PRIVACY ACT MATERIAL REMOVED

[redacted]
DECLASSIFIED
WITH DELETIONS

HW-10993-DEL

~~HW 10993~~ 727712

REPOSITORY PNL
COLLECTION Atmospheric Releases
BOX No. N/A
FOLDER N/A

HAN-[illegible]

#1 - H. A. Winne, Schenectady
#2 - Zay Jeffries, Pittsfield
#3 - C. G. Suits, Schenectady
#4 - R. C. Muir
#5 - J. R. Rue
#6 - C. N. Gross
#7 - A. B. Greninger
#8 - F. R. Creedon
#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 - Office of Hanford Directed Operations
Attention: C. Shugg, Manager
#14 - 700 File
#15 - 700 File
#16 - 700 File

CLASSIFICATION REVIEW FOR DECLASSIFICATION BUT LEFT UNCHANGED
By [illegible]
Date 5-17-73
U. S. AEC Division of Classification

September 24, 1948

HANFORD WORKS

MONTHLY REPORT

AUGUST 1948

Classification Cancelled (Change to
Declassified with Deletions
By Authority of DOE-4
DA Snyder 1-30-92
By [illegible] 1-30-92
PM-Eick 1-30-92

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[redacted] HW-10993-DEL

GENERAL SUMMARY

AUGUST-1948

A total of 88.8 tons of metal was discharged during the month as the three piles operated an average of 87.5 percent of the time. The Power Level was 275 MW except for outage periods.

300 Area canning production amounted to 133 tons of acceptable slugs; a new record for 4" slugs.

Effective August 30, 1948, all metal charged into the piles will be alpha-rolled, triple-dipped and transformed into the beta phase.

A total of 48 batches were processed through Isolation. Waste losses for all separations activities averaged 2.4 percent for the month.

Construction of sand-bed filters as a means of correcting the 200 Area stack gas contamination is proceeding at a rapid rate.

Operational efficiencies have permitted a 25 percent reduction in Isolation Building manpower requirements.

As a safeguard against possible contamination of the DR Pile, techniques were developed for measurements of the diffusion length of neutrons in the pile before the top shield is installed.

The quality of all graphite deliveries decreased during the month. This situation is being actively investigated. The graphite development program made a number of major advances, among them being (a) a demonstration that a nitrogen sweep during graphitization improves quality by about 0.3 dih; (b) identification of rare earth impurities as europium and possibly samarium and neodymium; and (c) a demonstration that pile exposures can be accelerated by a factor of at least 2.5 by impregnating the graphite test samples with boron.

The complexity of power coefficient behavior is pointed up by new evidence that the reactivity effects due to graphite temperature become smaller at higher temperatures. A rapid and unexplained rise in the "hot" reactivity of the D Pile is also commanding much attention.

The concentration of carbon dioxide in the D Pile atmosphere was raised from 25% to 40% during the month, with no adverse thermal effects and with the expected reactivity change.

An electric resistance heater which reached a temperature of 500° C. in one of the tube positions of the D Pile failed to produce significant annealing.

Magnesium washers were found to corrode too rapidly to be usable as sacrificial corrosion inhibitors for Van Stone flanges. Magnesium alloys are being investigated.

The 16" Redox Scale-Up column was placed in operation during the month and six nitric acid transfer runs carried out to obtain preliminary information on capacity, stage height and operating characteristics. The results indicate

that the column, designed on the basis of small column performance with Fenske packing, is considerably over-designed for service with the Raschig ring packing employed in columns of this size. H.E.T.S. improved with increasing mass throughput to an optimum value of about 1.8 feet at 275-370% of flowsheet rates. This value is much lower than that estimated in earlier feasibility studies, and if a proportionately low stage height is established for uranium transfer in the runs scheduled for September the packed tower will again become a strong contender for selection as the preferred contactor in full scale plants. In the meantime progress is being made on the installation of 1/100 scale and full scale mixer-settler units received from the fabricator during the month, and experimental studies with these units will be started at an early date.

Production tests to explore the possibility of reducing process volumes in the 200 Area have shown that a 30% saving in process volume (and thus in stored wastes) can be effected with no loss in yield or decontamination efficiency. Evaluation of the sand bed filter as a means of controlling active speck contamination has continued with emphasis on the effect of grain size and bed depth on efficiency and operating characteristics. An early choice of grain size must be made for the first plant unit, which is to be completed in the next 2-3 months.

300 Area Plant Assistance personnel continued to supervise the rolling of uranium rods for Hanford at Lockport, N.Y., and covered also the first production rolling by Vulcan Crucible Steel at Aliquippa, Pa.

Tests with mechanical agitation of slugs in the bronze baths showed it to assure complete structural transformation of this metal in 12% less time than had been required with normal manual dipping. This improvement was put into practice by the P Division on August 27.

Eight uranium billets were gamma extruded to evaluate the effects of extrusion temperature and rapidity of quenching on metal structure. The resultant rods contained so little of the desired grain size that neither variable is considered sufficiently promising to merit further study.

Investigation of low canned slug reactivity observed recently in the Test Pile has shown it to result from abnormal contents of magnesium and nitrogen in some of the Mallinckrodt and Electromet metal. Since all billet analyses and egg reactivities have been satisfactory, these impurities evidently are segregated within the billets involved. Hanford remelt uranium continues very satisfactory in quality.

Experimental facilities for metallurgical studies on irradiated uranium are being removed from the 212-N Bldg., as required for S Division resumption of operations in this storage basin early next month. This means that these important studies must be suspended until projected replacement facilities can be provided.

In cooperation with the Accountability Unit, the Analytical Section and the Statistics Group are undertaking an extensive program for improving the accuracy and precision of the two most critical product solution analyses(8-1-MR and AT).

The force increased by eight. There were four Class I special Hazards incidents. One involved plutonium contaminated skin. In view of the new permissible deposition limit in the body, the incident gave concern since about 65% of the residual contamination disappeared overnight. One Class II incident occurred with the overexposure of four men to beta radiation in the Melt Plant.

In the Control and Development Section, no abnormal conditions were detected in the routine water, air and vegetation sampling program. The bioassay analyses showed no results above the warning limit for the plutonium excretion test. Uranium content of thirteen samples exceed 20 ug U/liter.

In the Biology Division, monitoring of mammals and fowls proceeded without incident. Trout fingerlings in the Aquatic Laboratory were seriously affected by bacterial and protozoan disease which masked any biological effects produced by the effluent water. Radiobiological surveys of the Columbia River, discontinued last April, were started again along with the initial study in a series of biological food chain investigations.

There was no evidence of injury to any employee during the month due to radiation

With encouraging progress being made on the sand filter for the stacks, the most pressing health problem at present is to get started on a long range experimental program to determine the effect of the inhalation of active particles.

Employee physical examinations decreased slightly while first aid treatments reached a new high of 22,916, approximately 880 per day.

Absenteeism due to sickness reached an all time low of 0.56%.

Clinic visits reached a new high of 10,294 for Richland and North Richland, or 395 per day. This represents an increase of 32%. Dental clinic visits were up again to 3,970, a 20% increase over the previous high.

Open requisitions for additional personnel increased from 443 at the beginning of the month to 533 at the end of the month. Due to scheduled layoff in Design and Construction Divisions plus terminations of summer employees total plant roll decreased 112.

Six general news releases made to local and other newspapers in the Northwest. Radio broadcast script concerning G. E. Graduate School of Nuclear Engineering prepared for broadcast over G. E. "Voice of Washington". One hundred seventy-one women employees completed the six weeks training program.

Negotiations were made for our fourth quarter steel requirements. A procedure was set up to facilitate and expedite purchase of emergency material requirements which should materially speed up the procurement of urgently needed materials.

We were advised by the Schenectady Purchasing Department to place orders for our requirements of all aluminum products to be used on the project through June, 1949. This is due to the increasingly critical situations with respect to this material.

Bertram Miller, in charge of Labor Relations and Wage Rates, Erie Works, arrived in Richland August 2nd for the purpose of assisting with the preliminary classification of all Hanford Works exempt personnel below the assistant superintendent level except those individuals on engineering assignments.

A preliminary comparative wage analyses was made from data assembled by the Pacific Telephone and Telegraph Company involving Seattle, Portland, Spokane and Tacoma.

A wage rate manual for limited distribution to supervision which was designed for the purpose of clarifying the non-exempt wage structure was virtually completed and will be ready for distribution in early September.

There were two Major Injuries for the month making a total of 10 for the year and a cumulative frequency rate of 0.88 for 1948.

Operation of 200-W Area laundry on a six-day, three-shift basis continues to be necessary.

Continued reduction of volume in 700 Area laundry will permit return to two-shift operation in September.

Operation of Patrol and Fire Protection services on a six-day week schedule continued throughout the month.

On August 31, 1948, the new center section (Unit 2) of the Columbia High School was officially accepted from construction.

The Richland Junior Chamber of Commerce opened its Atomic Frontier Days celebration on August 30, 1948.

Sales by established Commercial Facilities remained constant during the month. There is an apparent, marked tendency by established facility operators to make improvements, at their own expense, to the buildings and equipment leased to them.

The interest of prospective facility operators in building their own facilities for operation in Richland has shown considerable decrease during the past several weeks. This is apparently due to a reluctance on the part of operators to invest the large sum necessary for building construction in Richland.

Responsibility for the operation of sewage disposal system, underground irrigation system, sanitary water system, and steam plant was transferred to the Public Works Division on August 23, 1948; this will be known as the Utilities Section.

During August, meetings of division accountants and others were held for the purpose of allocating the accounting personnel and work among the decentralized accounting divisions to be formed. It was decided that the decentralization of the accounting functions will be made effective as of October 1, except that the cost sections will operate as a central group until additional cost personnel is acquired.

Revised cost codes were issued for the manufacturing and related service divisions community and hospital, to make the new cost accounting systems effective as of September 1.

[redacted]

HW-10993-A

STAFF

General Manager	R. C. Muir
Assistant General Manager	R. S. Noblett
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.

1194514

FORCE REPORT
AUGUST-1948

	Non-Exempt		Exempt		Total	
	7-30-48	8-31-48	7-30-48	8-31-48	7-30-48	8-31-48
GENERAL	14	14	7	6	21	20
LAW	2	4	4	4	6	8
DESIGN & CONSTRUCTION DIVS.						
Administrative	38	35	6	6	44	41
Construction	351	314	275	250	626	564
Construction Accounting	14	14	-	-	14	14
Design	225	189	145	135	370	324
Procurement	42	40	63	62	105	102
North Richland Realty	302	301	22	22	324	323
MANUFACTURING DIVISIONS						
Administrative	-	1	3	3	3	4
"P" Division	291	297	60	62	351	359
"S" Division	227	236	56	57	283	293
Power	396	335	85	87	481	422
Maintenance	629	524	80	80	709	604
Project Engineering	75	74	51	51	126	125
Electrical	236	222	42	43	278	265
Instrument	153	157	44	44	197	201
Transportation	674	679	64	64	738	743
Accounting	-	-	1	1	1	1
TECHNICAL DIVISION	471	472	222	227	693	699
MEDICAL DIVISION	436	425	97	99	533	524
H. I. DIVISION	191	201	87	87	278	288
ACCOUNTING DIVISION	238	239	36	37	274	276
SERVICE DIVISIONS:						
Employee & Comm. Relations	78	71	18	18	96	89
Plant Security & Service	1005	1006	118	123	1123	1129
Labor Relations & Wage Rates	5	5	5	5	10	10
Purchasing & Stores	166	158	21	22	187	180
COMMUNITY DIVISIONS	650	798	132	135	782	933
GRAND TOTAL	6908	6811	1744	1730	8653	8541

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PERSONNEL DISTRIBUTION - AUGUST 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
GENERAL	-	-	-	-	-	-	-	-	6	6
Clerical	-	-	-	-	-	-	-	-	14	14
Total	-	-	-	-	-	-	-	-	20	20
LAW DIVISION	-	-	-	-	-	-	-	-	4	4
Clerical	-	-	-	-	-	-	-	-	4	4
Total	-	-	-	-	-	-	-	-	8	8
DESIGN & CONSTRUCTION DIVISIONS										
Adminstrative										
Supervisors	-	-	-	-	-	-	-	-	5	5
Engineers	-	-	-	-	-	-	-	-	1	1
Clerical	-	-	-	-	-	-	-	-	28	28
Others	-	-	-	-	-	-	-	-	7	7
Total	-	-	-	-	-	-	-	-	41	41
Construction										
Supervisors	-	-	-	-	-	-	12	32	-	44
Engineers	39	-	-	-	17	4	23	35	23	141
Clerical	19	-	-	-	4	-	43	121	10	197
Others	18	-	-	-	2	-	133	3	26	182
Total	76	-	-	-	23	4	211	191	59	564
Construction Accounting										
Supervisors	-	-	-	-	-	-	-	-	-	-
Clerical	-	-	-	-	-	-	-	-	14	14
Total	-	-	-	-	-	-	-	-	14	14

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HW-10993 -DEL

	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
DESIGN & CONSTRUCTION DIVISIONS										
Design										
Supervisors	-	-	-	-	-	-	-	-	14	14
Engineers	-	-	-	-	-	-	-	-	144	144
Clerical	-	-	-	-	-	-	-	-	91	91
Others	-	-	-	-	-	-	-	-	75	75
Total	-	-	-	-	-	-	-	-	324	324
Procurement										
Supervisors	-	-	-	-	-	-	2	-	13	15
Clerical	-	-	-	-	-	-	-	-	41	41
Others	-	-	-	-	-	-	25	-	21	46
Total	-	-	-	-	-	-	27	-	75	102
North Richland Realty										
Supervisors	-	-	-	-	-	-	-	24	-	24
Engineers	-	-	-	-	-	-	-	4	-	4
Clerical	-	-	-	-	-	-	-	32	-	32
Others	-	-	-	-	-	-	-	263	-	263
Total	-	-	-	-	-	-	-	323	-	323

	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
MANUFACTURING DIVISIONS										
General										
Supervisors	-	-	-	-	-	-	-	-	3	3
Clerical	-	-	-	-	-	-	-	-	1	1
Total	-	-	-	-	-	-	-	-	4	4
"P" Division										
Supervisors	9	12	16	-	-	17	-	-	8	62
Operators	28	33	33	-	-	188	-	-	-	282
Clerical	2	2	2	-	-	5	-	-	4	15
Total	39	47	51	-	-	210	-	-	12	359
"S" Division										
Supervisors	-	-	-	21	25	-	-	-	11	57
Operators	-	-	-	110	110	-	-	-	-	220
Clerical	-	-	-	4	10	-	-	-	2	16
Total	-	-	-	135	145	-	-	-	13	293
Power										
Supervisors	19	21	18	10	9	1	7	-	-	85
Operators	83	75	74	22	30	10	-	-	-	294
Clerical	2	2	2	-	1	-	2	-	-	9
Others	7	7	7	4	5	4	-	-	-	34
Total	111	105	101	36	45	15	9	-	-	422

	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
MANUFACTURING DIVISIONS										
Maintenance										
Supervisors	2	7	8	6	16	7	16	-	3	65
Engineers	-	-	1	1	1	1	-	-	10	14
Mechanics	33	24	62	42	97	61	109	-	-	428
Clerical	1	-	2	2	4	1	4	-	4	18
Others	3	1	10	6	19	11	28	-	1	79
Total	39	32	83	57	137	81	157	-	18	604
Project Engineering										
Supervisors	-	-	-	-	1	-	-	-	13	14
Engineers	-	-	-	-	5	1	-	-	30	36
Drafting Personnel	-	-	1	-	5	3	-	-	31	40
Clerical	-	-	2	-	1	-	-	-	14	17
Others	-	-	1	-	2	-	-	-	15	18
Total	-	-	4	-	14	4	-	-	103	125
Electrical										
Supervisors	2	2	3	2	3	2	2	-	24	40
Electricians	10	10	13	10	11	12	-	-	99	165
Clerical	1	-	1	1	1	1	2	-	3	10
Others	2	3	2	2	3	4	2	-	32	49
Total	15	15	19	15	18	19	6	-	158	265

	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
MANUFACTURING DIVISIONS										
Instrument										
Supervisors	2	4	5	2	4	6	-	-	7	28
Engineers	-	-	-	-	-	8	-	-	9	17
Mechanics	13	10	10	12	15	25	-	-	9	94
Clerical	-	1	2	1	1	4	-	-	5	14
Others	2	3	3	2	4	26	-	-	8	48
Total	17	18	18	17	24	69	-	-	38	201
Transportation										
Supervisors	8	2	2	2	2	1	7	-	40	64
Drivers (Based on Areas Served)	9	13	33	33	41	24	20	-	89	262
Mechanics	12	2	1	3	2	-	3	-	76	99
Trainmen	9	4	4	4	4	-	-	-	11	36
Laborers	6	13	10	7	22	9	3	-	46	116
Clerical	-	-	1	1	1	-	-	-	27	30
Others	7	9	10	7	23	4	6	-	70	136
Total	51	43	61	57	95	38	39	-	359	743
Manufacturing Accounting										
Supervisors	-	-	-	-	-	-	-	-	1	1
Total	-	-	-	-	-	-	-	-	1	1

