was issued as Document HW-9430, dated April 7, 1948.

Preliminary equipment has been installed in the fan room of Bldg. 189 in the 100-F Area in preparation for mock-up studies on cell design and remote control apparatus for hot metallurgical studies. Designs for the metallographic sectioning and polishing box are near completion.

Dilatometric Studies on Uranium

Work is progressing satisfactorily on the automatic recording system and the temperature program controller for the dilatometer.

Experimental Equipment

An order has been placed for the purchase of a Zeiss Neophot Metallograph obtainable by the AEC from war surplus. This instrument should serve as an excellent companion to the present B & L Research Metallograph.

Boron Stainless Steel

Examination of the forged and heat treated specimens was completed and showed carbide precipitation at the grain boundaries. Some grain growth had taken place in the austenite. Analysis of the structure shows that the boron has no effect in inhibiting the formation of a carbide precipitate at the grain boundaries when the piece is cooled slowly through the critical zone. Because the carbon content (0.13%) of this steel is not extremely low, good welding will be difficult and every precaution should be taken when the welds are being made.

Redox Corrosion Tests

Samples of monel, nickel, inconel, strap iron, and boiler plate, under consideration for storage tank construction, have been set up in partial and total static immersion tests in IAW (Neutralized) solutions. Since NH_4NO_3 and $Al(NO_3)_3$ are both under consideration for use in the Redox process, IAW solutions have been prepared from both these salts and tests are being conducted in duplicate.

Static immersion of stainless steels T-304, T-316, T-347, and T-309 in IAF has resulted in a slightly corroded surface after six months immersion. Alloy No. 372 in IAX, IBS, and IBP solutions, Worthite in IBP and IBS solutions, and LaBour in IBX and IBS solutions, showed no significant change after 1.3 months immersion.

The laboratory tables to be used for the dynamic corrosion tests in Redox solutions arrived late in the month, and are now being installed in Rooms 6 and 4A of the Technical Bldg. (3706). Routine inspection of static corrosion tests is continuing. These tests also have been moved to Room 6 in an effort to concentrate all corrosion work in one part of the building.

Miscellaneous

Samples of 2S aluminum process tubing (72S clad) were received from the Pile Physics Section. One of the tubes was material used in the present piles, and one was taken from the order of new tubing. Although this new tubing was presumably made to the same specifications as the old, tests in the 100 Areas have shown that the new tubing is approximately 3.6% lighter than the old. Examination of the microstructure has shown that there is no difference in porosity which could account for this density difference. The one microstructure variation between the tubes is the amount of inclusions between the 2S and the 72S layers. An investigation is underway to determine what these inclusions are, and the amount of variation that exists between tubes.

Some calculations on stresses in the top biological shields of the piles are being made at the request of the Pile Engineering Section to complement their calculations. The object is to be able to predict if and when failure might occur in these shields due to pile expansion. Calculations show that the top shield will support itself if lifted along a centerline running from the front to the rear face. Stress computations for the condition where the shield is supported along the near-side to far-side centerline are now in progress.

ANALYTICAL LABORATORIES

Work Volume Statistics

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

Technical Divisions

	March		April	
	Samples	Determinations	Samples	Determinations
Routine Control, 200	1520	2415	1628	2563
Routine Control, 300	893	3285	625	3366
Water Control 100, 700	9853	17488	9554	16955
Redox Control	1342	4020	1799	6675
Process Reagents	783	1404	852	1554
Essential Materials	154	591	79	314
Special Samples	2160	3259	2349	3492
Totals	16705	32462	16886	34919

200 Area Process Control

Routine measurements of the geometry of the methane proportional alpha counting instruments (accepted value 50.50%) in the 200 Area Control Laboratories were as follows:

Laboratory	Ave. Geometry (%)	No. Tests
B & T Plant	50.49	106
Isolation Bldg.	50.54	101

The precision of the analytical results on the canyon starting solution (8-1-MR), the Isolation Bldg. starting solution (P-1), and the final product solution (AT) may be summarized as follows:

	March		April	
Sample	Precision (±%)	No. Out of Control	Precision (±%)	No. Out of Control
8-1-MR	1.39	16	1.24	15*
P-1	1.68	1	1.62	2
AT	1.35	4	1.54	7

* Ten of the fifteen results out of control were on the low side; i.e., insufficient spread between disc values to satisfy statistical limits.

The mechanics of calculating precision limits have been changed. Instead of using the last 100 assays for the overall precision determination, the results for the past ten weeks will be used. This allows fluctuation in trends to be noticed at an earlier date. In addition, the precision is calculated on each week's set of results, which is of greater value in notifying the laboratory of difficulties. As a result, the practice of including ranges of a month's AT sample figures will be discontinued.

The standard iron solution used in the Isolation Laboratory to check the chemical titration of plutonium was analyzed a total of 146 times during the month. There were 73, 38 and 35 results inside ± 1%, ± 2% and outside ± 2% of the assay value, respectively. The average precision for duplicate titrations was ± 2.71% as compared to ± 2.16% for March. The apparent decrease in precision obtained on this synthetic solution results from the

increased numbers of new personnel being trained on these analyses. A summary of the results follow:

Assay Value	Group Ave.	% Diff.	No. Determinations	Precision (±%) Single	Duplicate
11.51	11.64	+1.1	30	3.39	2.39
13.57	13.64	+0.5	26	3.70	2.62
10.18	10.25	+0.7	28	3.75	2.65
12.68	12.69	0.0	30	4.38	3.10
14.84	14.84	0.0	32	3.95	2.79

The synthetic 8-1-MR was analyzed nineteen times during the month. The standard precipitation procedure (CA-2a) was used and the present recovery based on 2.077×10^6 c/m/ml calculated. The results are tabulated:

Month	Ave. Results ($\times 10^6$)	No. Assays	% Recovery
March	2.033	15	97.9
April	2.036	19	98.0

The analytical procedure for determining Pu in the Sump sample in the Isolation Bldg. was revised. The fuming-oxidation-reduction procedure was replaced with a single lanthanum precipitation method using SO_2 as a reductant. A saving in both time and space was effected in addition to an increase in accuracy.

300 Area and Essential Material Control

During the month analyses of lead "dummy" slugs and magnesium oxide were added to the list of Essential Materials routinely controlled.

Adaptation of the direct current arc for the spectrographic analysis of stainless steel has been investigated. Using this technique, Cr, Co, Mo, and Ti may now be determined with an accuracy of better than 2%. This work is being continued to include Ni and Mn.

A series of uranium billet samples were tested to determine the effect of the outer surface, or "bark," on the density of the metal. The density of the interior metal is significantly higher than that of the sample as a whole.

Graphite Analysis

A tentative procedure was developed for the determination of rare earth elements in graphite. Using this procedure, the bombarded sample will be wet ashed with perchloric acid. The rare earths will then be separated and determined by radio-chemical techniques.

Redox Process Control

Operation of the Redox Control Laboratories proceeded without incident.

Technical Divisions

At month-end 126 personnel were assigned to these laboratories as follows: 73 in Building 3706, 53 in Building 222-T, (200 W Area), with an additional 28 being trained for this work in the 100 Areas.

Analytical Development - Redox

The volumetric method for the determination of hydrazine in aqueous phase Redox solutions was successfully adapted to the analysis of hexone phase samples. A spectrophotometric method for the determination of hydrazine in Redox solutions using p-dimethylaminobenzaldehyde is being studied. Preliminary results indicate that this procedure will be suitable for routine analysis in the range of from 2 to 20 micrograms of hydrazine dinitrate.

To date, study of anhydrous systems has not resulted in a suitable method for the determination of nitric acid in Redox solutions. The end point for these titrations is not satisfactory. Both the chloranil-hydrochloranil and the tungsten - tungsten-oxide electrodes failed to indicate a suitable break in potential. Most of the common acid-base indicators have been tried in this system with none of them giving a satisfactory indication of the end point.

Further investigation of the KF procedure for the determination of nitric acid showed that solutions of the reagent deteriorated on standing. By using a fluosilicate-free reagent and adding it as a solid, the results obtained by this method are quite satisfactory.

A study of the effect of temperature on the change of pH at the end point of the oxalate method for the determination of nitric acid indicates a definite improvement of the break at reduced temperatures.

Preliminary investigation of the modified Carl Fischer reagent for the determination of water in hexone phase Redox solutions gave promising results. While the end point obtained by adding reagent to the sample is not distinct, a back titration with a standard solution of water in an inert solvent gives a sharp potentiometric end point with platinum-tungsten electrodes. It was noted that during the titrations a large amount of brown precipitate was formed. This precipitate was analyzed for hexone and found to be free of this compound. The pyridine available at the present time has too large a blank to be used successfully, but further work will be done when a suitable grade of pyridine is obtained.

The adaptation of a bromometric titration of aluminum quinolate for the determination of aluminum on a micro scale is being studied. Due to the mechanical difficulty of centrifuging the aluminum quinolate, a preliminary separation of the aluminum from the uranium by means of the ammonium carbonate-ammonium hydroxide precipitation is being investigated.

Investigation of the ZPA method for the determination of mixtures of Pu(III) and Pu(IV) was continued. A Pu(III) stock solution was prepared and approximately equal amounts of Pu(III) and Pu(IV) were mixed together and analyzed by the ZPA method. Recoveries of about 98% with standard deviations of about 1.2% were obtained. During this investigation it was noted that the Pu(IV)

was unstable in the above mixtures, being reduced to Pu(III) on standing.

Samples were also analyzed in which both high and low ratios of Pu(IV) and Pu(III) were present. In general, it was found that samples containing small amounts of Pu(IV) in the presence of large amounts of Pu(III) were successfully analyzed by this method. Samples containing small amounts of Pu(III) in the presence of large amounts of Pu(IV) gave high recoveries of the Pu(III) and low recoveries of the Pu(IV). Since the present forseeable use of this method is in the IBP solution, which should fall in the first category, i.e., small amounts of Pu(IV) in the presence of large amounts of Pu(III), this effect may not be serious.

The work of calibrating the X-ray Photometer with standard UNH samples was interrupted when it was found that the response of the instrument varied from day to day. The instrument is now being modified to minimize this drift.

An extensive study indicates that trace amounts of UNH may be successfully determined by spectrographic means. The preparation of suitable standards for use in such a procedure is now in progress.

Special Hazards Control

A working model of a panel board to be used in the micro-volumetric determination of UNH has been completed. This apparatus has been delivered to the Bldg. 3706 Redox control laboratory for testing.

The design of decontamination sinks for use in Bldg. 3706 has been started. These units will be built into a 48" Hanford stainless steel hood and will include a divided sink and a drying rack, each 24" x 30". They will serve as prototypes for larger, more advanced units to be built at a later date.

The decontamination procedures used in the T & B Plant Control Laboratory (222-B) were reviewed in accordance with the Special Hazard Incident #72 recommendation. No practical revisions have been suggested.

In Incident Investigation #75, it was suggested that a shoe monitoring instrument be placed on the floor of the hallway of Bldg. 222-B. Personnel would then be required to walk over it and thus survey their shoes. While electronic equipment is available, a question arose as to the probable tripping hazard of such an instrument. The possibility of placing a stationary G. M. Probe in the hallway near Room 7 is being considered.

STATISTICAL STUDIES

Graphite Quality

The Pile Physics Section requested an analysis to determine whether differences in graphite resulted from the use of different heat treatment furnaces. An analysis of covariance was required to remove the effects of the upward trend in graphite quality. No significant quality differences were found due to the 35 furnaces represented. At the suggestion of the Pile Physics Section, an analysis of variance was run between lots and heat fractions. There were

questionable quality differences due to both effects.

No significant correlations were found to exist between the average dih of graphite bars, the average reported boron content, the average center of bar temperature, or three other processing variables on seven CS purified graphite heats for which complete processing information was available. Additional information on subsequent heats is being requested from the vendor by the Pile Physics Section.

Uranium Rod Machining

Assistance was given the Bldg. 313 Plant Assistance Group in analyzing data on the depth of cut necessary to give a flawless surface on machined alpha rolled uranium rods.

Effect of Operators on Canning Yield

A study of the statistical control charts established last January in the Metal Fabrication Area indicated approximately 15% difference in average weekly yield of Class III four-inch slugs which coincided with the rotation of operating crews. To check this observation further, an analysis of variance was performed on the total rejects for the period of March 22 to April 16, 1948. Each crew was consistent from day to day and between the G and H lines, but a highly significant difference in yield existed between crews. These results were brought to the attention of the P Division. It now appears from the control charts that the difference between crews has been reduced. The non-seat rejects have been materially reduced by the elimination of crew differences. However, the charts indicate that other factors are still adversely affecting non-seats. Further chart study is in progress in an attempt to find causes of these rejects.

Slug Blistering

A plan was prepared for the pile loading of slugs fabricated under Production Test 314-53-M to study alpha extruded and alpha rolled slugs from straightened and unstraightened rods.

At the request of the Bldg. 314 Plant Assistance Group and the Metallurgy Laboratory, the sample size was recommended for an experiment to study the blistering tendency of slugs prepared from gamma extruded rods of four different oversize diameters, rolled to normal rod diameter (this metal is termed "duplexed").

Plateau Studies of Mica Window Tubes

Data submitted by the Instrument Division pertaining to five consecutive plateaus on the same mica window tube revealed significant differences between plateaus, but no significant difference between the six points on the plateau. The experimental error term checked very closely with the expected counting error calculated from the Poisson probability distribution, indicating no

significant interaction between the five consecutive plateaus and the six points on each plateau. This means that the entire counting level changed with consecutive plateau determinations, but that the slope of the plateau did not change. Further data are to be submitted on other tubes. A sequential testing program is being designed to distinguish between standard and sub-standard mica window tubes with a minimum of testing.

Analytical Laboratory Precision

The precision of the analysis for lead in samples from the 300 Area canning pots was computed for the Analytical Section. The precisions from 117 pairs of duplicate results were:

Average Lead Content	Absolute Precision	Relative Precision
0.55%	± 0.06%	± 11%
0.08%	± 0.03%	± 35%

The within-chemist precision obtained above failed to account for the erratic results observed in the lead analyses of the Al-Si canning baths. An experiment was designed to study the between-chemist and the plant sampling errors. The plant sampling errors were not excessive, but the between-chemist error was large.

The following within-chemist precisions for duplicate analyses of impurities in "B" billets were estimated:

Impurity	No. of Analyses	Precision for Duplicates (ppm)
Iron	101	± 7.8
Silicon	98	± 21.6
Nitrogen	101	± 18.1
Carbon	24	± 50.8
Hydrogen	24	± 3.9

Studies of duplicate Redox samples taken from the F-4 tank indicate that the between-chemist and plant sampling errors are frequently large compared to the within-chemist precision.

During late April the 8-1-MR and AT analyses became less precise than expected from previous experience. The P-1 analysis remained in a state of statistical control. A discussion of 8-1-MR, P-1, and AT analyses precisions was held with 200 Area representatives of the Analytical Section. A program for the routine reporting of precision information was devised.

Distribution of UHN Between Hexone and Aqueous Phases

A regression analysis (linear correlation coefficient of +0.9889) was made for the Chemical Development Section for the relationship between the ratio UNH to non-UNH in the hexone phase and in the aqueous phase. The data consisted of 18 pairs of aqueous and hexone ratios.

Blood Count Data

Non-orthogonal analyses of variance between ages and months for the red blood count, white blood count, hemoglobin, neutrophils and lymphocytes has been completed for the pre-employment examination of males. The red blood count, white blood count, and hemoglobin are completed for the females.

Correlations between white blood counts versus lymphocytes and neutrophils for males and females for both re-employment and subsequent data from various operating buildings.

Analyses of variance and t-tests are nearing completion between initial and subsequent blood analyses in the various operating buildings.

A conference was held with Dr. P. A. Fuqua of the Medical Division and Dr. S. T. Cantril (consultant) relative to this blood count study.

LIBRARY AND FILES

General

C. G. Stevenson attended an AEC conference of project site librarians at Brookhaven National Laboratory on April 26-28. Library problems of mutual interest to all sites were discussed, and the operation of the library and files units at Brookhaven were observed.

E. K. Yost, formerly with the Statistics Group, was transferred to the Information Group and will assume responsibility for development of an Office Services unit. Part of this work will be mail and document distribution within the 300 Area, responsibility for which transferred from the Accounting Department to Technical on April 5.

Plant Library

Work on the acquisition, cataloging, and circulation of books proceeded on a routine basis.

The Library's periodical holdings were increased by the receipt of two substantial shipments of bound periodicals from the book bindery. Assembling was completed on the preparation of the 1947 periodicals for binding, but many of the early issues are missing and will have to be located through dealers. Receipt of two standard library card catalogs, and two library trucks, has greatly facilitated Library operations.

Following the AEC conference of librarians held in Washington, D.C. last February, a decision was reached to inaugurate a double charge-out system for all books and Library reports. This necessitated the typing of an additional book card for the entire book collection. The work was completed this month, the cards inserted in the respective books, and the system set up. The use of this double charge-out system will greatly tighten control of the book collection, and will enable the Library to supply instantly the titles of all books which an individual has out.

Technical Divisions

A Technical Abstracter was added to the Group and has been assigned the responsibility of organizing the indexing, on a current basis, of the technical reports issued on site. Work was substantially completed on an expansion of sections of CA-1927, in order to supply a more adequate number of subject headings for use in indexing reports on Redox development. The final draft of this expansion will be forwarded to the AEC for possible inclusion in future revisions of CA-1927.

In furtherance of the policy of handling all unclassified reports through the Library, the MDDC reports from the 300 Area Classified Files and from the 700 Area Classified Files were consolidated into a single file in the Library. Outstanding reports not in active use have been called in; the procedures for handling the reports have been simplified and streamlined; the majority of missing MDDC titles have been received from the AEC at Oak Ridge and processed for circulation; and arrangements have been completed to return to the AEC a backlog of excess copies. In the future all MDDC reports will be charged out for a two-week interval and then followed up by overdue notices as are the Library's books.

Copies of the Library's new publication "The Information Bulletin" were printed, assembled, and mailed out to individuals on a distribution list developed by circularizing the interested Divisions. This issue contained all new titles added to the Library during January, February and March, and used as an insert a list of selected readings on nuclear energy supplied through the courtesy of the Information and Publications Division of Brookhaven National Laboratory. The publication is to be continued on a monthly basis and will include, besides the new books added to the Library, and the reviews of current literature on nuclear energy, a list of all unclassified reports received.

Library statistics were as follows:

	March	April
Number of books on order received	272	373
Number of books fully cataloged	413	244
Number of periodicals processed but not fully cataloged	326	217
Pamphlets added to pamphlet file	109	62
Miscellaneous material received, processed and routed (includes maps, photostats, patents, etc.)	43	61
Books and periodicals circulated	622	659
Reference services rendered	347	504

Technical Divisions

The present book collection is as follows:

	Main Library	W-10 Branch	Total
Number of books	2144	728	2872
Number of bound periodicals	1401	80	1481

300 Area Classified Files

Work on the receipt, issuance, and routing of documents proceeded routinely. Plans were developed for the consolidation of all Research and Development reports received from off-site into a single file in the 300 Area Classified Files. This will work effectively with the AEC index to these reports, which is being maintained on a current basis only in the 300 Area.

The policy of distributing abstracts rather than positively routing off-site reports received was extended this month to include all Research and Development Reports. A distribution list was developed by circularizing the interested Divisions, and following this a supply of two AEC publications was mailed out: (1) The "Abstracts of Research and Development Reports," and (2) a bi-weekly compilation by title only of all Standard Distribution List issuances from the various sites entitled "United States Atomic Energy Commission Research and Development Reports." This list will be extended as the situation seems to warrant.

Assistance was supplied the Security office in the completion of the primary inventory of classified documents as required by the AEC. The responsibility for continued periodic inventories of classified documents has been assigned by the AEC to the Information Group, which is responsible for setting up the machinery to carry forward the primary inventory. In connection with the inventory work was begun on the first reporting, covering March and April, of Technical Reports as required by the Central Document Control Office in Washington, D.C. This report, covering Technical Reports distributed in accordance with the AEC Standard Distribution Lists, will make available to Washington from each site on a monthly basis all Technical Reports received, distributed, secondarily reproduced, revised, or deleted, reclassified or declassified, or destroyed.

File document statistics were as follows:

	March	April
Documents routed	3700	3215
Documents issued	973	747
Reference services rendered	2050	1385

The drop in document routing volume was due to discontinuance of positive routing of both MDDC reports and off-site Research and Development reports. Reference services decreased, due principally to the MDDC catalog having been moved into the Library.

SERVICE DIVISIONS

APRIL, 1948

EMPLOYEE AND COMMUNITY RELATIONS DIVISION

ORGANIZATION AND PERSONNEL

Employment and Investigation

Effective April 22, a clerk (investigator) was added to the Procurement Group to replace an investigator who had tendered his resignation, effective April 30.

Two stenographers were added to the Procurement Group, one effective April 15 and one effective April 27.

One office helper terminated April 2, and three office helpers were added to the Procurement Group, one effective April 5, one effective April 21, and one effective April 27.

Two typists terminated voluntarily from the Procurement Group, one effective April 2 and the other effective April 23. Two typists were hired to replace these terminations, one effective April 13 and one effective April 16.

Employee Relations

An employee relations counselor was added to this group, effective April 13.

Public Relations

A junior clerk was added to the Public Relations group, effective March 31.
(Not included in the March report)

Education and Training

No organization changes were made during the month of April.

Number of Employees on Payroll	April
Beginning of month	83
End of month	90
Net increase	7

This additional personnel was required due to an increase in volume of work.

ACTIVITIES

Employment and Investigation

The volume of employment interviews decreased during April, whereas the volume of new cases received for investigation increased considerably. A total of 1,496 applicants were interviewed during April as compared with 1,925 during March. The number of new cases received for investigation increased from 607 in March to 748 during April. As a matter of record, it should be noted that the quality of applicants requesting interviews at the Employment Office at the present time is considerably below average.

At the beginning of the month there were 828 open requisitions for non-exempt personnel, 475 of which were covered by interim commitments. At the end of the month there were 820 open requisitions, 512 of which were covered by interim commitments. In addition, at the beginning of the month there was a total of 114 requisitions for exempt personnel; sixty-three of the persons requisitioned having accepted offers, 44 having been made offers but no acceptances received and the balance being in the process of investigation. At the end of the month there was a total of 150 requisitions for exempt personnel; 68 of the persons requisitioned having accepted offers, 67 having been made offers but not accepted, and the remaining in the process of investigation.

During April, 32 new requests for inter-divisional transfers were received by the Procurement Group. In addition, 35 active cases were also reviewed, making a total of 67 requests on file. As a result of these requests, 24 personal interviews were held and 13 transfers effected.

Recruiting for additional technical graduates continued during the month of April with interviews at Iowa State College, Ames, Iowa; University of Colorado, Boulder, Colorado; Colorado School of Mines, Golden, Colorado; University of Portland, Reed College, and Lewis and Clark College, all at Portland, Oregon. A total of 118 interviews were conducted which resulted in 46 offers of employment being made. These offers were made to 11 chemists, 26 chemical engineers, 1 analyst, and 8 laboratorians. A number of candidates for graduate degrees were also interviewed at the various schools.

The program instituted in March for the recruitment of stenographers and typists continued during April with reasonably good results. Recruitment trips were made to Portland, Oregon; Seattle, Washington; Missoula and Butte, Montana; Denver, Colorado; and Salt Lake City, Utah. A total of 211 applicants were interviewed, a number of which were seeking employment in positions other than those for which advertisements had been inserted in the various newspapers. Offers of employment were made to 15 stenographers and to 26 typists. Applications were also obtained from 19 linemen. The newspaper advertisements have resulted in an increase in the number of inquiries being received at the Employment Office for positions that might be open.

Information obtained from the numerous contacts made through the West, Southwest, and Midwest indicates that there is a nation-wide shortage of qualified stenographers. Efforts will continue to be made to fill the existing demands for this type of personnel.

Employee Relations

During the month of April a total of 1,118 contacts with company employees were made by employee relations counselors. These contacts resulted in a total of 1,320 inquiries summarized as follows:

Policy	169
Military Service	15
Group Life Insurance	146
Group Disability Insurance	177
Pension Plan	71
Suggestion System	24
G.I. Bill of Rights	9
Social Security	24
Employee Sales Plan	270
Richland Housing	111
Other Housing	13
Municipal (Facilities)	13
Municipal (Social)	8
Municipal (Personal)	14
Personal	101
Miscellaneous	74
Income Tax	71
Recreation	10
Total	1,320

A total of 93 exit interviews were given to terminating employees during the month of April.

A total of 320 new employees were orientated during April. Of this number 57% elected to participate in the Group Life Insurance Plan and 79% elected to participate in the Group Disability Insurance Plan.

Employee relations counselors attended 5 Area Council Meetings, with a total of 95 members in attendance and also acted as counselors in 4 Supervisory Conference Meetings, with a total of 45 supervisors in attendance. Twenty-seven other meetings were conducted by counselors during the month of April with a total of 426 employees in attendance. The majority of these meetings concerned Life and Group Disability Insurance benefit plans and the Company's Sales Plan.

The following employees on leave of absence because of illness were visited at their homes and assistance rendered:

Edgar R. Kelly	Employee & Community Relations Division
Thomas M. Jones	Transportation Division
Earl W. Greenno	"P" Division
Earnest Nix	"S" Division
Irene Munk	Design Division

Additional time was devoted during the month of April to the tabulating and analyzing the ratings on weekly employees.

The following employees retired during the month of April:

Charles B. Hall	Transportation Division
Clarence L. Hillman	Electrical Division
Harvey A. Montgomery	Plant Security and Services Division
George S. Pickering	Power Division
James Rock	Transportation Division

These employees were interviewed by employee relations counselors prior to their retirement and fully informed as to all matters pertaining to their benefits under the Pension Plan.

1. Suggestion System

At the end of April the volume of work in the office of the Secretary of the Suggestion System was as follows:

	Mar.	Apr.	Total Since 7-15-47
Suggestions received and acknowledged	135	146	2,035
Investigation reports completed	76	61	1,590
Awards granted by the Suggestion Committee	26	14	120
Cash Awards	$200	$100	$1,195

During the month of April, 20 meetings, which were attended by approximately 650 employees, were conducted by the Secretary of the Suggestion System in the various areas, at which time the policies and procedures involved in the Suggestion System were discussed.

A new issue of suggestion box posters has been received from Schenectady.

Due to the transfer of Accounting Personnel to the various divisions, pick up of suggestions from the various boxes in the areas has been assumed by the employee relations counselors.

PRIVACY ACT MATERIAL REMOVED

2. Insurance Coverage

A. During the past month a letter was received from the Travelers Insurance Company Adjustor, setting forth the results of his investigation of the fire in the North Richland barracks. It was the feeling of the Adjustor that there is a possibility that if some of the claims resulting from this fire were carried to a jury that it might be possible to show negligence. The Adjustor's report was forwarded to the Company's Legal Section and also to the Atomic Energy Commission Legal Section for review. It is the general opinion that the Adjustor's investigation is incomplete and additional information is being obtained in order that appropriate recommendations can be made with reference to the settling of the various claims.