	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
TECHNICAL DIVISION										
Supervisors	-	7	-	7	12	36	-	-	14	76
Chemists-Engineers-Physicists-Metallurgist-Technical Graduates	2	10	16	20	27	143	-	-	13	231
Laboratory Assistants	8	17	34	38	63	111	-	-	2	273
Clerical	-	2	-	1	2	41	-	-	36	81
Others	-	-	-	-	1	37	-	-	-	38
Total	10	36	50	66	105	368	-	-	64	699
MEDICAL DIVISION										
Physicians	-	-	-	-	-	-	7	13	26	46
Dentists	-	-	-	-	-	-	-	3	11	14
Technicians	-	-	-	-	2	-	-	9	29	40
Clerical	1	-	-	2	1	1	-	32	85	122
Others	11	5	-	4	3	2	12	33	232	302
Total	12	5	-	6	6	3	19	90	383	524
H. I. DIVISION										
Supervisors	1	1	3	4	8	17	-	-	7	41
Engineers	4	4	6	13	10	9	-	-	-	46
Clerical	-	-	-	-	1	3	-	-	4	8
Others	7	13	17	31	52	55	7	-	11	193
Total	12	18	26	48	71	84	7	-	22	288
ACCOUNTING DIVISION										
Supervisors	-	-	-	-	-	-	-	-	37	37
Clerical	-	-	-	-	-	-	-	-	239	239
Total	-	-	-	-	-	-	-	-	276	276

	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
SERVICE DIVISIONS										
Employee & Community Relations										
Supervisors	-	-	-	-	-	-	-	-	18	18
Clerical	-	-	-	-	-	-	-	-	62	62
Others	-	-	-	-	-	-	-	-	9	9
Total	-	-	-	-	-	-	-	-	89	99
Labor Relations & Wage Rates										
Supervisors	-	-	-	-	-	-	-	-	5	5
Clerical	-	-	-	-	-	-	-	-	5	5
Total	-	-	-	-	-	-	-	-	10	10
Plant Security & Service										
Supervisors	14	9	8	10	10	12	26	-	37	126
Office Machine Operators	-	-	-	-	-	-	-	-	53	53
Inspectors	4	3	3	3	3	3	4	-	1	24
Patrolmen	52	119	73	67	109	85	36	-	40	581
Firemen	47	-	-	-	-	12	2	-	21	82
Laundry Operators	-	-	-	-	6	-	-	-	3	9
Clerical	-	-	-	-	-	-	18	-	36	54
Others	5	6	6	11	37	16	3	-	116	200
Total	122	157	90	91	165	128	89	-	307	1129
Purchasing & Stores										
Supervisors	-	-	-	-	-	-	-	-	22	22
Clerical	-	1	-	1	-	-	-	-	156	158
Total	-	1	-	1	-	-	-	-	178	180

	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
COMMUNITY DIVISIONS										
Supervisors	-	-	-	-	-	-	-	-	135	135
Others	-	-	-	-	-	-	-	-	798	798
Total	-	-	-	-	-	-	-	-	933	933
GRAND TOTAL	504	457	503	529	848	1023	564	604	3509	8541

HW-10993-DEL

HW-10993-DEL

MANUFACTURING DIVISIONS

AUGUST 1948

SUMMARY

A total of 88.8 tons of metal was discharged during the month as the three piles operated an average of 87.5 percent of the time. The Power Level was 275 MW except for outage period.

The 300 Area canning production amounted to 133 tons of acceptable slugs—a new record for 4" slugs.

Effective August 30, 1948, all metal charged into the piles will be alpha-rolled, triple-dipped, and completely transformed into the beta phase.

A total of 48 batches were processed through Isolation. Waste losses for all separations activities averaged 2.4 percent for the month.

Construction of sand-bed filters as a means of correcting the 200 Area stack gas contamination is proceeding at a rapid rate.

Operational efficiencies have permitted a 25 percent reduction in Isolation Building manpower requirements.

On August 23, 1948, responsibility for Power, Maintenance, and Electrical maintenance activities in the 700-1100 Areas, and associated regions, was transferred from the Manufacturing Divisions to the Community Division.

C. N. GROSS, MANAGER
MANUFACTURING DIVISIONS

P DIVISION

AUGUST - 1948

I. GENERAL

All piles operated at 275 M.W. throughout the month except for the outages listed under Area Activities in this report. A total of 88.8 tons of metal was discharged from the piles.

The 300 Area canning production amounted to 133 tons of acceptable slugs thus setting a new record for 4" slugs even though the long canning cycle which started on July 9, 1948 was in effect until August 27, 1948. As of the latter date, it was possible to reduce the canning cycle from 52 to 47 seconds through the use of mechanical agitation in the bronze baths.

All metal charged into the piles after August 30, 1948 will be alpha rolled, triple dipped, and completely transformed into the beta phase.

II. ORGANIZATION AND PERSONNEL

Number of Employees on Payroll - August

Beginning of Month:	350
End of Month:	359
Net Increase:	9

One operator was transferred from the Transportation Division and seven were hired, all being assigned to the 300 Area. Two operators left the 300 Area, one transferring to the Service Division and one terminating voluntarily.

W. J. Tupper was transferred from the Health Instrument Divisions on August 1 as Supervisor in Training in 100-F Area.

I. L. Huffman was hired as Supervisor in Training in 100-F Area on August 27.

A. A. Janos, Area Supervisor, returned to work on August 30.

W. K. Wright, Supervisor in Training, moved from 100-F Area to the 300 Area.

III. AREA ACTIVITIES

P Division

PILE SUMMARY	PILE B	PILE D	PILE F
Time Operated (%)	92.5	89.1	81.0
Operating Efficiency (%)	91.4	87.0	78.5
*Power Level (M.W.)	275	275	275
*Inlet Water Temperature (°C)	20.0	19.8	19.8
*Outlet Water Temperature (Maximum °C., 10 tubes, .240" zone)	58.7	60.2	64.9
Number of Scrams	1	3	0
Number of Purges	1	1	1
Helium Consumption (cu. ft.)	52,926	55,298	56,200
Metal Discharged (tons)	19.9	32.8	36.1
Inhours Gained (this month)	13	17	6
*Inhours Poisoned	258	438	336
*Inhours in Rods	66	65	63

* Month End Figures

PILE BUILDING

Outage Breakdown

Date of Outage	Scheduled Metal Discharged	Scheduled Maintenance	Unscheduled	Length of Outage (Hours)
8-4-48	B			19.2*
8-4-48	D*		D*	23.8
8-4-48	F*		F*	21.7
8-6-48			D**	0.2
8-10-48			B***	0.3
8-10-48			D***	0.4
8-12-48		F		77.4****
8-13-48	D			19.5
8-17-48	B			19.1
8-19-48	F			21.2
8-20-48		D		17.5
8-26-48	D			19.3
8-27-48	F			21.0
8-31-48	B			17.6

* Shutdown prolonged for one hour at B Area due to a Grade Y power condition on the Bonneville Power Administration System. At D Area the discharge scheduled for August 6, 1948 was made at this time. At F Area the discharge scheduled for August 5, 1948 was made at this time.

** Unit shutdown to tie out a Vertical Safety Rod which slipped into the unit during routine test.

*** Grade Y power condition on Bonneville system scrammed B and D Piles. F Pile started to shutdown but was able to return to level almost immediately following electrical clearance.

**** Maintenance shutdown was extended when four Production Test tubes (105-191-P) could not be discharged normally. Total time includes shutdown for "P" discharge after startup.

Operating Experience

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

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

105-81-P (Probe Test of Top Central Tubes)
Monthly tests were carried out with satisfactory results. At 100-F Area a 1.480" probe was inserted 7 feet and a 1.475" probe 10 feet from the front nozzle of Tube No. 4674. At D Area Tubes Nos. 4568, 4579, 4668, and 4679 all passed the 1.485" probe successfully.

105-114-P (Inspection of Van Stone Flanges)
The magnesium gaskets on the rear nozzles of Tubes Nos. 3172-F and 3257- F were found to be in bad condition on August 4, 1948 and on Tubes Nos. 3162- F, 3166-F, 3178-F, and 3277-F on August 27, 1948. These gaskets, which had been in service since February 9, 1948, were replaced with regular cranite gaskets.

105-168-P (Replacement of Pile Helium Atmosphere with Carbon Dioxide)
The percentage of carbon dioxide in the gas circulating system at D Pile was increased to 40 (nominal) in steps of 2.5 percent. No unusual change in operating conditions resulted.

105-172-P (Exposure of Carbon Dioxide)
Ten samples of carbon dioxide were charged into the "B" test facility on August 4, 1948 which is being operated without cooling water.

105-180-P (Irradiation of Experimental Beta Slug)
A second sodium and uranium slug was placed in F Pile on August 13, 1948; this one is located in the center of Tube No. 0865 and the first is in Tube No. 1481.

105-188-P (Reactivity Power Coefficients)
The power level of the F Pile was lowered for eight hours on August 23, 1948 for a routine determination of the coefficient.

105-191-P (Exposure of Alpha Extruded Slugs)
The metal in Tubes Nos. 1677-F, 2679-F, 3580-F, and 3670-F was discharged with great difficulty at 74 percent normal concentration on August 12, 1948 by the use of very high pushing forces and special pushing equipment. The remaining six tubes were discharged at concentrations of from 39 to 70 percent of normal concentration without difficulty, thus ending this test. The stuck pieces displayed varying degrees of warping with no evidence of blistering.

105-213-P (Measurement of Radiation Through a Hanford Shield)
Approximately ten tons of lead brick shielding was constructed on top of the B pile on August 27, 1948, and the detection instruments were installed.

105-214-P (Silicate Feed Reduction)
On August 26, 1948, the amount of sodium silicate added during the treatment of the process water was reduced from 5.5 to 4.5 ppm (nominal) at 100-B Area.

Effluent water activity at 100-B Area continued to be higher than at the other two areas, necessitating the continued use of both halves of the 107 Building basin. Considerable attention is being devoted to this problem in an effort to determine the cause, but no conclusions have been reached.

Each unit was purged once during the month with 100 ppm of Super-Cell; B Pile on August 4, D Pile on August 5, and F Pile on August 20, 1948.

Mechanical Experience

All vertical and horizontal safety rods are in satisfactory operating condition with the exception of horizontal rod No. 4 at F Pile which was found to have several water leaks on August 12, 1948. This rod is out of service at month end pending completion of repairs. At F Pile, Vertical Safety Rods Nos. 12, 13, and 27 were buffed and oiled and the rust was removed from these thimbles. To date, 13 of the F Pile vertical rods have been so cleaned and 19 thimbles have been freed of rust. Vertical Safety Rods Nos. 19 through 25 were given similar treatment at D Pile making a total of 16 which have been renovated in this manner.

Process Tubes Nos. 1677-F, 2679-F, 3580-F, and 3670-F, all of which were damaged on August 12, 1948, were replaced on August 14, 1948.

At D Area, installation was begun on the temporary effluent line which will be used during the DR Pile effluent tie-in. Several leaks were found in the effluent line near the 1904-D Building at the point where the effluent line from DR Pile will enter.

The leaking Mason-Nielan valve on the No. 3 third safety tank at B Pile was replaced on August 17, 1948. During the same shutdown, work was begun on the installation of magnetic type strain gauges in accordance with the program outlined in Document No. HW-10525.

Pile Development

Experiments with front end cap supported slugs as replacements for the front dummy train have indicated that two 4" high chrome iron dummies of 1.44" diameter give satisfactory shielding.

The algae problem in the 107 Building Retention Basins continues to receive considerable study. Alternate use of the two basin halves where possible and periodic treatment with calcium hypochlorite at each area is still the

accepted treatment. Experiments with the use of an electric current to kill algae were successful at the F Area Fish Laboratory. However, excessive amounts of current would be required in a retention basin.

Direct reading of the amount of CO_2 entering the D Pile system was made possible by the installation of a suitable rotameter.

The method finally used in discharging Tubes Nos. 1677-F, 2679-F, and 3580-F, mentioned under Operating Experience above, was considerably simpler than the usual method which involves washing from the tube the metal pieces downstream from the stuck piece and then cutting the ribs of the tube. In these cases the charges were moved back and forth at intervals of several hours while water soluble oil was allowed to stand in the tube after each movement. This method will be utilized first in future cases.

Three colored cans containing lead were examined after two weeks' exposure in the D Pile. The green and red colors were found to have disappeared; the brown appeared to be intact but this color is not sufficiently distinct under twenty feet of water to make its use attractive.

A time study of the operation of removing hot front dummy charges made at D Pile indicated that at least ten minutes would be required per tube in routine operation. This study was made in connection with the segmented discharge program.

A routine work check sheet and schedule for the Pile operators was developed and put into use at F Pile in August. Considerable improvement has been noted as a result of its use. F Area also set up a new respirator and assault mask control and cleaning system which greatly reduced the spread of contamination from these sources.

GAS PROCESSING BUILDING

Operations were normal.

The tunnel connection between 115-DR and 105-D was completed during the month.

SPECIAL HAZARDS

The B Pile experimental level was maintained as a Danger Zone due to the abnormal neutron emanation from the uncooled "B" test facility as indicated under Operating Experience above.

The old "D" Test Hole thimble from F Pile was removed from its lead shield and buried on August 11, 1948. Maximum exposure readings were 52 mr/hr at ten feet.

300 AREA

Production Statistics

Production for the month of August was as follows:

Billets Produced	88 Tons
Rods Machined	213 Tons
Acceptable Pieces Canned	133 Tons

P Division

Melt Plant

Casting yields were as follows:

	% Yield		
	July	August	To Date 1948
Billet	67.7	64.4	70.0
Solid Metal	84.6	86.0	87.0

Operation was continued on a three-shift, seven-day week schedule in August melting mixed charges of TXB and solid scrap. A new record production of 42 acceptable billets for a 24 hour period was made on August 26.

During the month, four crucibles containing metal broke while being heated in the furnaces which necessitated the replacement of the insulating brickwork under them.

When an attempt was made to pour the No. 4 crucible in "B" furnace on August 10, the stream failed to shut off after the first mold was poured. Because of poor visibility through the sight glass it was not discovered that the second mold was not in position and metal was poured onto the turntable, burning a small hole through the turntable and furnace bottom. The necessary repairs were made without difficulty.

New type stopper rod connections, which permit the stopper rod adapters to adjust themselves horizontally in case the stopper rods are not in true position to fit the adapters, were developed and installed in both furnaces.

On August 13 the bronze gear in the Phillie drive on "B" furnace failed, apparently as a result of a faulty casting, and was repaired. When this gear failed for a second time on August 19, it was replaced with a new gear fabricated at this site. At the time of this replacement the turntable rollers were removed, straightened, and replaced, and the turntable shaft was replaced.

Backfiring occurred in the Stokes pumps exhaust line on August 1, 13, 16, 26, and 28. Project Engineering recommendations for means of elimination of this difficulty are being sought.

Machining:

Machining yields were as follows:

	% Yield (4" - A's)		
	July	August	To Date 1948
	68.1	69.7	68.3

Operation continued on a two-shift, six-day basis.

Alpha rolled rods have shown little improvement with respect to irregular surface, folds, cracks, and porosity. Poor yields and high machine tool mortality continue to result from this condition. Sample rods received from Vulcan Crucible Steel Company were of a quality superior to that normally obtained from either Lockport or Joslyn.

Nineteen special rods were gamma extruded on August 10 and eight additional rods on August 11. Included were 5 average quality rods for use in experimental work at Batelle Memorial Institute, 8 rods for evaluation of the effects on yields and reactivity of high nickle content metal, and the balance for evaluation of the effect of quick quench on the crystal structure of gamma extruded material.

Chip Recovery and Oxide Burning:

The Chip Recovery yield was as follows:

% Yield		
July	August	To Date 1948
89.0	92.1	91.3

The entire Chip Recovery Process operated 19 eight-hour shifts and the press operated an additional 18 eight-hour shifts and processed 80,217 pounds of TX briquettes in August.

A cracked press bed insert was repaired on August 6 and 7 and a broken die table shaft was replaced on August 19.

During hot weather it has been observed that the press hydraulic pump oil heats up and slows down the press. A heavier oil is now on order.

The material burned in the oxide burner was as follows:

Weight Out - Pounds		
July	August	To Date 1948
9998	8632	59,756

The burner was operated on a daily two shift schedule during the month. Because of the considerable backlog of oxides to be burned, which resulted from the down-time for repairs in July and the increased volume of oxides originating in the Melt Plant, the oxide burner was placed on a three-shift, seven-day week operation on August 30.

Canning Operation

The canning yield was as follows:

% Yield (4" A's)		
July	August	To Date 1948
86.5	89.0	88.3

Canning rejects, by cause, were:

	% Total Canned (4" - A's)		
	July	August	To Date 1948
Non-Seating	5.5	4.1	4.5
Marred Surface	1.8	1.6	1.4
AlSi on Outside of Can	.7	.6	1.1
Frost Test	1.1	.7	1.3
Bad Welds	2.0	2.7	1.7
Miscellaneous	2.4	1.3	1.7
	13.5	11.0	11.7

Operation continued on a two-shift six-day basis.

A yield improvement of 2.5% was realized this month primarily as a result of additional training of new operators.

Non seating continued to be the principal cause of canning rejects. A study of the Brown and Micromax recorders used in the thermal analysis and standardization of the AlSi for the canning baths indicated that these instruments were performing within the expected limit of error and were thus not culpable for these rejects. Analyses of the canning baths were made at two hour intervals during several days of canning operation to determine the extent of silicon depletion of the baths in the course of usage. It was found that depletion develops at a fairly uniform rate. On the basis of these findings, rates and times of addition of silicon-rich AlSi to the canning baths were established and closer control of bath composition has resulted. Late in the month a study of the temperature variations within the canning pots was undertaken.

The frequency of repairs and replacements of the heating elements of the bronze furnace has increased appreciably since they have been operated in the range
Previously a set of elements lasted for three weeks or more. During the month, with operation , furnaces 1-A and 4-A were overhauled three times each and 2-A and 3-A were overhauled twice each because of element failure. An attempt is being made to obtain heavier elements for these furnaces.

Eight Hundred and seventy-five slugs were rejected on August 8 because of bad welds. The cause was found to be a carry-over of phosphoric acid, used as a cap and can etchant, into the methanol rinse. A sticky deposit on the cans processed through this contaminated methonal prevented successful welding of the canned pieces.

Authorizations for Process Change, Documents Nos. HW-10623, 10624, and 10625, were put into effect on August 9. Effective agitation and stirring of the caps and cans during cleaning and etching, as specified in these process changes, has resulted in improved wetting of these components. No bad welds examined since the adoption of these changes have been due to poor cap wetting.

The electrical connections of the heating elements in AlSi melt pots 3B and 3C were changed to a delta hook-up during the month so that they could be brought up to temperature more rapidly to supply the additional standardized metal necessary for two-shift operation.

One hundred and ninety-five pieces of SR 15-19 (lithium fluoride), 20 receptacle slugs, 30 papoose slugs, 12 special lead slugs for use in segmented discharge trials, 4610 lead slugs, and 1950 poison slugs were canned during the month.

A planned complete power outage of 3½ hours duration was experienced on August 20. Preparations were made by increasing the temperature of the furnaces prior to the outage and covering them with asbestos. No difficulty resulted from the outage.

Recovery Operation

	% Recovered		Average Wt. - Lbs.	
	August	To Date 1948	August	To Date 1948
Z Slugs	69.0	68.4	3.902	3.905
X Slugs	24.7	23.9	3.854	3.854
Rejects	6.3	7.7	--	--
	100.0	100.0		

The recovery of 8" gamma extruded, lead dip pieces was completed on August 13.

Inspection and Testing

Autoclave rejects were as follows:

July	August	To Date 1948
.13/M	.15/M	.30/M

Operation continued on a two-shift, six-day basis.

There were eleven autoclave failures in August. All of these failures resulted from incomplete bonding of the cap. The increase in autoclave failures this month resulted partially from poor cap wetting which occurred as a result of the contamination of the methanol cap rinse with phosphoric acid on August 3.

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

	% Usable - (4")		
	July	August	To Date 1948
Aluminum Cans	94.2	93.9	91.2
Aluminum Caps	99.0	97.5	98.2
Steel Sleeves	95.7	91.4	84.2

Material Handling

Four carloads, totaling 163 tons, of alpha rolled rods were received in August. Three carloads, containing 117 tons of billets, were shipped to Vulcan Crucible Steel Company and one carload, containing 25 tons of oxide, was shipped to Vitro Manufacturing Company.

305 Area Test Pile

The test pile was operated on a one-shift, six-day week schedule in August. A total of 148 tests was run on canned slugs, 94 on billet eggs, 529 on graphite bars, and the following on a special work request:

Request No.		No. of Tests
28	To calibrate stringer for single bar tests to be run in exact center of pile.	5

During the past few weeks the weighted average 305 reactivity of two weeks' canning production has been lower than the minimum limit of -0.295. During these weeks virgin metal, primarily, was processed through canning and all slugs were given slow-to-moderate agitation in the bronze bath. The effects of this agitation on slug reactivity (i.e. weight) was evaluated in the 305 test unit but no correlation could be found and B metal, made at this site, did not show a corresponding drop in reactivity when processed through the agitated bronze bath. A correlation of the high magnesium and nitrogen contents of virgin metal with low reactivity has been found, however.

Single bars of graphite are now tested in the 305 pile with the center of the bar at the center of the unit rather than with an end of the bar at the center of the unit.

The following table shows the limits set up as a result of this change:

	Class	Old Limits	Class	New Limits
Unpurified	Red	+ .05 or less	Red	+ .05 or less
Unpurified	Blue	+ .051 to + .200	Blue	+ .051 to + .500
Purified	White	+ .201 to + .600	White	+ .501 to + .920
Purified	Green	+ .601 or better	Green	+ .921 or better

Special Hazards

Documents HW-10697 and HW-10842 outline the steps to be taken in reducing the airborne contamination in the 313-315 Buildings to below tolerance levels in line with the newly established tolerance limits.

Since the start-up of the Melt Plant, radiation exposures to personnel as measured on film badges have tended to be higher than exposures encountered by personnel working elsewhere in the area. This was thought to be due to the necessary practice of working in greater proximity to massive uranium for longer periods of time than is required elsewhere in the area. Exposures in excess of 600 mrep/six day week were encountered but it was believed that a general operator education program would result in greatly reduced exposures.

During the week ending August 22, four exposures in excess of 600 mrep (one of these in excess of 1000 mrep) were reported from film badge results. During an investigation of this problem a recommendation was made that the Health Instrument Division determine the radiation levels present at the various jobs done in the Melt Plant in order that personnel could be scheduled in such a fashion that no over-exposures would result. In the course of surveys conducted by Health Instrument Division following this recommendation, radiation levels as high as 15R were observed on crucible covers and levels as high as 10R were found on crucibles, crucible extensions, stopper rods, insulating brickwork, and inside the furnace.

The normal radioactive decay of uranium occurs in the following fashion:

$$U^{238} \xrightarrow{\alpha} UX_1\ (Th^{234}) \xrightarrow{\beta} UX_2\ (Pa^{234}) \xrightarrow{\beta} U^{234}$$

4.5×10^{10} yrs. 24.5 da 1.14 min. 2.33×10^5 yrs.

It is postulated that in a melted furnace charge, the thorium and protoactinium fractions to which the radioactivity of normal uranium is largely due, rise to the top, because of lower density, and possibly vaporize. A sample of the residue taken from the underside of a crucible cover was analyzed by the Technical Division and was found to have 45 times as much UX_1 and UX_2 as is found in equilibrium with an equivalent sample weight of U_3O_8. This agrees very closely with the radiation levels observed.

In spite of these high levels it is believed that Melt Plant operation can be performed safely. The revisions to equipment necessary to permit operation at greater distances as well as the necessary tongs and shielding for some of the equipment have already been fabricated. Since the radiation is largely beta, leather gloves which are always worn will shield approximately half of it from the hands. An extensive time versus exposure level study was undertaken by the Health Instrument and P Divisions on August 30.

Development Work

The mechanical agitator described in last month's report was successful

in trial and production models were installed on August 27. A 10% increase in production has resulted from this installation.

The evaluation of cleaned (in nitric acid) turnings versus uncleaned turnings on Melt Plant yields was started in August.

During the month it was determined that USP magnesium oxide in suspension alone is as satisfactory for the painting of the inside of Melt Plant crucibles as is the 40-60 mixture of USP and S.L. magnesium oxides previously used. Since the S.L. grade costs $1.82/lb. compared with $0.36/lb. for USP, an appreciable saving will result.

Since the start of operation of the bronze baths at higher temperatures the need for some other method of heating, to avoid the necessity for frequent changes and repairs to furnace heating elements, has been recognized. The possibility of heating the bronze pots directly with induction heating was considered but this appears to require complete remodeling of the bronze furnaces. An investigation of the possibility of using induction heating as a means of slug preheat (and thus eliminating the bronze and tin baths) or of transforming the rod prior to machining (and thus permitting the canning operation to be done by the Lead Dip method) has therefore been undertaken in conjunction with the Technical Division. Preliminary work indicates that 3000 cycle current at 200 KW is required for heating either rods or slugs at the necessary rate. This cycle and power requirement eliminates the possibility of using the Frost Test apparatus as a source of power and the power requirement eliminates the possibility of using the 300 cycle Melt Plant power source. The possibility of using some off-site power source for initial trials will be investigated.

A solenoid operated device for marking (dating) finished pieces was built and put into use.

S DIVISION

AUGUST, 1948

OPERATING SECTION

I. GENERAL

Forty-four batches were started in the Canyon Buildings during August and forty-eight batches were processed through the Concentration Buildings and the Isolation Building. The average purity for the completed batches was 98.7 percent.

The material balances for the T and B Plants averaged 97.3 percent and 100.2 percent, respectively, for a combined average of 98.9 percent. Waste losses for the two plants averaged 2.4 percent.

Canyon and Concentration Building Production Performance Data - (8-1-48 - 8-31-48, inclusive)

	B Plant	T Plant	Combined
Number of charges started	24	20	44
Number of charges completed	27	21	48
For completed charges:			
Percentage of starting product in waste			
This month	2.5(a)	2.4(a)	2.4
Last month	2.5(b)	2.6(b)	2.5
Cumulative to date	5.0(c)	4.9(c)	4.9
Percentage of starting product recovered			
This month	97.7	94.9	96.5
Last month	99.1	94.1	96.8
Cumulative to date	97.2	95.5	96.5
Percentage of starting product accounted for			
This month	100.2	97.3	98.9
Last month	101.6	96.7	99.3
Cumulative to date	102.2	100.4	101.4
Gamma decontamination factor (log.)			
This month	7.73	7.66	7.70
Last month	7.72	7.83	7.77
Cumulative to date	7.32	7.29	7.31

(a), (b), (c): Include waste from processing recycle. The recycle wastes are estimated as: (a) 0.020%-T Plant; 0.025%-B Plant. (b) 0.017%-T Plant; 0.021%-B Plant. (c) 0.14%-T Plant; 0.007%-B Plant.

Isolation Building Performance Data (8-1-48 - 8-31-48, inclusive)

	% of Incoming Product			
	Prepared for Shipment	Recycle	Losses	Material Balance
Average for this month	92.1	8.21	0.0007	100.3
Average for last month	96.0	5.69	0.04	101.7
Average to date	96.1	4.32	0.10	100.5

II. ORGANIZATION AND PERSONNEL

Number of employees on payroll:

Beginning of month	284
End of month	296
Net increase	12

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

9 transfers from other divisions (all Weekly Roll)
2 transfers to other divisions (all Weekly Roll)
6 new hires (all Weekly Roll)
1 termination (Weekly Roll)

Changes in supervisory organization:

J. G. Attanas, Shift Supervisor, T Plant, was transferred to the 234-5 Development Group on loan to the Technical Division.

Effective August 9, 1948, changes in operating schedule permitted by operating efficiencies were established in the Isolation Building. These changes, which released one shift crew, including a Senior Supervisor, plus the procurement of added personnel, will permit the S Division to return to a five day work week in all operations effective September 13, 1948. The Isolation Building will operate on a three shift, five day work week basis with the building being shut down on Saturdays and Sundays.

III. AREA ACTIVITIES

PRODUCTION PERFORMANCE

T and B Plants

Volume Reduction (Production Test 221-T-13)

Evaluation of Production Test 221-T-13, involving the reduction of process volume at the end of the extraction step was continued. Current runs in both T and B Plants are now being processed at 30 percent.

reduction in volume. With the exception of the first cycle by-product (13-4BP) waste losses at B Plant all waste losses and decontamination have been normal. The 13-4BP losses at B Plant have increased approximately 0.20 percent but the increase is not attributed to volume reduction.

One 40 percent volume reduction run was completed at T Plant. Waste losses for this run were normal and further evaluation of 40 percent volume reduction will be made.

At 30 percent volume reduction, the savings in waste storage costs and essential material costs per year will approximate $750,000, assuming a three pile level of operation.

F Cell Waste Loss Study - T and B Plants

Experimental work during the month indicates that the metathesis precipitator can be satisfactorily flushed by recycling a portion of the metathesis waste through the precipitator prior to the rework of the metathesis waste. Results to date indicate that approximately 0.10 percent product savings can be effected in this manner. A new line which will permit the F-9 waste tank contents to be transferred directly to the F-1 precipitator tank will be installed at T Plant during the coming month.

WASTE DISPOSAL

T and B Plants

241-TX Farm - Project C-163

Good progress was made by the sub-contractor. All eighteen concrete tank domes have been poured. Waterproofing has been completed on seven tanks and the gunite work has been completed on five tank domes. The hatchways have been completed on three tanks and the dome risers are approximately 75 percent completed on all tanks. Backfilling is approximately 50 percent complete. The pouring of the 153-TX diversion box was completed and approximately 90 percent of the lines from the 153-TX diversion box and the TX tanks have been hydrostatically tested. It is expected that all major items with the exception of backfilling will be completed during September.

In the General Electric phase, 448 ft. of seven line encasement between the 155-TX diversion box and the 241-TX tank farm was poured. The seven line encasement between the 221-U Canyon and the 155-TX diversion box was extended 665 ft. The 291-T stack drain was installed hydrostatically tested and encased. Pouring of the 154-UX diversion box was completed and the excavation for piping in the 221-U Area was finished.

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 the handling of cell drainage water from the 221-B Canyon Building was completed on August 13, 1948 and put into service on that date. Although the strata in which this crib was installed are similar to that in which other waste disposal cribs have been installed, the flow from the crib became restricted after having received only a small number of charges of cell drainage water. With agreement from the Health Instrument Division, an unneutralized waste was jetted to the crib and the drainage from the crib was accelerated to a satisfactory rate. It is understood that the filtering efficiency of the soil in regard to the removal of fission product and product activity is not effected by the ph of the solution. Consideration will be given to the elimination of the neutralization step should further difficulty be encountered.

200 Series Tank Alterations - B and T Plants

Alteration to the remaining 200 series tanks (202, 203 and 204) in the 241-T and B tank farms to permit the maximum utilization of these tanks for the settling of the Concentration Building wastes has been completed with the exception of the installation of the float gages and the tie-in of the overflow line to the crib at B Plant.

Cribbing of Second Cycle Wastes - B and T Plants

At T Plant the cribbing of the X-106-T tank was completed on August 3, 1948. The cribbing of tank X-112-T was started on August 4, 1948 and was nearing completion at month end. The storage space made available will be utilized in the storage of additional first and second cycle wastes.

At B Plant, the cribbing of second cycle waste from the X-104-B tank was continued until August 2, 1948, when the flow from the crib became restricted after receiving 312,000 gallons of supernate from X-104-B. Although the liquor was being decanted from a point two feet above the sludge level in the tank, it is apparent that the sludge became disturbed since the suspended solids and activity in the material being jetted increased at this time. Jetting from tank X-104-B was immediately discontinued and an effort is now being made to jet second cycle tank X-105-B to the crib. Drainage from the crib, however, remains slow and consideration is being given to making an acid flush of the crib in an effort to remove the restriction.

Metal Waste Tank Sounding and Sampling

At the request of Carbide and Carbon Chemical Company and Kellex Corporation representatives, soundings of tanks X-101-T, X-102-T and X-103-T were made on August 5, 1948 in an effort to determine accurately the depth and characteristics of the sludge in these tanks. Satisfactory

data were secured. In tank X-101-T, a layer of sludge approximately 4 feet in depth was indicated. About two feet of this layer proved to be extremely dense. The sludge in tanks 102-T and 103-T was indicated to be negligible. On August 5, 1948, a core sample of the sludge on the inlet side of tank X-101-T was secured. This sample was delivered to K-25 at Oak Ridge, Tennessee.

Soundings of the balance of the metal waste storage tanks in the 200 East and West Areas have been requested by the newly formed Sampling Committee. It is expected that these soundings will be completed by September 3, 1948.

Waste Status

The status of the Waste Storage Areas as of August 31, 1948, is shown in the following table:

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	60.2	0	0	107	107
x104,5,6	Metal	-	100	0	-	0	269	269
x201,2,3,4	Metal	0	100	-	-	0	-	0
x107,8,9	Metal	-	-	-	-	-	-	-
x107,8,9	1st Cycle	100	98.2	0	0	8	384	392
x110,11,12	1st Cycle	-	100	-	-	0	-	0
x104,5,6	1st Cycle	-	-	-	-	-	-	-
x104,5,6	2nd Cycle	77.6	-	-	127	-	-	127
x110,11,12	2nd Cycle	85.4	-	0	83	-	531	614

T Plant

Bldg. 241 Tanks	Waste	Percentage Full			* Reserve Capacity In Batches to Process			
		T	U	TX	T	U	TX	Total
x101,2,3	Metal	100	100	-	0	0	-	-
x104,5,6	Metal	-	94.6	-	-	14	-	14
x201,2,3,4	Metal	0	0	-	-	37	-	37
x107,8,9	Metal	-	0	-	-	269	-	269
x107,8,9	1st Cycle	100	-	-	0	-	-	-
x110,11,12	1st Cycle	-	100	-	-	0	-	-
x104,5,6	1st Cycle	70.3	-	-	127	-	-	127
x104,5,6	2nd Cycle	-	-	-	-	-	-	-
x110,11,12	2nd Cycle	67.5	-	-	191	-	-	191

* Reserve capacity in batches was calculated from August waste volume averages and therefore reflects the intermediate volume reductions obtained during that period as the result of Production Test 221-T-13. Average waste volumes used were as follows:

	B Plant	T Plant
Metal Waste	5,900 gal./batch	5,900 gal./batch
1st Cycle	3,650 gal./batch	3,700 gal./batch
2nd Cycle	2,800 gal./batch	2,700 gal./batch

Isolation Building

Waste Disposal Cribs

The two Isolation Building waste disposal cribs were put into service on February 11, 1947. During July, 1948, the No. 1 crib became plugged and wastes began to spill into the No. 2 crib. Drainage from the No. 2 crib has been closely followed since that time and while the condition is not yet critical, the residual liquor in the No. 2 crib is slowly increasing. Although the need of constructing new cribs may develop in the near future, consideration is at present being given to the possibility of replacing the water jets and aspirators, which contribute the bulk of the water, with air jets.

MECHANICAL PERFORMANCE

Bismuth Metal Dissolver - Project C-262

The installation in the 271-B Building of the necessary facilities for the preparation of bismuth subnitrate from bismuth metal has been completed with the exception of the electrical work, calibration of the tank and procurement of the agitator. Completion of the installation is expected during September.

Fan Motor Failure - 291-B

The north motor bearing on the No. 1 stack exhaust fan at 291-B Building failed on August 10, 1948 and was replaced. An inspection of the motor after removal from service indicated that the grease retainer ring had permitted loss of the lubricant by leakage resulting in the shaft becoming scored. The defective shaft will be repaired.