B. There has been an increasing number of liability claims arising from the theft of workmen's tools at North Richland. These claims have been referred to the Travelers Insurance Company, who have adopted the policy of refusing all such claims unless definite evidence of negligence can be shown on the part of the employer.

3. Life Insurance

Code information for use by insurance companies in issuing insurance to employees at this works was furnished to 40 insurance companies and investigation agencies during the month of April.

4. Compensation

(deceased), An appeal to the Joint Board in the above-named case was made on April 16. According to law, this appeal must be acted upon within 30 days.

Public Relations

During the past month the Public Relations Supervisor attended a meeting at the Brookhaven National Laboratory in New York City which included all Atomic Energy Commission and Contractor Public Relations personnel. Morse Salisbury outlined the overall program planned by the Atomic Energy Commission so far as public relations matters were concerned. In addition, a field trip was made to the Brookhaven National Laboratory Nucleonics Exhibit.

During this trip, one day was spent in the New York Office of the Company with Public Relations people, and also two days were spent with the Advertising and Publicity Department in Schenectady. At that time it was ascertained that the Nucleonics Department will have two full pages of space allotted to it in the Company Organization Directory. In addition, considerable information was obtained as to the Company's overall Public Relations Program.

PRIVACY ACT MATERIAL REMOVED

Speaking engagements filled by individuals from this works during the month of April were as follows:

4-20	American Society of Safety Engineers	Seattle, Wash.	C. P. Cabell H. P. Jones

A rather wide-spread program of classified advertisements to assist the Procurement Group as well as the Construction Division in the recruiting of additional personnel was instituted during the past month. These advertisements included information for the recruiting of stenographers, typists, linemen, power operators, patrolmen, laborers, and construction engineers. Classified advertisements were placed in newspapers in the following cities: Seattle and Spokane, Washington; Missoula and Butte, Montana; Salt Lake City, Utah; Portland, Oregon; Boise, Idaho; San Francisco, Los Angeles, and Oakland, California; and Chicago, Illinois; also in the Engineering News-Record and Pacific Builder and Engineer. The last two mentioned were magazines being used for the recruiting of construction engineers only. Advertisements for power operators, patrolmen, and laborers were inserted in newspapers at Walla Walla, Sunnyside, and Yakima.

News releases in connection with the need for additional personnel were also prepared and used in connection with the advertising program.

A large number of releases were made to the various newspapers throughout the Northwest in connection with the various organization appointments in the Nucleonics Department. In some instances photographs and personal histories were submitted in connection with these releases.

Eleven general news releases were made during the month of April to the various newspapers in the Northwest. Five news releases were made to the Richland Villager and the Tri-City Herald during the month of April.

Five issues of the Hanford Works News were issued during April. The April 16 issue contained a specially prepared insert reprinting the Collier magazine story concerning Mr. Charles E. Wilson.

Women's Activities

In connection with the Women's Activities Section, a representative of this section assisted new women employees, particularly stenographers and typists, in becoming settled in North Richland. Arrangements were made for transportation of the employees and their luggage to the North Richland dormitories.

Beginning and brush-up shorthand classes offered on a nine-weeks basis have continued during the month of April. Plans are being made, upon completion of these classes, to start two more classes, one for beginners' shorthand to extend 27 weeks and one for brush-up shorthand to extend 18 weeks. The tutition fee will be $13.50 and $9.00 respectively for each course which will meet for two hours one night each week.

During the month of April a total of 186 women attended women's orientation. In addition, 27 exit interviews were conducted by the Women's Activities Office.

Material for the women's page was prepared for two issues of the Works News during the month of April.

Education and Training

During the past month considerable publicity was given to the graduate program at this works on the General Electric Fred Waring Program. As a result of this publicity, there has been an increase in the number of inquiries concerning the education program at this works.

Relationship with the various educational institutions in the Northwest has made some progress. Washington State College has officially notified us that they will require one semester at Pullman for those seeking a Master's degree and two semesters for those seeking Ph.D. degrees. Contrary to the report for February, information has been received from Oregon State College that they have not been able to clarify the question of residence in connection with those students taking graduate courses at this works. Official notification has been received, however, that the teaching members for the graduate staff at this works, whose credentials were submitted, have been accepted as members of the Oregon State College faculty.

On April 23 and 24 the Education Supervisor visited Oregon State College for conferences with Dean W. Weniger and President A. L. Strand, and at the same time, attended the Northwest Regional Meeting of the American Society for Engineering Education.

Training:

During the month of April, 56 Supervisory Conferences consisting of approximately 600 members of supervision held an average of three meetings each. During these conferences the following subjects were discussed:

The Use of Instructions and Suggestions

Handling Requests and Grievances Promptly

Employee Ratings.

In addition, the following material was distributed to these groups without the benefit of discussion:

Leadership Responsibility and its Meaning

Service Divisions
Employee and Community Relations

STATISTICS

Employment and Investigation

Number of employees on rolls	3-31-48	4-30-48
Exempt	1,551	1,611
Non-Exempt	6,255	6,458
Total	7,806	8,069

ADDITIONS

	Exempt	Non-Exempt	Total
New Hires	43	326	369
Re-employs	1	3	4
Reactivations	2	13	15
Reinstates	0	1	1
Transfers from Other Plants	2	0	2
Net Additions	48	343	391
Payroll Exchanges	22*	-	22
Gross Additions	70	343	413

TERMINATIONS

	Exempt	Non-Exempt	Total
Actual Terminations	8	95	103
Removals due to extended leaves	2	23	25
Payroll Exchanges	-	22**	22
Totals	10	140	150

Approximately 97% of all actual terminations were on a voluntary basis and most of these were for the following reasons: (a) Another job, (b) Personal reasons (wages, etc.), (c) To return home, and (d) Housing.

*Transferred from weekly salary roll.
**Transferred to Monthly salary roll.

Service Divisions
Employee and Community Relations

GENERAL

	3-48	4-48
Applicants Interviewed (Gate)	1,925	1,496
Photographs Processed	6,247	3,821
Fingerprint Impressions Taken (In Duplicate)	690	844
Procurement Letters Written	1,611	2,196

ABSENTEEISM STATISTICS* (Weekly Salary Roll)

	3-48	4-48
Male	2.06%	1.77%
Female	2.94	2.86
Total Plant Average	2.27	2.05

INVESTIGATION STATISTICS

	3-48	4-48
Cases pending at beginning of month	1,627	1,592
Cases received during the month	607	748
Cases closed	642	540
Cases pending at month-end	1,592	1,800
Number found satisfactory for employment	409	540
Number found unsatisfactory for employment	14	32
Cases closed before investigation completed	13	55
Special investigations conducted	112	31

Compensation and Insurance

Claims

	Reported in April, 1948	Reported in March, 1948	Total Since 9-1-1946
Workmen's Compensation	119	121	547
Liability	20	12	146
Handled for du Pont	0	0	

*Statistics furnished by Weekly Payroll Division

Compensation Payments Approved (Department of Labor and Industries)

	March, 1948		February, 1948		Total Since Sept. 1, 1946
	No. of Claims	Amount	No. of Claims	Amount	Amount
Medical Aid	15	$1,536.42	6	$ 113.10	$ 9,442.91
Accident Fund	48	2,918.92	25	2,690.92	62,003.57
Pension	29	2,604.74	25	1,250.47	27,080.08

Liability Payments Approved (Travelers Insurance Company)

February	-	Automobile Liability	$ 43.64	
		Automobile Property Damage	64.84	
			$ 108.48	
		Property Damage	1.93	
			$ 106.55	- Total
March	-	Liability	$6,113.93	
		Property Damage	557.16	
		Automobile Property Damage	91.14	
			$6,762.23	- Total

PURCHASING AND STORES DIVISION
APRIL, 1948

GENERAL

Purchasing

Purchase orders issued totaled 1,686 as compared to 1,664 during March. 2,545 purchase requisitions were received in April as against 2,778 in the previous month. 2,420 purchase requisitions were placed during April as compared to 2,533 placed during March.

Negotiations by the AEC in Washington with the Steel Industry have resulted in an allocation for Hanford Works steel requirements for the third and fourth quarters of 1948 and the first quarter of 1949. As the allocation was received too late for second-quarter scheduling, our requirements for that period are to be included in the third and fourth quarter. schedule. All interested parties have been requested to review their requirements so that our needs will be known when we are informed how to proceed under the allocation program.

The decision that the Operations Purchasing Division would handle all sub-contracting negotiations for Plant Operations and the Village has been rescinded. All bids received on proposed sub-contracts as the result of Invitations to Bid mailed by the Operations Purchasing Division will be accumulated and turned over to the D & C Contract Engineer for completion of the sub-contracts. In the future, the D & C Contract Engineer will be responsible for sub-contract negotiations.

Additional office space has been allocated to this Division. Part of this space will be utilized in setting up an adequate catalog and pamphlet file.

The Schenectady Purchasing Department requested us to negotiate our own coal contracts for the coming year. Based on an estimate furnished by the Power Division, Invitations to Quote on 300,000 tons of 1 5/8 X 0 steam coal were mailed out on April 26. This tonnage will cover the period from June 1, 1948 to May 31, 1949. Contracts will be negotiated with the successful bidders.

We have requested an estimate on the lump or domestic coal requirements for the period July 1, 1948 to June 30, 1949. This size coal will be used by the Village, 3000 Area, White Bluffs, 101 Building, Columbia Camp and several other locations. Invitations to Bid on this coal will be requested as soon as the estimates from the above are completed.

Due to the change from a 9" to a 4" aluminum can, plus an increase in consumption, we only have approximately one month's supply on hand. Arrangements have been made with Alcoa to increase their production of this item 50% beginning July 1 which will enable us to build up our stock to a more desirable position.

GENERAL (Cont.)

Stores

Activity in Stores is generally three times greater than in 1946. Disbursements continue to be approximately 300 percent greater than they were two years ago. An average of 1,000 store orders are filled daily, valued between $11,000 and $12,000. This activity can partially be attributed to increased maintenance problems, as well as the current development and expansion program.

Considerable effort has been expended in a review and study of Spare Parts and Extra Machinery in order to high-light non-moving and obsolete items toward the end that our inventories may be relieved of such items. Lists covering four sections of our Spare Parts inventory have been submitted to operating supervision during the past sixty days but to date no material results by way of inventory reduction have been achieved.

Request has been made to Management for a policy with respect to the disposition of useable materials excess to the needs of the project. Three excess lists of material have been transmitted as a test case. It has been our policy in the past to effect disposal by sale of scrap materials only. Lists of useable materials in excess of project needs have been submitted to the AEC for disposition. However, we have been required to retain physical custody of such excess material until the AEC supplied shipping instructions. Our experience in the past indicates that the interim between the declaration of material or equipment as excess and the receipt of shipping instructions has been months and in some instances, years.

The physical condition of Warehouses No. 5 and 6 in Richland has further deteriorated since the last report. The Project Engineering Division has been asked to make a complete study of this condition so that comparative costs can be arrived at relative to modernizing these warehouses or constructing new buildings. It is imperative that some decision in this regard be made within the next few weeks. In the meantime, material is still being stored at the Pasco Supply Depot, and trucks are being shuttled back and forth frequently in replenishing stock in our central warehouse in Richland.

PERSONNEL

Administrative Supervision	1
Purchasing	
Employees Exempt	6
Employees Non-Exempt	24
Stores	
Employees Exempt	14
Employees Non-Exempt	145
TOTAL	190

Further reduction in Stores Personnel during the month resulted in a total of 159 employees at month end as compared with 166 thirty days ago.

PURCHASING AND STORES DIVISION

SAFETY

Purchasing

Safety and Security Meetings Scheduled	1
Number of Employees attending	29

Stores

Safety and Security Meetings scheduled	20
Number of Employees attending	166
Minor Injuries	3

STATISTICS

Purchasing

Requisitions on hand 4-1-48	749
Requisitions received during April	2,545
Requisitions placed during April	2,420
Reqs. assigned to Gov't. Procurement during April	176
Requisitions on hand 4-30-48	698
HW Orders placed	1,686
TPS Orders placed	110
M.O.'s placed	0
O.R.'s placed	10
Alterations issued	187
Orders Expedited	218

Stores

Number of items added to Stores Stock	418
Number of items deleted from Stores Stock	375
Items in Stores Stock at month end	50,325
Receiving Reports issued	4,267
Store Orders filled	21,820
Emergency Store Orders filled	6
Returnable Containers on hand at month end	5,123
Returnable Containers on hand over 6 months	1,056

PLANT SECURITY AND SERVICES DIVISION
ORGANIZATION AND PERSONNEL

Number of employees on payroll:

	Beginning of Month	End of Month	Increase	Decrease
Central Files	26	26	-	-
General Division	177	177	-	-
Patrol and Security	619	630	11 (a)	-
Safety & Fire Protection	139	138	-	1 (b)
Miscellaneous Clerical	-	91	91 (c)	3
Total	961	1062	102	4

NET INCREASE - 98

(a) - 21 Hires
2 Removals from Payroll returned to duty.
7 Voluntary Terminations
5 Transfers to another Division

(b) - 2 Transfers in
2 Transfers to Design & Construction Division
1 Voluntary Termination

(c) - The Miscellaneous Clerical Section was transferred from the Accounting Department to the Plant Security and Services Division April 9, 1948.

PLANT SECURITY AND SERVICES DIVISION

APRIL 1948

SAFETY & FIRE PROTECTION

Safety

Plant Safety Record - 84 days

Injury Statistics

	March	April	Year to Date	Cumulative F/R - 1948
Major Injuries	0	0	2	0.38
Non-Tabulatable Major Injuries	0	0	0	
Sub-Major Injuries	2	3	11	
Minor Injuries	544	504	1896	3.61

Sub-Major Injury No. 109

April 8, 1948 - working in the 200-W Area, sustained a right sacroiliac strain while putting on a grease ring over the end of the shaft. It was necessary for injured to lie with his back on the floor. It was while he was in this position that he mentioned a soreness in his back to a fellow worker. The largest machine part handled in the assembly was approximately 90 pounds. Available crane facilities were used in doing this work.

Sub-Major Injury No. 110

April 26, 1948 - working in the 1100 Area, sustained a fracture of distal phalanx, left little finger, while cleaning coal deposits from sockets on a shovel bucket preparatory to installing teeth in the bucket. Injured was using a 2 pound ball-pein hammer. As the punch was placed against the coal and struck with the hammer, the packed layer gave way and the punch was driven completely into the soft pocket.

Sub-Major Injury No. 111

April 28, 1948 - working in the 1100 Area, sustained contusion with abrasions of lumbar region and chip fracture of two short ribs, left side. Injured and helper were standing on tail gate lowered level with bed of dump truck, emptying small garbage can (80 pounds full) which had been filled with waste solvent sludge from cleaning plant of the commercial laundry. As the men were working, one hinged latch (which holds the gate to the truck bed) released the gate pin, and the two men fell into the disposal pit. Injured dropped the can he was holding and then fell upon it.

Safety Meetings - There were 837 safety meetings held, with a total attendance of 10,432.

Safety Spectacles - Orders were placed for 60 pair prescription safety spectacles; 59 pair were checked, received and fitted; and 166 adjustments and repairs were made to all types safety spectacles.

Exposure Hours - 1,385,101 (from 4-1-48 to and including 4-30-48.

Plant Security and Services Division

Activities

100 Areas

An accident involving the breaking of a large glass lens at the 105-B Building was investigated by an Area Committee. A report of a special investigation as to cause was submitted to the Safety Department by H. P. Knepp, a glass expert in the Technical Department.

Investigation was also made on a large water line break in the 186-D Building which involved only a large volume of water flooding a portion of the building located below ground level. There were no injuries involved, and the cost of work required to clean up the building and dry out four large motors was approximately $250.00.

All new employees in the 100 Areas and Pistol Range were contacted for safety orientation.

The 100-F Area completed a third consecutive year without a lost time injury, as of April 25, 1948. The Area Council has set up a committee to plan a celebration.

The 100-D Safety Skit was presented for AEC employees in Richland on April 21, 1948.

Satisfactory progress is being made by the newly formulated Accident Prevention Committee of the 100-D Area. An excellent report was submitted by the Committee on safe practices and conditions, and corrective measures are being installed by departments concerned.

200 Areas

Investigation was made on one sub-major injury in the 200-W Area.

The Safety Engineer of the 300 Area inspected the 275 Building Warehouses in the 200 Areas along with the Safety Engineer of the 200 Areas.

300 Area

An investigation was made and a report written on the circumstances surrounding the alleged back injury to Facts were gathered from the P Department supervision, First Aid records, and from an interview with Mr. Nagle at his home in Pasco.

Investigation was made as to the type of electrical outlets that should be placed in the new "Hanford" type hoods. The suggestion of a ventillated type outlet box and plug is being carried out.

An emergency situation was investigated and permission granted for the use of properly installed single gas tanks in one of the laboratories. This request was granted on a temporary basis only to cover the emergency period.

Plant Security and Services Division

700-1100 Areas

Previous to putting elevators in the 703 Building and 722 Hangar into service, an inspection was made of the installations. Operating procedures and safety rules were established. Recommendations were made for safeguards, signs, draft stop door latches, ~~lock~~-out switch, loads, authority to operate, zone painting, and other ~~protective~~ measures to assure safe operation.

Upon request of Maintenance Section of Village Public Works, Paint Shop, 722 Hangar, an inspection was made and recommendations given for vapor proof lighting in paint spray booth, including additional lighting needed.

Inspection was made of present methods and recommendations given for proposed cleaning booth to be placed in 722-A Building to facilitate cleaning of electric motors and small parts. Carbon tetrachloride is used in the operation, and a draft ventilated booth has been recommended. The possibility of low pressure steam for cleaning purposes to eliminate extensive use of CTC is being considered. Other points discussed were reclaiming tubs, drainage, floors, walls, ceilings, mono-rail and equipment, speed of air flow through booth, direction of venting, and lighting.

Supervision of the Upholstery Section, 722 Hangar, asked for assistance in devising a better method for opening crates of bed and mattress springs which are received in crates under compression. Recommendations were made and action taken for construction of opening device.

Recommendations were made for emergency fire exit for second floor of 722 Hangar.

Recommendations were made for cleaning booth to be installed in typewriter repair hut.

Steps were taken for organization of 700 Area Council.

Two meetings of investigating committees were called to investigate two sub-major injuries - one each in Transportation Labor and Village Public Works.

The Richland schools will again present their Safety Program to the National Safety Council (School and College Division) for national recognition. Two year honor roll certificates were granted by the Council last year for the meritorious Safety Program carried out during the school years 1945-1946 and 1946-1947. The three year award will be applied for this year.

General

Recommendation was made to AEC Safety to alter the canopies on the Pasco Warehouse to make the fire wall more effective.

The new fire alarm system in the 761 and 762 Buildings was tested and accepted.

The new fire alarm system in the 760 Building was tested. Part of the system did not operate, and it was not accepted.

Plant Security and Services Division

An inspection of the new wings of the 703 Building was made. The alarm system was incomplete, and the sprinkler system leaked. The systems were not approved.

An alarm system was designed for the new Public Health Building.

The water supply and distribution for the White Bluffs Area was discussed with Construction Division.

The quantity of water needed for fire fighting in North Richland was discussed with the Construction Division.

Fire Protection

Fires

	Number of Fires		Estimated Damage	
	March	April	March	April
Plant Area	8	3	No Damage	
Miscellaneous	0	0		

Routine Duties

Fire Extinguishers

Inspected	2014
Installed and Relocated	50
Refilled	89
Repaired	7

Fire Drills & Lectures

Outside	35
Inside	82
Auxiliary Brigade	42
Safety Meetings	51

Gas Masks

Inspected	44
Serviced	3

All fire alarm boxes in the Industrial Area were tested.

All fire hose houses, hydrants and lines in Plant Areas were inspected and hydrants flushed.

SAFETY DIVISION - INJURY AND ACTIVITY STATISTICS

	300 Area	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	700-1100 Areas	Hanford Area	3000 Area	Pasco Area
Minor Injuries	124	14	27	32	60	116	109	7	13	2
Sub-Major Injuries	0	0	0	0	0	1	2	0	0	0
Major Injuries	0	0	0	0	0	0	0	0	0	0
Days since last Tabulatable Major Injury	198	1302	456	1102	169	841	84	396	274	274
Days since last Sub-Major Injury	80	102	626	192	142	22	2	52	52	200
Days without a Minor Injury	5	19	15	13	7	1	3	25	21	28
Safety Meetings Conducted	106	51	56	78	82	104	314	0	32	14
Number in Attendance	1077	261	491	803	751	1118	5380	0	457	94
Safety Spectacles Delivered	12	0	3	3	2	7	28	0	4	0
Safety Spectacles Serviced	24	4	11	13	45	60	9	0	0	0

MONTHLY INJURY ANALYSIS

Period - April 1 through April 30, 1948

Minor Injuries

	Misc. Burns	Abrasions	Contusions	Lacerations	Punctures	Splinters	Strains & Sprains	Foreign Body	Blisters	Unclassified	TOTAL APRIL	TOTAL LAST MONTH
Production P	12	7	7	7	1	2	4	0	2	2	44	23
Production S	2	13	0	1	4	2	1	2	0	0	25	23
Technical	12	7	2	17	4	4	2	3	0	4	55	63
Power	0	1	1	6	0	3	0	2	1	1	15	23
Maintenance	20	25	25	42	4	16	6	11	5	7	161	167
Electrical	1	8	3	7	1	5	0	2	0	2	29	35
Instrument	1	5	4	5	1	3	1	0	1	1	22	16
Service	1	18	9	9	1	7	6	8	4	5	68	68
Transportation	1	4	13	9	1	0	2	2	1	2	35	51
Accounting	0	1	1	4	0	1	0	1	0	0	8	11
Design & Construction	1	3	0	2	0	1	1	0	0	0	8	13
Health Instrument	0	5	0	6	0	3	0	1	0	0	15	32
Project Engineering	0	1	0	3	0	0	0	0	0	0	4	5
Medical	1	0	0	8	3	1	0	2	0	0	15	14
TOTAL	52	98	65	126	20	48	23	34	14	24	504	
LAST MONTH	59	125	69	123	32	34	22	57	11	12		544

Plant Security and Services Division

GENERAL DIVISION

Laundering volumes were as follows:

Plant Laundry (Building 2723)

	March	April
Coveralls - Pieces	24,935	24,219
Towels - "	7,262	7,366
Miscellaneous "	46,709	52,785
Total Pieces	78,906	84,370
Total Dry Weight - Lbs.	113,932	115,604

Richland Laundry (Building 723)

Flatwork - Pieces	167,462	155,124
Rough Dry- "	28,375	29,837
Finished - "	5,331	5,242
Total Pieces	201,168	190,203
Total Dry Weight - Lbs.	130,772	123,632

CLASSIFIED FILE

During the month of April, work proceeded on a routine basis. File room personnel worked three Saturdays on the inventory of classified documents.

A breakdown of work statistics as compared with the month of March follows:

	March	April
Classified Documents Received and Issued (Incoming)	1256	1003
Unclassified and Restricted Documents Received (Incoming	9362	8363
Classified Documents Issued (Outgoing)	3582	3497
Inter-Area Transfer	6862	7066
Yellow Copy Transfer - Pittsfield	2388	2693
Documents Routed	4651	6098
Requests for File Documents	2501	2405
Documents Transmitted to AEC for Retransmittal Off-site	156	186
	30,758	31,311

MISCELLANEOUS CLERICAL

Telephone

Four additional trunk lines were installed between the main exchange and North Richland to relieve traffic congestion.

Nineteen direct lines connected from Atkinson and Jones' buyers to our board eliminate this load on the trunks between the two points.

Additional lease line was installed to Spokane to handle increased volume of traffic.

Procedure was completed for handling Emergency Mobilization in the Telephone Exchange.

Busy visual lights were installed on the trunks between here and North Richland.

The following additional telephone lines were requested to take care of present volume:

5	Additional number 1900 lines to Pasco
3	Additional number 2000 lines to Kennewick
1	Additional lease line to Portland
1	Additional lease line to Seattle

Mail Room

Arrangements were made for Design and Construction Division to install a central mail room in the 760 Building and in North Richland. All Design and Construction Division mail will be delivered in bulk to the 760 Building.

The Design and Construction Division will secure postage meters, scales, etc., and will handle their own out-going mail.

Teletype

The Western Union Teletype Section was transferred to the AEC, who will now operate all teletype machines. Operating personnel were transferred to the Design and Construction Division to work in the new Construction Teletype Section.

Full schedule of pick-ups and deliveries has been established.

Office Equipment

A Project was approved for new Office Equipment Repair Shop, and work will begin immediately. This shop will permit an improved maintenance and repair program.

Arrangements were made for the Design and Construction Division to set up its own repair section.

Plant Security and Services Division

Printing

The Design and Construction Division has agreed to establish a mimeograph and ditto section which will handle all its work.

Due to the heavy volume of printing, our multilith section has been unable to handle all requests. Arrangements have been made for Design and Construction Division to purchase their printing from outside sources.

Routine Activities

Office Machines repaired in shop	315	
Service calls	308	
Lines working as Class A single lines	345	
Lines working as Class A party lines	11	
Lines working as Class A PBX lines	13	
Lines working as Class C single lines	306	
Lines working as Class C party lines	40	
Lines working as Class C PBX lines	6	
Lines working as Class B1-B2 combination lines	1	
Total Official Lines		722
Lines working as B2 single lines	82	
Lines working as B2 party lines	10	
Lines working as B2 PBX lines	2	
Lines working as B1 single lines	8	
Lines working as B1 party lines	1252	
Lines working as B5 single lines	20	
Total non-Official Lines		1374
Vacant Lines		104
Total Lines in multiple bank		2200
Pieces of first class mail received	45,851	
Pieces of parcel post mail received	1,061	
Pieces of registered mail received	344	
Pieces of insured mail received	155	
Pieces of special delivery mail received	358	
Total pieces of mail received		47,789
Pieces of mail sent out	35,949	
Amount of money used in postage meter in April	$1,897.82	
Teletypes sent	5,494	
Teletypes received	5,329	

Plant Security and Services Division

Multilith orders received	163
Multilith orders completed	186
Multilith orders on hand at end of month	21
Mimeograph orders received	2864
Mimeograph orders completed	2783
Mimeograph orders on hand at month end	81
Ditto orders received	4219
Ditto orders completed	4000
Ditto orders on hand at month end	219

PATROL AND SECURITY

General

A new section was established within the Plant Patrol and Security Division on April 10. This section will be known as the Field Inspection Section, and its purpose will be inspecting the Security and Patrol functions to make sure that standards set up are being maintained.

A temporary evacuation procedure for the 100-H Construction Area was made effective April 8; the 100-F Area being responsbile for handling this detail.

The Patrol Headquarters at the Pasco Depot was moved from Building T-5 to Building T-24 on April 8.

Effective April 8, the Construction badge house and inner gate, near the power house in the 300 Area, are being manned 24 hours daily.

April 11, entrance to the Pasco Depot Area was restricted to persons having proper identification, with the exception of National Guard personnel. Procedures were made effective April 26 covering visitors and contraband.

Physical work was completed on Building 720, and this building is now on a "restricted" basis. On April 22, a patrolman was posted at the north entrance from 6:30 A.M. to 8:00 A.M. and from 4:40 P.M. to 6:30 P.M., Monday through Saturday. Effective April 19, a patrolman was posted at the Reception Desk from 4:15 P.M. to 5:30 P.M., after which the building is checked and locked.