Agitator Failure - B Plant

The agitator on the effluent tank in Section 6 used for reduction of metal solution prior to extraction failed on August 22, 1948 and was replaced by standard remote control crane methods. Determination of the cause of the failure was prohibited by the high level of radiation. The agitator had been in active service since August 21, 1947.

Agitator Repairs - T Plant

The agitator on the 9-1 waste neutralization tank which failed during the run-in period after installation in July has been repaired and reinstalled on the 9-1 tank.

F-2 Centrifuge Overhaul - T Plant

The 26 inch metathesis centrifuge (F-2) was completely overhauled during the month. The original skimmer was replaced with the new type reinforced skimmer and new buffer rings were installed to minimize vibration. In addition, the worn 1/16 inch Teflon plow scrapers were replaced with 1/8 inch Teflon plow scrapers. At month end the repairs are complete except for making the electrical connections and final skimmer adjustments.

SPECIAL HAZARDS

Stack Gas Contamination

Construction of the sand bed filter installation at T Plant progressed rapidly during the month and there is every indication that the goal completion date of December 1, 1948, reported last month, will be bettered. Design of the B Plant filter unit is well under way and excavation is expected to start early in September.

At T Plant the concrete base, inlet duct and outer walls were completed and work is progressing on the installation of the supporting columns for the top and the prefabrication of the cover blocks. Fabrication of the stainless steel duct work is well under way at Bremerton. The coarser aggregates to be used in the filter are being reserved by a sub-contractor working on the site and indications are that no delay will result in the procurement of the finer (20 - 40 mesh and 8 - 18 mesh) sands.

Experimental work is being carried out by the Technical Division on sand filters with various types and grades of sand, air flows and depths of sand layers within the filters. It has been shown that the use of local ungraded sand is impractical due to excessive pressure drops and that depths of fine sand (20 - 40 mesh) materially less than 24 inches are unsuitable due to lowered efficiency. Tests will be made evaluating the sand from the principal bidders as soon as samples are received.

There was no change in the status of the C. W. S. Type 6 individual cell filters during the month. The fiberglass necessary for the new type cell filter units, described last month, has now been received and installation in B Plant will be made early in September.

Evaluation of the electrostatic precipitator and the packed water scrubber was continued on an experimental basis. Efficiencies of the scrubber have been erratic but in no case comparable to the sand filter. Operation of the electrostatic precipitator has continued to indicate potential maintenance problems of considerable magnitude.

DESIGN AND CONSTRUCTION CONSULTANT'S SECTION

Redox Development

A floor plan for the Redox Test Plant service side (single floor construction) was approved during the past month and the final design of this portion of the building is in progress. The type of construction contemplated for this area will likely include semi-permanent prefabricated paneling to permit later alterations, disassembly, or salvage in the event such action is desirable.

Final process flow sheets for the Test Plant have been prepared and approved as a basis for cell and equipment design. Test Plant Area Plot Plans have also been revised to a satisfactory arrangement and have been approved by General Electric.

Studies are currently being made to determine the optimum cell size to be used in the Test Plant. As soon as this size has been definitely established, excavation drawings for the main Test Plant building may be prepared. Since cell size will determine the number of connectors available and the cell piping and piping through concrete layouts, final design of these items is also awaiting optimum cell determinations.

In view of the individual tank venting and the super ventilation contemplated for the Test Plant cells, it was agreed by interested parties in the Design Division, the Safety Division and the S Division, that the original request for Class 1, Group D (explosion proof) electrical requirements for the remote maintenance crane can be safely modified somewhat for the Test Plant installation. Present plans include totally enclosed mill type motors on the bridge and trolley, festooned power cables to the trolley, bare wire main power pick up to the crane, and normal (non-explosion proof) equipment within the crane cab. Interlocks will be provided between the main power supply to the crane and the ventilation equipment for the canyon as an added safeguard. This interlock may be by-passed to permit emergency operation of the crane under controlled conditions. A Ward-Leonard electrical control system has been selected for the crane to permit better control over low speed crane movements than is inherent in the existing AC system in the canyon buildings.

A report has been issued by the Redox Layout Group of the Design Engineering Division comparing a blockless canyon with the conventional cover block type of construction in utility, radiation hazard and cost of construction. The suggested blockless canyon is currently being studied by the Technical Division, the Health Instrument Division and the S Division to determine its desirability in Redox Main Plant construction.

The Process Group of the Design Engineering Division is currently preparing specifications for mixer settler performance which will be

desired in the Main Plant contactor units. This information will be transmitted to the sub-contractor responsible for mixer-settler design and will be utilized in the final design of the Main Plant contactors. Also included in this transmittal will be all available data on equilibrium, specific gravity changes, etc. which will aid in the proper design of the units. In conjunction with the Layout Group, the Process Group is also preparing a complete report of a combined Redox-Chelate Process which appears to be worthy of consideration as an alternate to Redox. Using equipment specified by the Process Group, the Layout Group is currently laying out the entire Redox-Chelate Process for a full scale production unit in the Head End of the T Plant, utilizing the wall connectors which are available in the Head End cells.

Additional Waste Storage Facilities - 200 East Area

A total of nineteen drawings of the proposed underground waste storage facilities for 200 East Area were approved during the past month to enable sub-contractors to submit bids for the construction contract. Detailed specifications are in the process of preparation at the present time. Approximately 350 tons of steel plate for the tank liners are on order and are being rolled and fabricated at the present time. The availability of ten foot wide steel plates has reduced considerably the number of welded seams required in the tank liners and will, consequently, reduce the cost of welding, chipping and x-ray work on the new tanks. The formal project proposal for the tank farm has been completed and submitted for approval.

POWER DIVISION
AUGUST 1948

GENERAL

A transfer of responsibility was effected on August 23, when all Power Division services for Richland, North Richland and Pasco Depot were taken over by the Community Division. This transfer included all personnel with exception of the Area Supervisor, who is at present working on a loan basis.

PERSONNEL AND ORGANIZATION

Number of employees on payroll	August
Beginning of month	484
End of month	415
Net decrease	69

The indicated decrease is a result of the termination of one employee and the inter-departmental transfer of 68 employees to the Community Division.

100 AREAS

Critical "Y" power conditions were in effect from 8:20 a.m. to 5:00 p.m. on August 4, and from 11:15 a.m. to 11:34 a.m. on August 10 in the 100 Areas, due to unstable conditions on the BPA system. No power equipment in the areas was adversely affected.

Approximately twenty-seven tons of anthrafilt were added to the filters in the "B" Area water filtration plant on August 5, replenishing each filter to its original level.

All anthrafilt was removed from No. 5 filter in the "F" Area water filtration plant and used to restore level in other filters. The anthrafilt in this filter was replaced with sand on August 6, borrowed from DR. The object is for comparative purposes to determine if sand is more desirable from the standpoint of economy and quality of filtered water. Results to date are not conclusive.

On August 18, the north distribution flume in the "B" Area filtration plant was cleaned and the coagulant feed reduced by 10 ppm. This was done to determine if more frequent cleaning of flumes will permit reduction of coagulant feed.

The process water pressure to the "F" Area pile is being maintained at 370 psi for an indefinite period at the request of the "P" Division.

Power Division

The construction of additional required facilities in the "D" Area to provide for the DR pile are progressing according to schedule.

Approximately 69 tons of anthrafilt were added to the filters in the "D" Area water filtration plant on August 10, bringing all filters to original levels.

200 AREAS

As a measure to prevent excessive wear and subsequent maintenance, a 6-inch by-pass line was installed around the East area reservoir level control cone valve. Normal flow is now being provided through the by-pass line, and peak flow through the cone valve.

A new 4-inch sanitary water line to supply well drillers headquarters near the East Area south gate was completed and placed in service on August 6.

Activated silica feed was started experimentally, as a coagulant aid in the West Area filter plant, on August 25, in an effort to produce satisfactory water coagulation and filtration at higher than normal flow rates. Results to date are encouraging.

The construction of the new power house extension in the West Area is progressing on schedule.

300 AREA

Installation of additional auxiliary equipment for boiler plant expansion is in progress. This work includes new service and soft water pumps, replacement of deaerator, and alterations to water softener.

700 AREA

Inspection of all equipment as scheduled was completed prior to transfer to the Community Division on August 23.

1100 AREA

Forty feet of 10-inch water main was replaced on Stevens Drive near Knight Street.

Abnormal sewerage flows caused by high water in the Columbia River have gradually decreased and are now considered normal.

3000 AREA

The new "D" well was started in service on August 17.

Power Division

PASCO STORAGE DEPOT

Silt deposited around the river pump suction bay during the Columbia River flood was removed during the month.

On August 18, a small fire occurred under the river pump house floor where the pump engine exhaust header passes through the exterior wall. The engine exhaust header is now being relocated to eliminate this fire hazard.

WHITE BLUFFS

Operations normal.

POWER DIVISION STATISTICS

From August 1, 1948

Through August 31, 1948

			AREAS		
			100-B	100D	100-F
RIVER PUMP HOUSE (Building 181)					
River stage	Feet above sealevel	(max)	395.2	386.0	372.4
		(min)	392.3	383.6	370.0
		(avg)	393.6	384.6	370.9
River temperature	avg. °F.		65.1	65.7	66.4
Water pumped to Reservoir	gpm avg. rate		40,032	40,277	37,507
Water pumped to Refg. Condensers	gpm avg. rate			0	0
RESERVOIR (Building 182)					
Water pumped to Filter Plant	gpm avg. rate		33,978	34,759	33,123
Water pumped to Condenser System	gpm avg. rate		4,065	3,839	4,040
Water pumped to Export System	gpm avg. rate		1,989	1,679	344
	gpm normal rate		4,012	4,012	4,012
Chlorine added at #1 inlet	pounds		20,040	21,265	11,200
FILTER PLANT (Building 183)					
Filtered water to Power House	gpm avg. rate		280	294	260
Filtered water to Process	gpm avg. rate		29,159	31,078	29,832
Filtered water to Fire & Sanitary	gpm avg. rate		118	200	146
Chlorine used in Water Treatment	pounds		10,398	7,515	10,300
	ppm avg.		2.1	2.00	1.65
Lime used in Water Treatment	pounds		67,599	53,760	63,520
	ppm avg.		5.3	4.1	5.2
Coagulant used in Water Treatment	pounds		250,341	235,267	256,570
	ppm avg.		19.8	18.2	20.8
Raw Water pH	pH avg.		7.95	7.91	8.1
Finished Water pH	pH avg.		7.43	7.42	7.40
Alkalinity, M. O. - Raw	ppm avg.		60	57.2	61
Finished	ppm avg.		54	51.9	54
Residual Chlorine - Settled	ppm avg.		.32	.34	.20
Finished	ppm avg.		.08	.04	.07
Iron - Raw	ppm avg.		.15	.15	.14
North Clearwell	ppm avg.		.02	.02	.02
South Clearwell	ppm avg.		.013	.02	.02
Hardness - Finished	ppm avg.		71.5	72.0	72.
Turbidity - Raw	ppm avg.		7.7	6.0	7.0
Filtered	ppm avg.		0	0	0
REFRIGERATION (Building 189)					
Refrigeration produced	Tons per day			0	0
Temperature, Process Water In	avg. °F.			-	-
Temperature, Process Water Out	avg. °F.			-	-

From August 1, 1948

Through August 31, 1948

POWER HOUSE (Building 184)

Steam Generated - Total	M pounds	92,645	102,051	96,651
Average rate	lbs./hr.	124,523	137,165	129,907
225 psi Steam to plant (est.)	M pounds	81,568	89,515	84,931
15 psi Steam to plant (est.)	M pounds	40	290	121
Coal consumed	Tons	6,913	7,460	7,100
Coal in storage (est.)	Tons	34,658	40,765	38,771

DEAERATOR PLANT (Building 185)

Water flow	gpm avg. rate	29,084	30,788	29,582
Chemicals consumed:				
Dichromate	pounds	23,200	24,600	23,100
Sodium Silicate	pounds	236,000	235,991	228,980
Chemical Analysis:				
pH	pH avg.	7.33	7.67	7.68
Dichromate	ppm avg.	1.9	1.96	1.9
Silica	ppm avg.	5.4	5.96	5.6
Dissolved Iron	ppm avg.	.016	.027	.02
Free Chlorine	ppm avg.	.06	.040	.06

PROCESS PUMP ROOM (Building 190)

Total water pumped	gpm avg. rate	28,909	30,613	29,407
	gpm normal rate	31,700	32,343	32,353
Water temperature	avg. °F.	68.1	68.7	68.2

VALVE PIT (Building 105)

Chemicals consumed:						
Solids		pounds		2,350	2,250	1,900
Chemical analysis:						
A, B, C, & D Headers						
	Standard limits					
pH	7.5-7.8	pH	(max)	7.70	7.70	7.70
			(min)	7.60	7.55	7.60
			(avg)	7.65	7.64	7.65
SiO_2		ppm	(max)	6.50	7.0	6.0
			(min)	4.00	5.5	5.0
			(avg)	5.80	6.1	5.6
$Na_2Cr_2O_7$	1.8-2.2	ppm	(max)	2.00	2.2	2.1
			(min)	1.80	1.8	1.8
			(avg)	1.90	1.96	2.0
Iron		ppm	(max)	.03	.03	.03
			(min)	.01	.01	.02
			(avg)	.017	.02	.02
Chlorides		ppm avg.		1.90	1.9	1.5

From August 1, 1948

Through August 31, 1948

		200 AREAS	
RESERVOIR (Building 282)		**200-E**	**200-W**
Raw Water Pumped	gpm avg. rate	2033	1978
Filter Plant (Building 283)			
Filtered Water pumped	gpm avg. rate	436	420
Chlorine Consumed	lb.	380	349
Alum Consumed	lb.	2000	2300
Chlorine Residual - Sanitary Water	ppm	.7	.59
POWER HOUSE (Building 284)			
Steam Generated - Total	M lb.	14260	19627
Steam Generated - Ave. Rate	lb./hr.	19166	29735
Coal Consumed (Est.)	tons	971	1435
Coal in Storage (Est.)	tons	10011	11280

		300, 700, 1100 AREAS		
		300	*** 700**	*** 1100**
POWER HOUSE (Buildings 384 and 784)				
Steam Generated - Total	M lb.	5102	10915	
Steam Generated - Avg. Rate	lb./hr.	6858	14671	
Coal Consumed - Total (Est.)	tons	388	831	
Coal in Storage (Est.)	tons	1115	9719	
Sanitary and Fire System (1100)				
Well Water Pumped - Total	gal.			297,110,000
Well Water Per Day	gal/day			9,584,000
Well Water	gpm avg. rate			6,656
Chlorine Residual	ppm			0.25
Sewage Treatment Plant (1100 Area)				
Total Sewage Treated	gal.			78,400,000
Sewage Treated Per Day	gal/day			2,529,000
Sewage Flow	gpm avg. rate			1,756

*Covers the entire month.
Facilities transferred to the Community Division Aug. 23, 1948.

MAINTENANCE DIVISION

AUGUST, 1948

GENERAL:

A major injury occurred on August 6, in the 200 West Area when a mechanic received internal injuries from a fall while painting on a suspended scaffold. A sub-major injury occurred on August 7, in the 300 Area when a mechanic fractured the left ring finger while using a wrecking bar.

On August 16 the 700 Area Maintenance responsibilities together with personnel and equipment were transferred to the Village Public Works Division.

ORGANIZATION AND PERSONNEL:

There was a net decrease of 97 persons in the Maintenance Divisions' personnel during the month. This change was principally due to the transfer of Maintenance forces to the Village Public Works Division.

Employees on Roll	August
Beginning of Month	698
End of Month	601
Net Decrease	97

WORK ORDER SUMMARY:

Area	Backlog Mandays 9-1-48	Men on Roll	Backlog Days 9-1-48
100	3646	131	27.8
200	4412	160	27.6
300	3369	72	46.8
Minor Construction	26570	140	154.1
	32997	503	65.6

The total backlog increased from 21981 to 32997 mandays during the month. The average number of days to complete all work increased from 41 to 65.6 days. The large increase in the backlog is due to the start of construction of two sand filters in the 200 Areas.

100 AREAS:

Two dummy gun barrel nozzles were installed on the front face of the 105-B pile so that charging machines can be tested and adjusted during operating time.

Magnetic air gap strain gauges were installed on top and on the far side of the 105-B pile for the use of the Technical group.

Four sections of floor grating on the "D" elevator of the 105-B pile were hinged to provide better access to the discharge chutes when operating push poles.

All milling, planing and tube spraying have been completed on the 9 Horizontal Shim Rods for 105-DR pile. The assembly of the rods is now in progress.

The rust was removed from the bottom of 7 vertical safety rod thimbles in the 105-D Building. The rods and rod guides were buffed full length.

Fabrication was started on a 12" by-pass line that will be used to carry 105 effluent water to the sewer when the 105-D sewer tie-in is made to the 105-DR sewer.

The rust was removed from the bottom of 7 vertical safety rod thimbles in the 105-F Building. The rods and rod guides were buffed full length.

During the week of August 12, stuck metal was removed from process tubes #1677, #2679, and #3590, in the 105-F pile. New process tubes were installed in the three above locations and also in place of tube #3670. The replacement tubes were obtained from the 105-DR shipments.

A portion of Aimer track was removed from the "D" elevator in 105-F Building, for the installation of the D&C segmented charging machine.

A propane gas system was installed in 146-F Building to provide Bunsen burner facilities in the laboratory.

The Chrysler air temp unit was removed from Building 1704-F because of cost and time required to put the unit back in operating condition. A three ton frigidaire unit was connected direct to the air conditioning unit, using evaporators in place of cold water coils in the spray chamber.

200 AREAS:

The bottom and welds of the 3-8B stainless steel scale tank in the "T" Canyon failed from chemical attack. The bottom of the tank was replaced and put back into service.