Fence lines were changed to allow buildings 761 and 762 to become a part of the 700 Area. Effective April 12, the south door of the east wing of Building 761 will not be sealed and will be used for entrance and exit to the 700 Area.

H.W. Instructions Letter No. 80 was issued, entitled "Central File Established for Recording of Combinations of Lock File Cabinets, and procedures Concerning Reports and Inspections of Unlocked Files".

H.W. Instructions Letter No. 81 was issued, entitled "Procedures for Processing Classified Matter".

A memorandum to Division Managers was issued April 26, 1948, informing them that administrative clearances have been discontinued.

Plant Security and Services Division

On April 12, special padlocks, all keyed alike, were installed on all main railway gates. Keys are maintained in all patrol headquarters, and a sufficient number of keys were furnished to the Transportation Department to be issued to the conductor of each train crew to be accounted for at the end of each shift.

The practice of transporting contraband from one barricade to another for the convenience of the employees, was discontinued on April 1; all contraband being handled according to procedure.

A properly executed material release form must accompany all material leaving the Pasco Depot. Specimen signatures of authorized personnel were furnished to Patrol for comparison. This procedure was made effective on April 12.

An attempt is being made to curtail "sightseeing" trips by employees during off-shift hours.

Various office buildings and warehouses in the White Bluffs Area will be given added patrol protection during the off-shift hours. As of April 19, the White Bluffs Area jeep patrol established his post at the First Aid Station, when a nurse is in attendance, and will work foot patrols from that point. The 100-F Area outer patrol car will also check these buildings during their tour of duty.

Division Supervisor S. F. Campbell has been assigned to work with Mr. O. R. Simpson of the Atomic Energy Commission, in cooperation with Army personnel from Fort Lewis, stationed near the Yakima Barricade, who are holding maneuvers on the reservation.

Effective April 23, Atkinson-Jones termination clearance cards, form AJ-126, will be honored by patrol at all perimeter barricades, for exit purposes only.

On April 23, the Yakima-Hanford Stage Company started the operation of a commercial bus line between Yakima and North Richland, for employees of the Hanford Works. This bus will stop at the Yakima Barricade, 100-D Area, White Bluffs, Hanford and the 300 Area Barricade. Baggage compartments will be sealed through the reservation; other baggage being inspected for contraband.

Mobilization plans for the Industrial Area Patrol have been worked out in detail to insure maximum protection to personnel and property in case of an emergency. Tests on the section covering "Plan A" have been activated on all shifts in each area during the month.

On April 16, the fence lighting around the 213 Area was discontinued. A daily check of this Area will be made by Patrol on the second shift.

Four new Pontiac sedans and one new International carryall were received in exchange for old equipment. Two Ford sedans were received for use in the Field Inspection Division.

A physical inventory of equipment and supplies in all areas was completed during the month.

A new gun rack was constructed and installed in the Supply Equipment room, and it contains a sufficient number of revolvers in readiness for an emergency.

Plant Security and Services Division

Organization

Captain E. W. Sutherland was transferred from the 100-D Area and placed in charge of the Field Inspection Division, being assisted by Lieutenant J. A. Bow man in the 200 Areas, and Lieutenant R. E. Watts in the 100 Areas.

Captain A. L. Meyer was transferred to the 100-D Area as Area Commander, and Lieutenant H. L. Smith was transferred to the 100-B Area as Area Commander.

PATROL

The 200 Areas handled 385 Process escorts between the Areas.

Requests handled totaled 722, mainly consisting of opening doors and gates for employees of other departments.

A total of 1106 Construction employees were escorted into areas for First Aid treatment.

There were 128 Unusual Incident reports received, consisting mainly of contraband picked up at barricades, lost badges and pencils and emergency escorts to First Aid.

Twenty classified escorts were handled during the month.

Six employees were given emergency first aid treatment in Areas by Patrol supervision during periods when medical personnel were absent from the Areas.

The Outer Area traffic car issued three citation tickets, 10 warning tickets, 48 verbal warnings and handled 144 details in addition to their regular duties.

Practice evacuations were held as follows:

Date	Area	Time
April 2	200-E	10:58 AM
April 4	200-E	5:01 AM
April 4	200-E	9:02 PM
April 20	100-D & 100-DR	1:35 PM
April 30	100-B	11:35 AM

Training

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

	February Percent	March Percent	April Percent
Unqualified	10	8	9
Marksman	29	34	38
Sharpshooter	21	21	19
Expert	40	37	34
Totals	100	100	100

Plant Security and Services Division

M-8 Light Armored car training was continued with groups from all areas represented.

A special radio training class was held during this period, using a field model telephone set for practice radio transmittals.

The machine gun course was not fired this period.

The safety meeting included the topic of the month "Eye Protection".

Health talks were given on "Cancer".

Security talks on "Compartmentation, Bulletin No. 19" were continued.

SECURITY

There were 342 Security Meetings held, with an attendance of 6,020 General Electric employees.

Authorization cards issued: March - 51 April - 14

Re-investigation cases forwarded to AEC this month	553
Re-investigation cases forwarded to AEC to date	4,070
Class "Q" clearances received on old employees this month	338
Class "Q" clearances received on old employees to date	1,571
Class "Q" clearances received on new employees this month	202
Class "Q" clearances received on new employees to date	3,467
Class "Q" clearances received on both old and new employees to date (since February 17, 1947)	5,038
Formal "S" clearance awaiting change to "Q"	1
Interim "S" clearances awaiting change to "Q"	23
Formal "P" clearances awaiting change to "Q"	240

Some of the better Security Slogans which were received during the recent Security Slogan Contest have been appearing each week in the Works News and the author receiving honorable mention.

A "Slogan of the Month" security poster was distributed to all areas, entitled, "Don't Say It - Don't Write It - Just Think It".

G. E. Security Bulletin No. 22, entitled, "Questionnaires from Outside Agencies" was issued April 29, 1948.

Procedure Memorandum No. 9, entitled "Security" was issued April 14, 1948, and Procedure Memorandum No. 10, entitled "Compartmentation" was issued by T. B. Farley to the Design and Construction Departments.

Plant Security and Services Division

Statistical Summary of Outstanding Area Badges

	March				April				
	A	B	C	Total		A	B	C	Total
100-B	427	1239	685	2351	100-B	442	1269	661	2372
100-D	741	1168	695	2614	100-D	734	1208	667	2619
100-F	719	1054	682	2455	100-F	758	1099	660	2517
200-E	916	1275	610	2801*	200-E	890	1323	601	2814*
200-W	1140	1422	565	3127	200-W	1197	1484	539	3220
200-N	67	733	187	987	200-N	70	741	183	994
300	1372	1408	436	3216	300	1388	1440	414	3242
100-DR	2970	201		3171	100-DR	3619	287		3906
300-C	88	156		244	300-C	183	155		338
241-TX	1047	186		1233	241-TX	2464	136		2600

*Includes 33 "A" badges at Riverland Yards

*Includes 32 "A" badges at Riverland Yards

Visitors or Temporary Badges

Area	March	April
100-B	49	35
100-D	67	85
100-F	69	37
200-E	70	65
200-W	82	51
200-N	34	17
300	93	68
100-DR	47	42
300-C	20	13
241-TX	271	117
101	48	
Totals	850	530

Special Clearance Section

Following is a statistical summary of emergency clearance status of vendor and consultant companies:

Total companies forwarded to AEC this month - 31 Personnel - 179
Total companies forwarded to AEC to date - 149 Personnel - 1,499
Total companies cleared for restricted data this month - 21 (new and old)
Personnel - 133
Total companies cleared for restricted data last month - 33 (new and old)
Personnel - 306

Plant Security and Services Division

Number and type of clearance granted by AEC this month to vendors:

Emergency "Q"	0
Administrative "Q"	8
Formal "Q"	124
Formal "P"	103

Total number of individual investigations conducted by the Security Section for the purpose of obtaining emergency clearance for vendors and consultants:

March	59
April	18

Emergency clearances requested for GE personnel this month	7
Emergency clearances requested for GE personnel to date	55
Emergency clearances received on GE personnel this month	3
Emergency clearances received on GE personnel to date	22
"Q" clearance cards issued this month to vendor personnel	21
Clearance changes from "PF" to "Q" requested from AEC this month	10

Construction Section

There were 450 Security Meetings held, with an attendance of 12,139 sub-contractor employees.

Construction Security Bulletin No. 7, entitled "Contractor's Responsibility Under the Atomic Energy", and Bulletin No. 8, entitled "Espionage" were issued to all sub-contractors for their April 5 and 26 Security Meetings, respectively.

	March	April	Total to Date
Hires	3,279	3,217	22,775
Terminations	1,557	2,657	10,105

The number of sub-contractor and vendors payrolls as of April 30, 1948: 12,670

Summary of Clearances Requested and Received

Number of Formal "P" clearances requested this month	304
Number of Formal "P" clearances received this month	556
Number of Formal "P" clearances requested to date	548
Number of Formal "P" clearances received to date	1,443
Number of "P" clearances requested this month	690
Number of Formal "Q" clearances requested to date	4,965
Number of Formal "Q" clearances received to date	2,482
Number of "QP" clearances requested this month	1,967
Number of "QP" clearances requested to date	3,438

Plant Security and Services Division

Number of Administrative clearances requested to date	63
Number of Administrative clearances received to date	43
Number of Emergency clearances requested to date	89
Number of Emergency clearances received to date	5

Lost Badges

March	April	Total to Date
132	153	494

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HANFORD WORKS
General Electric Company
Richland, Washington

REPORT OF VISITORS FOR PERIOD ENDING APRIL 30, 1948

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
MEDICAL DIVISION						
I. Visitors to this Works						
S. T. Cantril Tumor Institute Swedish Hospital Seattle, Washington	Consultation on medical problems	W. D. Norwood P. A. Fuqua	4-27-48	4-29-48	X	
S. Warren Atomic Energy Commission	Consultation on medical work	W. D. Norwood P. A. Fuqua	4-26-48	4-27-48	X	
CONSTRUCTION DEPARTMENT						
I. Visitors to Other Installations						
R. V. Dannehl to: Willamette Iron & Steel Portland, Oregon	Inspection facilities vendor critical material	Mr. Siegel	4-6-48	4-6-48		X
R. V. Dannehl to: McCullough Bros Tank Wks Portland, Oregon	Inspection facilities vendor critical material	E. R. McCullough	4-6-48	4-6-48	X	
R. V. Dannehl to: Northwest Copper Works Portland, Oregon	Inspection facilities	Mr. Rovang	4-6-48	4-6-48		X
G. E. Hotaling to: General Electric Co. Schenectady, New York	Inspection and procurement of materials	Mr. Erlicher	4-6-48	4-18-48	X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
G. E. Hotaling to: Patch Wegner Company Rutland, Vermont	Inspection and procurement of materials	J. A. Nelson	4-6-48	4-18-48	X	
DESIGN DIVISION						
I. Visits to Other Installations						
R. T. Jaske to: Giffels & Vallet Detroit, Michigan	Consultation with engineers on new ventilation system	W. D. Rausch	4-5-48	4-12-48	X	
W. M. Wright to: Refinite Water Softener Omaha, Nebraska	Engineering evaluation of installed equipment being considered for new area.	A. McConnell	4-6-48	4-12-48		X
R. F. Klein to: Puget Sound Navy Yard Bremerton, Washington	Technical consultation on work being performed	S. L. Allison	4-8-48	4-9-48		X
R. F. Klein to: Western Gear Works Seattle, Washington	Technical consultation on work being performed	P. E. Forsythe	4-8-48	5-1-48	X	
C. A. Evans to: Puget Sound Navy Yard Bremerton, Washington	Technical consultation on work being performed	S. L. Allison	4-8-48	4-9-48		X
C. A. Evans to: Western Gear Works Seattle, Washington	Technical consultation on work performed	P. E. Forsythe	4-8-48	4-9-48	X	
L. H. Hildebrandt to: Vermont Marble Company Rutland, Vermont	Discuss fabrication problems	H. A. Collin	4-6-48	4-14-48	X	

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
L. H. Hildebrandt to: Patch Wegner Rutland, Vermont	Discuss fabrication problems	G. K. Chaffee	4-6-48	4-14-48	X	
L. H. Hildebrandt to: Balmar Corporation Baltimore, Maryland	Discuss fabrication problems	A. A. Murison	4-6-48	4-14-48	X	
W. R. McKenna to: Vermont Marble Co. Rutland, Vermont	Discuss fabrication problems	H. A. Collin	4-6-48	4-14-48	X	
W. R. McKenna to: Patch Wegner Rutland, Vermont	Discuss fabrication problems	G. K. Chaffee	4-6-48	4-14-48	X	
W. R. McKenna to: Balmar Corporation Baltimore, Maryland	Discuss fabrication problems	A. A. Murison	4-6-48	4-14-48	X	
A. J. Delong to: C. C. Moore & Company San Francisco, California	Expedite Design and Procurement schedules and contact completion	R. L. Andresen H. H. Smith	4-13-48	4-15-48	X	
W. P. Duncan to: C. C. Moore & Company San Francisco, California	Expedite Design and Procurement schedules and	R. L. Andresen H. H. Smith	4-13-48	4-15-48	X	
E. P. Peabody to: Bonneville Power Ad. Portland, Oregon	Discuss with BPA engineers on transmission line relay	A. A. Adams O. DeMuth	4-15-48	4-17-48		X
A. G. Silvester to: General Electric Co. Schenectady, New York	Consultation on induction heating and vacuum system	F. E. Ackley R. Kohler	4-14-48	4-19-48	X	

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
C. A. Evans to: Puget Sound Navy Yard Bremerton, Washington	Technical consultation on work being performed	L. McKee	4-19-48	4-21-48		X
E. V. Mills to: Giffels & Vallet Detroit, Michigan	Expedite work in progress on 100-H area; general design coordination	M. Bush, Jr.	4-18-48	4-26-48	X	
A. T. Strand to: Puget Sound Navy Yard Bremerton, Washington	Consultation on experimental work	S. L. Allison	4-20-48	4-21-48		X
R. E. Burroughs to: Giffels & Vallet Detroit, Michigan	In connection with 100-H project	R. F. Giffels	4-21-48	4-29-48	X	
R. E. Burroughs to: Brookhaven Laboratory Long Island, New York	In connection with Pile	M. Fox	4-21-48	4-29-48	X	
C. L. Johnson to: DeWitt C. Griffin Seattle, Washington	Discuss technical problems regarding electrical system at sewage disposal plant	C. O. Mannes	4-20-48	4-22-48		X
R. F. Klein to: Puget Sound Navy Yard Bremerton, Washington	Technical consultation on work being performed	-	4-26-48	Still gone		X
R. F. Klein to: Western Gear Works Seattle, Washington	Technical consultation on work being performed	-	4-26-48	Still gone	X	
G. H. Syrovy to: Brookhaven Laboratory Long Island, New York	AEC information meeting	-	4-24-48	Still gone	X	

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
C. A. Evans to: U.S. Navy Ordnance Plant York, Pennsylvania	Technical consultation	E. C. Rook	4-26-48	4-28-48		X
L. B. Medlin to: Cascade Mfg. Co. Portland, Oregon	Technical consultation	R. C. Warren	4-26-48	4-27-48	X	
L. H. Hildebrandt to: Patch Wegner Rutland, Vermont	Discuss "B" block fabrication difficulties	--	4-30-48	Still gone	X	
W. R. McKenna to: Patch Wegner Rutland, Vermont	Discuss "B" block fabrication difficulties	--	4-30-48	Still gone	X	
R. F. Klein to: Puget Sound Navy Yard Bremerton, Washington	Technical consultation on work being performed	S. L. Allison	3-29-48	4-6-48		X
R. F. Klein to: Western Gear Works Seattle, Washington	Technical consultation on work being performed	P. E. Forsythe	3-29-48	4-6-48	X	
F. W. Wilson to: Giffels & Vallet Detroit, Michigan	Technical consultation	C. J. Steigleder	4-11-48	4-19-48	X	
D. D. Streid to: Giffels & Vallet Detroit, Michigan	Technical consultation	C. J. Steigleder	4-11-48	4-19-48	X	
ELECTRICAL DIVISION						
I. Visitors to this Works						
C. A. Martin Graybar Electric, Seattle	Telephone conference	H. A. Carlberg B. J. Willingham	4-1-48	4-1-48		X

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
J. J. Jolliffee Bonneville Power Ad. Portland, Oregon	Discussion of transmission lines	H. A. Carlberg F. J. Mollerus	4-8-48	4-8-48		X
R. B. Wall General Electric Company Seattle, Washington	Inspection of electrical equipment	A. L. Vosmer	4-29-48	4-29-48	X	
G. M. Clifton General Electric Company Pasco, Washington	Inspection of electrical equipment	A. L. Vosmer	4-29-48	4-29-48	X	
HEALTH INSTRUMENT DEPARTMENT						
I. Visitors to this Works						
Captain Antonow Second Division U. S. Army	Health hazards for military maneuvers	H. M. Parker	4-29-48	4-29-48		X
S. T. Cantril Tumor Institute Swedish Hospital Seattle, Washington	Consultation	H. M. Parker	4-27-48	4-27-48	X	
M. E. Emnsinger Washington State College Pullman, Washington	Consultation	H. M. Parker	4-23-48	4-23-48	X	
H. L. Hofenrichter U.S. Dept. Agriculture Portland, Oregon	Consultation	H. M. Parker	4-23-48	4-23-48		X
G. Failla Atomic Energy Commission Washington, D. C.	Consultation	H. M. Parker	4-26-48	4-27-48	X	

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
S. Warren Atomic Energy Commission Washington, D. C.	Consultation	H. M. Parker	4-26-48	4-27-48	X	
II. Visits to other Installations						
B. Weidenbaum to: Argonne Laboratory Chicago, Illinois	Discuss air purification	E. Fitzpatrick	4-20-48	4-20-48	X	
to: Edgewood Arsenal and General Electric Co. Chicago, Illinois	Regarding development of air filters	Col. Loucks I. Langmuir, GE	4-22-48	4-22-48		X
to: Knolls Atomic Power Lab Schenectady, New York	Discuss health physics problems	J. Marsden L. German	4-23-48	4-30-48	X	
to: Research Laboratory Schenectady, New York	Discuss aerosols and analytical procedures	I. Langmuir	4-23-48	4-30-48	X	
to: Brookhaven Laboratory Long Island, New York	Attend information meeting	P. Morse	4-26-48	4-28-48	X	
R. F. Foster to: University of Washington Seattle, Washington	Attend information meeting	L. R. Donaldson	4-15-48	4-17-48		X
INSTRUMENT DIVISION						
I. Visitors to this Works						
H. E. Wheeler Shell Chemical Company San Francisco, California	Inspection re Instrument Design activity	H. D. Riddel	4-29-48	4-30-48	X	
PROJECT ENGINEERING DIVISION						
I. Visitors to this Works						
M. E. Emninger, Wash. State College	Engineering Consultation	H. F. Peterson	4-23-48	4-23-48	X	

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
TECHNICAL DIVISION						
I. Visitors to this Works						
D. H. Miller Knolls Atomic Power Laboratory Schenectady, New York	Work on beta experiment	C. W. J. Wende	4-26-48	5-3-48	X	
C. E. Weber Knolls Atomic Power Laboratory Schenectady, New York	Work on beta experiment	C. W. J. Wende	4-26-48	5-3-48	X	
T. A. Reed Carbide & Carbon Oak Ridge, Tennessee	Metallurgical consultation	R. Ward	4-15-48	4-16-48	X	
W. Pellini Carbide & Carbon Oak Ridge, Tennessee	Metallurgical consultation	R. Ward	4-15-48	4-16-48	X	
II. Visits to other Installations						
T. S. Jones to: Simonds Saw & Steel Lockport, New York	Supervise metal fabrication	P. D. Potts	3-31-48	4-2-48		X
T. S. Jones to: Joslyn Mfg. Co. Fort Wayne, Indiana	Supervise metal fabrication	L. S. Frye	4-3-48	4-7-48		X
T. S. Jones to: Atomic Energy Commission New York City, New York	Metal fabrication contract discussions	S. Belmore	4-16-48	4-16-48	X	
R. Teats to: Simonds Saw & Steel Lockport, New York	Supervise metal fabrication	P. D. Potts	3-31-48	[illegible]		X

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
R. Teats to: Joslyn Mfg. Co. Fort Wayne, Indiana	Supervise metal fabrication	L. S. Frye	4-3-48	4-5-48		X
R. Teats to: Atomic Energy Commission New York City, New York	Metal fabrication contract discussions	S. Belmore	4-26-48	4-26-48	X	
R. Teats to: Electro Metallurgical Co. Niagara Falls, New York	Inspect and discuss metal casting facilities	E. C. Forbes	4-27-48	4-28-48		X
R. D. McGreal to: Electro Metallurgical Co. Niagara Falls, New York	Inspect and discuss metal casting facilities	E. C. Forbes	4-27-48	4-28-48		X
R. D. McGreal to: Mass. Institute Tech. Cambridge, Massachusetts	Process metallurgy discussions	A. R. Kaufman	4-29-48	4-29-48		X
R. Teats to: Mass. Institute Tech. Cambridge, Massachusetts	Process metallurgy discussions	A. R. Kaufman	4-29-48	4-29-48		X
R. J. Schier to: Rustless Iron & Steel Baltimore, Maryland	Witness special fabrication trials	G. D. Moomaw	4-2-48	4-3-48		X
R. D. McGreal to: Joslyn Mfg. Co. Fort Wayne, Indiana	Supervise metal fabrication	L. S. Frye	4-10-48	4-17-48		X
R. D. McGreal to: Simonds Saw & Steel Lockport, New York	Supervise metal fabrica..	L. D. Potts	4-20-48	4-23-48		X

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
R. E. Burns to: Argonne Laboratory Chicago, Illinois	Attend Laboratory Design Conference	H. H. Hull	3-31-48	4-2-48	X	
D. W. Haught to: Argonne Laboratory Chicago, Illinois	Attend Laboratory Design Conference	H. H. Hull	3-31-48	4-2-48	X	
D. F. Shepard to: Research Laboratory Schenectady, New York	Discussion of analytical problems	J. Marsden	3-29-48	4-2-48	X	
J. M. Frame to: Kellex Corporation New York City, New York	Attend Redox Design consultations	H. H. Willis	4-1-48	4-2-48	X	
R. H. Beaton to: Kellex Corporation New York City, New York	Attend Redox Design consultation	H. H. Willis	4-1-48	4-2-48	X	
H. H. Hubble to: Kellex Corporation New York City, New York	Attend Redox Design conference	H. H. Willis	4-1-48	4-2-48	X	
C. E. Kent to: Kellex Corporation New York City, New York	Attend Redox Design conference	H. H. Willis	4-1-48	4-2-48	X	
R. H. Beaton to: Research Laboratory Schenectady, New York	Redox consultation	J. Marsden	4-3-48	4-3-48	X	
L. M. Knights to: Argonne Laboratory Chicago, Illinois	Attend Laboratory Design conference	H. H. Hull	4-2-48	4-2-48	X	
R. S. Rosenfels to: Radiation Laboratory Berkely, California	Technical consultation on Hot Lab. Design	N. Garden J. F. Gifford	4-12-48	4-13-48	X	

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
J. K. Figenshau to: Radiation Laboratory Berkeley, California	Attend Laboratory Design conference	N. Garden J. F. Gifford	4-12-48	4-13-48	X	
E. W. Rebol to: Argonne Laboratory Chicago, Illinois	Attend conference on graphite quality	H. H. Hall	4-19-48	4-23-48	X	
D. W. Pearce to: Chicago, Illinois	Attend American Chemical Society Meeting	--	4-19-48	4-23-48		X
J. B. Work to: Chicago, Illinois	Attend American Chemical Society Meeting	--	4-19-48	4-23-48		X
C. W. J. Wende to: Research Laboratory Schenectady, New York	Consultation on pile technology	K. H. Kingdon	4-16-48	4-26-48	X	
W. R. Lewis to: Brookhaven Laboratory Long Island, New York	Attend information meeting	P. Morse	4-23-48	5-3-48	X	
W. R. Lewis to: Research Laboratory Schenectady, New York	Consultation on stress analysis problems	K. H. Kingdon	4-23-48	5-3-48	X	
U. M. Staebler to: Brookhaven Laboratory Long Island, New York	Attend information meeting	P. Morse	4-23-48	5-8-48	X	
U. M. Staebler to: Research Laboratory Schenectady, New York	Consult on pile physics	H. Brooks	4-23-48	5-8-48	X	
P. F. Gast to: Brookhaven Laboratory Long Island, New York	Attend information meeting	P. Morse	4-23-48	5-3-48	X	

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
C. W. Bobsford to: National Carbon Co. Morganton, North Carolina	Examine experimental graphite finishing runs	G. H. Fancher	4-23-48	5-2-48	X	
J. B. Work Gen. Engr. & Consulting Lab Schenectady, New York	Discuss 234-5 design program	D. Marquis	4-26- 48	4-27-48	X	
R.L. Moore to: Argonne Laboratory Chicago, Illinois	Consultation and inspection of Redox facilities	W. M. Manning	4-26-48	4-26-48	X	
R. L. Moore to: Brookhaven Laboratory Long Island, New York	Attend information meeting	P. Morse	4-27-48	4-28-48	X	
R. L. Moore to: Knolls Atomic Power Lab Schenectady, New York	Attend Redox analytical meeting	J. F. Flagg	4-29-48	4-30-48	X	
C. H. Ice to: Knolls Atomic Power Lab Schenectady, New York	Review Redox analytical methods	J. Marsden J. F. Flagg	4-26-48	4-30-48	X	
W. A. Briggs to: Knolls Atomic Power Lab Schenectady, New York	Redox analytical discussion panel	J. Marsden J. F. Flagg	4-28-48	4-30-48	X	
C. G. Stevenson to: Brookhaven Laboratory Long Island, New York	Attend AEC Librarian conference	H. H. Goldsmith	4-26-48	4-28-48	X	

"S" DIVISION

I. Visitors to this Works

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
P. E. Church University of Washington Seattle, Washington	Consultant on meteorology	D. E. Jenne	4-2-48	4-4-48	X	
II. Visits to Other Installations						
R. S. Bell to: Kellex Corporation New York City, New York	Consultation	H. H. Willis	3-30-48	4-4-48	X	
K. C. Vint to: Kellex Corporation New York City, New York	Consultation	H. H. Willis	3-30-48	4-4-48	X	

Service Department

MUNICIPAL ADMINISTRATION DIVISION
ORGANIZATION AND PERSONNEL

Number of employees on payroll:

	Beginning of Month	End of Month	Increase	Decrease
Patrol	160	155		5 (a)
Fire Protection	120	123	3 (b)	
Total	280	278	3	5

NET DECREASE -2

(a) 3 Hires
8 Voluntary Terminations

(b) 3 Hires

MUNICIPAL DIVISION
FIRE PROTECTION

Fires

	Number of Fires		Estimated Damage	
	March	April	March	April
Village	9	16		$575.00
North Richland & Columbia Camp	13	11	$42.90	56.75
Miscellaneous	1	1		
Totals	23	28	$42.90	$631.75

Village

4-27-48 At 5:45 A.M. fire started in basement of "B" type house, 402 Douglass, occupied by P. R. Engels. The probable cause of fire was faulty electric wiring to air-conditioning motor. Estimated Damage $575.00.