Improved bottom inlet samplers were installed in six sample parts in the "B" Concentration Building. Lubrication lines to the 40" centrifuges were extended to permit lubrication from outside the Canyon of the Concentration Building.

The skimmer was replaced in F-2 centrifuge of the "T" Concentration Building. The new skimmer is of an improved reinforced design to insure longer service life.

Due to a failure of the 8" water main at the waste sump near the northeast corner of the Isolation Building, the fire hydrant served by this line, was relocated to the southeast corner, and that section of pipe abandoned. This permitted placing the line back into service at an earlier time and without working under SWP conditions.

The East Area Shop completed fabrication of 16 Canyon cell piping assemblies and one diversion box connector. These assemblies are for replacement purposes. Also, one 40" centrifuge was assembled and run-in to be held in readiness for Canyon replacement.

The roof on tract house J J-624, near Midway, was reshingled. Also, the Priest Rapids School and teacher's residence was reconditioned for the opening of school.

300 AREA:

In Building 313 a new nitric acid drain line was fabricated. Two mechanical agitators were made and installed on bronze furnaces.

The firebrick was repaired on the rotary hearth furnaces in Building 314. Repairs were also made to the "B" furnace drive and turntable, including the replacement of a new worm gear. Revisions were made to the burn-out stations and crucible carts in order to permit the use of longer crucibles.

The erection of the three horizontal Contactors in Building 321 are now 60 percent complete; one of the small units in the "hot lab" is now ready for operation.

A fifty gallon-per-hour still was erected and put into service in the attic of Building 3706.

Two special radiation shields were made for Building 3745.

A new hutment was erected for the H.I. Division.

PROJECT ENGINEERING DIVISION

AUGUST 1948

GENERAL

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

Engineering items of major importance actively progressing in the various areas for the month of August are as follows:

100 AREAS

Project C-172. Alterations to Buildings 186-D and 185-B, D & F

The DR construction group is installing a water by-pass that will allow complete isolation of 186-D Building.

Project C-238. Building 105-F - 107-F Effluent Sewer Line

Pressure testing of the new line is now in progress. The final tie-in is scheduled for approximately the middle of September.

E. R. 1044. Outlet Charging Device

Design of Mark II is complete and a test unit will be available early in September. Some parts of the Mark II design are now being fabricated at the Puget Sound Naval Ship Yards. Extensive use of the Puget Sound Naval Ship Yards' fabricating facilities is planned to permit operation at the 105 Building on a limited scale by November 1, 1948.

Design of Mark III unit is in progress.

Project C-213. Sprinkler System Riverland Locomotive Storage

Field work is complete except for minor items.

Project C-184. Animal Farm

Design is practically complete except for minor details and work on specifications is progressing. Part II of the project has been submitted for approval

Project Engineering Division

200 AREAS

E. R. 2309. Meteorological Station - Building 622-A

The project has been approved and a Field Release was issued for construction on August 12, 1948. Prints have been issued to Minor Construction and materials are being obtained.

E. R. 2377. Stack Gas Decontamination

The sand filter designs are complete for the T Plant and construction on the filter is progressing ahead of schedule. The B Area sand filter design will be completed September 4, 1948 and field work will be started immediately. A project proposal to cover this work for both areas will be submitted in the near future when the cost can be more accurately determined. Tests are still continuing on sand samples and all efforts are being concentrated on procurement of material.

Project C-133. Special Test Wells 200 E and W

Essentially 64 wells have been drilled to date on this job. (89% Complete)

300 AREA

Project C-223. Building 3703 Technical Office Bldg.

Field work is continuing. A Part II has been requested to cover additional funds.

Project C-227. Conversion of Office Labs. Building 3706

Several "cold" laboratories will be released to the Technical Division during September. Present trends indicate that the "cold" laboratories along the main building corridor should be released for use by early November.

The roof and partitions of the new change house are now being installed.

Project C-270. 3706 Distilled Water System

Project approval has been received and the field work is approximately two-thirds completed.

E. R. A-3050. 300 Area Rolling Mill

Cost data were developed for an installation including a new building specifically designed to accommodate the proposed equipment. This work will be continued under another E. R. number, including evaluation of a rolling mill installation in the present 314 building.

2.

Project Engineering Division

Project C-237. Building 305-A Nine Tube Mock Up

Present plans schedule this building to be ready for use early in October.

Project C-189. Building 3745-A X-Ray Facilities

E. R. 4345, 4346, 4347. Building 313 Mechanization

Work has been started on the three phases of this industrial engineering problem, and Mr. D. E. Garr of Schenectady has arrived on the plant to assist with the work.

700-1100 AREAS

Project C-138. Richland Telephone Exchange

The additional building is completed and telephone equipment will be installed as rapidly as is practical after it is received.

Project C-177. 115 KV Power Transmission Line

Design is about 75 percent completed for the entire project. Work is progressing on the 115 KV line north of the 300 Area and on the sub-stations in Richland.

Project C-196. Electrical Distribution Headquarters Bldg and Conversion of Building 2713-E to Garage

The design work is progressing and is about 30 percent completed.

Project C-214. Rehabilitation of Plant Railroad

Design, field survey, and construction are progressing concurrently on this project. Grading on the new cut-off route west of the 100-B Area is finished.

Project C-253. Roof Replacement - North Reservoir - Bldg. 1182

Plans were finished during the month and specifications are being prepared for subcontract.

Project C-269. Temporary Radiobiological Laboratory Bldg.

Architectural design is completed and construction will be started in the near future.

Project Engineering Division

E. R. 841-R. Richland Dust and Pollen Control 1948 to 1950

Project has been submitted and design work is in progress.

E. R. 990-R. Security Fences - All Areas

The project proposal has been revised to include new fencing for the exclusion areas only. Wood posts in area perimeter fences are to be replaced with treated timber.

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	10	8-19-47	$486,000
C-184	Experimental Animal Farm - Part I (Part II Awaiting Auth for Additional $507,000)	0	10-27-47	286,000
C-213	Fire Protection Riverland Shop	95	1-13-48	8,200
C-222	Dismantling Unoperated Equipment in 105 Valve Pits	18	2-10-48	4,000
C-238	Effluent Sewer Line 105 F to 107 F	77	3-26-48	207,000
C-269	Temporary Radio Biological Lab. 100 F Area	0	7-28-48	10,100
	TOTAL Estimated Cost 100 Area Projects			1,001,300

200 AREAS

C-133	Special Test Wells 200 E and W	89	1-30-47	180,600
C-163	Additional Waste Storage & Tie Lines - 200 W (G.E.Portion Only - Subcontract not Included)	71	7-25-47	600,000
C-171	Alterations to Six Periscope Assemblies	80	8-6-47	7,200
C-225	5-6 Waste Disposal to Ground	94	3-8-48	32,000

4.

Project Engineering Division

Projects, Suspense Codes Authorized and Under Construction - 200 Areas Cont'd

Project Number		% Phys. Complete	Date Auth	Est. Cost
C-262	Bismuth Subnitrate Preparation Fac.	40	7-13-48	23,000
C-273	Water Supply & Plumbing - Bldg. 622A	0	8-4-48	13,500
SC 10155	Physical Testing Equipment	65	- - - -	7,500 *
SC 10225	Stack Filtration Facilities	5	- - - -	840,000 *
	TOTAL Estimated Cost 200 Area Projects			$1,703,800.
	300 AREA			
C-127	300 Area - Increased Capacity of Telephone Exchange (Elect.Div.Will Procure and Install Equip.)	75	5-12-47	30,000
C-189	Building 3745-A X-Ray Facility Part I. (Part II Awaiting Auth. for Additional $12,500)	91	8-20-47	22,000
C-219	Construction of Additional H. I. Instruments	21	1-27-48	97,200
C-220	Optical Instrument Bldg. and Elect. Shop 3708 - 300 Area	50	1-30-48	82,000
C-227	Conversion of Offices to Labs. Bldg. 3706 & 3707-C Change House	25	3-15-48	429,000
C-237	Nine Tube Mock Up Bldg. & Equip.	23	4-12-48	106,000
C-270	Building 3706 Distilled Water System	60	7-28-48	4,800
	Total Estimated Cost 300 Area Projects			$771,000
	700 - ADMIN. & GENERAL PLANT AREAS			
C-138	Richland Telephone Exchange - Bldg. 702	8	5-12-47	470,500.
C-144	Additional Telephone Cables - Rich.	0	5-12-47	45,000
C-148	Combined Maintenance Shops	97	6-4-47	128,000

* High Spot Estimate

5.

Project Engineering Division

Projects, Suspense Codes Authorized and Under Construction. 700-Area Cont'd

Project Number		% Phys. Complete	Date Auth	Est. Cost
C-177	115 KV Power Transmission Line	12	8-14-47	1,167,000
C-195	Radio Communications for Railroad and Electrical Division	79	10-15-47	34,000
C-196	Electrical Distribution Headquarters Bldg. & Conversion of 2713 E to Garage	0	10-10-47	162,400
C-209	Two Story Addition to Bldg. 703	96	12-3-47	140,000
C-214	Rehabilitation of Plant Railroad	26	2-18-48	3,214,000
C-229	Office Machine Repair Shop. Hut 722-L	73	3-26-48	3,700
C-256	Seal Coating of 36 Miles of Plant High-Way	50	5-18-48	75,000
C-265	Additional Telephone Cable - Richland to Kennewick	0	7-29-48	30,000
	TOTAL Estimated Cost for 700 Admin. & General Plant Areas			$5,529,600.
	1100 AREA			
C-134	Richland Village Dust Control & Landscape Program 1947 to June 1948 (Grass Planting has been Subcontracted)	57	12-19-46	250,000
C-146	Irrigation Extensions - Village	90	3-28-47	90,000
C-158	Air Conditioning All Dorms Except W-4 and W-13	100	7-28-47	136,800
C-242	Installation of Mail Boxes - All Dorms	100	4-5-48	5,600
C-245	Remodeling of Tract House L-859	30	4-15-48	7,000
C-253	Roof Replacement - Domestic Water Reservoir - Richland	0	7-21-48	35,500
	TOTAL Estimated Cost 1100 Area Projects			$524,900
	TOTAL Estimated Cost for Active Approved Projects - All Areas			$9,530,600.

6.

Project Engineering Division

Projects Being Routed for Authorization

841-R	(C-282)	Richland Dust and Pollen Control 1948 to 1950	218,000
941	(C-184) Part II	Experimental Animal Farm	507,000
990	(C)	Security Fences - All Areas	246,800
A-452	(C-276)	Overall Plant Telephone System	1,235,800
A-502	(C-284)	Transportation Consolidation	1,947,000
A-3019	(C-189) Part II	Bldg. 3745-A X-Ray Facilities	12,500

PROJECT ENGINEERING - AREA REPORTS

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

100 AREAS

E. R. No.		% Engineering Complete
A-1004	Downcomer Design 105-F	20
A-1012	Physical Bend and Tension Testing Machine	82
A-1034	Alterations to Bldgs. 186 and 185	17
A-1044	Outlet Charging Device (Through Proposed Model III)	14
A-1046	Spectrometer Mount	95
A-1048	Revise Gas Circulating System Bldg. 105	50
A-1051	Remove Equip. in Valve Pits Bldgs. 105 B&F	52
A-1052	Study 2nd Effluent Sewer Line 105 F and 107 F and Recommend New Installation	100
A-1054	Design Roller Flanging Device for Van Stone Joints	50
A-1055	Design and Estimate a Radiation Shield for Top Far Side of 105 D and F	90
A-1057	Prepare Project for Earth Crib 100 B & F	30

Project Engineering Division

Status of Engineering Study & Design Work in progress During Month of August - 100 Areas Cont'd

E. R. No.		% Engineering Complete
A-1058	Study & Est. Cost of Preparing "B" Area for Operation Devise Charge Code System	90
A-1059	Prepare Project for Steel Sewer Line at 100 B Area	10
A-1060	Increased Shielding Front Nozzle Caps	30
A-1061	Estimate Cost of Slack Cable Limit Switches	20
A-1062	Prepare Project for Mark II and Mark III Machines for Segmented Discharge	5
	200 AREAS	
2277	Revise Cell Piping per Marked Prints	90
2279	Prepare Project for Regasketing Facilities 221-T & B	75
2285	"B" Jet Assembly	75
2287	Study Rail Alignment of 200 N. Cranes	70
2288	Special Test Wells 200 E & W. 64 Wells Comp.	89
2299	Determine Stack Alignment 291 T-B Continuous Check	100
2305	Study & Recommend Facilities & Procedure for Working Diversion Boxes	100
2309	Water Supply & Plumbing - 622 Bldg.	95
2326	Mark Grade on Steam Line Supports 200 W	0
2327	Study Possibility & Redesigning Connector Head to Simplify Gasket Changing	75
2343	Design Equipment Decontamination Station for Small Items 221B	95

8.

Project Engineering Division

Status of Engineering Study & Design Work in Progress During Month of Aug. - 200 Areas Cont'd

E. R. No.		% Engineering Complete
2344	Design Equipment Decontamination Station for Small Items 221 T	100
2353	Crane Alignment & Rail Elevation 221T	70
2355	TX Waste Storage (Field Engr. for Proj. C-163	75
2368	Study & Recommend a Means of Preventing Steam Cell Piping From Creeping Through A Concrete Wall	50
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	80
2372	292-B Annex to Scrubber Facilities	100
2376	Cathodic Protection to Underground Waste Lines (Survey Work and As-Built Drawings)	95
2381	Design Acid Supply Tanks & Piping for 222B	80
2385	Steel Stack Handling Equip. 272 E & W	80
2387	Piping Changes E-I-Y Tank 224-T	75
2393	Steam Jet with Remotely Removable Features	0
2397	Specify 1-1/2" Pipe from Car Spot to 181 Tank 211 T	70
2400	Maintenance Hoist for Cranes 221 T U B	5
2401	Maintenance Hoist for Cranes 212 N P R	5
2403	Revision of 222 T & B Control Labs.	10
2414	Separation & Control of 231-W Process Wastes Project in Preparation	90
2417	Location Determination for Zone Signs & Directional Markers over BX Lines	15
2421	Procure & Install Lab. Equip. in 271 T-U-B Control Labs.	5

9.

Status of Engineering Study & Design Work in Progress During Month of August - 200 Areas Cont'd

E. R. No.		% Engineering Complete
2422	Clothing Change House with Monitoring Facilities at 221-B-R-13	90
2423	Investigate Settling of Caustic Tanks & Recommend Remedy 211-T Pump Relocated Leaks Diverted to Sewer	.10
2425	Utilization of Tanks 241-AX-107,108 & 109 for Metal Waste	90
2432	Identification of Stainless Steel Articles	0
2434	Prepare Project to Cover Mock-Up Facilities for Metallurgical Studies 200-N Area	0
2435	Design Waste Disposal Sumps 222-B	0
2436	Study ventilation & Cooling System 221-T Gallery for Improvement of Present Facilities	0
2437	Prepare Project for the Study of Process Waste Separation 200 B-T-U	0
	300 AREA	
A-3019	Housing for X-Ray Machine	100
A-3036	Designs for Construction of Optical Instrument Building 300 Area (Project C-220)	100
A-3044	Designs for Conversion of Bldg. 3706 Offices to Labs. Project C-227	100
A-3050	Make a Design Study of Rolling Mill for 300 Area (Cancelled. See E. R. No. 3062)	6
A-3057	Design Cooling Coil for Bldg. 313 Chip Recovery Press	0
A-3058	Study & Recommend Design Changes for Air Conditioning System Bldg. 321	0
A-3059	Evaluate Construction of "P" Div. Change House in the 303 Area	0

Project Engineering Division

Status of Engineering Study & Design Work in Progress During Month of Aug. (300 Areas Cont'd)

E. R. No.		% Engineering Complete
A-3060	Temporary Metal Melting and Fabrication Bldg.	20
A-3061	Increased Ventilation - 313 and 314 Bldgs.	5
A-3062	Installation of Rolling Mill in Bldg. 314	5
A-3063	Evaluate CO_2 System for Rooms 4A and 6 Bldg. 3706	0
	700 ADMIN. & GENERAL PLANT AREAS	
828	Bldg. 702 - Automatic Dial Exchange	96
872-R	Improvement to Area Administration Bldgs.	30
883-R	Coal Pile Survey - 700 Area	100
887-R	Coal Pile Survey - 100 B & F Areas	0
912-R	Acid Storage & Handling - 706 Bldg.	65
941	Designs for Experimental Animal Farm Proj. C-184	84
954-R	Cylinder Rack for Trailer	100
962	Designs for 115 KV Power Line Through Richland	74
973	Designs & Engr. for Elec. Dist. Hdqts. Bldg., Sub-Station for 251 & Conversion of Bldg. 2713 E to Garage. Project C-196	28
990-R	Fencing All Areas	50
997	Deodorizer for Building 705	30
A-401	Telephone Cable Layout - Bldg. 720	20
A-409	Telephone Cable Layout for Bldgs. 703, 705, 760 and 770	0
A-420	Engineering Work for Rehabilitation of Plant Railroad. Project C-214	45
A-445	Electrical Design for Bldg. 3706, 3703, and 3707	85

Project Engineering Division

Status of Engineering Study & Design Work in Progress During Month of August - 700 Area Cont'd

E. R. No.		% Engineering Complete
A-452	Prepare Project for Expansion of Main Plant Telephone System (Design Work Only)	45
A-463	Electrical Drawings for Charging Device	45
A-464-R	Metering of Power - All Process Areas	10
A-468	Illumination Tests - 716 Garage	90
A-485	Study for Sidewalks - 700 Area	35
A-487	Study of Lighting - Bldg. 703	92
A-489	Study Road Improvement Between Midway and Priest Rapids	10
A-490	Project for Columbia Camp Rehabilitation	40
A-492	Preparation of Project Additional Telephone Cable - Richland to Kennewick (Design Work Only)	75
A-496	Prepare Project for Temporary Biological Laboratory Facilities - 100 F Area	40
A-498	Designs for Addition to Fire Station 200 W Area	100
A-499	Lighting Study - Room 2240-1-2-3 - 703 Bldg.	20
A-500	Badge Stamping Machine & Jig - Bldg. 705	100
A-502	Prepare Project for Transportation Consolidation	5
A-504	Fire Evacuation Plan - Bldg. 703	100
A-505	Electrical Standards	10
	1100 AREA	
812	Design Work Irrigation Extensions - Village	100
841	Design Work for Richland Dust Control & Landscape Program (Project C-134)	96
841-R	Design work for Richland Dust & Pollen Control Project - 1948 - 1950 Program	5

Project Engineering Division

Status of Engineering Study & Design Work in Progress During Month of August - 1100 Area Cont'd

E. R. No.		% Engineering Complete
A-426	Electric Heating - Wiring - M.S.Warehouse Cancelled	25
A-453	Designs & Specifications for Replacement of Roof - North Reservoir - Rich. Proj. C-253	100
A-455	Design for Renovation of Tract House L-859	100
A-494	Revise Village Map	100
A-501	Ice Flaking Machine Installation - Hospital	30
A-503	Designs for Relocation of Transformer Station Desert Inn	75

ENGINEERING STUDIES GROUP REPORT

Studies Completed This Month

E. R. No.		Date Completed
4337	Village Survey	8-4
4338	Tire Recapping & Repair	8-19

Studies Added This Month

4345	Automatic Machining Equipment	7-27
4346	Welding Line Analysis	7-27
4347	Improve Frost Test Line	7-27
4348	Soft Water System - Kadlec Hospital	7-30
4349	Pistol Range Sanitary System	8-18

ACTIVE STUDIES

		% Complete
A-489-S	Midway - Priest Rapids Road	30
4318	Packing and Gasket Standards	20
4324	Lubrication Survey	80
4326	Use of Inhibited Oil	30

Project Engineering Division

Active Studies - Cont'd

E. R. No.		% Complete
4327	Maintenance of Pitched Roofs	40
4330	J. I. Penn & Worthington Compressors	85
4336	Revise Oil Coding System	5
4339	Standard Sign Catalog	95
4341	Transportation Consolidation	95
4342	Analysis of Heavy Duty Lacquers	25
4343	J. I. Forced Draft Fans	20
4344	Operating Standards for Hydrocrane	0
4345	Automatic Machining Equipment	50
4346	Welding Line Analysis	10
4347	Improve Frost Test Line	25
4348	Soft Water System - Kadlec Hospital	15
4349	Pistol Range Sanitary System	0

BACKLOG SUMMARY

	Work on Hand 7-31 Estimated Man Days	Work Completed During Aug. Estimated Man Days	Work on Hand 8-31 Estimated Man Days
Studies	195	72	324
Proj. & Design	11,936	1,699	9,979
TOTAL	12,131	1,771	10,303

14.

ELECTRICAL DIVISION

AUGUST, 1948

GENERAL

Work Order Summary - Estimated Mandays:

Area	Work on Hand July 30 Estimated Man Days	Work Completed to August 31 Estimated Man Days	Work on Hand August 31 Estimated Man Days
100-B	337.5	284.5	360.9
100-D	382.9	270.7	516.2
100-F	365.0	322.0	302.0
200-E	300.4	238.0	389.7
200-W	364.2	213.8	357.8
300	175.4	173.1	180.2
700	227.5	135.1	0 *
Telephone	1305.0	610.0	1204.0
Minor Const.	506.3	297.5	401.3 **
Distribution	4184.0	1129.1	4009.6
Totals	8148.2	3773.8	7721.5

* Transferred to Community Public Works Division as of August 23, not to be recorded in future reports.

** Minor Construction in the 300 Area is retained; the bulk of minor construction in the 700 Area was also transferred to the Community Public Works Division.

The foregoing summary includes routine work requests as well as Project construction work and regular work orders.

The attached load chart refers to the peak day of the month, August 24, showing a peak of 60.4 MW for the entire project with a single non-coincidental 15.4 MW demand on the 66 KV system. The slightly lower peak than experienced during the previous month is in line with seasonal expectations.

Under Project C-177 (new 115 KV system), work is progressing on the 7.2 KV feeders in Richland in preparation for cutting Village load over to the 115 KV system when ready. A plan was evolved for progressive transfer of all 66 KV load to the 115 KV as construction continues. Subcontractors continue construction work on both Richland 115 KV stations as well as the first section of the line from Benton Station to the 300 Area. It is understood that the Bonneville Power Administration will be ready to cut the new Benton Station into service in mid September.

Referring to last month's remarks, the plan for progressive transfer of load from 66 KV to 115 KV will make it unnecessary to move the existing 66 KV line in Richland from B1-S1 to B1-S3 stations 25 feet to the west, and this expenditure will no longer be necessary.

The Electrical Standards Committee request for funds as required for drafting and publications of standards has been approved, and final work on approximately 100

tracings has been started by the Project Engineering Division. The Standards Committee has been relatively inactive during the month because of vacation season.

Budgets for the Electrical Division, fiscal years 1949, 1950, and 1951 were prepared.

Annual review of exempt personnel was completed.

All responsibilities of the Electrical Division for 700 Area and balance of the 1100 Area general maintenance were transferred to the Community Public Works Division as of August 23. The Electrical Division, however, will remain responsible for the distribution system.

A joint meeting was held with the Construction Division as well as Subcontractors representatives to discuss the problem of enforcement of previous agreements relative to responsibility between the parties concerned and relative to safe practices during construction in Richland. It is expected that as a result of these discussions, the numerous violations of the existing agreements will be minimized.

The entire subject of pole butt treatment was reviewed again, and in line with new procedures, request has been made of the Appropriations and Budget Committee for funds to carry this work to completion, including replacement of poles already rotted beyond saving. Butt treatment is at present 65 percent complete, all areas including Richland.

Transportation requirements for the division for the next three years were reviewed, and detailed report sent to Transportation Division.

ORGANIZATION AND PERSONNEL

During the month there were five terminations, including one Assistant Area Engineer, one Foreman, and three Helpers. Five Helpers were added to the payroll, and one Helper and one General Clerk C were transferred from Design and Construction Divisions.

In line with transfer of 700-1100 Area electrical maintenance responsibilities, the following were transferred to the Community Public Works Division:

6	Electricians B
1	Utility Man
2	Helpers

One Electrician B was transferred to the Instrument Division, and one Utility Man to Project Engineering.

Mr. L. H. Holden was promoted to the position of Assistant Area Engineer, Substation Maintenance, to replace Mr. H. E. Evans who resigned.

Mr. H. M. Osborn was promoted to Shift Engineer, replacing Mr. Holden.

Mr. K. A. Palmer was upgraded to Foreman, replacing Mr. Osborn.

Mr. R. D. Richey was promoted to Foreman to replace Mr. E. F. Leinberger who resigned to enter personal business.

The foregoing promotions are to be effective on September 1, 1948.

Electrical Division

Mr. L. S. Howard was promoted to Shift Engineer in the Telephone Section. He was replaced by Mr. F. W. Simmons. Mr. C. N. Ganse was also promoted to Foreman in the Telephone Section in line with increased activities in this section.

Number of employees on payroll:	August Exempt	Non-Exempt
Beginning of month	42	234
End of month	43	222
Net decrease	1 (inc.)	12

AREA ACTIVITIES

1. 100 Areas

A. General

Severe voltage disturbances on the Bonneville Power Administration system on August 4 caused the establishment of a "Critical Y" power condition for the 100 Areas at approximately 8:41 a.m. The 105-D Pile Building was shut down by the operation of No. 2 Beckman at 8:41 a.m. which may have been caused by voltage disturbances, although the 105-F Pile Building did not scram. The 100-B Pile Building had already been shut down on a scheduled shut down at 11:35 p.m. on August 3. Critical power was cancelled at 4:57 p.m. The critical power condition was caused by severe lightning storms throughout the territory.

A "Critical Y" condition was established in the 100 Areas on August 10 from 11:17 a.m. to 11:32 a.m. due to Bonneville Power Administration system difficulties. The 100-D Pile was scrammed by operation of No. 3 Beckman but the other two areas were shut down according to procedure. No other equipment was affected.

Taps were lowered 2-1/2 percent on the 230/13.8 KV transformers at Station A-2 as voltage in this area was found to be generally high.

B. 100-B Area

A new service was installed for the pump motor at Tract House JJ-631, Vernita.

A telephone was installed in Tract House JJ-649 for the Vernita Orchard Company.

The wiring was inspected and minor changes were made in Tract House W-2009 at Priest Rapids. The Priest Rapids school was also inspected preparatory to the starting of the school year.

The lighting fixtures over the filter beds in Building 183 are being relocated and equipped with swivel hangers to provide better lighting in this area. The work is approximately 95 percent complete.

Two angle type reflector lights were installed behind the control board in the 185 Building control room.

Insulation of the motor indicating light terminals on the 100 Building control boards was completed.

Conduit and wiring were installed for a drill press and a milling machine in the 1717 Machine Shop.

At 4:14 a.m. on August 4 lightning struck line C2-L10 at pole No. 12 causing the breaker C2-X10 in 151 substation to trip. This line feeds Riverland and half of the 181 River Pump House. The two bottom lines were burned in two and the insulators were shattered. The fuses on the Riverland tap were blown. The load in Building 181 was picked up by closing the bus tie in the building but service could not be restored to Riverland until the day shift.

105 Pile Building

Work was started on the installation of conduit and wiring for 14 strain gauges to be mounted on the top and the far side of the unit. The work is approximately 65 percent complete.

The damper solenoid on No. 7 fan unit burned out and was replaced.

An alarm reset panel was fabricated and mounted in the monitor room for resetting the top of unit alarm and providing an indication that the alarm had functioned.

Some preliminary work was done to prepare for the installation of the test drive for No. 4 horizontal rod. Most of the control equipment had been received and has been checked and remarked or rewired according to prints furnished by the Design Division. The temporary battery room is 70 percent complete and battery connectors have been made up.

Bearings were replaced in the 2 h.p. air conditioning fan motor.

C. 100-D Area

A large proportion of time was utilized for the requirements of the construction program. Considerable time is still required for standby men during movement and operation of cranes, etc. The conduit runs for construction "ties" in the 190 pipe tunnel were completed and a start made on pulling in the wires. Relocation of conduits to the Re-use Pumps in the 190 Building, made necessary by a water pipe installation, was completed.

Transformer "B" in Substation C4-S12, Building 186, was disconnected for transfer to the new substation for 190 Building addition.

The instrument panels in the 182 Reservoir Building and the 183 Filter Plant Building were rewired to accommodate the 105-DR High Tank indication.

Rewiring of panels L-1 and L-2 in the 190 Process Water Building and the installation of indicating lights was completed.

Layout was started for conduit runs for construction "ties" to 105-DR.

On August 18, a Construction truck and trailer carrying a tractor struck and broke down the 120 volt emergency power supply between the 1719 First Aid Building and the 1717 Shop Building. The line was replaced.

On August 25, Construction equipment struck and broke the telephone cable between Buildings 182 and 183. Cable repairs were made by the Telephone Section.

An air cooler motor in the 182 Reservoir Building was burned out because of being sprayed with water being used to clean the filter pads. The motor was rewound and returned to service.

A solenoid valve was installed in the cooling water line to the electrically driven compressor in the 115 Purification Building.

A "Do-all" saw was installed in the 1717 Machine Shop.

The two new Westinghouse switchboard panels for the 13.8 KV feeders at the 100-DR Area are now installed with satisfactory connections having been made. All connections have been completed to one of the two 13.8 KV feeders to the DR Area and is now ready for service. The second feeder is now in the process of being connected to the incoming line position. It should be completed in the near future.

At the request of Construction, 105 Area street lighting circuits were removed in order to provide clearance for construction on six separate days. Circuits were returned to normal at the end of each day.

At the request of Construction in the 100-DR Area, it was necessary to relocate transformer pole and service to provide clearance for excavation.

One hundred and thirty-eight distribution and fence light poles were straightened and retamped during the month of August.

105 Pile Building

Work was continued on the installation of wiring for the 14 new strain gauges. Wires have been pulled for the gauges on the far side.

Two of the vertical rod clutch rectifiers which were damaged during the Bonneville Power Administration system disturbances on July 19 were replaced by new units.

During the month Vertical Safety Rod No. 29 developed trouble due to the brake dragging. Subsequent to correcting the brake adjustment, the rod slipped due to excessive oil accumulation on the clutch slip rings and brushes. The unit was cleaned and tested satisfactorily.

D. 100-F Area

Ventilating fan No. 46 (2 h.p.) in the 183 Filter Plant Building burned out and was rewound. The fan blade rivets were found quite loose and were replaced.

Rivets were found loose and broken on the fan blades of the 7.5 h.p. ventilating fan in the 183 Filter Plant pump room during the routine

preventive maintenance overhaul of the motor. The fan blades were welded to the hub as similar difficulty was encountered before. Both motor bearings were replaced.

Bearings were replaced in the 7.5 h.p. air cooler motor in the 1704 office building. Failure was caused by too much belt tension.

Services were installed for a 1000 amp and a 500 amp A.C. welder in the 1717 Machine Shop.

A 12 inch by 12 inch plexiglass window was installed in the rear of cubicle E6X47 in the 183 Head House Substation to allow for visual inspection of the disconnect switches without disrupting service.

New timbers were installed in the 1717 Building substation and Substation C6-S3 to replace split timbers.

No progress has been made since last month on Project C-238, Effluent Line to 107-F - awaiting electrical prints on gate house.

105 Pile Building

A preventive maintenance overhaul of the 75 h.p. Westinghouse supply fan motor No. 6 revealed a small crack in the outboard endbell. The crack is not considered as of any immediate consequence.

A 220 volt receptacle was installed at the top of the unit for use by the Maintenance Division.

The solenoids, brakes and motors on the Horizontal Safety Rods were checked and adjusted. The Vertical Safety Rods and safety circuit time delay were also checked and adjusted.

2. 200 Areas

A. General

Due to a low frequency condition on August 4 and August 10, the emergency generators in the 284 Power House Buildings in the 200 Areas started up automatically. The low frequency condition originated in the Grand Coulee area with no result in damage to 200 Areas production or equipment.

Arrangements have been made (with permission of S Division) to reduce coverage in the 200 Areas to a single shift.

During the past month cathodic protection of the stainless steel waste lines has proceeded in a satisfactory manner as shown by the voltage readings made of the potential between the cathode risers and a copper sulphate half cell.

Several breaks were found in the line connecting the anodes in the "T" Area during the past month. Repairs were made as soon as the discontinuity of the line was indicated by a low current reading at the system rectifier.

Experiments under way for the past several months are being continued as outlined in previous report.

Additional test samples were placed in the 200-W Area on August 18. Four samples of stainless steel encased in iron pipe were buried, the stainless steel insulated from the cast iron to prevent any electrical contact. Protection of the samples is:

1. Six volts applied, stainless steel pipe negative to cast iron encasement.

2. Six volts applied, stainless steel pipe positive to cast iron encasement.

3. Six volts applied between cast iron encasement and ground. Positive connected to cast iron.

4. No electrical connections, however, one half of stainless steel pipe sprayed with two coats of red lead.

Additional samples of stainless steel pipe with red lead coatings were also buried.

Field and laboratory tests are under way at the present time under the guidance of Dr. W. R. Varner. In these experiments, definite relationship between half-cell potential readings and the degree of protection provided to the stainless steel pipes by cathodic means are being sought.

B. 200-E Area

The cable drum on the 30 ton Whiting crane in the 212 North Building was reground during the month. The friction between the load cable and the drum caused the grooves to become sharp and rough, thereby causing excessive wear on the load cable. It was, therefore, necessary to re-groove the cable drums in order to correct the condition.

The inboard bearing on No. 1 stack gas fan in the 291-B Building failed on August 11. The inner race was turning on the shaft which resulted in severe undercutting of the shaft. This in turn allowed the rotor to ride on the grease seal. The grease seal was eventually distorted sufficiently to freeze on the shaft. A complete rotor and bearing assembly was removed from the "U" area and assembled in the "B" area motor. The motor was tested and returned to service.

The defective rotor shaft will be repaired and assembled in the "U" area motor.

A new impact wrench was installed on the 221-B Canyon Building crane on August 14, 1948. This wrench replaced the defective one reported in the July report.

On August 20, the 8-1 Agitator motor in the 221-B Canyon Building tripped off. An investigation showed that there was a slow swing of the hand on the indicating ammeter. This slow swing indicates trouble in the reduced speed mechanism of the agitator. All bearings were lubricated but the condition still exists. The agitator is still in service but kicks off occasionally.

Electrical Division

The E-2 centrifuge motor in the 224-B Building was rewired in accordance with the plug-in receptacle plan on August 16, 1948. A work order has been received to install plug-in receptacles on the remaining two centrifuges.

The 40/10 h.p. D-2 centrifuge motor in the 224-B Process Building as reported in July report has been removed to the 272-E Shop for repairs. A temporary danger zone has been established for this repair work.

The limit switches for the impact wrenches on the 221-B Canyon Building crane were installed on August 25, 1948.

Due to the uneven contacts on the rectifier wheel of the experimental precipitator in the 292-B Building area, there was very poor operation at low voltage. These contacts were replaced on August 9.

There were eighteen motors repaired in the 200-E Area Motor Shop during the month.

Fifteen percent of the bad order poles in the 200-E fence lighting circuit have now been replaced.