North Richland

4-2-48 Occupant of Room 4, Barracks 126-D, dropped burning cigarette on bedding. Estimated Damage $28.05.

4-25-48 Occupant of Room 21, Barracks 152, dropped burning cigarette on bedding. Estimated Damage $6.70.

4-25-48 Occupant of Room 3, Barracks 230-A, dropped burning cigarette on bedding. Estimated Damage $22.00.

Routine Duties of the Fire Department

Fire Extinguishers		Fire Drills & Lectures	
Inspected	703	Outside	59
Installed and Relocated	79	Inside	136
Refilled	107	Auxiliary Brigade	0
Repaired	31	Safety Meetings	26

All fire alarm boxes were tested.

4.

MUNICIPAL DIVISION

PATROL

GENERAL

Effective April 15, 1948, the North Richland Patrol moved from it's former location in the old Army hutment near the MP Barracks to the newly constructed Headquarters building, just recently completed. The new building which was constructed for our purposes, allows ample room for all divisions of Patrol assigned to the North Richland section, to function properly.

The new Patrol Headquarters in North Richland is equipped with a Contraband Room for handling and storing weapons, ammunition, etc., belonging to residents of North Richland as well as other items of contraband which are picked up here and there throughout the camp for safety reasons.

On April 26, 1948, Mobilization plans were drawn up for the Municipal Patrol to coordinate with those drawn up by the Plant Security & Services Division.

Eighty-two (82) prisoners were processed through the Richland jail during the month of April 1948.

A new Webster Wire Recorder was received by the Crime Prevention Section on April 16, 1948.

The weekly boat check which began on March 5, 1948, was continued through the month of April.

April 13 and 14, Mr. R. S. Soule, Instructor in Police Science from Washington State College, again visited Richland and gave some very interesting instruction and lectures on various phases of police science.

Effective April 28, 1948, one man was assignedto the Bank in North Richland, from 4:00 P.M. to closing time.

Training

Routine classroom instruction in Dorm. W-10 continued through the month as follows:

1:00 P.M. to 2:00 P.M. - "Laws of Arrest".

2:00 P.M. to 3:30 P.M. - "Traffic Instruction and Methods of Procedure".

3:30 P.M. to 4:00 P.M. - "Health, Safety and Security Discussions and Instructions".

Municipal Division - Patrol

For period covering month of April, the advance Firearms Training for Municipal Patrol members at the Small Arms Range was divided as follows:

Pistol	2 Hours
Riot Gun	½ Hour

Qualification in Army "L" course firing were as follows:

	February	March	April
Unqualified	10%	2%	4%
Marksman	29%	30%	30%
Sharpshooter	21%	19%	26%
Expert	40%	49%	40%

Richland Area (Village)

	February	March	April
Check on Absentees	2	2	2
*Persons Assisted	612	314	347
Doors and windows found open in commercial facilities	20	11	11
Lost children found	3	6	6
Ambulance runs	66	44	53
Lost dogs reported	1	7	1
Dog and cat c omplaints	29	30	19
Persons injured by dogs	0	8	4
Totals	746	436	443

*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.

Richland Area (North)

	February	March	April
Check on absentees	0	4	0
Escorts	165	137	101
Bank details	26	27	35
Ambulance runs	15	7	12
*Persons assisted	658	731	147
Complaints investigated	122	121	147
Totals	986	1027	944

Municipal Division - Patrol

*Includes: Special Bank details; admitting persons to their rooms; contacting parties on long distance calls; issuing rooms and bedding; locating persons wanted for various reasons, and handling complaints of a general nature.

Richland Area (Columbia Camp)

	February	March	April
*Persons assisted	167	123	94
Escorts	0	0	0
Ambulance runs	2	1	1
Complaints handled	8	2	5
Open doors and windows	3	2	0
Totals	180	128	100

*Includes: Bedding issued; services rendered to others, and handling of emergency details in general.

Traffic Section

Adult drivers training and instruction which began on January 30, 1948, was continued through the month of April. Classes are conducted each Friday night for periods of two (2) hours.

A Schoolboy Patrol was organized at North Richland, comprised of fifteen (15) members and is under the sponsorship of the Traffic Section. Arrangements have been made to supply necessary equipment to members.

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 Violation Reports, not accompanied by an Unusual Incident Report, are presented in separate tables in the Traffic Statistics attached to this report.

Organization and Personnel

Number of employees on payroll:	April
Beginning of month	160
End of month	155
Net decrease for month:	5
Reason: Voluntary termination, personal reasons	8
New Hires	3
Net decrease for month:	5

APRIL 1948

PATROL DIVISION - RICHLAND OFFENSES

Classification of Offenses	Offenses Known or Reported to Patrol	Offenses Unfounded	Actual Offenses March	Actual Offenses April	Offenses Cleared By Arrest	Offenses Cleared By Other Action	Perpetrators Involved
Assault	3	0	1	3 (a)	2	1	6*
Attempted Suicide	0	0	0	0	0	0	0
Burglary-Breaking and/or Entering	1	1	2	0	0	0	0
Robbery	1	1	0	0	0	0	0
Larceny-Theft (except auto & bike):							
(a) - $50.00 and over value	3	2	5	1	0	0	(u)
(b) - Under $50.00 value	22	6	27	16	1	0	1
Auto Theft	4	0	2	4 (b)	3	0	4
Attempted Auto Theft	1	0	0	1 (c)	1	0	3
Bicycle Theft	8	3	9	5	0	0	(u)
Weapons: Carrying-Possessing	0	0	1	0	0	0	0
Destruction of Government Property	5	0	3	5 (d)	0	1	3
Destruction of Personal Property	3	0	9	3	0	0	(u)
Destruction of School Property	0	0	0	0	0	0	0
Disorderly Conduct	7	0	5	7	0	7	10
Drunkenness	7	0	19	7	7	0	8
Embezzlement and Fraud	9	0	5	9	5	0	2
Forgery	0	0	0	0	0	0	0
Gambling	0	0	0	0	0	0	0
Missing Persons	0	0	1	0	0	0	0
Offense against family & children	0	0	0	0	0	0	0
Pickup for Outside Agency	0	0	1	0	0	0	0
Prowlers	4	0	6	4	0	0	(u)
Public Nuisance	2	0	0	2	1	1	3
Rape	0	0	0	0	0	0	0
Sex Offense	1	0	4	1	0	0	(u)
Cohabitation	0	0	1	0	0	0	0
Vagrancy	0	0	1	0	0	0	0
Violation State Game Laws	0	0	0	0	0	0	0
Violation State Liquor Laws	0	0	0	0	0	0	0
Miscellaneous	1	0	2	1	0	1	1
Juveniles (other than reported above)							
Disorderly Conduct	6	0	4	6 (e)	0	5	9
	88	13	108	75	20	16	50

*One of the offenses was perpetrated by a colored male.

(a) - One of the offenses was perpetrated by four juveniles, of ages 12 and 13 years.
(b) - Three of the offenses were perpetrated by four juveniles, of ages 15 and 17 years.
(c) - The one offense was perpetrated by three of same juveniles cleared in item 'b', of ages 15 and 17 years.
(d) - One of the offenses was perpetrated by three juveniles, of ages 12 and 13 years.
(e) - Five of the offenses were perpetrated by nine juveniles, of ages 5, 10, 12, 13, 14 and 15 years.
(u) - Represents 'unknown'.

Value of perperty recovered during month of April was $2,120.00 (includes three automobiles & two bicycles).

OFFENSES, NORTH RICHLAND, PATROL DIVISION - APRIL 1948.

Classification	Offenses known or reported to: Patrol	Offenses Unfounded	Actual Offenses: Mar	Actual Offenses: Apr	Offenses Cleared: By Arrest	Offenses Cleared: By Other Action	Offenses Cleared: Perpetrators Invl
Assault	5	0	3	5	2	1	4 a
Attempted Suicide	0	0	0	0	0	0	0
Burglary-breaking and/or entering	1	0	0	1	0	0	u
Larceny-Theft (except Auto & Bike)							
(a) $50.00 and over value	13	2	11	11	1	0	1
(b) Under $50.00 value	31	1	22	30	1	0	1
Auto Theft	2	0	0	2	0	0	0
Bicycle and Motor Bike Theft	0	0	0	0	0	0	0
Carrying Concealed Weapon	0	0	0	0	0	0	0
Destruction of Government Property	4	0	3	4	2	1	3
Destruction of School Property	0	0	0	0	0	0	0
Destruction of Personal Property	2	0	0	2	0	0	u
Disorderly Conduct	0	0	0	0	0	0	0
Drunkenness	33	0	39	33	33	0	33
Embezzlement and Fraud	0	0	0	0	0	0	0
Forgery	0	0	0	0	0	0	0
Gambling	3	0	2	3	3	0	3
Missing Person	2	0	1	2	0	2	2
Offense against Family & Children	0	0	0	0	0	0	0
Prowlers	0	0	0	0	0	0	0
Public Nuisance	13	0	28	13	13	0	13
Rape	0	0	0	0	0	0	0
Robbery	4	0	0	4	3	0	3
Sex Offenses	0	0	0	0	0	0	0
Vagrancy	10	0	10	10	10	0	10
Violation of State Game Laws	0	0	0	0	0	0	0
Violation of State Liquor Laws	0	0	0	0	0	0	0
Miscellaneous	6	0	0	6	0	2	2
Juveniles (other than reported above) - Disorderly Conduct	0	0	0	0	0	0	0
	129	3	119	126	68	6	75 b

(a) One of the offenses was perpetrated by two juveniles, of ages 12, and 14.
(b) 23 of perpetrators involved are colored males.
(u) Represents Unknown.

Value of property recovered during the month - $1552.30

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 1947)	Wash., Oregon & Calif. One Month Average	Richland Six Months (Jan-June 1947)	Richland March 1948	Richland April 1948	North Richland Six Months (Jan.-June 1947)	North Richland 1948 March	North Richland 1948 April
Murder	.688	.114	0	0	0	0	0	0
Robbery	19.57	3.26	0	0	0	0	0	2.66
Aggravated Assault	11.23	1.87	.22	.66	2.0	0	2.00	3.33
Burglary	114.53	19.09	1.66	1.33	0	0	0	.66
Larceny	296.10	49.35	12.33	30.66	15.0	0	22.00	27.33
Auto Theft	57.73	9.62	.22	1.33	2.66	0	0	1.33

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 1947)	State of Washington One Month Average	Richland Six Months (Jan-June 1947)	Richland March 1948	Richland April 1948	North Richland Six Months (Jan-June 1947)	North Richland 1948 March	North Richland 1948 April
Murder	.184	.30	0	0	0	0	0	0
Robbery	5.11	.85	0	0	0	0	0	2.66
Aggravated Assault	1.62	.27	.22	.66	2.0	0	2.00	3.33
Burglary	36.20	6.03	1.66	1.33	0	0	0	.66
Larceny	91.39	15.23	12.33	30.66	15.0	0	22.00	27.33
Auto Theft	19.79	3.30	.22	1.33	2.66	0	0	1.33

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

Classification	National Average (Jan-June 1947)	Richland Six Months (Jan.-June 1947)	Richland March 1948	Richland April 1948	North Richland Six Months (Jan.-June 1947)	North Richland March 1948	North Richland April 1948
Robbery	56.1%	0	0	0	0	0	0
Burglary	61.0	30%	0	0	0	0	0
Larceny	46.0	19%	4%	0	0	2.0	0
Auto Theft	74.1	33%	50%	75%	0	0	0

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

In Richland every delinquent juvenile is entered in the records.

PATROL DIVISION - TRAFFIC CONTROL STATISTICS
April - 1948

Motor Vehicle Accidents

	Total Number		Fatalities		Major Injuries		Minor Injuries	
	March	April	March	April	March	April	March	April
Plant	10	3	0	0	0	1	1	0
Richland	21	27	0	0	0	0	4	2
North Richland	7	13	0	0	0	0	1	4
Totals	38	43	0	0	0	1	6	6

Accident Causes

	Negligent Driving		Failure to Yield Right-of-Way		Reckless & Drunken Driving		Other Causes	
	March	April	March	April	March	April	March	April
Plant	10	1	1	0	0	0	0	2
Richland	16	22	4	6	2	2	1	0
North Richland	5	11	1	3	0	0	1	0
Totals	31	34	6	9	2	2	2	2

Plant Warning Traffic Tickets Issued

	Speeding		"Stop" Sign		Parking		Imp. License		Def. Equip.		Other Violations		Totals	
	Mar.	Apr.	Mar.	Apr.	March	April	March	April	March.	April	March	April	March	Apr
Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	
Richland	3	4	2	3	132	159	0	0	13	38	1	3	151	20
N. Rich.	3	2	5	3	254	190	0	6	28	30	5	2	295	23
Totals	6	6	7	6	386	349	0	6	41	68	6	5	446	44

Court Citation Traffic Tickets Issued

	Speeding		"Stop" Sign		Drunken Driving		Reckless Dr.		Neg. Dr.		Parking V.		Other V.		Totals	
	Mar.	Apr.	Mar.	Apr.	Mar.	April	Mar.	Apr.	Mar.	Apr.	Mar.	Apr.	Mar.	Apr.	March	Apr
Plant	13	2	4	2	0	0	0	0	1	2	0	0	3	0	21	
Richland	25	38	14	22	6	6	1	2	8	27	20	64	30	23	104	18
N. Rich.	18	35	22	24	6	1	0	0	10	22	6	3	19	16	81	10
Totals	56	75	40	48	12	7	1	2	19	51	26	67	52	39	206	28

Traffic Volume Count taken on 4-13-48, north of Yakima R. Bridge on George Wn. Way - 24 hour period - 13,711 Cars.

Note: Due to late reporting, eight accidents that occurred in Richland and five that occurred in North Richland during the month of March, are included in April totals.

1225953

PATROL TRAFFIC SECTION
****
RICHLAND JUSTICE COURT CASES
****
APRIL, 1948
****

Violation	Number of Cases	Number of Convictions	Total Fines	Total Susp.	Sentenced to Jail	Sentence Suspended	License Revoked	Average Fine Paid	Cases Dismissed	Warrants Issued
Drunken Driving	7	7	$416.25	$72.50	None	0	7	$49.10	0	0
Reckless Driving	2	2	80.00	52.50	0	0	2	13.75	0	0
Negligent Driving	19	16	367.50	95.50	0	0	0	17.00	1	2
Speeding	72	69	738.75	52.50	0	0	0	9.94	1	2
Stop Signs	49	45	256.75	28.75	0	0	0	5.06	0	4
Impeding Traffic	1	1	12.50	12.50	0	0	0	None	0	0
Failure to YROW	4	3	37.50	None	0	0	0	12.50	1	0
Improper Passing	19	19	123.00	12.50	0	0	0	5.81	0	0
Improper Parking	45	43	154.50	29.50	0	0	0	2.86	2	0
No Arm Signal	1	1	7.50	7.50	0	0	0	None	0	0
No Drivers License	20	18	46.00	39.25	0	0	0	.37	0	2
Failure to Stop & Identify	2	2	40.00	12.50	0	0	0	13.75	0	0
Defective Equip.	2	2	15.00	7.50	0	0	0	3.75	0	0
No Vehicle License	2	2	7.00	None	0	0	0	3.50	0	0
Following too Closely	1	1	7.50	7.50	0	0	0	None	0	0
Public Intoxication	39	39	517.50	80.00	2	0	0	11.22	0	0
Public Nuisance	16	16	270.00	35.00	0	0	0	4.68	0	0
Vagrancy	10	10	82.50	42.50	7	5	0	4.00	0	0
Third Degree Assault	2	2	None	None	2	2	0	None	0	0
Petit Larceny	1	1	None	None	1	0	0	None	0	0
Possession of Gambling Equipment	3	3	292.50	None	0	0	0	97.50	0	0
	317	302	$3472.25	$588.50	12	7	9		5	10

Total Fines---------- $3472.25
Less Fines Suspended---------- 588.00

Total Fines Received---------- $2884.25

The Above includes violations that occurred on the Hanford Works Project.

Service Department

MUNICIPAL ADMINISTRATION

GENERAL

A questionnaire has been prepared for issuance to all residents and applicants for housing in order to have available up-to-date information as to the adequacy of existing housing in relationship to family size and information relative to the number of children who will be attending Richland schools during the 1948-49 term.

Due to the necessity of establishing additional bus transportation service to the residents in the new housing areas, a conference was held with members of the Transportation Division and the Municipal Administration. Agreement was reached for establishing a new and additional route to cover the new residential Areas A and E and to revise the existing route now covering Division II and the new residential Area B. These proposed changes in the local bus transportation system will be presented to the Atomic Energy Commission for approval.

G. C. Houston, of the Municipal Administration Division, and Mr. J. E. Travis, of the Atomic Energy Commission, represented the Richland community at the Army Day parade in Kennewick on April 6.

The proposal of Villagers, Inc., to operate certain recreational and community facilities in Richland and North Richland, with the profits to be used for community projects, was disapproved by the Atomic Energy Commission.

VILLAGE EXPANSION AND IMPROVEMENTS - RICHLAND

A conference was held the ninth of April relative to the recommended new shopping area to be established between Williams and Van Giesen. It was agreed that J. Gordon Turnbull and Associates would prepare a preliminary layout and cost estimate together with recommendations relative to the expansion of the existing commercial area. Their report was scheduled to be due for review by management by the end of the month.

Relative to the proposal of the Castle Club to establish a commercially operated restaurant in conjunction with the club's normal operations, the board of Directors was informed that expansion of existing facilities in the face of the residential development of the area immediately around the club was not considered advisable.

A new area north of the existing village and the Air Port was selected as the new disposal area for garbage and trash in accordance with the recommendations of the United States Department of Public Health. Garbage and trash will be disposed of in that area by the sanitary fill method.

Service Department

Clearance was obtained from the Design-Engineering Division and J. Gordon Turnbull and Associates in order that a study could be started for the installation of a shelter belt and neighborhood play ground area in the region located between Duane Avenue and the existing railroad track.

Recommendations were made to management relative to the proposed construction of barracks south of the southwest prefabricated area to house the employees of the Nettleton-Sound Corporation. Inasmuch as it was apparent that this program would create an additional burdon to the already overcrowded facilities in the village, it was recommended instead that housing for employees of this subcontractor be located at North Richland.

The proposed location of hutments to be used by Electrical Division personnel in the vicinity of Lee Boulevard and Stevens Drive was disapproved inasmuch as that location is to be reserved for commercial facility development to accommodate service facilities such as auto sales and service, public warehouses, etc.

Comments were prepared on the report of Howard R. Ennor, Budget Analyst, relative to housing requirements in Richland. It was pointed out in the comments on this report that while the conclusions reached by Mr. Ennor were accurate on the basis of the statistics as gathered, there are underlying factors involved outside of the province of pure statistics which result in a somewhat different picture on housing needs than was indicated by Mr. Ennor's report.

In an endeavor to use all possible means to ameliorate the present housing crisis, further study is being given to the rehabilitation of tract houses in those cases where expenditure can be justified.

Physical developments in the construction program during the month of April are listed as follows:

1. Contracts were awarded for the next phase of the school construction program, specifically for the Robert Gray Junior High School, the Spalding Grade School and additions to Marcus Whitman and Lewis & Clark Grade Schools.

2. Construction of the softball field was started April 2.

3. Construction of the by-pass highway was commenced April 12.

4. Ground was broken for the 1000-house addition April 7.

Work orders were written during the month as follows:

1. For the preparation of a project for installation of an automatic fire detecting system to cover all Richland dormitories and

Transient Quarters.

2. For the installation of a lighting mechanism to illuminate the pedestrian corsswalk west of the Recreation Hall.

3. For the installation of flood lighting equipment for the tennis courts at the Richland Park.

VILLAGE EXPANSION AND IMPROVEMENTS - NORTH RICHLAND

A type A work authority was requested of the Design-Engineering Division for the installation of such outdoor recreational facilities for North Richland as playgrounds, park, lighted softball diamond and base ball diamond.

Similarly, a type A work authority was requested for the construction of the North Richland Recreation Building.

The North Richland Post Office and North Richland Bank opened for business April 26 and construction has started on the second section of the North Richland grade school.

DUST CONTROL AND LANDSCAPING

During the month of April the street tree planting program concluded for the season with the planting of 404 street trees. Work was completed on revising certain drainage facilities in the village nursery.

ORGANIZATION AND PERSONNEL

Number of Employee on Payroll	April
Beginning of month	13
End of month	12
Net decrease	1

Mr. H. E. Price was transferred to the Realty Division at North Richland.

Requisitions were placed for three life guards, including one supervisor, who will be employed at the swimming pool this season.

VILLAGE SAFETY COMMITTEE - RICHLAND

Action taken by the Village Safety Committee during the month is listed as follows:

Service Department

Traffic Control

Recommended the relocation of the school child silhouette signs at two grade schools to provide adequate clearance in the street for motor vehicles.

Recommended establishment of 10-minute parking zone on both sides of Knight Street in the block between Goethals Drive and George Washington Way, to accommodate individuals transacting business at the Bank and calling at the Post Office to pick up or deposit mail, and to include in the 10-minute parking area a space on the east side of the Post Office building if the Post Office Department is in a position to install a letter collection box at that location.

Recommended establishment of a one-hour parking zone on Flagler Avenue to accommodate individuals transacting business in the Administration Area.

Recommended elimination of parking in the Administration Area parking lots between the hours of 2 and 6 a.m. in order to prohibit the parking of cars stored there indefinitely.

Recommended the painting of a crosswalk on Hunt Avenue at Jefferson School in order to protect school children crossing at that point.

Fire Prevention

Recommended steps to be taken for water conservation in the event of impending shortage of domestic water.

Public Health

Recommended the sanitary fill system of garbage and trash disposal as an approved technique to overcome the difficulties presently caused by burning.

Recommended continuation of the present policy not to sell garbage to piggeries due to the lack of control over maintenance of proper health standards.

Recommended that review be made of the proper control measures to be taken on dog breeding as a business enterprise within the village limits.

Program and Publicity

Announced the preparation of publicity relative to the clean-up program, use of fire works, and the location of a public dumping area.

Service Department

COMMUNITY ACTIVITIES

On April 27, 1948, the Recreation Advisory Committee held its regular monthly meeting. The committee recommended that the following organizations be approved subject to the required security clearances: Singer Sewing School, Kelly Piano School, Baird Piano and Voice School.

As part of the current cancer drive, a quartet of experts from the Kadlec Hospital staff presented a panel discussion on cancer at the American Legion rooms April 21. The program was sponsored by the Richland Community Health Council with the cooperation of the Legion officials and was open to the public.

The Richland Community Concert Association conducted a one-week membership campaign which opened April 5 and resulted in a complete sell-out of available memberships for the 1948-49 season. On April 7, in connection with theAppleton-Field Concert, a survey was conducted to enable the local membership to select those artists it preferred for the coming season. Results of this survey were announced on April 26 when the Association also held its annual election of officers.

On April 1, N. Paul Nissen, who had edited the Richland Villager for the past three years was succeeded by Mr. Ted Best, a Whitman College graduate and former Seattle newspaperman.

The Richland Health Council sponsored a three-day Food Show which opened at Sacajawea Grade School on April 8. Washington State College extension agents were in charge of the instructive sessions.

The newly-formed Richland Art Association sponsored its first exhibition which opened April 10 at C. C. Anderson's store with a display of 34 watercolor paintings lent to the association by the Northwest Watercolor Society. The exhibit was open to the public without charge.

SCHOOLS

School Enrollment in Richland and North Richland as of April 30, 1948, was as follows:

Sacajawea Grade School	1,032	
Marcus Whitman Grade School	761	
Lewis and Clark Grade School	845	
Jefferson Grade School	359	
John Ball Grade School (North Rich.)	373	
Total all grade schools		3,370
Columbia High School		802
TOTAL, ALL SCHOOLS		4,172

This indicates a total enrollment increase since May 31, 1947, of 907 pupils, with 170 additional pupils at the high school and 739 at the grade schools. During the month there was an increase in enrollment of 98 pupils in the grade schools and 7 pupils in the high school.

On April 30, 1948, there were 77 children enrolled in the Richland Nursery School with an average attendance of 53. There was a decrease in enrollment during the month of 1. On this day there were 16 children enrolled in the Extended Day Care program of the Nursery with an average attendance for the month of 13. There was no increase nor decrease in enrollment during the month.

Parents and teachers of the John Ball Grade School held an organizational Parent-Teachers Association meeting April 20. The North Richland group was assisted in its efforts by officers and members of the Richland Parent-Teachers Association.

Completion dates for the new schools and additions now under construction have been announced as follows:

Columbia High School	Aug. 1, 1948
Jefferson Grade School	Aug. 1, 1948
Robert Gray Junior High School	Sept. 1, 1948
Spalding Grade School	Sept. 1, 1948
John Ball Grade School	Sept. 1, 1948

CHURCHES

The Church of God announced on April 23 that Rev. Harold E. Lougheed, formerly of Grandview, Washington, had been appointed as the regular minister of the Church of God in Richland.

COMMUNITY FACILITIES PERSONNEL

The number of full time personnel employed by the schools, churches and community organizations as of April 30, 1948, was distributed as follows:

Churches	25
Schools	241
Community Organizations	74
Total	340

Service Department

Major Activities During the Month:

April 2	Thespian Troupe 640	Columbia High Sch.
April 7	Appleton-Field Concert	Columbia High Sch.
April 11	Adelphian Concert Choir	Columbia High Sch.
April 12	V. F. W. Boxing Show	Columbia High Sch.
April 15,16,17	Richland Players, Inc.	Columbia High Sch.
April 21	Columbia High Vocal Department Concert	Columbia High Sch.
April 26	Arthur Kent Concert	Columbia High Sch.
April 26	Richland Orphans' Wrestling Show	Columbia High Sch.
April 30	Columbia High Band Concert	Columbia High Sch.

Service Department

REALTY DIVISION

GENERAL

The Realty Division has as its general responsibility the landlord relationships involving assignment and leasing of houses, apartments and dormitory rooms; and the procurement and performance of commercial facilities.

ORGANIZATION AND PERSONNEL

Number of employees on payroll:	April
Beginning of month	277
End of Month	49
Net decrease	228

The reduction in number of personnel is due to the fact that North Richland Realty is no longer included in this group.

The following report is divided into two parts: Richland Housing and Commercial Facilities.