C. 200-W Area

On August 20, the outboard bearing on a 15 h.p. compressor motor in the 272-Z Building failed. When the bearing failed, the rotor struck the stator winding causing damages which necessitated rewinding the motor stator. Necessary repairs were made and the motor returned to service.

The resistor grids on the bridge travel motor control for the 75 ton crane in the 221-U Canyon Building burned out on July 30, 1948. Necessary repairs were made and the crane returned to service. The common practice of leaving the motor control in the first position and using the foot brake only for control of the bridge was the cause of the above trouble.

The lower bearing on the 9-1, 15 h.p. agitator motor in the 221-T Canyon Building was replaced during the month. The motor was assembled and returned to service. Study of this problem will be continued during the month of September. See last month's report.

The following notations refer to 241-TX waste facilities construction, Project C-163:

	% Complete
Installation of bond connections and thermocouples, risers only	73
Installation of terminal boxes and supports for bonds and thermocouples	0
Installation of external connections to bond points	0 *
Installation of conduit and wire at 155 and 154 diversion boxes	80

	% Complete
Installation of light structures and power outlets at diversion boxes and tank farm	5 *

* We have not received any plans or specifications for these items.

At the request of Construction in the 200-W Area, series fence lighting circuit at the 221-T Area was removed so as to provide clearance for excavation. The circuit was returned to normal at end of day.

On August 13, Construction equipment broke off distribution pole in the Area. The pole was replaced and the line restored to normal.

Service, 120/240 volt, was provided to the Minor Construction huts near the 291-T Building.

Four additional poles to the fence lighting circuit in the 221-T Area to provide coverage for new fence installation were added.

4. 300 Area

The following statements briefly describe work beyond the usual normal maintenance.

Severe voltage and frequency variations occurred throughout the day on August 4. Operating groups were advised of this in advance.

A phase to phase arc developed in the control cubicle of 1A furnace in the 313 Building due to an overheated fuse holder on August 17 at 11:00 p.m. These fuse holders are of poor design and are being replaced with a more substantial type.

On August 18 at 9:00 a.m., the X-Ray tube used in the 220 KVP Quadro-Condex X-Ray unit in the 3745 Building failed after approximately 250 hours of operation. This is believed to be the life expectancy of the tube and is consistent with the performance of previous tubes.

A new tube-head was received from Chicago late on August 24. This was installed on August 25 and the regular procedure for conditioning a new tube started. The procedure was completed at noon on August 26 without incident. The operating group encountered some difficulty later when the maximum operating voltage was approached too quickly but normal conditions obtained when recommended steps in increasing voltage were used.

On August 18, the emergency feeder was opened from 8:00 a.m. until 12:00 N to permit connecting new structure for street and fence lighting circuits near main gate. The new structure is now complete and the old structure has been removed.

On August 19, the marking fluoroscope used in the 313 Building failed due to an open filament in the X-Ray tube. The tube was replaced and the device restored to service.

Electrical Division

On August 21, a complete scheduled 300 Area outage was taken from 12:00 a.m. to 3:00 a.m. to lower 66 KV line in order to provide clearance for new 115 KV line which crosses at this point.

On August 21, the elements of two bronze furnaces in the 313 Building failed and were replaced on the following day to meet Monday's production schedules.

An outage was scheduled from 2:00 p.m. to 3:00 p.m. on August 26 on breakers B1 and B7 in Substation 351-B to permit connecting 440 volt service to Building 305-A.

Frequent failures of the elements on the bronze pot furnaces in the 313 Building are still occurring due to the high operating temperatures being used. Mechanical agitators are being installed which will permit a considerable reduction in operating temperature and probably increased life of the elements.

A flashover occurred on August 31 at 8:58 a.m. when a primary disconnect was operated resulting in a fuse blowing on the 66 KV line in Substation 351-A, and a single phase condition in the south end of the area. Normal service was restored at 10:27 a.m.

Work was started on installation of a new "Horizontal Contactor Unit" in the 321 Building late this month. This includes explosion proof wiring for lighting and both single phase and three phase power.

Electrical work associated with all active projects and construction in the 300 Area is proceeding normally as associated with progress made by other divisions.

Extensive work was completed on rebuilding both primary and control circuits to wells No. 3 and No. 4 in the 300 Area. Also, installed 5 KVA transformer setting for lighting service at both wells.

5. 700-1100 Areas

As previously noted under "General", all electrical inside work has been transferred to the Community Public Works Division as of August 23. However, the Electrical Division will retain all distribution, line, and substation work in these areas. Future reports will, therefore, omit this section, and line and substation work will be incorporated in the "Distribution and Transmission" report.

All inside construction and maintenance work was proceeding normally in these areas at the time of transfer.

Extensive repairs were made to the 25 KVA transformer which was damaged when pole was blown over at swimming pool in Richland.

Service was provided to six new houses on Duance Street at Benham.

At the request of Construction, primary service was provided to part of "C" Area.

In order to provide clearance for widening of George Washington Way, it was necessary to relocate four distribution poles on the east side of the street.

Electrical Division

Overhead messengers in the village of Richland were installed for decoration purposes, preparatory for Atomic Frontier Days.

At the request of the Telephone Section, 2000 feet of 3/8 inch messenger were installed and 1000 feet of 50-pair cable and 1000 feet of 25-pair cable were strung at the 1131 Transporation lot. Also, 200 feet of 11-pair cable were strung across Swift at George Washington Way.

Six spans of 7.2 KV primary were removed on George Washington Way north of Swift as they were no longer required.

A new two-pole transformer setting was constructed at the Lewis and Clark School to provide 112.5 KVA capacity. The old structure was removed.

At the request of Construction, a three-phase transformer bank was installed at the Marcus Whitman School to provide temporary service until the permanent vault installation is completed.

A new pole was set on Wellsian Way to provide connection for new line to be built by Construction forces.

At the request of Construction, secondary and service was extended to Columbia High School for construction tools.

At the request of the Atomic Energy Commission, 10,000 feet of fire alarm circuit were strung to provide coverage for the Richland Airport, and provided obstruction lights on antenna pole at this location.

A 50 foot pole was set at the Robert Gray Junior High School for underground 7.2 KV service, as requested by Construction.

In order to provide additional circuit capacity from B1-S1 Substation, a complete outage was necessary while a breaker was connected to the station bus.

The primary line feeding the Sewage Disposal Plant was relocated in order to prov clearance for construction work.

At the request of Construction, the transformer bank and primary at the intersection of Kadlec Road and Van Giesen Street was removed.

The new street lighting circuit in the "C" Area was energized.

Three-phase power to the Graysport Batch Plant located at Bypass Road and Van Giesen was provided, clearing the setting of two new poles and two 25 KVA transformers.

The primary line at the Columbia High School was moved to provide clearance for new parking area. This required setting five new 45 foot poles and transferring of line to new location.

Extensive work along Lee Blvd. between Thayer and Stevens was completed in order to cutover to new 115 KV system.

Three poles and a transformer setting in "F" Area were relocated so as to provide clearance for construction and service to Area Engineer's office.

Electrical Division

At the request of Construction, 1800 feet of secondary were strung to provide service to the McNeil Heavy Duty Garage located just east of the McNeil Administration Building.

The transformer capacity was increased at Tract Houses 772, L-859 and K-744 in ord to provide additional capacity for cooking and heating purposes.

Service to five construction temporary buildings at the Columbia High School was provided.

A new 35 foot pole was set at Klopfenstein's Store so as to provide clearance for construction of new building.

6. Distribution and Transmission

During the month, the services of the personnel of one entire line crew was required to provide escort for the movement of construction machinery so as to protect overhead lines and personnel.

The following work was done on pole treatment and replacement program during the month.

	Inspected	Condemned	Treated	Replaced
200-E Area	313	35	278	11
Richland				4

This crew was also used elsewhere during the month, clearing and grading substation yeards.

During the month, 223 distribution transformers were tested for Construction and 20 were tested for Electrical Distribution.

The following radio equipment was serviced during the month:

Two-way radio mobile units installed	11
Mobile locomotive units installed	4
Two-way mobile units removed	11
Two-way mobile units serviced	91
Two-way mobile units overhauled	45
Stationary units serviced	3
Stationary units overhauled	2

Discussions have been initiated with the Bonneville Power Administration and the Atomic Energy Commission relative to system power interruptions of July 19, August 4 and August 10.

Power Supply Interruptions

Date	Area	Circuit Affected (230 KV)	Duration	Remarks
August 4	100-B	Line C2-L10	9 hrs. 27 min.	Line down caused by wind and lightnin
August 4	All	Critical "Y" - all circuits	8 hrs. 19 min.	BPA trouble - storm

Power Supply Interruptions — 230 KV

Date	Area	Circuit Affected	Duration	Remarks
August 4	Percer Ranch	Ringold, all 6.9 KV line	10 min.	Blown fuse
August 10	All	All	15 min.	Operational error at Grand Coulee
		66 KV		
August 9	300	OCB's B-94, B-41 & B-43 at Hanford relayed	4 min.	Thunder storm and lightning on system
August 9	100-H & White Bluffs	B7-S10, OCB B-41 relayed	4 min.	" " "
August 9	3000	Hanford-Pasco line relayed	4 min.	" " "
August 31	300	Substation B3-C4	1 hr. 4 min.	Replace fuse B-297 blown during switching

7. Telephone Section

Temporary cable connections were inspected and made to "A" Housing Area. Ninety six telephones were installed in this area on a priority basis.

Two new 202 pair cable were spliced in underground system on the north side of Williams Blvd. between Goethals Drive and George Washington Way. A 75 pair cable was installed from this to serve the multiple apartment houses.

The old 300 pair cable on south side of Williams between Goethals Drive and George Washington Way was removed.

The open wire lines to the 1131 Garage and telephone cable was provided to same. Additional facilities were required because of Labor Division establishing offices in this area.

A 16 line PBX switchboard in office J. A. Tertoling and Sons was installed and connected four trunks to same.

Richland-BY trunk cable damaged by Scott-Buttner Electric Company "A" frame on truck was repaired. Damage occurred approximately three miles north of 300 Area.

Arrangements were made for raising trunk cable crossing North Richland railroad spur to provide 27 ft. clearance.

Project Engineering was provided with cable layout for the new Richland exchange cable vault and assisted in the layout of the proposed underground system.

Eighty five percent of the job of loading, balancing and splicing 27 quad and
13 13 quad trunk cables between BY Exchange and White Bluffs was completed.

Electrical Division

Installation of cable from White Bluffs exchange to the 100-H Area was completed.

Sixty percent of cord circuit supervisory relays on White Bluffs switchboard was readjusted to obtain proper supervision on long loop lines in the 100-H Area.

Installation of 100 additional lines (3400 number group) to 300 Area automatic dial exchange is 85 percent complete.

Fifty additional lines were installed to the 200-W automatic dial exchange, thereby making it a 200 line equipped office.

Telephone requirements of the new 3703 Building in the 300 Area were reviewed with various divisions and plans were made for serving same with telephone cable.

The following number of lines and half lines or "sides" were vacant on the Richland switchboard as of midnight on August 29:

Class of Number	Lines Vacant	Sides
1500 Series	9	25
Resident Numbers	38	262
Office Numbers	31	9

The following telephones were moved during the month:

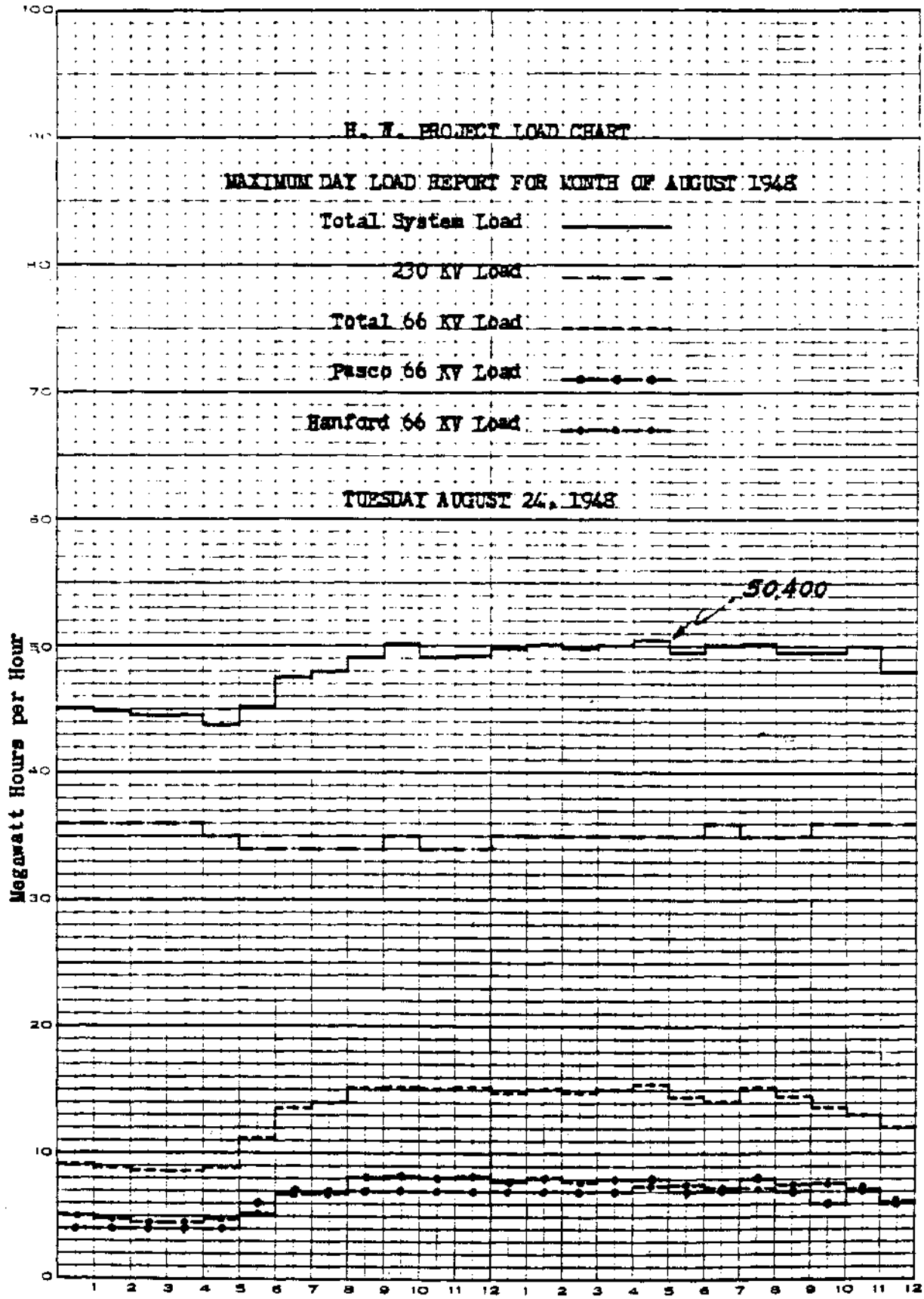
	Installed	Removed
All work areas (active)	21	3
Richland	403	246
North Richland	32	34
White Bluffs and 100-H	60	11
Total	516	294

POWER STATISTICS - ELECTRICAL DIVISION
FOR MONTH ENDING AUGUST 31, 1948

ITEM		ENERGY - MW HRS. July	ENERGY - MW HRS. August	MAX. DEMAND - KW July	MAX. DEMAND - KW August	LOAD FACTOR - % July	LOAD FACTOR - % August
230 KV SYSTEM							
A-2 Out	(100-B)	7,350	7,340	11,600	11,300	85.2	87.3
A-4 Out	(100-D)	7,630	7,790	12,500	12,500	82.0	83.8
A-6 Out	(100-F)	7,130	6,770	11,500	11,600	83.3	78.4
A-8 Out	(200 Areas)	2,010	2,000	3,200	3,300	84.4	81.5
TOTAL OUT		24,120	23,900	38,800**	38,700**		
MIDWAY IN		24,423	24,175	36,400*	36,000*	90.2	90.3
Transm. Loss		303	275				
Per Cent Loss		1.2	1.1				
66 KV SYSTEM							
B1-S1 Out	(Richland)	1,314	1,797	2,800	4,000	63.1	60.4
B1-S3 Out	"	1,304	1,318	2,800	2,800	62.6	63.3
B1-S2 Out	"	2,405	2,030	4,566	4,797	70.8	56.9
B3-S4 Out	(300 Area)	185	190	456	432	54.5	59.1
B3-S5 Out	"	568	642	1,200	1,440	63.6	59.9
B1-S4 Out	(North Richland)	1,646	1,814	2,938	3,110	75.3	78.4
B7-S10 Out	(White Bluffs)	402	426	1,147	1,260	47.1	45.4
B9-S11 Out	(100-H Area)	14	77	280	560	6.7	18.5
Hanford Out		239	300	500	500	64.2	80.6
TOTAL OUT		8,077	8,594	16,687**	18,899**		
Hanford In		4,538	4,738	18,300*	12,200*	33.3	52.2
Paeco In		3,646	4,141	7,600*	11,600*	64.5	48.0
TOTAL IN		8,184	8,879	25,900**	13,800**	42.5	86.5
Transm. Loss		107	285				
Per Cent Loss		1.3	3.2				
PROJECT TOTAL							
230 KV (Item 5)		24,120	23,900	38,800**	38,700**		
66 KV (Item 15)		8,077	8,594	16,687**	18,899**		
TOTAL OUT		32,197	32,494	55,487**	57,599**		
230 KV (Item 6)		24,423	24,175	36,400*	36,000*	90.2	86.5
66 KV (Item 18)		8,184	8,879	25,900**	13,800**	42.5	86.5
TOTAL IN		32,607	33,054	51,700*	50,400*	84.8	88.1
Transm. Loss		410	560				
Per Cent Loss		1.3	1.7				

* Coincidental Demand
** Non-Coincidental Demand

Average Power Factor - 230 KV System--98.1
Average Power Factor - 66 KV System--96.7



INSTRUMENT DIVISION

MONTHLY REPORT

AUGUST, 1948

August 31, 1948

GENERAL

The Division assumed fuller responsibility as regards time clocks and time standards by absorbing the personnel and facility normally maintained by the Electrical Division in the 700 Area.