RICHLAND HOUSING

Housing Utilization as of Month End

Houses Occupied by Family Groups	Conventional	Block	Pre-Cuts	Prefab	Apts.	Tract	Total
Operations	2253	52	208	1139	57	38	3747
Facilities	119	-	6	112	1	11	249
Government	97	11	30	39	2	11	169
Kellex Corporation	1	3	5	10	1	-	20
Morrison-Knudsen	4	-	-	3	1	-	8
Atkinson & Jones	1	5	1	3	1	-	11
J. Gordon Turnbull	-	-	1	4	-	-	5
Giffels & Vallet	-	-	-	2	-	-	2
J. A. Terteling & Sons	-	-	-	1	-	-	1
Graysport Construction	-	-	-	-	-	1	1
Newport-Kern-Kinne	-	-	-	-	-	1	1
Vernita Orchards	-	-	-	-	-	5	5
TOTAL HOUSES OCCUPIED	2475	71	230	*1313	63	**67	4219

Service Department

Houses utilized for special purposes	-	-	-	-	-	1	1
Houses assigned-(Leases Written)	4	9	26	8	4	-	51
Houses assigned-awaiting tenants	21	7	26	33	7	-	94
Government Houses-Unassigned	-	-	-	-	-	***33	33
TOTAL HOUSES	2500	87	282	1354	74	101	4398

* Total includes 10 prefabs and 12 hutments taken over at Columbia Camp.
** Occupancy figure includes 4 houses occupied by Bonneville Power in ... Priest Rapids and White Bluffs.
*** This includes 32 Tract Houses boarded up for salvage.

Housing Turnover During Month	Begin Month	Moved In	Moved Out	Month End	Difference
Conventional type	2470	57	52	2475	Plus 5
Block Type	27	44	-	71	Plus 44
Precut type	110	120	-	230	Plus 120
Prefab type	1330	59	76	1313	Minus 17
Apartments	10	55	2	63	Plus 53
Tract	61	8	2	67	Plus 6
Total	4008	343	132	4219	Plus 211

Dormitories		Occupants	Vacancies	Total Beds
Men-Occupied	14	*522	**35	557
Men-Unoccupied	-	-	-	-
Women-Occupied	13	624	**18	642
Women-Unoccupied	-	-	-	-

Women's Dormitories Occupied By:

Medical Department	1
G. E. Office	1
Education	1
Apartments	1
***	31

* Total includes single bed added in one single room in the men's dormitory for a G. E. employee.

** This includes 6 beds in W-9 and 10 beds in M-12 not in use. Space in W-9 is being used for Supply Rooms and Dormitory Offices. Space in M-12 is being used for F.B.I. offices.

*** Potential Occupancy 28 dormitories: 14 men's - 14 women's.

131 precuts were accepted from the Hudson Company during the month of April: 38 "U" type and 93 "V" type.

Service Department

41 Atkinson-Jones houses were accepted during the month of April: 17 "Q" type, 17 "R" type, 5 "M" type and 2 "S" type.

The last seven units, totaling 56 apartments, were accepted during the month of April and are ready to allocate.

Dormitory W-8 was opened on April 23, 1948, for occupancy.

Tract House K-788 was leased at a rental of $40.00 per month unfurnished.

Tract House JJ-674 was leased to the Vernita Orchards Company at $1.00 per month.

COMMERCIAL FACILITIES

The following figures indicate trends in commercial activities as related to various basic items:

	March	April
Cafetoria Meal Customers (Progressive)	123,613	125,530
Percent of room-day occupancy - Transient Qts.	97.41%	98%
Gallons of ice cream sold	8,941	10,139
Carnation milk and cream deliveries (gallons)	82,201	83,202
Darigold milk and cream deliveries (gallons)	8,572	6,818
Theater Customer Count	52,044	52,355
Cases of soft drinks sold	9,694	11,842
Gallons of gasoline sold	224,769	246,725

Total number of Commercial Facility employees, full and part time, as of April 30, 1948, 951.

The Elite Shop at 713 The Greenway, specializing in children's wear, opened for business April 30, 1948.

Ganzel's Barber Shop installed new interior lighting, customer waiting chairs, hat and coat racks and shoe shine stand, at operator's expense.

The Elite Shop was granted authorization to install a neon sign at the expense of the operator.

The Richland Shoe Salon was authorized to install a neon sign at the expense of the operator.

Progressive Cafeteria has provided, at operator's expense, a portable type coffee and doughnut service wagon.

Re-activation of kitchen equipment was accomplished for the reopening of the Desert Inn Coffee Shop.

Service Department

Authorization was granted the new operator of the hotel to remodel and modernize the Desert Inn Coffee Shop Dining Room.

Work was completed on new air conditioning system at the Richland Theater.

An additional bakery mixer and range have been installed at the Cafeteria to increase the food preparation capacity.

Stainless steel sanitary sinks were installed in the Recreation Hall Tavern and Fountain, at the request of Public Health.

During the month of April a trip was made to Seattle, Bellingham, Tacoma and Portland by members of the commercial facilities group in order to contact prospective commercial facility operators.

Contracts and Negotiations

A new Operating Agreement dated April 9, 1948, was entered into by and between General Electric Company and Progressive Cafeterias, covering the operation of the cafeteria in Richland. Former Operating Agreements on Transient Quarters and Cafeteria were cancelled, effective April 13, and a new contract with Vanco Properties, Inc., covering the operation of the Transient Quarters, is in process of preparation.

An Operating Agreement dated April 12, 1948, was entered into by and between General Electric Company and the Washington State Liquor Control Board, covering the operation of the liquor store in Richland.

An Operating Agreement dated April 8, 1948, was entered into by and between General Electric Company and the Richland Plumbing and Heating Company, covering the operation of a plumbing, heating and sheet metal shop.

A Supplemental Agreement dated April 14, 1948, was entered into by and between General Electric Company and the Richland Plumbing and Heating Company, covering construction of a building, at operator's expense, to house a plumbing, heating and sheet metal shop.

Invitations to bid were sent out on the following prospective facilities:

Furniture Store - Richland
Tavern - North Richland

Operators for the following facilities in Richland and North Richland have been selected:

Barber Shop in Bldg. 182 - Henry J. Naimy, 722 Balm, Walla Walla, Wash.
Barber Shop in Bldg. 192 - Richard Grossley, 666 Jackson Street, Seattle.

Service Department

Fountain Lunch - Clifford A. Brenner and James P. Milnor, Yakima
Self-Service Laundry - Chalmer D. Joseph and Robert Cavin, Yakima
Jewelry Store - Richland - Raymond A. Hall, Panama Bldg., Portland

Inventory and Property

The annual 1948 inventories of Government equipment at the following locations were completed:

Style Center
Richland Laundry

Requests for Establishment of Businesses in Village

A number of individuals expressed a desire during the month to establish and operate businesses in Richland and North Richland. The types of establishments desired are shown in the following list:

Amusement Device Concession for Rec Hall
Automobile Agency
Automotive Electrical Shop
Barber Shop
Beauty Salon
Cafeteria
Card and Camera Store
Cars for hire and Travel Bureau
Delicatessen Store
Dental Laboratory
Furniture Store
Garage and Service Station
Garbage Disposal
General Merchandise Store
Gift Shop
Glass Working Shop
Golf Driving Range
Haberdashery
Hardware & Electric Appliance Store
Ice Cream & Sandwich Shop
Ice Cream Store
Ice Delivery
Infant's & Children's Store
Insurance Office
Jewelry Store & Gift Shop
"Kiddie-Ride"
Laundry & Dry Cleaning Establishment
Lunch Trailers
Men and Boy's Store
Men's Clothing Store
Novelty Shop
Pin Ball Concession
Drive-in Restaurant
Drug Store
Electrical Maintenance & Repair
Finance, Ins., Mortgage Loan and Real Estate Office
Firestone Dealer Store
Flower Shop-Greenhouse-Landscaping
Flying School
Food Store
Fresh Fruit Stand
Plumbing and Heating Shop
Portrait Studio
Press Shop & Shoe Shine Stand
Printing Shop
Radio Sales & Service Store
Radio Station
Recreation Center
Restaurant
Roller Skating Rink
Self-Service Laundry
Shoe Repair Shop
Sporting Goods Store
Tailor Shop
Tavern
Theater
Trailer Sales & Accessories
Transfer and Storage Line
Used-Car Dealership
Variety Store
Watchmaking Shop
Wholesale Sandwich Manufacturing
Women's Wear

Service Department

Written permission was granted to fifteen Village tenants to conduct the following part-time businesses in their homes:

Sell Westmoreland Sterling (2)
Sell Kirby vacuum cleaners
Rent personally-owned car
Sell Lo-Heet Stainless Steel Cook-ware
Sell the Gateyard Playpen
Operate limousine charter service
Sell Softee water softener (2)
Represent American National Life Ins. Co.
Represent North American Life & Casualty Co.
Sell Fuller Brushes
Represent Travelers Insurance Co.
Lawn mower sharpening service (2)

Written permission was granted seventeen individuals living outside of Richland to contact Village tenants on an appointment basis on the following business matters:

Sell Vacuum cleaners for Wicks Electric Co. (2)
Sell household wares for the H. L. Roberts Co. (3)
Sell Westmoreland Sterling Silver
Sell Compact vacuum cleaners, and cellulose mops, brooms and wax (3)
Sell Softee water softener (3)
Take orders for Utah Woolen Mills
Sell Webster Dictionaries
Represent Periodical Publishers
Take orders for the House of Duchesne and Arthur Rose (2)

Service Department

REALTY DIVISION

GENERAL

The operation of the construction camp at North Richland, as well as the operation of Columbia Camp is the responsibility of the North Richland Section of the Realty Division.

ORGANIZATION AND PERSONNEL

Number of employees on payroll:	April
Beginning of month	223
End of month	298
Net increase	75

This increase is due to the continued expansion of the North Richland Camp and to the added responsibility of garbage and trash collection and ground maintenance.

NORTH RICHLAND HOUSING DIVISION

North Richland Population:

On April 30, 1948, the population of North Richland was slightly under 10,000, of which about 6,700 were in barracks, 2,950 in trailers, and 250 in houses.

Barracks:

During April the number of occupied barracks beds increased by about 600, making a total of 6,700 occupants. There remained only three one-story men's barracks and two women's barracks to be completed by construction. Barracks #200 was evacuated as an office building and is being remodeled into a standard one-story barracks to be used for key personnel of the principal subcontractor. Two-story barracks #191 was evacuated by the Post Office April 26, 1948, and was ordered converted into normal use which work is about 40% complete.

April 5, 1948, the first women's barracks was open and filled so quickly that a second barracks was opened about a week later. On April 30, 1948, there were 160 women occupants. Matrons were employed to act as housemothers, one to each barrack, normally on duty from 4:00 PM to Midnight. A janitress was up-graded to matron on day duty in all women's barracks.

Service Department

April 26, 1948, Columbia Camp was evacuated so that it might be turned over for use by subcontractor. About the same time barrack #218 was designated for occupancy by Monthly Roll personnel of the Design and Construction Department. White occupants were moved from two wings of barracks #234 to provide more beds for colored occupants.

Barracks in use as of April 30:

One-story male barracks -	80 wings	- white
	22 wings	- colored
Two-story male barracks -	42	- white
	1	- colored
One-story female barracks	8 wings	- white

(Two two-story barracks were still in use as temporary Recreation Halls.)

By the end of April the number of beds available for occupancy by men was reduced to under 100 due to the evacuation of Columbia Camp, and the assignment of barrack #218 to Design and Construction monthly roll personnel. The completion of barracks now under construction or being used for non-residence purposes will add approximately 630 beds for men and less than 300 for women. This will make a total of less than 8,000 available beds for both men and women.

Trailer Camp

On April 30, 1948, there were 1,042 trailers in camp, occupied by nearly 3,000 residents. A total of about 1,200 lots had been received from Construction, so that the waiting list for trailer lots was practically ended. Trailer lots are now assigned on a "first-come -- first served" basis. All 59 bath houses east of George Washington Way were in use. Road surfacing kept pace with the acceptance of lots and bath houses for use. A Work Authority for canopies over trailers was approved but installation of canopies had not started by the end of April.

Houses

The total number of prefabricated houses brought from Bremerton, Washington, was increased from 198 to 200. On April 30, 1948, 80 houses were occupied by 264 residents.

Change of Location of Offices

On April 27, 1948, the G. E. Administration Building for North Richland was ready for occupancy, and the General Office for Commercial Facilities, Realty, Engineering Staffs moved in. On April 28, 1948, the Room and Bedroll Office was moved from Warehouse #10 to permanent quarters in Warehouse #52. The barracks supervisor moved his office to Warehouse #51.

Service Department

Engineering & Maintenance

During the month of April final inspection was made and acceptance forms signed on the following North Richland buildings: 112 Bremerton type houses; 59 trailer camp bath houses; 43 Pasco type barracks; 5 Hanford type men's barracks; 2 Hanford type women's barracks; commercial bus depot; Post Office; cafeteria #2; commercial bank; temporary school #42; GE Administration Building; Fire Station; Patrol Headquarters; 3 temporary boiler plants and change houses; and subcontractor's bus depot. These buildings and the keys thereof were turned over to the operating department.

During the month 277 Maintenance Work Requests were processed by this section. As of the end of the month the record shows that 210 Work Orders have been completed by the Maintenance Group and 67 are still outstanding as incomplete. Little change is noted in the status of Work Orders incomplete at the present time as compared to the number incomplete at the beginning of the month; however, since more orders were issued this month than last, this indicates a better coverage by the Maintenance crews. This increase in Work Orders is normal at this time since we are accepting new buildings from the Construction Forces, and during the first months use a building usually has more maintenance work to be performed than it will require later on, since certain faults in installations will show up at this time.

The following engineering work was also performed during April:

1. A Work Authority Request was prepared and necessary sketches drawn to cover an addition to the Trailer Camp Office, and renovation work in Tract House J-641.

2. A Work Authority and sketches were prepared for an extension to the Commercial Ice Storage House.

3. A Work Authority Request was prepared and necessary sketches drawn covering improvements in Mess Halls #1 & 2.

4. Conferences were held with the Engineering Contractor (J. Gordon Turnbull, Inc., & Graham, Anderson, Probst & White) who is making studies on evaporative coolers for Pasco type barracks, dust control and irrigation in the 3000 area, and top soiling in trailer camp and Bremerton house areas.

5. Advice was supplied to the Commercial Facilities Group, Housing group and Community Activities Group in connection with problems arising within their normal operation.

Service Department

Responsibility for garbage and trash collection and grounds clean-up at North Richland, which had formerly been handled by Richland Public Works Division, was transferred to the North Richland Realty Division on April 19, 1948, and the equipment and personnel necessary for this function were transferred at the same time. The following personnel were involved in this transfer:

1 Truck & trailer driver
8 Helpers
3 Light truck drivers
2 Heavy truck drivers

Commercial Facilities

The following figures indicate volume of business in Cafeteria #1:

	March	April
Meal Customers	92,702	77,990
Average Meal Check - Breakfast	.48	.49
Average Meal Check - Lunch	.60	.56
Average Meal Check - Supper	.62	.60
Average Daily sales of box lunches (Sun.excluded)	431	386

The following figures indicate volume of business in Cafeteria #2:

	March	April
Meal Customers	139,612	135,705
Average Meal Check - Breakfast	.45	.52
Average Meal Check - Lunch	.53	.60
Average Meal Check - Supper	.58	.67
Average Daily sales of box lunches(Sun.excluded)	458	477

The following figures indicate volume of business in Columbia Camp: *Feeding service discontinued April 24, 1948.

	March	April
Meal Customer	6,655	2,289
Average Meal Check - Breakfast	.42	.45
Average Meal Check - Lunch	.55	.40
Average Meal Check - Supper	.52	.54
Average Daily sales of box lunches(Sun.excluded)	54	22

The automobile license agency department of the Columbia Service Company served approximately 165 patrons during the month.

Mickey's Shoe Renewing pick-up station served 52 customers during the month.

The Richland Laundry & Dry Cleaning served 969 customers at the North Richland pick-up and delivery station during the month.

Service Department

Western Gas & Power Company delivered 1,196 gallons of propane gas to trailer residents during the month.

North Richland Ice Delivery delivered 129,850 pounds of ice to residents in North Richland Trailer Camp during the month.

North Richland Barber Shop (Building 192) began operating April 1, 1948, and served 566 customers during the month.

Naimy's Barber Shop (Building 182) began operating April 1, 1948, and served 2,220 customers during the month.

The Self-Service Laundry installed a total of thirty-six coin operated Bendix washing machines in Trailer bath houses one through thirty-six between the dates of April 22 and April 30, 1948. One Bendix washer was installed in the laundry room of women's barracks #219. The operator has agreed to install one Bendix in each laundry room of all women's barracks.

Seattle First National Bank, Area Office, opened for business April 26, 1948, in its new location at "M" Avenue and 5th Streets. Business hours are the same as those in Richland Bank.

North Richland Commercial Bus Depot began operating April 24, 1948, and served approximately 2,200 customers through April 30, 1948.

Richland Cab Company began operating April 1, 1948, and rendered service to 41 people during the month. This operator moved into Bus Depot April 24, 1948, and telephone service commenced April 30, 1948.

The total number of Commercial Facility employees, full and part time, as of April 30, 1948, was 331.

Service Department

VILLAGE PUBLIC WORKS

GENERAL

Effective April 1 the services of the Maintenance Shift Engineers in the village were replaced by two foremen who alternate on the daily 4-12 shift and Saturday and Sunday day shifts for emergency coverage. They are responsible for all non-exempt employees in the Public Works Division who are on duty on off shift hours.

ORGANIZATION & PERSONNEL

Number of employees on payroll:	Exempt	Non-exempt	Total
April 1, 1948	32	344	376
April 30, 1948	36	334	370
Increase	4		
Decrease		10	6

During the month of April the following personnel changes were made:

	Exempt	Non-Exempt
New Employees	1	16
Transfers:		
From non-exempt roll	2	
Maintenance Division	1	
To North Richland Realty		14
Maintenance Division		1
Exempt roll		2
Terminations		9

VILLAGE ENGINEERING DIVISION

GENERAL

The normal duties of inspection, scheduling and follow-up consultation and general planning were performed during the month. Priority schedules were set up with the Village Maintenance and Labor Divisions, and Transportation Department, outlining the work to be performed in the order most advantageous to the over-all village maintenance. Contacts with members of the Construction Group were continued relative to Richland houses, facilities, and dormitories. Performed the necessary liaison work with Design Department, where we were designated as the Contact Engineer.

TENANT SERVICE SECTION

Activities

The processing of Patrol Orders and Work Orders during the month is as follows:

1.

Service Department

	Incomplete 3/31/48	Issued During April	Incomplete 4/30/48	Issued Prev.Mo.
Patrol Orders-Days Maint. & Electrical	1158	3607	1404	3243
Patrol Orders, Fire Insp.	442	0	355	0
Patrol (Furniture Repair	142	91	172	118
Patrol (Off Shift Elec.)	0	567	0	624
Patrol (Off Shift Maint.)	0	317	14	254
Regular Work Orders	648	112	441	472
Back Charge Work Orders	66	109	43	153
Routine Work Order Requests	0	37	37	0

COLUMBIA CAMP

Tenant Service

Patrol Orders	0	20	0	31
Work Orders	0	1	1	21

The Tabulation of House Renovations by Types for the Month is as follows:

Tract	A	B	D	E	F	G	H	L	Q	Prefab.	Apts.	Hutments	Total
0	9	15	0	3	6	0	4	1	0	50	2	0	90

During the month paint was distributed to tenants as follows:

Kemtone and Muraltone	288.00 gallons
Enamel	120.25 gallons
Varnish	76.00 quarts

ITEMS OF INTEREST

Paint Inventory - on hand April 30, 1948

Kemtone and Muraltone	1762.50 gallons
Enamel	544.00 gallons
Varnish	302.00 quarts

201 grass seed permits were issued to tenants during the month, which amounted to 4491½ pounds.

Home fire inspections for the month amounted to 302 (492 homes were visited and 302 were inspected).

There have been many requests during the past month for building permits (alteration) on both new and old type homes that are being held up pending policies to be established.

Requests for bathroom paintings outstanding amount to 103 for the month.

Sink linoleum requests for replacement amount to 292 outstanding.

Service Department

Window glass replacements, requests outstanding amount to 138 to date.

Outstanding Patrol Order requests for miscellaneous repair amount to 658 as compared with 663 the previous month.

658 permits for scrap lumber were issued to tenants during the month.

Miscellaneous inspections during the month amounted to 25 daily average on lot lines, soil for foundations, basement excavations, and clothes reels.

During the month 519 items of household furniture were sent to Maintenance for repair and 536 items were returned to warehouse following repair by Maintenance.
Alteration permits issued to tenants during the month of April amounted to 176 as compared with 130 issued during the month of March. Permits issued during the month of April consist of the following.

Installation of room in basement	1
Installation of tileboard around bath tub	2
Basement excavations	23
Reverse position of range and refrigerator	2
Installation of air conditioners in windows and furnaces	83
Installation of back door in 3-bedroom prefabs	7
Installation of Automatic washers	26
Construction of patios (brick and concrete)	3
Construct small tool shed & rear of "E" house 5'x4'	1
Sanding & refinishing of floors	23
Installation of 20 amp. circuits	1
Installation of clothes dryer	1
Installation of electrical outlet	1
Installation of louvers in hot air duct system "R" type house	1
Installation of kitchen floor linoleum	1
Total alteration permits issued	176
Daily average of permits issued	8

ENGINEERING SECTION

Activities

Modernization of Thrifty Drug Store is complete except for laying of the asphalt tile floor which has been delayed pending delivery of materials.

Final inspections were made of the air cooling installation at the Richland Theatre and the renovation of kitchens in "E" type houses. These projects are now acceptable.

Campbell's Locker Addition is approximately 55% complete. Roofing and exterior finishing is now in progress.

Service Department

Work is now proceeding on the alteration of the Transient Quarters Dining Room and is approximately 30% complete. Additional alteration changes in the air conditioning systems and entrance stairways will be submitted for approval.

During the month a number of contractors who are bidding on the exterior painting of 514 houses in divisions 4 and 5 were conducted to the area where the painting is to be done. Details were given these contractors so that they might have additional information for estimating the job. The bids were submitted to the Design & Construction contracting group and opened by them. The letting of the contract will not be done until the Project Engineering Division has completed their project covering the work, which will include an estimate to be used in guiding the committee who grants the contract for this work.

Proposal approvals were given to the following groups who desire to erect new structures:

a. Richland Lutheran Church addition
b. Addition to the Rainbow Service Station.
c. V.F.W. Building and plot.

Preliminary review was given on the tentative proposals of the following groups:

a. Elks Club at North Richland
b. Expansion of Chevron Station in Richland.

Contacts were made with prospective facility operators for North Richland, and several architect's drawings were reviewed for proposed buildings. A permit was issued to Herman's Clothing Store at North Richland, and construction of the building was started April 26. It is anticipated that this building will be complete by the fore part of July.

Listed below are names of prospective facility operators whose plans and specifications are being reviewed:

a. Signal Service Station
b. Phillips "66" Service Station
c. Food Store
d. Drug Store

A final inspection was made of the Women's Apparel Shop, and the alterations were accepted as made.

Contacts were made as necessary with construction on the following work authorities on which a representative of the Engineering group has been designated contact engineer:

a. Additional men's Dormitories.
b. By-pass highway.
c. Conversion of 3 bedroom houses into 2 bedroom.
d. Eight additional dormitories.

e. Clothes Line Poles, U & V type houses.
f. Third addition to housing, 1000 houses
g. Third addition to housing, Alleys.
h. Walkways & Steps for U & V type houses.
i. Replacement houses, U & V type.
j. Top soil, U & V type.
k. Construction of five duplex houses.
l. Architectural services for commercial buildings, Richland and North Richland.

INSPECTION AND ACCEPTANCE OF NEW HOUSES

	Previously Accepted	Accepted during April	Total
"U" and "V" type pre-cuts	151	131	282
M, Q, R & S type, conventional	46	41	87
Apartments	8	56	64

Approval was received for the project to remodel tract house L-859. Work orders are being sent by the Project Engineering division to the Village Maintenance Division for scheduling.

Tract Houses, remodeling and repair, April 1948.

House No.	Estimate Submitted	Work Order Issued	% Complete	Completed
K-784	2-19-48	2-23-48	25	
K-789	3- 5-48	3-15-48	25	
0-1250	3-17-48	3-17-48		4-8-48
L-902	4-26-48	4-20-48	0	
K-756	3-19-48	Forwarded for Signatures	0	
K-718	3-24-48	4-12-48		4-30-48
K-780	4-14-48	4-14-48	0	
0-1246	4- 9-48	4- 9-48	0	
K-744	4-15-48	4-15-48		4-27-48

PERSONNEL

Number of employees on payroll at beginning of month 15
" " " " " " end " " 17

New employees - 2, one stenographer to fill vacancy left by termination of stenographer during month of March. One assignment engineer who will handle our electrical engineering functions.

VILLAGE MAINTENANCE DIVISION

GENERAL

Service Department

The use of foremen on off shift hours to supervise groups on duty at those times, which arrangement was started on April 1, has proven satisfactory and worth while. Numerous emergencies which have arisen have been handled capably by these men.

At 8:30 PM on April 16, water pressure in the Village domestic supply system was increased to more than 110# following a request to the Power Department pump house operator by the Fire Department, who were testing the sprinkler system in the 703 building. Increased pressure caused water tank pop-off valves, many of which were set between 80 and 95 pounds, in the new homes to function, some of which did not reseat. In some instances gaskets at the elements started leaking. During this evening and the following day approximately 50 calls were handled that resulted from this cause. Repairs were made, assistance given to tenants to reduce damage and in clean up; followed by corrective measures as follows: To increase setting of pop-off valves to 125# in unaccepted houses and to regulate instances whereby increased pressure would be allowed.

Attention has been drawn to several instances where new buildings, particularly homes, have been designed and built with little attention to the maintenance that must follow. Because these problems finally settle down in Village Maintenance, all possible effort is and shall be made to secure corrections in the blue-print stage. Examples: location of steam shut-offs in new men's dormitories, location of sewer pipe clean outs in pre-cut houses, cramped quarters and inaccessibility to plumbing and duct work under pre-cut houses, location and inadequate working space about the heating unit assembly in each of the apartments, etc.

An oil burner maintenance school was conducted by three representatives of the Lennox Furnace Company on the days of April 26, 27 and 28. Meetings were attended by interested supervision and four oil burner service mechanics.

PERSONNEL

Number of employees on payroll:

	Exempt	Non-exempt	Total
March 31, 1948	15	195	210
April 30, 1948	17	201	218

New Employees	10
Tfrd. from Maint. Divn.	1
Terminations	3

SAFETY

There have been no sub-major or major injuries or near serious incidents during the month.

Eight contestants participated in the Safety Speaker's Contest. Mr. Alfred Poole, painter, was selected to compete in the 700-1100 Area finals.

Service Department

MAJOR EQUIPMENT FAILURES

None

PROGRESS

1. Renovations: During April 93 renovations were completed.

2. Reconditioning of Dorm W-8: Started April 17 and completed April 23.

3. "E" House Kitchens: This project, No. C-157, was completed April 15.

4. Outside Painting Program: One tract house, otherwise no progress.

5. Inside Painting Program: Completed 24 conventional type units and 10 prefabs.

6. Richland Theater Air Conditioning: This project, No. C-194, was completed as per schedule on 4-30-48. Minor exception included completion of insulating ducts being delayed until receipt of material.

7. Kitchen sink linoleum replacements numbered 238 this month as compared to 221 for March.

8. Mail Boxes - Dormitories: Field release and work orders for this project, No. C-242, have been received. Starting date is pending receipt of mail box assemblies which were ordered by Project Engineering.

9. Renovation Tract House L-859: This project, No. C-245, is listed on the project information sheet but has not been released to the field.

10. Clothes pole installations are being handled only on receipt of order from Village Maintenance. Pre-cut houses shall receive these installations without charge. All other existing housing unit installations will be made on a back charge basis when requested. Repaired clothes reels will be installed when necessary on renovations.

11. Exterior House Repair: Preparing houses for the outside painting program has progressed as follows: Div. 7--50%; Div. 5--30%, Div. 4--15%.

VILLAGE LABOR DIVISION

GENERAL

1. Project C-134: Village Nursery No. 2 is 100% complete, other than for routine maintenance. A foreman and a crew of ten men have been employed during the entire month on straightening, bracing and fertilizing village trees.

2. The movement of project and personal furniture continued heavy during the month. Furniture movement consisted of 36 personal moves. 176 houses and 56 apartments furnished with ranges and refrigerators.

7.

3. Garbage and Trash Cleanup - Richland & North Richland.
The Richland garbage crews functioned as usual throughout the month. The crew consists of one foreman and 37 men. The responsibility for the garbage and trash cleaning up in North Richland was transferred to the Realty Division in North Richland. The transfer was affected April 19, as follows:

Personnel	14
Garbage trucks	3
Dump trucks	2
Flat bed trucks	1
Farm Wagons	2

4. Orchards Maintenance: The maintenance of orchards in and around the village has progressed very satisfactorily, resulting in all orchards having been pruned, cultivated and sprayed.

5. Maintenance of Public Areas: Irrigation and mowing of public areas in the village was started this month. 150 large type sprinklers and 15,000 feet of hose have been placed and are now in service.

Grass seed dispensed to tenants of new houses totaled 4,500 pounds.

6. Fuel Deliveries: A total of 1,151,000 lbs. of coal and 53,939 gallons of fuel oil were delivered during April.

ORGANIZATION & PERSONNEL

Number of employees on payroll:

	Exempt	Non-exempt	Total
March 31, 1948	12	138	150
April 30, 1948	12	123	135

New Employees	4
Terminations	4
Transfers out	15

HEALTH INSTRUMENT DIVISION

APRIL 1948

Organization

The composition and distribution of the force as of 4/30/48 was as follows:

	100-B	100-D	100-F	200-W	200-E	300	700	P.G.	Total
Supervisors	0	1	3	8	4	13	5	0	34
Engineers	1	3	6	8	17	6	0	0	42
Inspectors	0	3	8	9	24	20	0	0	64
Clerical	0	0	0	1	0	2	3	0	6
Others	0	10	8	45	16	30	7	6	122
Total	1	17	25	72	61	71	15	6	268

Number of Employees on Payroll	April
Beginning of Month	256
End of Month	268
Net Increase	12

The net increase came from the addition of four survey inspectors, two helpers, six laborers for the expanding badge and pencil program, and one office helper. Also added was a stenographer transferred from the Accounting Division without change of assignment. Two inspectors terminated.

A division organization was established to eliminate the rigorous line organization system previously used. It is expected that this change will give the Area Supervisors more freedom of action and more responsibility, together with a reduction in paper shuffling at the intermediate levels.

General

Surveys of the active particle distribution in the 200 West and 200 East Areas were completed at an excellent pace by the H. I. Plant Assistance group. Approximately 20 million particles were detected in each area. The rate of emission of particles does not appear to have diminished, and radical engineering changes to eliminate the off-standard condition are projected by the proper divisions.

The hazard arising from wind transport of already deposited particles is being studied by the H. I. Division and two groups of consultants. Preliminary results are somewhat more favorable than the earlier predictions. It is agreed that the particles should be held on the ground by a cover of vegetation. Dr. A. L. Hafenrichter, U. S. Department of Agriculture visited the location to advise on grass planting. Although his formal report has not yet arrived, it appears that the preferred policy is to

preserve the existing natural cover, rather than to disturb the whole surface by a planting program. Practically the whole of the affected part of the 200 West Area is adequately protected from wind pick-up. A central zone in the 200 East Area may require treatment in the fall.

Dr. Shields Warren and Dr. G. Failla, A.E.C. visited Hanford Works to review the active particle problem. It was their opinion that the risk is essentially limited to the eventual production of cancer of alveolar origin perhaps 10 to 15 years hence. So-called cancer of the lung is really cancer of the bronchus in about 95% of the cases. It is judged that the active particles cannot produce cancer of the bronchus. The residual hazard applies then to the chronic irritation of either alveolar cells or of connected lymph nodes. The consultants were of the opinion that such risk is vanishingly small. They felt that no harm would arise from continued exposure to the present conditions for six months. Nevertheless, conservative policy requires more immediate solution of the particle emission problem.

Dr. M. E. Ensminger came from Washington State College to advise on final plans for the experimental animal farm.

Dr. B. Weidenbaum visited Schnectady to acquire Dr. Langmuir's techniques for fine particle detection. He also investigated the Rochester modification of the Cascade Impactor.

Dr. C. C. Gamertsfelder attended the Brookhaven Information Meeting, and reported on instrument development.

There was no overexposure demonstrated on the routine pencil and badge measurements throughout the plant.

Four incidents were investigated according to the Special Hazards Bulletin #6 Class 1 procedure. Two of these concerned possible overexposure to hands as indicated on finger film, and two were possible overexposures due to contaminated clothes. The radiation dose was not high in any case.

Health Instrument Division

OPERATIONAL SECTION

100 Areas

Work Permit Summary

	March	April	1948 To Date
100-B	121	111	458
100-D	954	921	3485
100-F	1092	939	3875
Total	2167	1971	7818

Retention Basin Effluent

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

	100-D	100-F
Power level	275	275
Average beta dosage-rate (mrep/hr)	0.9	1.0
Average gamma dosage-rate (mr/hr)	1.7	2.0
Average total dosage-rate (mrep/hr)	2.6	3.0
Average integrated dose in 24 hrs. (mrep)	62	72
Maximum integrated dose in 24 hrs. (mrep)	77	84
Maximum integrated dose in 24 hrs. (mrep) 1948	77	84

100-B Area

Nothing but incidental maintenance work occurred during the month.

100-D Area

Numerous surveys were made to establish the dimensions, direction, and intensity of the beam emerging from the top far edge of the pile. The beam width as measured on film placed 12 inches from the neoprene seal was 1¼ inches at a point between seams #5 and #6 and tapered to about 1/8 of an inch at seam #7. The beam was found to emerge at an angle of about 45° and showed a dosage-rate of 5 mr/hr through the 50 foot far roof. The width of the beam here was estimated at 20 inches. A maximum slow neutron flux of 1.3 mrem/hr was obtained at seam #5. The fast neutron flux could not be evaluated because of the high gamma background, but the maximum reading obtained with the BF_3 counter was at seam #4. Only traces of neutrons could be detected on the 50 foot far roof.

Moderate exposure rates were obtained on work with the special installation for removing samples from "receptacle pieces" in the transfer area.

Dosage-rates during the transfer of samples from one cask to another were as high as 1 roentgen per hour at 18 inches, and on one occasion personnel received a dose of 33 mr in two minutes while manipulating the cask plugs. Some difficulty was encountered in removing a sample of plutonium (encased in a platinum capsule) from one receptacle piece. The sample was finally knocked loose by inverting the cask and dropping the sample into a screen basket. The basket became contaminated but the alpha component of the contamintion was negligible.

Following the extended shutdown, high gas activity was present in areas adjacent to and above the pile. Leaks were detected in the far side vertical neoprene seal, which was replaced during the shutdown along the far side base and later around two of the step-plugs on top of the pile. The high activity persisted, however, after these leaks were repaired. Since startup of the pile the exhaust and stack air monitors for the Pile Building have continued to show large increases in activity during the gas purification cycle. The possibility of a leak in a vertical thimble is currently being exploited.

A layer of brick was removed from the wall separating the top of the pile from the discharge area. Air filter samples taken during this work showed no appreciable contamination. During a subsequent shutdown, a reading of 36 mr/hr was obtained at this new opening while two tubes in row 36 were discharged.

Three partly empty and dry process tubes were shielded with cadmium and paraffin at the inlet end and were surveyed during pile operation. Neutron fluxes were generally low but corrected gamma beams were as high as 75 mr/hr. Two charges became jammed during discharge operations but were easily freed without exposure to personnel.

100-F Area

Following the extended shutdown survey readings and fixed monitors showed an increase in the beam intensity at the far edge of the pile of about 45%. The reading at the reference point above the I-beam increased from 14 to 29 mr/hr. A BF_3 counter survey showed a low neutron flux along the neoprene seal for the first time. A reading of 3 mr/hr was obtained on the 50 foot far roof.

Several stuck process tubes were encountered during regular discharge operations but were generally easy to free. Tube 3576, however, required the removal of front and rear dummy charges to allow the use of additional pressure. In the attempt to free this charge, the rear Van Stone joint was sheared and the rear bellows broken. The tube was finally discharged, however, with little exposure to personnel. Two process tubes were emptied, swabbed and borescoped; the principle hazard being contamination. Gloves became contaminated but were changed frequently enough to prevent spread to body surfaces. Exposure rates to personnel during work

on the special equipment in tube 1481 was kept to a nominal level. Filters removed gave a maximum reading of only 10 mrep/hr. The special production test to determine the lateral exposure rate through the biological shield for a slug 15 inches inside of the shield was completed without incident.

Moderate exposures and high levels of contamination were encountered on top of the pile during rod buffing. Coveralls became contaminated to the extent of 132 mrep/hr; and gloves, to 225 mrep/hr. Two persons received hand counts above the warning level but no other personal contamination was experienced.

Technical exposed several special samples in the "E" experimental hole under constant monitoring by H. I. Dosage-rates to personnel were as high as 1.8 roentgens per hour for short intervals and samples removed were as high as 30 rep per hour including 4.5 roentgens per hour at 3 feet. All samples decayed rapidly and could be handled easily after a few hours. Samples removed from the "D" experimental hole were handled with little difficulty.

One of the openings in the B" experimental hole assembly was opened during pile operation, for special tests on boron tube coating samples. Gamma readings taken on the inner instrument room roof were estimated at a maximum of 1.2 roentgens per hour directly in the beam from the open hole. Neutron fluxes were negligible and gamma plus neutron scatter at the sides of the equipment was very low. The boron samples showed little activity when removed from the opening.

During the extended shutdown the vertical far side neoprene seal was replaced and a layer of concrete brick removed from the wall separating the top of the pile from the machinery room. Air filter samples taken during this work showed no appreciable activity.

High levels of contamination were again observed in the #1 Drier Room of the Gas Purification Building. Maintenance work on equipment in this room was carried out satisfactorily without undue exposure although gas readings of 500 mrep per hour were obtained for a few moments.

The Technical laboratory in the 185 Building discontinued all work with radioactive materials and was released from all hazards control

Health Instrument Division

200 Areas, T and B Plants

General Statistics

	March			April			1948
	T	B	Total	T	B	Total	To Date
Special Work Permits	376	382	758	376	433	809	2925
Routine & Special Surveys	294	323	617	295	299	594	2461
Air Monitoring Samples	284	632	916	282	545	827	3457
Thyroid Checks	251	153	404	162	116	278	1409

Canyon Buildings

The T Plant canyon air was highly contaminated during observed jetting in cells 12L and 12R in an effort to locate a process leak. The air sample filters showed surface dosage-rate of 980 mrep/hr and 180 mrep/hr. In addition the latter also showed a result of 4×10^{-9} µg Pu/cc. The canyon was closed to entry during these tests. Subsequent spot surveys showed low level contamination deposited on canyon walls and the crane bridge. Other significant air sample results were obtained when an old 14-1 tank water jacket was welded on dock. Results were 1.5×10^{-6} µc f.p/liter and 1.5×10^{-11} µg Pu/cc.

The S.W.P. leather glove supply in the telephone office was surveyed following the discovery of product hand contamination presumably due to contaminated gloves after work in the Operating Gallery. A total of about 1 ug Pu was reported and corrective measures to prevent recurrence were immediately instituted by the "S" Division.

Unusual readings were noted on the T Plant Section 11, H.M. Chamber. Investigation disclosed a pair of coveralls in a nearby hamper which showed a maximum surface dosage-rate of 27 rep per hour and 1.25 roentgens per hour at 2 inches. A check of the S.W.P's and the time when high readings were first recorded showed that the sampling team could have been exposed to this condition. These men were subsequently surveyed at their Richland homes, and personal and clothing contamination found in one case. The skin contamination was immediately cleaned and the contaminated clothing confiscated.

In the B Plant, 11 air samples taken at the canyon deck when all cells were closed and conditions presumed normal showed significant results. Maxima reported were 4.2×10^{-5} uc f.p/liter and 7×10^{-11} ug Pu/cc. Radioautographs of air sample filter discs from canyon samples disclosed that a portion of the collected activity was due to small particles. As a result of these findings masks are required in the canyon at all times.

Health Instrument Division

Control Laboratories

In the B Plant, 360 items, not regulated with respect to handling, were found contaminated on surveys by Technical and H. I. personnel. In addition, 20 contaminated floor locations were reported.

Nineteen cases of hand contamination were recorded. Reduced scores were not reported on three cases of fission product contamination slightly over the warning level, and two cases of product contamination were released slightly above the warning level due to skin irritation. Both were successfully cleaned the following day.

Concentration Buildings

In the T Plant, an estimated 1850 ug Pu was found in F Cell as a result of a leaking flange. Most of this was in the process line trench to the F-10 enclosure. Two cases of hand contamination occurred during cleanup, and were successfully reduced. Another case was attributed to the use of a contaminated glove. The clean rubber glove supply was surveyed and eleven gloves found contaminated. Corrective measures to prevent recurrence were taken in the Laundry monitoring program.

In the B Plant, a clean glove showed a reading of 2000 d/m, and another glove apparently used, but on a table in the F-10 room, showed 30000d/m.

Maintenance work in cells was done in both areas with good contamination control.

Stack Areas

In the B Plant, the #2 fan and ductwork were removed and replaced with stainless steel equipment without incident. Smoke tests showed the air flow going into the duct holes when open and air samples showed no significant concentrations. Maximum exposure rate to personnel during the fan removal was 600 mr/hr.

Waste Disposal Areas

Ground contamination was again found near the vent pipe of the #1 crib in the 361-T Tank Area with a maximum dosage-rate of 3 rep per hour reported. As before decontamination was effective by removal of the top layer of dirt. The exact cause of this recurrent contamination was not determined but is apparently associated with the jetting operation.

General

A total of 6444 Martindale mask pads was checked with a G.M. probe in the T Plant and no contamination found. Radioautographs of 4764

of these pads showed 491 suspected particles of which 433 were confirmed by refilming. Quantitative estimates of the radioactivity of 276 of these confirmed "specks" indicated 246 were below 1 μ μc, and the maximum was about 10 μ μc reported on 3 spots.

A total of 8632 Martindale pads was checked with a G. M. probe in the B plant and low level contamination (about 100 c/m) found on one pad which was confirmed by the film survey. On April 13, 1946, radioautographing of these pads was started and 4500 checked. One hundred seventy one suspected spots were found and 86 confirmed by resurvey. The pads worn by the Well Crews and H. I. personnel working in the 200 East Area outside the Exclusion Area fence were handled separately and three "specks" found on these pads.

The Isolation Building

Air Monitoring

There were 213 spot air samples taken of which two were above 10^{-11} μg Pu/cc. These samples, taken while sampling at AT, showed 1.6×10^{-11} μg Pu/cc. and 1.2×10^{-10} μg Pu/cc. Masks are worn during this work. Fifty-two Little Sucker samples, run continuously by shifts, were below 4×10^{-12} μg Pu/cc, and twelve samples of the 903 exhaust system air had as the high result 2.5×10^{-12} μg Pu/cc. All filters over the research section have been replaced with new type filter paper, except Room 43.

Surface Contamination

A total of 197 items, not regulated with respect to handling, was found contaminated on surveys by Technical, H. I., and "S" Division personnel. Four items above 20000 d/m and one above 80000 d/m were reported. Nine contaminated floor spots were reported, and there were five instances of low level hand contamination, all of which were satisfactorily reduced.

When the 903 duct work was opened for damper repairs, the rust layer noted showed general contamination of about 1500 d/m.

Gamma Radiation

P. R. Container	15 mr/hr (maximum)
Process Hood	2.5 mr/hr (maximum)
S. C.	4 mr/hr (maximum)

Health Instrument Division

The 300 Area

General Statistics

	March	April	1948 To Date
Special Work Permits	367	232	1035
Routine and Special Surveys	165	153	665
Air Monitoring Samples	151	92	491

Metal Fabrication Plant

Twenty-seven of 46 air samples taken were above tolerance as summarized below:

Location	No. Taken	No. Above 1.5×10^{-4} ug U/cc	Maximum Concentration ug U/cc
Extruder Building	6	5	*3.8×10^{-4}
Chip Recovery	9	0	--
Other Locations in 313	4	3	**7.0×10^{-3}
Box Cars	1	1	5.8×10^{-4}
Melt Plant	26	18	***4.1×10^{-3}

*Near entrance to Melt Plant
**Between canning and machining while dusting before painting
***In Burnout Room

Respiratory protection is now required for all critical operations in the Melt Plant, and all doors to this area are kept closed while work is in progress.

A film study of hand exposures obtained during the unloading of uranium rods from box cars showed that it was necessary to limit this work to 4 hours per day per man instead of the usual 8 hours.

Technical Building

Three air samples, two in Room 58 and one in Room 57 were slightly above 2×10^{-11} ug Pu/cc when calculated as plutonium but were probably due to uranium contamination. No samples were above the 10^{-6} uc/liter for fission products.

A total of 0.1 ug of Pu was found on a desk and table in the Counting Room and was traced to a contaminated sample carrier of the Chemical Research group.

Health Instrument Division

Redox Semi-Works Building

All data received to date indicates that uranium is the only source of hazard in the 321 Building, except during construction work. Levels of uranium contamination are very low and do not require Special Work Permit control. However, this control is still used as a means of training Technical personnel.

Laundry Decontamination and Hand Counting

A total of 112,792 items was monitored in the Plant Laundry, including 41,206 alpha checks. There were 24,742 coveralls, 29,606 gloves, 32,697 overshoes, and 5,190 slacks and jackets included.

Thirty-eight spot and thirty-eight Big Sucker air samples were made during laundry operations. The maximum concentration of 1.7×10^{-11} ug Pu/cc was obtained in the H. I. Survey Room, during survey of clothing from 300 Area.

There were 31,831 alpha hand checks, and 49,018 beta hand checks recorded. About 0.42% of the alpha and about 0.46% of the beta scores were above the warning level.

Most of the high hand scores were again recorded in the 300 Area where uranium was the contaminant. No attempt at reduction was made in 42 of the high alpha scores and 103 high beta scores in the 300 Area. Decontamination, where attempted, failed in one case of alpha contamination when it was discontinued due to skin irritation. However, it was completed the following day.

Health Instrument Division

PERSONNEL METERS

Pencils	100-B 100-D	100-F	E&N 200	200-W	300	Total	1948 To Date
Total Pencils read:	10,465	12,672	29,623	42,507	37,596	132,863	503,767
No. single readings: (100 to 280 mr)	29	42	27	94	140	332	1,771
No. paired readings: (100 to 280 mr)	1	0	0	0	3	4	14
No. single readings: (Over 280 mr)	78	132	97	87	263	657	2,676
No. paired readings: (Over 280 mr)	0	3	2	0	6	11	41
Paired Readings Lost	0	0	1	0	3	4	20

No significant result was confirmed by the badge result. Investigation of lost readings disclosed no possibility of an over exposure.

Badge Resume, Construction Areas

	105-DR	241-TX	384	Total	1948 To Date
Badges Processed:	6,600	4,237	455	11,292	49,989
No. of readings: (100 to 500 mrep)	10	18	3	31	39
No. of readings: (Over 500 mrep)	2	27	0	29	29
Lost Readings:	3	5	0	8	41

The causes for lost readings were, four when sensitive film was not packaged, two when the badge was lost in the area, and one each to wet packet and damaged film.
Two results above 500 mrep were due to fogged film.
Twenty-seven of the results above 500 mrep were radiation effects from the use of the X-Ray machine in the field. In addition, 18 results under 500 mrep were also attributed to X-Rays.

Badges	100-B	100-D	100-F	200-E	R.R.T 200-N	200-W	300	Total
Badges Processed:	1,280	1,946	1,951	2,205	678	3,170	8,044	19,274
No. of readings: (100 to 500 mrop)	0	11	1	15	5	8	183	223
No. of readings: (Over 500 mrop)	0	2	0	0	0	0	2	4
Lost Readings:	1	1	1	2	0	1	2	8

Total 1948 Badges to date were 104,801

Lost readings were accounted for as follows:

Badge lost in area	3
Sensitive flim not packaged Insensitive read 0	2
Badge dropped in water	1
Exposed to X-Ray	1
Lost in processing	1

Results above 500 mrep were accounted for as follows:

Contaminated badge	2
Defective film	2

The regular schedule for badge servicing was extended to a two week cycle, except in the 300 Area, due to the increased load brought about by the Construction Program.

In addition 1,688 items of non-routine nature were processed, 1948 total to date 4,317.

Health Instrument Division

CONTROL AND DEVELOPMENT SECTION

Water Monitoring

Three hundred and seventy-five samples of drinking water were taken during this period. The maximum alpha contamination of 14 disintegrations per minute per liter was found in 300 Area Well #1. The 300 Area wells averaged about 3.0 - 3.5 dis/min/liter and traces of alpha activity were found in the lower Knob Well, B-Y Well, and White Bluffs Wells. There were no samples that gave beta activity as high as 5×10^{-5} μc/liter.

Thirteen test well samples including four from wells to be used for irrigation were taken with no detectable alpha or beta activity.

Fifty-five samples of Columbia River water were taken with two results at Hanford and the export water giving trace values of alpha activity. These values were not confirmed by resamples. The maximum beta reading was 1.6×10^{-3} μc/liter from a 300 Area sample. Thirteen samples were taken from the Yakima River with no positive result for either alpha or beta activity.

Atmospheric Monitoring

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

Location	Integrons (mrep/24 hours)		C Chambers (mrep/24 hours)	
	March	April	March	April
100-B	0.2	< 0.1	0.3	0.3
100-D	0.3	0.2	0.4	0.3
100-F	1.4	0.8	0.4	0.3
200-W	0.1	0.2	0.3	0.3
200-E	1.3	0.9	0.4	0.9
Riverland	1.3	1.3	---	---
Hanford	1.3	1.1	---	---
300 Area	1.3	1.2	0.3	0.4
700 Area	< 0.1	< 0.1	---	---
Kennewick	0.4	0.2	---	---
Pasco	< 0.1	< 0.1	---	---
Benton City	< 0.1	0.3	---	---

The detachable chambers at Hanford, 241-TX, 105-DR, and White Bluffs, indicate radiation levels the same as last month. The maximum eight hour reading on a CI unit was 4×10^{-7} μc/liter at Gable Mountain. The highest average concentration for the month was 2×10^{-9} μc/liter in the 200 East Area. Sixty rain samples were collected. The maximum rain sample was 0.05 μc/liter from the 200 West Area. The maximum off-area sample was 3×10^{-4} μc/liter from Benson's Ranch.

Health Instrument Division

Data from a remote monitoring instrument maintained at Mullan Pass, Montana indicate activities with half lives of the order of several hours which were obtained between March 28 and April 7. This length of half life is not compatible with those obtained with the natural radioactive materials normally present in the air and may have been caused by the tests recently conducted at Eniwetok. The other remote monitoring equipment located on Mount Rainier failed on April 5 and was clearly not operating properly for several days previous to this.

Land and Vegetation Contamination

Routine vegetation samples gave the following results:

Location	Average for March	uc I^{131} per kg. April	
		Maximum	Average
North of 200 Areas	0.04	0.11	0.04
Near the 200 Areas	0.22	1.36	0.17
South of 200 Areas	0.05	0.52	0.05
Richland	0.04	0.12	0.04
Pasco	<0.04	0.10	<0.04
Kennewick	0.05	0.12	0.05
Benton City	<0.04	0.07	<0.04
Richland "Y"	0.05	0.15	0.06
Hanford	0.04	0.12	0.04

Twenty-one samples were collected from the 234-235 Area. The average sample was 0.10 μc/kg with a maximum of 0.18 μc/kg. A survey of the Wahluke plateau gave a maximum of 0.21 μc/kg.

Well Drilling

The positive alpha contamination of the three wells located 1000 feet from the 361-B drywell have not been confirmed by subsequent sampling. One of these wells, #361-B-4 located S.E. of 361-B, does have beta contamination amounting to about 2.5×10^{-4} μc/liter. At present there are two other wells which are definitely contaminated; these are 361-B-1 and 361-B-3 located 500 feet east and 500 feet S.W. of 361-B. The 361-B-2 well located 500 feet to the N.W. is no longer contaminated. Three more wells are now being drilled one at about 20 feet from 361-B and the other two at about 5000 feet.

Samples are being taken regularly from the laterals in the shaft at 241-B. Maximum activity observed was 0.65 μc/liter in a sample taken 10 feet below the crib. The maximum from a point 20 feet beneath the crib was 0.41 μc/liter. Alpha activity in these

samples has been low the maximum being only about 10 dis/min/liter in one of the 20 foot samples.

On April 5, water was found at the bottom of two of the eight wells located around the 241-T #3 crib. Analyses of these samples indicated some activity and they were rechecked on April 15. It was then found that the 241-T-5 well was filled to within 30 feet of the surface with a yellow colored liquid. This was sampled and found to have about 0.1uc/liter. The wells in this area and in 241-T were then sealed with cement to prevent the spread of contamination near the water table. The liquid apparently entered the well through openings which were made in attempts to obtain soil samples and which were not subsequently sealed.

Soil samples were taken at depths of 22 and 37 feet from well 361-T-6. Analyses of these samples indicated considerable variation in the relative abundance of the contaminating isotopes at the two levels.

Representative fission product activities (uc/kg) were:

	At 22 Feet	At 37 Feet
Ce	9.9×10^{-2}	3.7×10^{-4}
Y	1.9×10^{-5}	3.4×10^{-7}
Ru	1.7×10^{-3}	1.2×10^{-2}
Cs	5.8×10^{-2}	3.7×10^{-3}

It should be noted that good retention of ruthenium is not anticipated. As shown by Overstreet and Jacobson, it behaves as an anion, whose soil retention will be very different from that of the cations measured.

Bioassay

Four hundred and thirty-two samples were analyzed for plutonium. Nineteen resamples were necessary this month; six because of a low spike value; twelve because of failure of two stainless steel plates while the spike was being evaporated; and one because of a high result. The two resamples from last month have been run and found to fall below the detection limit.

A spiked sample was sent through the process unknown to the workers and a slightly low yield of 60% was obtained.

Twenty-two urine samples, forty-nine water samples, and forty Hexone samples were run on the fluorophotometer. Two urine samples were greater than 10 ug/liter. The one resample from last month has been run and confirmed at 15 uc/liter. Further investigation of contamination possibilities is being made. The new fluorophotometer has been installed and is now under test.

Biological Monitoring

A rabbit which had been kept in a cage 150 feet from the T Plant stack was sacrificed. G.M. tube measurements and radioautographs indicated no detectable activity above background. The thyroid had about 0.1 μc/kg and bone had 8×10^{-3} μc/kg. Another rabbit was liberated within the T Plant and was allowed to live near the stack and fan casings for a period of two weeks at which time it was sacrificed. The fur of this rabbit had a large number of active spots as shown by radioautographs. Some of the spots seem to have been liquid droplets which were smeared out and some seem to be quite definite small specks. One ear had a large yellow colored stain which was very active giving about 1500 counts per minute on a G.M. probe. The thyroid of this rabbit had 2.2 μc/kg. A feces sample had 2.5 μc/kg. Two female jack rabbits were checked and they had thyroid activities of 2.2 μc/kg and 5.1 μc/kg.

Some radioiodine has been obtained from Oak Ridge and will be used in some preliminary feeding experiments in order to work out procedures for use when the animal farm is completed.

Several rats, which had been given only 100-F area process effluent water, were checked. Feces activities were about 0.035 μc/kg while other samples of blood, liver and kidneys had about 0.015 μc/kg.

The two ducks which were being fed active algae from the 100-F Retention Basin were scarificed. All samples checked had more than 0.07 μc/kg, the maximum being about 1.1 μc/kg in the pancreas. Average activity of all samples was about 0.5 μc/kg. Another duck which had been kept on the river had very little activity in the tissues due presumably to the reduction in the supply of algae.

Fish Laboratory

Studies on the effect of area effluent water diluted with five to two-hundred fifty parts of river water on young chinook salmon have been continued. The results have been much as expected with the 1:5 and probably the 1:10 concentration having a deleterious effect on the fish. Fish held in undiluted process water, either before or after passing through the pile, do not grow, they gradually become emaciated and die. The amount of dichromate present in the process water is sufficient to account for a large portion of the deleterious affect.

All of the adult trout which were held in the half strength retention basin water have been spawned as have nearly all of the control fish. Eggs from these fish are being incubated in the laboratory and studied for fertility and vitality.

Tests on the effect of prolonged exposure of young salmon to dilute solutions of copper sulfate were terminated on April 21. A concentra-

tion of 0.2 p.p.m. was found to inhibit growth, stronger concentrations were soon lethal. A concentration of 0.2 p.p.m. copper sulfate appears not to kill Retention Basin algae but inhibits the establishment of certain other algae types and dissuades the immigration of insect larvae.

Routine sampling of the various levels of aquatic life in the Columbia River for abundance and activity studies was continued until the last week of the month when the freshet condition of the river made such work impractical.

Methods Development

The very soft beta emitter (approximately 0.05 mev.) found in the pile gas has been found to carry through a nickel analysis. The absence of any build-up of activity from a separated sample has eliminated nearly all natural activities. The isotope is tentatively identified as Ni^{59} (0.05 mev. B^-) and investigations into the presence of non-active nickel in the air and source of the active isotope are underway.

At the suggestion of Dr. Langmuir, an experiment was run to determine whether beta emitters were knocked off a filter paper by alpha particles. The results indicated that this would be a small effect. Radioautographs were made of ten blank "queenie" filter papers from the 222-U stock (originally obtained from 231). Exposures of 72 hours showed 42 spots similar to those reported as specks. A second exposure confirmed 19 of these spots and showed a total of 28 specks. This experiment is being repeated by another group to eliminate the possibility of contamination of the supply of filter paper used. Eleven blank Martindale Masks showed no spots under similar treatment. Monthly build-up curves on the separated Ce and Sr isotopes obtained from Oak Ridge are being run so that this data will be available for future age determinations.

Work is continuing on a more sensitive determination of I^{131} in vegetation. A series of radioautographs gave little darkening for activity measurable on a G.M. counter. A calorimeter bomb has given yields of 30-50% I^{131} and 80-95% radio-cerium from one gram samples. A digestion of the vegetation in hot 2N NaOH gives favorable results from material obtained from the reservation, but considerably more work is needed to obtain uniform results.

Twelve filters from the stack were read with a C.P. meter and analyzed for beta activity. An average value of 36 mrep/hr per microcurie on the filter with a C.P. at two inches was obtained. A series of 21 measurements on the activity of specks and dust versus the reading on a Victoreen portable Geiger counter gave an average result of 3×10^{-3} uc per 1000 counter per minute under field conditions for active particle measurement. Several attempts were made to measure the efficiency of the asbestos filter paper by passing air from the 50 foot level of the 200 West stack through a filter paper and then

a scrubbing tower. In each case the dissolving consisted of a "heel" left from the preceding night and little activity was found.

Instrument Development

All of the portable poppies failed because of breakdown of the condenser coupling the probe to the first amplifier grid. An attempt has been made to improve the condensers by coating them with G.E. moisture resistant varnish. Another type of concenser for the same job is being obtained and may provide the best solution to the problem.

The pulse height analyzer has been operating well. Tests with conventional plutonium sources indicate that they have considerable self absorption. Other tests on some separated U^{238} foils indicate very little self absorption. Attempts are being made to produce plutonium sources with less self absorption. This instrument is intended for use in determining the amount of plutonium in air samples without waiting for the decay of the natural radioactive materials which are also collected. In order to do this the samples will necessarily have very little self absorption which will probably entail the use of electrostatic precipitation collectors rather than the filter paper collectors which are now being used.

The water curtain beta monitor has been removed from service until more shielding can be installed.

Physics

The extrapolation chamber work has progressed to the point where all major difficulties have been resolved and should be ready to use in making surface dosage rate measurements when a few minor modifications have been completed.

Health Instrument Division

Calibrations

The routine calibrations were:

RADIUM CALIBRATIONS	Number of Calibrations March	April
Fixed Instruments:		
Gamma	492	517
Portable Instruments:		
Alpha	49	49
Beta	92	67
Gamma	424	367
X-ray	2	2
Neutron	4	7
Total	571	492
Personnel Meters:		
Beta	1,470	1,008
Gamma	8,780	9,411
X-ray	3,468	2,231
Neutron	56	---
Total	13,774	12,650
Grand Total	14,837	13,659

MEDICAL DIVISION PERSONNEL SUMMARY

April 30, 1948

AREAS	Physicians	Dentists	Nurses	Aides & Orderlies	Technicians	Office Workers	Others
100-B			)			)	
100-D			4)		2*	1)	
100-F			)		2*	)	
200-E			3		2*	2)	
200-W			3		2**	)	
300			2		2**	1	
700-1100	20	10	130	55	30	95	64
Plant General	12		16				
100-DR			2				
White Bluffs			3				
Pasco			1				
101			1				
3000			3				1
TOTAL	32	10	168	55	33	99	65

GRAND TOTAL - 462

Number of employees on payroll:

Beginning of month	452
End of month	462
Net Increase	10

MEDICAL DIVISION

APRIL 1948

GENERAL

There was an increase of ten in the number of employees largely due to augmentation of our nurses. W. T. Pope rejoined the Medical Division as supervisor in charge of business administration of the North Richland medical program. Dr. R. R. Sachs has been placed in charge of North Richland medical services in addition to Public Health.

Dr. H. H. Pitluck adds the administration direction of the Richland Medical-Dental Clinic to his present duties of directing the Dental Section.

Dr. B. C. Scudder will supervise the North Richland industrial medical work.

Dr. Shields Warren, director of biology and medicine, and Dr. G. Failla, consultant for the A. E. C, visited the project for consultation with the Medical and Health Instrument Divisions, in regard to the problem of stack gases. Dr. S. T. Cantril, consultant, was also present for these discussions. All agreed that all harmful particles or mists must be removed before reaching the outlet of the stack even though the cost be considerable. Dr. Warren approved the method of attack here, and both he and Dr. Failla expressed the belief that the possibility of harmful effects to plant personnel as a result of continuing operations as at present for a period of three to six months was extremely remote. Both stressed the need for reasonable haste in solving the problem.

Dr. Warren criticized the present plans of adding extensions to present long wings of Kadlec Hospital, but after considering all alternates agreed that the present plans were perhaps the best possible under existing conditions. His recommendation that the long corridors be sound-proofed was gladly accepted.

There was no evidence of occupational disease or injury as a result of exposure to radiation.

Absenteeism due to sickness of weekly employees dropped by nearly 50% to 1.45%.

Employee physical examinations were slightly increased to average 282 per working day. Average daily first aid treatments increased to 725 in the eleven first aid stations.

Temporary movable first aid stations will soon be ready for use in construction areas 200-W and 100-H. A mobile first aid unit on a trailer type bus will also be used at an early date to reach small construction groups where a permanent installation would not be practical. These temporary measures are aimed at reducing travel time required for first aid treatment of construction employee injuries.

GENERAL (Continued)

Twenty major and forty-three submajor plant injuries were sustained by G. E. and subcontrator employees. One of the major and six submajor injuries were suffered by G. E. personnel.

The local health topic for April was "Cancer", thus taking advantage of the national publicity given to this subject during April.

Clinic visits have increased by 2,000 per month since the first of the year with a 10% increase during April. The average daily was 235.

The average daily hospital census was up 11% to 95.

Seventy-two deliveries in the Obstetrical Section represented a peak month, while sixty major operations also was a high month.

An average of 112 dental patients were treated daily by ten dentists.

There were 273 new cases of measles to bring the total to date to 370 while 206 new cases of mumps brought the total to 818 for four months of 1948.

Social service cases continued to increase.

Food-handling establishments of North Richland do not meet public health standards due to delay in alterations and repairs.

The schools were checked for light intensity and found to be quite deficient. Recommendations for correcting the defect were made.

The mosquito control work is being augmented by a new aero-mister and a more satisfactory plane for spraying.

Plans call for starting first aid, physical examinations and outpatient medical services in North Richland in the new unit on May 17th. Bad service will be offered at a later date.

MEDICAL DIVISION

APRIL 1948

Plant Medical Division

Physical Examinations	March 1948	April 1948	Year to date
Pre-employment (G.E.)	386	523	1559
Annual	1	0	2
Subcontractors & Food Handlers	4204	4100	15696
Rechecks	628	651	2698
Interval Rechecks (Area)	947	827	3379
Terminations & Transfers	136	129	476
Army & Government	29	13	68
Assist to A & H Ins., Clinic, etc	0	0	0
Total	6331	6243	23878

Laboratory Examinations
Clinical Laboratory

Pre-employment, terminations, transfers	15247	17991	67969
Annual	8	10	24
Rechecks (Area)	4894	4224	17263
First Aid	20	14	111
Plant Visitors	0	0	12
Clinic	2571	2223	9313
Hospital	2784	3017	12073
Public Health (Inc. food handlers)	705	735	2479
Total	26229	28214	109244

X-Ray

Pre-employment, terminations, transfers	2806	3158	12338
Annual	0	0	0
First Aid	256	259	911
Clinic	303	282	1123
Hospital	219	242	895
Public Health (Inc. food handlers)	153	145	714
Total	3737	4086	15981

Electrocardiographs

Industrial	4	10	18
Clinic	6	9	30
Hospital	25	16	69
Total	35	35	117

Allergy

Skin Tests	35	33	184

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MEDICAL DIVISION

APRIL 1948

First Aid Treatments	March 1948	April 1948	Year to date
Occupational Treatments	2696	2547	8607
Occupational Retreatments	7885	7945	26154
Non-occupational (Welfare) Treatments	5382	5505	22542
Total	15963	15997	57203

Absenteeism Investigation Report

Total number calls requested	26	13	143
Total number calls made	26	13	143
Number absent due to illness in family	1	0	1
Number not at home when call was made	1	1	2

General

Pre-employment examinations and first aid treatments during April were approximately the same as in March. There are eleven first aid stations operating at the present time. Standard plans for two temporary first aid stations, 18 ft. by 24 ft., which are to be movable, were drawn up during the month, and will be used when completed in 200-W and 100-H. Plans for a mobile first aid unit on a trailer type bus were also drawn up. This unit will be for immediate use in any location.

Major and sub-major injuries during April were as follows:

	Major Injuries	Sub-major Injuries
General Electric	1	6
Atkinson - Jones	17	35
Morrison-Knudsen	2	2
Total	20	43

The health topic for April dealt with "Cancer" in line with the general national program of the American Cancer Society.

Absenteeism was as follows:

Total absenteeism weekly employees all causes	2.10%
Total absenteeism weekly employees sickness only	1.45%
Total days lost by male employees due to sickness	1,512
Total days lost by female employees due to sickness	741
Total days lost due to sickness	2,253

The lowest absenteeism was in the Project Engineering Department with 1.10% and in the Transportation Department with 1.45%. The highest absenteeism was in the Accounting Department with 2.99% and in the Technical Department with 2.83%

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MEDICAL DIVISION

APRIL 1948

Village Medical Division

Clinic Section	Men	Women	Children	March 1948	April 1948	Year to date
First Visits	578	295	277	1297	1150	4562
Retreatments	2266	2526	1124	5114	5916	19918
Total				6411	7066	24480

Clinic Visits

Medical	1102	1074	4127
Pediatrics	591	797	2700
Surgical	838	976	3190
Gynecological	493	488	1708
Obstetrics (new)	91	63	299
Obstetrics (recheck)	698	629	2479
Venereal Disease	652	728	2770
Ear, Nose & Throat	328	304	1300
Eye	305	285	1076
Visits handled by nurses (hypo., dressings)	716	937	2171
Night clinic visits	597	785	2860
Total	6411	7066	24480
Total clinic visits per day	207	235	202
Seen in Well-baby Clinic	211	191	768

Home Visits

Doctors	216	256	876
Nurses	141	237	509
Total	357	493	1385

Kadlec Hospital Section

Census

Admissions	477	531	2037
Discharges:			
Surgical	114	136	466
Medical	94	87	420
Obstetric & Gynecol gic	88	99	372
Eye, Ear, Nose & Throat	82	66	306
Pediatrics:			
Children	55	63	231
Newborn	46	68	231
Total Discharges	479	519	2026
Patient Days	2636	2853	11353
Average Stay	5.5	5.3	5.5
Average Daily Census	85	95	94
Discharged against advice	5	1	9
One-day cases	92	72	299

MEDICAL DIVISION

APRIL 1946

OPERATIONS

	March 1946	April 1946	Year to date
Transfusions	33	26	125
Eye, Ear, Nose & Throat	43	23	118
Dental	0	1	4
Casts	26	21	71
Minors	61	63	245
Majors	42	63	176

Vital Statistics

Deaths	3	1	14
Deliveries	53	72	233
Stillborn	1	0	2

Physiotherapy Treatments

Clinic	95	197	527
Hospital	65	63	320
Industrial:			
Plant	440	552	1717
Personal	50	54	194
Total	650	866	2758

Pharmacy

Number of Prescriptions Filled	2606	2777	10781

Patient Meals

Regulars	3163	3450	14881
Lights	23	40	218
Softs	1874	1878	7293
Surgical Liquids	188	60	394
Tonsils & Adenoids	39	65	326
Specials	142	833	2378
Liquids	1047	340	2060
Total	6476	6666	27550

Cafeteria Meals

Noon	2620	2394	9858
Night	284	311	1187
Total	2904	2705	11045

MEDICAL DIVISION

APRIL 1948

Nursing Personnel	March 1948	April 1948	Year to date
First Aid Nurses	45	48	
Clinic Nurses	16	16	
Public Health Nurses	14	15	
Hospital General Nurses	84	87	
Aides & Orderlies	55	55	
Total	214	221	

General

Clinic visits have continually increased during 1948. The increase in April over March was about 10 %. Since the beginning of the year, visits have increased by more than 2,000 per month.

Two clinical doctors were added to the staff.

The average daily hospital census increased from 85 in March to 95 in April.

There were 72 deliveries in the Obstetrical Department, which is the highest on record since the opening of the hospital.

Public Health Section	March 1948	April 1948	Year to date
Administration			
Newspaper Articles	20	15	62
Committee Meetings	4	4	11
Attendance	21	20	61
Staff Meetings	4	2	9
Lectures & Talks	13	7	27
Attendance	1075	650	1925
Conferences	15	15	52
Attendance	35	35	128
Radio Broadcasts	0	3	3
Immunizations			
Diptheria	82	63	220
Influenza	1	0	29
Rocky Mt. Spotted Fever	5	5	10
Schick Test	0	1	1
Smallpox	36	34	129
Tetanus	4	3	20
Typhoid	2	2	8
Whooping Cough	43	34	121
Total	173	142	538

7

Social Service

Thirty-five new cases were admitted during April, which added to the cases carried over from March made a total of 118.

Sources of referrals included: Youth Council, 1; Public health, 11; Doctors, 1; Interested persons, 7; Juvenile Court, 1; Personal application, 3; U. S. Industrial Relations, 2; Schools, 1; Other social agencies, 8. Four of the cases referred by other social agencies were in the North Richland Area.

Twenty-four cases were closed, leaving the case load at 94 as of April 30th.

	March 1948	April 1948	Year to date
Sanitation Inspections: Richland	130	141	474
North Richland	33	43	120

Bacteriological Laboratory

Treated water samples	200	225	676
Milk Samples (Inc. milk, cream, ice cream)	185	130	651
Other bacteriological Tests	329	365	1354
Total	714	720	2681

Communicable Diseases

Chickenpox	13	7	66
German Measles	15	11	48
Gonorrhea (Richland)	6	0	6
Gonorrhea (North Richland)	9	20	29
Impetigo (Richland)	1	0	5
Impetigo (North Richland)	1	0	1
Influenza (Richland)	16	3	60
Influenza (North Richland)	1	0	1
Measles (Richland)	74	273	354
Measles (North Richland)	3	13	16
Mumps (Richland)	253	206	779
Mumps (North Richland)	9	28	39
Pediculosis	1	0	1
Pinkeye (Richland)	3	1	4
Pinkeye (North Richland)	0	2	2
Ringworm	0	1	1
Scabies (Richland)	9	2	29
Scabies (North Richland)	0	2	2
Scarlet Fever	3	1	5
Syphilis (Richland)	15	7	57
Syphilis (North Richland	10	13	23
Tuberculosis	0	0	1

MEDICAL DIVISION

APRIL 1948

	March 1948	April 1948	Year to date
Communicable Diseases (Continued)			
Vincent's Infection	0	1	1
Whooping Cough (Richland)	8	2	27
Whooping Cough (North Richland)	0	4	4
Total	451	597	1581
Total Number Nursing Field Visits			
Richland	1445	1988	6047
North Richland	106	200	321
Total	1551	2188	6368

General

A sharp rise was noted in morbidity due to an epidemic of measles. This is reflected in the large increase in home nursing visits.

A food demonstration was sponsored by Richland Health Council in cooperation with our section. There were 250 people in attendance.

Social service intake of cases continued to increase. The referrals were particularly in a category of child welfare. The average monthly intake for the first quarter of the year was three times greater than last year.

Sanitarians kept busy checking water and sewage disposal systems. The food handling establishments remain in the same condition due to the delay in alterations and repairs.

The schools were checked for light intensity , and recommendations were carried out to increase the lighting by the use of complimentary paint.

The milk supply remains satisfactory.

The mosquito control work for the season was started by weed-burning, draining and larviciding swamp areas. The new aero-mister and Stearman plane have been put in operation.

Dental Division	March 1948	April 1948	Year to date
Patients Treated	2884	2900	10715

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ACCOUNTING DIVISIONS

APRIL 1948

GENERAL

During April, all employees in the following Accounting Divisions were transferred to Service and other Divisions:

	No. of Employees
Purchasing and Stores	197
Clerical	91
Field Clerical	67
Total	355

Charges to cost, inventories, and plant in April amounted to $22 095 119. These charges from September 1, 1946 to date aggregate $134 103 984.

Government reimbursement has not been received on charges included above as follows:

Billed on Public Vouchers (Form 1034)	$ 7 414 396
Submitted on Pre-Billing Audit Vouchers (Form 1035)	4 523 760
Unbilled	7 505 574
Total	$ 19 443 730

STATISTICS

General	April	Total to Date
HW Instruction Letters issued	3	83
Office Letters issued	2	33
Organization Announcements issued	28	116
Supplements and Revisions issued	---	21

Employees and Payrolls	Total	Monthly Payroll	Weekly Payroll
Employees on payroll at beginning of month	7 836	1 572	6 264
Additions and transfers in	390	45	345
Removals and transfers out	(132)	(8)	(124)
Transfers from Weekly to Monthly Payroll	---	22	(22)
Employees on payroll at month end	8 094	1 631	6 463
Gross amount of payroll	$2 541 066	$777 573	$1 763 493
Average salary rate per hour	1.862	2.512	1.656
Average salary rate previous month	1.829	2.476	1.664
Overtime Payments			
Weekly Payroll		March	April
Number		3 652	4 935
Amount		$61 634	$88 996
Monthly Payroll		$23 344	$29 395
Number of changes in Salary Rates and Job Classifications and transfers between divisions		1 409	1 775

1.

Accounting Divisions

Employee Plans	March	April
Pension Plan		
Number participating at beginning of month	4 253	4 381
New participants and transfers in	145	149
Removals and transfers out	(17)	(20)
Number participating at month end	4 381	4 510
% of eligible employees participating	97.7%	97.8%
Employees Retired	April	Total to Date
Number	3	21
Aggregate Annual Pensions including Supplemental Payments	$442	$3 187
Amount contributed by employees retired	$216	$ 794

Group Life Insurance	March	April
Number participating at beginning of month	5 327	5 350
New participants and transfers in	133	152
Cancellations	(44)	(29)
Removals and transfers out	(66)	(70)
Number participating at month end	5 350	5 403
% of eligible employees participating	75.5%	75.1%
Insurance Claims	April	Total to Date
Number of deaths	--	12
Amount of Insurance	--	$66 648
Amount contributed by employees	--	$ 553

Group Disability Insurance - Personal	March	April
Number participating at beginning of month	6 385	6 435
New participants and transfers in	158	172
Cancellations	(25)	(13)
Removals and transfers out	(83)	(83)
Number participating at month end	6 435	6 511
% of eligible employees participating	91.1%	90.6%

Group Disability Insurance - Dependent		
Number participating at beginning of month	3 996	3 993
Additions and transfers in	67	76
Cancellations	(39)	(14)
Removals and transfers out	31	34
Number participating at month end	3 993	4 021

Group Disability Insurance - Claims		
Number of claims paid by insurance company:		
Employee Benefits		
Weekly Sickness and Accident	125	93
Daily Hospital Expense Benefits	97	95
Special Hospital Services	100	82
Surgical Operations Benefits	50	56
Dependent Benefits Paid		
Daily Hospital Expense Benefits	153	112
Special Hospital Services	152	107
Amount of claims paid by insurance company:		
Employee Benefits	$10 260	$8 408
Dependent Benefits	5 228	3 970
Total	$15 488	$12 378

Accounting Divisions

Employee Plans (continued)	March	April
Group Disability Insurance - Premiums		
Personal - Employee Portion	$11 163	$11 088
- Company Portion	6 744	6 723
- Total	$17 907	$17 811
Dependent - Employee Portion	3 650	3 628
- Company	398	395
- Total	$ 4 048	$ 4 023
Grand Total	$21 955	$21 834

Annuity Certificates (For du Pont Service)	April	Total to Date
Number issued	---	46

U. S. Savings Bonds	March	April
Number participating at beginning of month	2 351	2 625
New authorizations	335	80
Voluntary cancellations	(55)	(68)
Removals and transfers out	(6)	(15)
Number participating at month end	2 625	2 622
% participating	33.5%	32.4%
Bonds issued - maturity value	$172 425	$149 225
- number	4 497	3 824
Refunds issued	28	32
Revisions in authorization	45	38

Suggestion Awards	April	Total to Date
Number of Awards	27	119
Total amount of awards	$225	$1 195

Security Slogan Awards		
Number of awards	0	7
Total amount of awards	0	$175

Employee Sales Plan	April		
	Total	Major Appliances	Traffic Appliances
Certificates issued	291	71	220
Certificates voided	10	3	7

Salary Checks Deposited	March	April
Weekly	920	1 002
Monthly	779	780
Total	1 699	1 782

Special Absence Allowance Requests		
Number Submitted to Pension Board	14	7

Absenteeism (Weekly Paid Employees)	1947	1948
January 1 to April 30	2.09%	2.61%

Accounting Divisions

Subcontractors' Payrolls Number of Subcontractors Employees or Payroll At End of Month	March	April
Cost-Plus-A-Fixed-Fee Subcontractors		
Guy F. Atkinson Company and J. A. Jones Construction Company	9 121	9 151
Sub-subcontractors		
Newbery-Neon Company	735	620
Urban, Smyth, Warren Company	1 137	1 036
*Newport, Kern & Kibbe	15	19
*Mehring & Hansen	109	85
*Saxon Painting Co.	-0-	14
*Peninsula House Movers	91	25
*V. S. Jenkins Company	62	48
*King Electric Co.	-0-	2
*Graysport Construction Company	136	135
*Joe Wilson Flooring Co.	-0-	3
*E. L. Knight Electric Company	18	16
*Bailey Plumbing & Heating	-0-	7
The Kellex Corporation	365	421
Giffels & Vallet, Inc.	106	178
National Carbon Company	215	233
C. C. Moore & Company, Engineers	30	40
J. A. Terteling & Sons, Inc.	199	420
Sub-subcontractors		
*Estes Electrical Co.	-0-	10
*Head Plumbing Co.	-0-	6
Morrison-Knudsen Co., (Tank Farm)	601	854
Sub-subcontractors		
Trowbridge & Flynn Electric Company	12	18
Morrison-Knudsen Co., (Track Maintenance)	103	104
Lump Sum Subcontractors		
C. C. Moore & Company, Engineers	3	2
John L. Hudson	402	142
Sub-subcontractors		
Twin Cities Construction Company	5	-0-
Payne Plumbing Company	11	15
E. L. Knight Company	9	9
Edmondson's Blind & Shade Company	1	1
Permawall Construction Company	147	134
B. K. V. Heating Company	21	16
Western Sheet Metal	4	-0-
J. P. Head	5	-0-
L. D. Reeder	83	37
H. D. Hacker	2	4
Pacific Roofing Supply Company	3	-0-
J. Gordon Turnbull, Inc.	45	45
Curtis Gravel Company	8	8
Dewitt C. Griffin & Associates	4	17

Accounting Divisions

Subcontractors' Payrolls (continued)	March	April
Nettleton, Baldwin, Sound Construction Co.	-0-	221
Sub-subcontractors		
Paul Thorgaard Plumbing Co. ,	-0-	4
Curtis Gravel Co.	-0-	10
Chicago Bridge Co.	-0-	-0-
Sub-subcontractor		
E. F. Sherrill	-0-	2
X-Ray Products Co.	-0-	29
Total	13 808	14 151

*Lump Sum Sub-subcontractor operating under a Cost-Plus-A-Fixed-Fee Subcontractor

SUMMARY OF PAYROLL REIMBURSEMENTS TO SUBCONTRACTORS

Subcontractor	Payrolls		Taxes (Employer's Portion)	
	This Month	Total To Date	This Month	Total To Date
Atkinson-Jones	$3 813 464.36	$15 628 467.25	$279 727.76	$474 129.87
Newbery-Neon	313 075.08	999 445.49	21 821.58	27 066.74
Urban, Smyth and Warren	522 031.88	1 730 227.25	--	9 596.23
Morrison-Knudsen	429 298.14	848 386.74	--	--
Trowbridge & Flynn	13 665.77	29 796.17	--	--
J. A. Terteling	81 151.18	101 691.05	1 452.00	1 452.00
C. C. Moore	9 000.00	32 300.00	--	--
Kellex	99 240.60	329 745.32	9 685.75	31 112.93
National Carbon	--	5 671.00	--	88.44
Giffels & Vallet	59 231.24	142 173.51	--	--
TOTALS	$5 340 158.25	$19 847 903.78	$312 687.09	$543 439.21

Accounting Divisions

Subcontractor		SUBCONTRACTOR'S PAYROLLS AUDITED Period Covered This Month	Period Covered Total to Date	Gross Amount This Month	Gross Amount Total to Date
Atkinson-Jones		3/13/48 to 4/10/48	7/25/47 to 4/10/48	$3 705 641.48	$14 627 536.81
Newbery-Neon		3/13/48 to 4/10/48	10/7/47 to 4/10/48	333 260.33	909 763.89
Urban, Smyth and Warren		3/13/48 to 4/10/48	10/8/47 to 4/10/48	523 619.53	1 594 221.74
Morrison-Knudsen		3/21/48 to 4/24/48	12/4/47 to 4/24/48	387 411.77	856 932.24
Trobridge & Flynn		3/14/48 to 4/24/48	1/14/48 to 4/24/48	14 295.63	32 440.84
J. A. Terteling		3/22/48 to 4/18/48	3/1/48 to 4/18/48	86 815.92	110 315.67
C. C. Moore		3/24/48 to 4/14/48	12/17/47 to 4/14/48	11 518.73	40 987.59
Kellex	(1)	3/1/48 to 3/31/48	9/15/47 to 3/31/48	99 240.60	329 745.32
National Carbon	(1)	---- to ----	8/1/47 to 3/31/48	----	5 671.00
Giffels & Vallet	(1)	3/1/48 to 3/27/48	10/2/47 to 3/27/48	46 241.10	144 007.69
TOTAL				$5 208 045.09	$18 651 622.79

(1) Audited by Atomic Energy Commission

Accounting Divisions

General Accounting	March	April	Total to Date
Charges to Cost-Plant and Inventories			
Payrolls - G.E. only	$ 3 002 037	$ 2 721 351	$ 37 013 612
Other Expense and Accruals	12 217 962	14 095 433	77 996 260
Government Cost Transfers	6 033 793	5 617 363	24 618 531
Gross Charges	$21 253 792	$22 434 147	$139 628 403
Less Revenue			
Village	241 322	245 443	4 262 771
Medical	74 177	78 559	1 027 804
Telephone	4 497	6 383	130 416
Other	11 560	8 643	103 428
Net Charges	$20 922 236	$22 095 119	$134 103 984

Payments Made to Subcontractors thru April 30, 1948

	Contract No.	Commitment To Date	Amount Paid To Date	Amount Withheld 4-30-48
Morrison-Knudsen Co.,Inc. CPFF	PHX-13693	$1 027 099.27		
Costs (Track			$ 994 099.27	$ -0-
Fixed Fee Maintenance)			29 700.00	3 300.00
Morrison-Knudsen Co.,Inc.	G-110	1 807 394.25	1 807 394.25	Retainer Paid
X-Ray Products Corp.	G-115	59 238.40	59 238.40	Retainer Paid
Atkinson-Jones CPFF	G-133	45 481 606.17		
Payrolls			18 068 925.83	609 154.88
Other (1)			15 630 607.61	-0-
Lone Pine Roofing Co.	G-134	52 875.13	52 875.13	Retainer Paid
National Carbon Co.,Inc. CPFF	G-135	1 313 000.00		-0-
Payrolls			5 759.44	-0-
Other (2)			1 651 376.70	-0-
G. A. Pehrson and Associates	G-137	18 700.00	15 895.00	-0-
John S. Villesvik	G-138	3 675.00	768.75	-0-
H. Brandt Gessel and Associates	G-139	11 719.50	2 787.50	-0-
DeWitt C. Griffin and Associates	G-141	205 524.00	172 023.59	19 113.73
John L. Hudson and Associates	G-142	4 654 402.78	4 394 166.49	-0-
Catlow Transport Co.	G-143	310 840.92	295 298.87	15 542.05
Northwest Hauling Co.	G-144	155 403.07	155 403.07	Retainer Paid
Sperry Products Co.	G-147	1 875.00	1 875.00	-0-
The Kellex Corp. CPFF	G-148	665 591.29		-0-
Payrolls			360 358.25	-0-
Other (3)			392 689.47	-0-
Catlow Transport Co.	G-149	25 426.00	25 426.00	Retainer Paid
Giffels and Vallet, Inc. CPFF	G-151	290 939.98		-0-
Payrolls			142 173.51	1 834.18
Other (4)			57 373.74	-0-
D. A. Whitley Co.	G-152	27 046.76	27 046.76	-0-
Roy L. Bair Co.	G-153	34 447.00	34 447.00	-0-
Sturm Elevator Co.	G-155	4 145.00	4 145.00	-0-

Accounting Divisions

General Accounting

Payments Made to Subcontractors thru April 30 1948 (continued)

	Contract No.	Commitment To Date	Amount Paid To Date	Amount Withheld 4-30-48
C.C.Moore and Co. Engineers	G-157			
Payrolls CPFF		$ 32 300.00	$ 32 300.00	$ 8 687.59
Lump Sum		304 287.00	-0-	-0-
Sturm Elevator Co.	G-158	2 218.00	2 218.00	-0-
Curtis Sand and Gravel Co.	G-159	44 142.81	44 142.81	4 904.76
Morrison-Knudsen Co.,Inc.CPFF	G-160			
Payrolls		1 762 034.92	878 182.91	11 190.17
Other			524 763.82	-0-
Fixed Fee		95 000.00	24 367.50	2 707.50
J. A. Terteling and Sons,Inc. (5)	G-161	450 000.00	200 000.00	-0-
Great Lakes Carbon Corp	G-167	196 232.65	196 232.65	-0-
J. A. Terteling and Sons, Inc. CPFF	G-173	249 757.76		
Payrolls			103 143.05	8 624.62
Other			12 740.94	-0-
X-Ray Products Corp.	G-175	107 550.00	11 491.65	1 149.17
		$59 394 462.66	$47 222 437.96	$686 203.65

(1) Amount Paid includes Provisional Reimbursement in the amount of $15 234 922.62 of which $13 794 622.61 was liquidated by audited Atkinson-Jones billings.

(2) Amount Paid includes $1 000 000.00 in advances.

(3) Amount Paid includes $350 000.00 in advances.

(4) Amount Paid includes $50 000.00 in advances.

(5) Estimated.

Construction Commitments and Expenditures	Commitments	Expenditures
July 1, 1947 to April 3, 1948	$74 853 471	$47 120 971
July 1, 1947 to April 30, 1948	93 171 284	57 670 416
Number of Accounts Payable Vouchers Entered	March	April
General Electric	5 624	5 729
du Pont	11	12
Total	5 635	5 741
Amount of Accounts Payable Vouchers Entered		
General Electric	$12 871 684.96	$14 523 410.01
du Pont	44 576.48	3 093 68
Total	$12 916 261.44	$14 526 503.69
Amount of Checks Issued		
General Electric	$12 799 324.22	$14 573 768.08
du Pont	568.37	46 035.30
Total	$12 799 892.59	$14 619 803.38

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Accounting Divisions

General Accounting

	March	April
Number of Checks Issued		
General Electric	3,711	3,964
du Pont	3	7
Total	3,714	3,971
Public Vouchers (1034) Submitted to AEC		
Vouchers not reimbursed at beginning of month	$ 8 489 811.71	$ 5 758 885.46
Vouchers submitted for reimbursement during month	14 880 723.92	15 741 794.82
	23 370 535.63	21 500 680.28
Vouchers reimbursed during month	17 611 650.17	14 086 284.03
Vouchers not reimbursed at end of month	$ 5 758 885.46	$ 7 414 396.25
Public Vouchers (1034) Submitted to AEC		
Number of vouchers not reimbursed at beginning of month	133	123
Number submitted during month	375	391
	508	514
Number reimbursed during month	385	353
Number of vouchers not reimbursed at end of month	123	161
Public Vouchers not Submitted to AEC		
Pre-Audit Vouchers (1035) Issued	$ 5 332 773.03	$ 4 528 759.58
Pre-Audit Vouchers (1035) not Issued	6 056 803.61	7 505 574.12
Total Unbilled Items	$11 389 576.64	$12 034 333.70
Number of Pre-Audit Vouchers Issued Awaiting AEC Approval	128	142
Items Over 60 Days Old Not Billed to AEC on Public Voucher (1034)		
Accounts Payable	$ 308 378.30	$ 482 816.32
Accounts Receivable	233.80 Cr.	473.45 Cr.
Freight	8 140.15	8 758.05
Payrolls - G.E.	400 851.93	241 966.67
Payroll Deductions - F.O.A.B. Taxes	26 924.10	490.02
Subcontractor's Payrolls	294 620.01	223 987.52
Subcontractor's Retainers - Accrued	98 020.86	34 501.75
U. C. Taxes - Federal	1.11 Cr.	-0-
Continuity of Service - Accrued	159 709.70	25 951.38
Total	$ 1 296 410.14	$ 1 017 998.26

Accounting Divisions

General Accounting (continued)	March	April
Cash Receipts - General Electric		
Accounts Receivable		
U. S. Government	$17 611 650.17	$14 686 284.03
Rents	78 477.29	83 760.41
Hospital	54 533.02	54 998.29
Telephone	5 162.60	5 530.57
Miscellaneous	2 297.83	2 089.49
Employee Sales	1 645.31	2 131.98
Bus Fares	9 253.55	8 466.20
Educational Program	2 840.34	637.90
Advances from U. S. Government	5 000 000.00	----
Sale of Furniture	----	181 700.57
All Other	9 984.77	11 079.14
Total	$22 775 844.88	$14 436 728.58
Cash Receipts - du Pont		
U. S. Government	$3 916.46	$3 826.11
Hospital	65.00	47.50
Vendor's Refunds	151.20	448.15
All Others (Collateral Fund)	43 469.75	-0-
Total	$47 602.41	$4 321.76
Cash Advances and Expense Accounts		
Cash Advance Balance at end of Month	$ 41 076.61	$ 48 652.09
Cash Advance Balances Outstanding over one month	$ 387.02	$ 6 331.92
Travel Orders Received	117	200
Traveling and Living Expenses Paid Employees	$33 541.72	$45 049.96
Billed to Government	$35 880.80	$45 948.29
Balance in Variation Account at end of month	$12 690.42 CR.	$13 588.75 CR.
Kadlec Hospital Accounting		
Accounts Receivable Balance at Beginning of Month	$49 816.78	$47 135.66
Total Invoices During Month	74 415.14	78 845.32
Total	$124 231.92	$125 980.98
Less Cash Received and Payroll Deductions	77 096.26	73 972 24
Accounts Receivable Balance at end of Month	$ 47 135.66	$ 52 008.74
Property		
Number of Transfer Notices Received	1 428	851
Number of Items Affected	14 704	7 180
Number of Receiving Reports Classified	14 174	11 152
Number of Receiving Reports Vouchered	3 546	2 123

Accounting Divisions

General Accounting (continued)	March	April
Property		
Number of Items Tagged at Beginning of Month	189 293	202 338
Number of Items Tagged this Month		
Decal Tags	7 968	3 676
Metal Tags	5 139	2 282
Number of Items Dropped from record	(62)	-0-
Total Tagged Items Recorded	202 338	208 296
Number of Items Recorded in quantity only	157 683	160 276
Total Items on Record	360 021	368 572

Accounting Divisions

PERSONNEL AND ORGANIZATION	March	April
Number of employees on payroll at beginning of month	658	611
Removals and transfers out	(72)	(373)
Additions and transfers in	25	21
Number at end of month	611	259
Net increase (or decrease) during month	(47)	(352)
% of termination and transfers out	10.9%	61.5%
% of absenteeism	2.8%	3.2%

Reasons for decrease of 352 in number of Accounting Division employees during April are as follows:

General	Weekly	Monthly
Transferred to Service	2	2
Transferred to Cost Analysis	-	2

or a total decrease of six employees

General Accounting: Net increase of four employees. Three new employees were assigned to Accounts Payable, one to Property Section, one to General Accounts, and one to Stenographic Section. Two employees were transferred in (one from Cost Section and one from 100-D Miscellaneous Clerical), and both employees were assigned to General Accounts Section. There were four terminations during April.

Weekly Payroll: Net increase of one employee. Two new employees and one returned from Leave of Absence. Two employees removed from payroll on illness absences.

Subcontractors' Payrolls: Net increase of two employees. Three new employees and one termination.

Cost: Net increase of one employee. Two new employees less one employee transferred to General Accounting.

Cost Analysis: Increase of three employees. Two employees transferred from General and one new employee.

Purchasing and Stores Divisions: 197 employees transferred from the Purchasing and Stores Divisions to the Services Divisions as of April 9, 1948. One employee removed from payroll.

Clerical: 91 employees transferred from Clerical to Service Divisions as of April 9, 1948. One employee was transferred to General Accounts.

Field Clerical: 67 employees transferred from Field Clerical to other divisions.

Injuries	March	April
Major	0	0
Sub-major	0	0
Minor	11	8

PERSONNEL AND ORGANIZATION (continued)

Number of Accounting Division employees and open employment requests as of May 1, 1948 were as follows:

	Number of Employees			Open Employment Requests			
				Replacements			
	Non-Exempt	Exempt	Total	For Employees Removed	For Employees Leaving	Additions	Total
General	3	4	7	0	0	0	0
General Accounting	123	11	134	8	0	8	16
Weekly Payroll	48	6	54	3	0	2	5
Monthly Payroll	10	2	12	0	0	0	0
Subcontractors Payrolls	15	1	16	0	0	5	5
Cost	28	3	31	0	0	1	1
Cost Analysis	1	2	3	0	0	0	0
Methods	0	2	2	0	0	0	0
Total	228	31	259	11	0	16	27

Open replacements may be summarized as follows:

Senior Clerk	1
Clerk	0
Junior Clerk	4
Office Machine Operator	4
Stenographer	3
Typist	5
Office Helper	10
Total	27

T. E. Sparks was transferred, effective April 20, 1948, from the position of Supervisor, Audit and Distribution of Checks to Supervisor, Records and Employee Benefit Plans of the Weekly Payroll Division. Effective the same date, G. B. Kuklinski was transferred from the position of Supervisor, Records and Employee Benefit Plans to Supervisor, Audit and Distribution of Checks.

All employees of the Field Clerical, Clerical, Purchasing, and Stores Divisions were transferred to other divisions effective April 9, 1948.

SECTIONAL ACTIVITIES

Cost

Cost reports for March were revised to include functional cost data as well as area cost data. This required a considerable amount of additional work, including the reworking of the functional data for January and February in order to show last month and year to date figures. Budget comparisons where available were also included for the first time in the monthly cost report.

During the month all balance sheet items previously carried in the Cost Ledger were transferred to the General Ledger.

The Construction Cost Ledger and two Underwood-Elliot Fisher posting machines were transferred to the Design and Construction Divisions on April 16, 1948. In the future all Cost Reports involving the activity of the Design and Construction Divisions will be issued by them.

As a result of the changes referred to in the preceding paragreph, it was necessary to review and revise when necessary all cost codes on open purchase orders in the General Accounting Division File. This was accomplished by the end of the month.

A new type ledger card was used for the first time during the month. Labor, other costs, and total costs for each code can be posted to the new card whereas previously a separate ledger card was required on each code for labor and material. It is expected that this revision will reduce the posting work and facilitate the preparation of cost report data.

Forms were prepared and final arrangements made to tabulate automotive and heavy duty equipment operating and maintenance costs on the IBM machines operated by the Cost Division.

Accounting Divisions

General Accounting

Accounts Payable

Volume in this Section increased considerably during the month with 5729 vouchers entered valued at $14 523 410 as compared with 5624 vouchers entered the previous month valued at $12 871 685. Cash Disbursements totaled $14 573 768.

At the end of the month, vouchers on hand which required additional processing before billing to the Government could be made totaled 1592 and amounted to $2 867 079. Reimbursable vouchers booked in April totaled $8 545 037. As of April 30 the unbilled total to date was $6 346 357. Of this unbilled total, $4 948 050 represents April vouchers and $915 493 represents March vouchers.

A change was made in the method of administering the Atkinson-Jones Provisional Reimbursement Account. Previously, current reimbursements were contingent upon the fact that the balance in the Advance Account did not exceed advances made during any preceding two-week period. Beginning with the last week in April, this was extended to a four-week period. Provisional reimbursements to date to Atkinson-Jones total $15 234 923; the balance in the Advance Account, representing unaudited A-J disbursements is $1 440 267. During the month provisional reimbursements amounted to $2 037 070.

Accounts Receivable

Telephone

Due to the many inter-departmental employee transfers, changes in telephone numbers, changes in telephone rates, and employees changes of addresses, an abnormal burden fell on this Section this month. However, the four employees handling the work have kept all work on a current basis. Statements for 2399 non-official telephones were prepared for service charges together with charges for over 13 000 toll calls during the month. Telephone revenue was $15 634.

Rent

As with the Telephone Section, this Section handled a considerable amount of abnormal work resulting from the increase in new house assignments and modification of rental charges resulting from the sale of government-owned furniture. Of approximately 2000 leases to be affected by the sale of furniture, modifications have been received for 875.

Including facility rent and North Richland rentals, total revenue amounted to $297 344.

Rentals are being charged for 4240 Richland houses, 41 Apartments, 1026 dormitory rooms, and 47 commercial facilities. In North Richland, rentals are being charged for 6500 barracks rooms, 1075 trailer spaces, 160 womens'barracks rooms, and 79 houses.

Accounting Divisions

General Accounting

Billings to the Government

During April billings to the Government totaled $15.741 795. Reimbursable costs booked to date aggregate $106 461 180. Billings to date to the Government total $94 426 846 leaving $12 034 334 as unbilled.

The unbilled balance is represented by current charges primarily, as only $1 017 998 represents items over 60 days old. This old balance was reduced by $300 000 from the March balance.

Cash Advances and Cash Change Funds

Cash advanced for traveling and living expenses in April amounted to $50 377. The outstanding balance in this account is $48 652 made up of current advances except for a few exceptions. Billings to the Government for expense accounts submitted are current except for those from employees transferred from du Pont. Billing of these vouchers has been withheld pending receipt by the Government of the definitive contract between du Pont and General Electric.

The 35 active Cash Change Funds total $3735.

Kadlec Hospital Accounting

Invoices during April numbered 12 297 and amounted to $78 845. The receivable balance at the end of the month was $52 008 and represents approximately 1500 accounts.

Much time during the month was spent in writing procedures, drafting and ordering forms, etc., which will be required for the North Richland Hospital which will open in May. Arrangements for assignments of adequate space in the new hospital for accounting offices were also made.

Billings to subcontractors' employees and their families for medical services are continuing to increase.

Collections are, with few exceptions, being kept on a current basis.

Property

On April 14 a reply to our letter of March 26 was received approving the recommendations made in that letter, except that motors and transformers when not permanently installed will continure to be accounted for as Class B Property. This letter modified the definition of Class B Property to exclude all items having a unit value of less than $50.00 and excludes tires and permanently installed electric motors and transformers regardless of value.

With the discontinuance of the recording and control of items valued at less than $50.00 work of the field crews was sharply reduced and six of these employees were assigned to relieving the records of these items. It is expected that more than 250 000 items will be dropped. Property transfer Notices have already been reduced 25%.

Accounting Divisions

General Accounting

John L. Hudson & Associates

Payments to John L. Hudson & Associates under Subcontract G-142 through April 30, 1948 may be summarized as follows:

Total progress payments made to John L. Hudson under the original contract amount to	$3 288 810.48
Additional payments were made through March 31, 1948 under the Supplemental Agreement to Subcontract G-142 dated March 5, 1948 in the amount of	379 645.20
Payments made under this Supplemental Agreement in April amounted to	725 710.81
Total payments made to John L. Hudson through April 30, 1948	$4 394 166.49

April payments to Hudson consisted of reimbursement for:

Payments in April by John L. Hudson to Subcontractors	$ 307 961.63
John L. Hudson's payroll and other April expenses	276 327.38
Reimbursements based on costs certified to by Peat, Marwick, Mitchell & Company	141 421.80
Total Payments to Hudson during April, 1948	$ 725 710.81

Payrolls

The following "Request for Reimbursement Orders" have not yet been approved by the Atomic Energy Commission:

Date of Request	Date Transmitted to Commission	Items Covered by Request
8/26/47	8/27/47	Seven exempt job classifications for Design and Construction
8/26/47	8/28/47	Five exempt job classifications for Construction Purchasing
8/26/47	8/28/47	Exempt job classifications for Expediting Supervisor and Expeditor
9/2/47	9/3/47	Revised job rates for weekly paid employees
9/10/47	9/10/47	Exempt job classifications for Construction Purchasing

All AEC Forms-37 covering Merit Salary Increases, Promotional Increases, and Changes in Classifications have been approved by the AEC through the month of April 1948.

There were no errors reported by the Government Audit Section in connection with the audit of the Monthly Payroll for March. Complete audit by the Government Audit Section of Weekly Payrolls for March revealed the following errors:

1. Explanations of adjustments were not shown on the Payroll in three instances.
2. Thirteen postings were illegible on the Government copy of the payroll.
3. There were three cases of deductions posted incorrectly.
4. Hours were posted incorrectly in three instances.
5. There were three rates shown incorrectly on the payroll although, no error in payment occurred in any of the cases.
6. There was one error in calculation of the gross payment resulting in an underpayment to the employee amounting to $.40.

Both payrolls have been reimbursed by the government through the month of March.

In preparation for the change over to the use of Weekly Time Cards in the 700-1100 Areas in place of Daily Time Cards, time clocks were converted to register time in columns provided on the new time card for each day of the week. Time card racks were installed at each clock location. In some instances, it was necessary to move the location of the clock in order to accommodate the time card racks. A new clock alley is being installed in the Labor Yard to replace the old one which is inadequate.

The Monthly Labor Report was discontinued as of the month of April. In its place an Employees and Payroll Report was issued, showing statistics for the month of April according to the new organization. The Employees and Payroll Report will also replace the Monthly Force Report.

In connection with the reorganization, new suffixes to employee payroll numbers were assigned to facilitate preparation of reports according to the new organization setup.

Accounting Divisions

Subcontractors Payrolls

During April, no additional Reimbursement Orders were received from the Atomic Energy Commission, however, the required documentation for several additional rates and classifications, was submitted by the Design and Construction Divisions.

Requests for Reimbursement Orders now being processed by the Atomic Energy Commission cover apprentice rates for Carpenters, Bricklayers, Stone Masons, Tile Setters, Marble Masons, Terrazzo Workers, Cement Blocklayers and Roofers; journeymens' rates for Plasterers, Linoleum Layers, and Linemen; Foreman differentials for Teamsters, Linemen, Roofers and Linoleum Layers. A Request for Reimbursement Order, covering the Atkinson-Jones policy to regard hours paid for accrued leave as hours worked when computing overtime for hours worked in excess of forty (40) in any week, was submitted to the Atomic Energy Commission on April 22, 1948.

Requests for Reimbursement Orders that are in process by the Design and Construction Divisions and the Subcontractor cover as follows; Carpenters' hazardous and onerous work differential (submitted by the subcontractor but disapproved by the Design and Construction Divisions on April 24, 1948); Job rates for Blacksmiths and Blacksmith Helpers, Locomotive Brakemen, Locomotive Flagger; Foreman Differentials for Sawfilers, Power Saw Operators, Millwrights, Piledrivermen, Shinglers, Sign Painters, Steel Painters, Spray Painters, Glazers Steel and Plate and Shop Glazers.

Design and Construction Divisions letter dated April 19, 1948 outlined the procedure to be followed in obtaining approvals for overtime worked by cost-plus-a-fixed-fee subcontractor employees. This new procedure provides for only General Electric approval for overtime worked and places the responsibility of maintaining files of authorized instances with the Field Superintendent of the Construction Division. Overtime worked prior to the time this procedure was made effective and heretofore unapproved, is to be approved without reservation by the Atomic Energy Commission, on receipt of letter requesting this approval from Design and Construction Divisions.

During April, discussions concerning reimbursement were held with representatives of Pacific Telephone and Telegraph Company and procedures formulated.

A definitive contract with Morrison-Knudsen Company was received during the month and all amounts previously withheld pending approval of various manual rates have been reimbursed. This action had the concurrence of the Atomic Energy Commission as it is generally felt that the manual rates now unapproved will be approved upon receipt of the proper documentation.

Reimbursement for National Carbon Co. payrolls is still limited to only those payrolls disbursed by their New York office.

Approved copies of A.E.C. Form 37 for subcontractor exempt employees have not as yet been received from the Atomic Energy Commission.

PROJECT AND RELATED PERSONNEL

GOVERNMENT EMPLOYEES	3-31-48		4-30-48	
Civilian Personnel - Atomic Energy Commission	322		326	
Civilian Personnel - G. A. O.	2		4	
Total		324		330
RICHLAND VILLAGE PERSONNEL				
Commercial Facilities (Including No.Richland)	935		951	
Organizations, Clubs, Etc.,	73		74	
Schools	240		241	
Churches	24		25	
Total		1272		1291
MORRISON-KNUDSEN PERSONNEL (Benton City)		105		98
CONSTRUCTION SUB-CONTRACTORS				
Atkinson & Jones	8480		9155	
Newport, Kern & Kibbe	15		19	
John L. Hudson Co.,	396		151	
Twin City Construction Co.,	5		-	
B. K. V. Heating Co.,	26		15	
Chicago Canteen Co.,	308		296	
Dewitt C. Griffin & Assoc.,	4		17	
Newberry Neon	606		618	
Urban, Smyth, Warren Co.,	1000		1031	
Payne Plumbing	12		16	
E. C. Knight Electric	27		25	
J. B. Head Co.,	16		6	
L. D. Rieder	27		37	
H. D. Hacker	5		4	
Kellex Corp.,	365		421	
J. Gordon Turnbull	45		45	
Giffels & Vallet, Inc.,	106		106	
Permawall Const., Co.,	147		134	
Morrison & Knudsen Co.,	607		864	
Edmonson	4		1	
C. C. Moore	30		42	

CONSTRUCTION SUB-CONTRACTORS	3-31-48	4-30-48	
Mahring & Hanson	111	96	
Jenkins Insulating Co.,	63	52	
Curtis Sand & Gravel	8	18	
National Carbon/Carbide Co.,	186	186	
Trowbridge & Flyn Electric Co.,	14	19	
J. A. Terteling & Son	249	412	
Graysport Construction Co.,	129	137	
Peninsula House Movers	88	25	
Estep Electric	1	10	
Paxton Painting Co.,	56	15	
Wilson Flooring Co.,	5	3	
Bailey Plumbing Co.,	12	7	
King Electric Co.,	2	2	
Pacific Roofing	3	-	
Chicago Bridge	1	2	
X-Ray Products	14	29	
Nettleton-Sound	-	225	
Thorgaard Plumbing	-	4	
Total		13,173	14,245
GENERAL ELECTRIC PERSONNEL		7,808	8,069
GRAND TOTAL		22,680	24,033