Work Order Summary

	Work on Hand August 1		Work Completed in August		Work on Hand August 31	
Area	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days
100-B	5	6.4	4	400.4	7	30.4
100-D	17	312.3	1	442.9	21	241.0
100-F	17	121.3	9	353.8	12	108.9
200-E	7	24.7	4	372.9	7	18.4
200-W	16	15.9	11	489.5	11	265.1
300	92	861.4	114	1516.4	69	673.7
700	19	27.3	20	224.4	26	43.3
Totals	173	1369.3	163	3800.3	153	1370.8

Organization and Personnel

Number of employees on payroll:

	August
Beginning of Month	197
End of Month	200
Net Increase	3

Reason: Seven new hires, four terminations.

100 AREAS (Reference Report No. HW-10903)

The Construction Division has completed deaerator by-pass and orifice installation on 8 of the 10 units in 185-D. Indicator ranges have been changed from 4500 GPM to 6000 GPM. New recorder charts to agree with this range change have not yet been received by the 700 Area Group in charge of addressographing and distribution, but old charts are being worked to indicated extended range.

Preliminary installation work on top of the unit Electro-Magnetic Strain Gauges has been completed and conduit partially run. Calibration equipment has been assembled and appears to be in good working order.

80

Instrument Division

100 AREAS (Continued)

The design details for process tube ionization chamber have been completed. Octant monitoring system will be installed as soon as plans under study have been agreed upon by the Technical, "P", and Instrument Divisions.

At the instigation of the Technical and "P" Divisions, a survey of the 5" - #617 GE neutron chambers in the 100 Areas was conducted. The following conclusions were reached;

The needs indicated are adequate unless additional installations are expected in the near future.

There are ample spares or units in service of secondary importance that may be used in case of an emergency.

It is not feasible for the Instrument Division to use a single 617 chamber under a riser of highest activity and get a reading comparable to that available from a 3" chamber located in a test hole. From existing data, a chamber under No. 8 riser produces approximately 50% the desired galvanometer deflection. Unless other more adequate means are developed, e.g., proposed Octant Monitor or chambers in parallel, the "P" Division will sacrifice sensitivity in start-up RXG/s and galvanometers if available test holes are turned over to the Technical Division for experimental purposes.

200 AREAS (Reference Report No. HW-10904)

A defective bearing on the electric motor driving No. 1 fan in 291-B stack area caused a high temperature indication on the bearing temperature recorder and alarm at the dispatcher's office. This offered first use of the quick-detaching thermocouple leads when the motor was removed for repair. The arrangement worked out satisfactorily and the original thermocouple was reinstalled in the new bearing.

An orifice section and compound manometer draft gauge was made up and calibrated for use in measuring sample gas flow from a scrubber in Building 292-BA. The compound manometer was designed to measure flows up to 3 CFM over the inclined portion and up to 9 CFM on the straight portion. This installation proved out so well that the range was extended on two other installations made previously.

Project C-262-Bismuth Sub-Nitrate Mixing Facilities

Purchase requisitions have been placed for a liquid level manometer, differential pressure manometer and temperature indicator for the bismuth sub-nitrate mixing facilities. The manometer for measuring specific gravity being of special design will be fabricated in the 271-B Shop.

At the request of the Accountability Group, a test was run on the 8-1 Ring Balance in 221-T to determine the accuracy of the weight factor measurement. The test was made in conjunction with the "S" Division in order to determine the order of instrument accuracy at the same time the system accuracy was checked. The maximum error of the instrument was less than 1%. Details are covered in a separate report.

300 AREA (Reference Report No. HW-10945)

C-171 - Crane Periscope

Practically no change in status of this project for last month. 200 Area Operators were unable to schedule their work so as to make the cranes available. Required completion date for this project is 8-31-48. Due to circumstances beyond our control, we will not be able to meet this date.

C-219 - Additional Health Instruments

Work on this project is proceeding satisfactorily. Twenty C.P. Survey Meters were delivered to the Calibration Section for scanning and calibrating. Twenty Junos are wired, one will be delivered to the Calibration Section within a few days. Results to date show that the #2 range on the C.P. Survey is low, however, we are now checking to find the cause and will correct it as soon as possible.

The manufacturing prototype of the Neutron Meter is completed and ready for testing.

Three additional standard Alpha counters have been completed, tested, all cables made and checked and the instruments are now ready for delivery.

The 3 BF_3 Neutron Counters are completed with the exception of the Dumb Cluck circuit, two of these instruments are in the possession of the Calibration Section for checking. One BF_3 was delivered to the field but was returned as erratic, upon investigation it was found to be in first class condition and that the P.C. Tube was faulty.

Optical Section

The first of a new series of permanent glass standards was made for the fluorophotometer. Originally one very low level standard, similar in reading to the usual samples, was made for each machine. We have been asked to also make a graded series to replace the present working standards which are fusions containing weighed amounts of uranium. These fusions are hygroscopic and lose their fluorescence with age.

We have considered several ways of improving the X-ray inspection of slugs in 313 Building. One suggestion was a completely automatic device which determined the position of the end of the slug by X-rays, a fluorescent screen, a beam splitting prism and two or more photomultiplier tubes indicating with go and no-go lights. Such a device is possible, but would require development and probably considerable maintenance. We do not feel that such a device is justified. A good operator can check both ends of a transfer cart of slugs, pick out the rejects and mark them with a figure to indicate excess material to be removed, all in about five minutes. It is true this requires training and good eyesight, but seems to be satisfactory. Accordingly we have concentrated on improving the present set up instead of replacing it, feeling that nothing can replace visual inspection which gives the operator a complete picture of the whole slug rather than a machine's estimate

Instrument Division

300 AREA (Continued)

of one property. The first proposed improvement is better lighting of the inspection booths. Others are improved magnifiers made of plastic that will not darken from exposure to the X-rays.

DESIGN SECTION

Jobs of Interest - August

1. Drawing of water counter - redesigned, awaiting H.I. approval.
2. Design electrode alignment system for spectrometer in Bldg. 231.
3. Design enclosed source holder for spectrometer in Building 231.
4. Redesign badge riveter.
5. Drawing of C.P. with probe (Totem Pole).
6. Redesign of Mica Window tube holder.
7. Design air sample filter holder.
8. Drawing of pull type register reset.
9. Design rotary shaft instrument.
10. Pictorial drawing of air sampler horizontal pig.
11. Drawing of circuit and mechanical components of poppy.

DEVELOPMENT SECTION

1. Photo electric position indicator for slug marking.
2. Power level indicator for 100 Areas.
3. Cover motion recorder for 100 Areas.
4. Automatic temperature monitor IBM system.
5. Canning and Sipping instrument study.
6. Thimble poppy probe.
7. General:
   - Neutron chamber
   - Modification of ASP for Beta counting
   - Bucking current devices for RXG Beckman
   - HW poppy specifications
   - Automatic temperature control device
   - Galvanometer filter
   - G.E. Rich pencil reader

A special poppy probe has been designed. Its dimensions are such that the sensitive part can be inserted in a cavity 3/4" in diameter with a depth of 1/2 inch.

Parts for the special small diameter neutron sensitive ionization chamber for the 100-F Area were fabricated in the 100-F Area and assembled and filled with argon by the Instrument Shop, 300 Area. Upon completion it was sent to the 100-F Area where it was tested. It does not saturate under the desired operating conditions, but it is more sensitive than the previous air chamber. Preliminary reports indicate that it will be satisfactory.

The Technical Division is interested in modifying a methane flow Alpha proportional counter for use in counting Beta particles. This will require the construction of a special ionization chamber and possible minor changes in the present Simpson circuit. The preliminary estimate of the cost of fabricating the chamber has been obtained, and it is expected that a work order for the chamber will be received soon.

700 AREA (Reference Report No. HW-10905)

Standards Section

Time Clocks

On August 23 this group assumed responsibility for maintenance of the time clock system in the 700-1100 Areas and 5 program clock system in the Richland schools. The time clock system consists of a master clock in the telephone building which sends operating signals over the telephone lines at one minute intervals to 27 slave clocks operated by synchronous motors in locations (paint shacks) where telephone lines are not available. It is estimated that time clock maintenance will require 60% of one man's time. It is not certain how much time will be required for the program clocks, since work on them did not start until last week, when the manufacturer's representative visited us and spent two days instructing our mechanic in repair procedures.

Tube Section

Production Report

11 Mica window tube
53 thin wall glass tubes
2 3" neutron chambers

Automatic Plateau Runner

Test plateaus run this month have been satisfactory. An operating procedure has been written up and the plateau runner has been put to service in the tube shop.

Spare Neutron Chambers

Nine 5 inch neutron chambers, GL-617 have been brought out of dead storage to be checked for stability. Preliminary checks with a Beckman micro-micro-ammeter indicate excessive current leakage in all of them, but it is hoped that more thorough cleaning of their anode insulators and replacement of possibly defective cable connectors may eliminate previous sources of trouble.

As a hedge against the eventuality that no good chambers will be discovered by this procedure, it is proposed to coat the electrodes of a good GL-563 chamber with boron carbide and zapon. (The GL-563 chamber is a Gamma chamber which differs from the GL-617 in not having boron coated electrodes.)

DESIGN AND CONSTRUCTION

100 Areas (Reference Report No. HW-10906)

General

In view of the advanced stages of the 100 and 234-5 Areas, Design, we are able to consolidate our forces and return one man to Operations and several to Construction.

Instrument Division

DESIGN AND CONSTRUCTION (Cont.)

100 Areas (Cont.)

Design

100-H Area

Design work remaining to be done for this area now consists chiefly of checking Giffels and Vallet drawings to satisfy the instrument connection requirements. The Main Control Desk, Miscellaneous Panel, and Area Monitor Room Panel arrangement drawings have been approved and work on cutout, piping and wiring diagrams is now under way. Cutout drawings are necessary to procure these panels. This is the extent of procurement yet to be done.

Construction

105-DR

1. The wiring of Main Control Desk for the 105-DR Building is proceeding in the White Bluffs Instrument Shop. This job is necessarily slow due to limited working space. The workmanship going into this board has been very good. This board will be moved into the Control Room when the Temperature Monitor Panel arrives so that the walls of this room can be completed. The selsyn receivers made by Schenectady have not been received although shipped on August 17, 1948. These should be in by August 30 at least.

2. Thermoccuples for monitoring the exit of each process tube which were assembled by the G.E. Service Shop in Seattle have been completed.

3. All equipment used with the power, flows, and temperature measuring system built by Bailey Meter Co. for this building, has been received. This included the Inlet Water Panel for the Control Room.

4. Everything is in readiness for installation of B.G.S.T. couples in the B blocks, T sections, Cast Iron Blocks and Graphite as the packing is built up.

5. Fabrication of copper tubing for the pressure monitor connections between unit and Control Room has been started. This will permit installation of this tubing in a minimum time when the work on part face of unit is ready to receive it. Sufficient gauges for the pressure monitor in this area have been received (2700 to date).

Instrument Division

REDOX (Reference Report No. HW-10907)

Demonstration Unit

"High-Low" level alarms were installed on the new 15 gallon displacement vessels and connected into the existing signal system.

A liquid level indication system was fabricated and installed on F-4 vessel blow-case.

Scale-Up Unit

The Instrument Group has been working in conjunction with the Technical Group in the co-ordination of several test runs. Automatic control of the column throughout these tests proved the satisfaction of instrument application for designed rates. Orifices in the feed and effluent streams were enlarged to accommodate a test run of 8 gallons per minute. The organic effluent is not properly metered at this rate of flow because of air entrainment in the vertical tail pipe.

H.C. Unit

Work is in progress on the installation of a 10 stage H.C. Unit received during this period.

Redox-Kellex

A recent directive on the Redox Test Plant specifies removable construction for the service building section. Instrument Shop space requirements have been submitted for the current building plan. The control of electronic shop ventilation has been requested to insure a maximum humidity of not more than 35 percent.

Latest information on New York meetings with the Kellex Corporation indicates approval for meter development work in the following priority:

Metering pump
Caloric metering
Inductance metering

The caloric metering problem has been subcontracted on the Leeds & Northrup Company to adapt the method for the Redox program. Work on larger units for the full size plant was urged in preference to a total effort on proglems of the Pilot Plant.

Project 234-5

The design is virtually complete. Additional personnel have been added to assist Construction.

SS

TRANSPORTATION DIVISION

MONTHLY REPORT

AUGUST 1948

GENERAL

Absenteeism in the Transportation Division for the month of August was 1.80%. This was an increase of .75% over the month of July.

Following is the August Work Order Summary for the Mechanical and Labor Sections.

Groups	Work on hand July 25 No.of Orders	Work on hand July 25 Estimated Man Days	Work Completed August 31 No.of Orders	Work Completed August 31 Estimated Man Days	Normal Work on hand August 31 No.of Orders	Normal Work on hand August 31 Estimated Man Days
All Area Labor and Repair	38	403.3	73	3,383.6	23	439.8
700-1100 and Railroad Labor	63	796.6	82	4,167.6	53	725.5
Riverland Railroad Repair	21	174.9	20	408.5	7	71.4
700-1100 Repair	71	391.4	83	3,109.6	44	280.1
Total Labor and Repair	193	1,766.2	258	11,069.3	127	1,516.8

ORGANIZATION AND PERSONNEL

700-1100 Area cleanup and Irrigation Canal functions heretofore performed by the Transportation Division were transferred to the Community Public Works Division August 23, 1948.

A. L. Dorrell, Engineer (Assignment), reported for work August 3, 1948.

Force of the Transportation Division was increased by five and the total force as of August 31, was 743.

Number of employees on payroll	August
Beginning of month	738
End of month	743
Net increase	5

New Hires	15
Transferred from other Divisions	4
Total	19
Terminations	8
Transferred to other Divisions	6
Total	14
Net increase	5

Force of Morrison-Knudsen, Track Maintenance Subcontractor, was increased by 19 and their total force as of August 31 was 252.

OPERATIONAL ACTIVITIES

1. Railroad Operations

Railroad operations continued in a routine manner with train movements being effected as scheduled. There were 5,527 cars handled which is the highest number recorded since the start of Operations. This increase of 294 cars over July can be accredited to the substantial increase in commercial tonnage.

Non-routine work consisted of work train service between May Junction and North Richland which is now complete; work train service was begun on August 19 for ballast work on the Helen line change; additional work train service is being rendered for track raising operations just west of May Junction.

An additional crew was set up during the month and assigned to the 4:00 p.m. to midnight shift for the purpose of serving the 100 Areas and Hanford as a roving switcher crew.

The Richland switcher was discontinued on August 25 at which time it was moved to the low line serving the White Bluffs 100-H Area on the day shift. This crew will work through Riverland to Richland, serving as a road switcher, handling switching from the 300 Area to the 700 Area. One of the 4:00 p.m. to midnight crews will come on duty at Richland and work back, removing empties and performing switching on the low line.

Two passenger train test runs were made during the month with eleven coaches, from North Richland to White Bluffs and 100-DR Area for the purpose of determining running time and feasibility of operating passenger trains for Construction workers. Both runs were successful and a desirable schedule was proved.

2. Repairs

Both new Alco locomotives were in operation throughout the month and performed very satisfactorily after the installation of new type pistons as recommended by the American Locomotive Company.

The No.1 cylinder of No.2 engine on General Electric locomotive 39-3726 was found to be cracked. Installed a used liner; cleaned and adjusted injectors and valves on both engines; adjusted the governors and checked synchronization of engines before returning this unit to service.

Installation of radio equipment has been completed on the four 80-ton General Electric locomotives. A transmitter has been installed at the Riverland Yard Office but as yet is not performing satisfactorily. A delay has been encountered in installing sets on the Baldwin and Alco locomotives due to different type electrical circuits. No radio installations will be made on the two 65-ton General Electric locomotives.

Installation of a sprinkler system in the Riverland Roundhouse was completed.

3. Track Maintenance

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

a. 100-B Area. Completed re-lay on leads to coal track and 105-B. Re-laid 108-B turnout with 100 pound rail.

b. 100-D Area. 183-D track re-lay was laid by Atkinson-Jones, Subcontractor, under Transportation Division supervision. Supervised removal of 105-D main and passing track sections for pipe installation.

c. 100-F Area. Raised and lined sagging coal track bridge.

d. 200-West. Renewed 50% of the ties in newly fenced area on 221-T wye.

e. The Railroad Track Maintenance Subcontractor was engaged in the following work in addition to that of a more routine nature:

1) Tie renewals were completed from May Junction to North Richland (6.5 miles).

2) Completed one mile revision of the "A" line track on the northeast leg of wye near May Junction.

3) Re-laid one mile of "B" line track on the southwest leg of the wye near May Junction.

4) Widened 3,000 feet of bank and spread 50 cars of ballast for proposed elimination of sag at Mile Post B-20.

5) Grading of "F" track revision was completed (1.5 miles). New 90-pound rail was laid on new ties and 16 cars of ballast were spread on this revision.

6) Fifty per cent of the grade was completed for the new Richland By-Pass.

7) A total of 22,500 tie renewals was completed.

AUTOMOTIVE OPERATIONS AND REPAIRS

1. Automotive Operations

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

Two new GMC suburban type coaches have been received and placed in service for training purposes. A comprehensive Driver Training

Program has been inaugurated under the supervision of an Automotive Shift Supervisor. He is to train five bus drivers, one from each shift, who in turn will then serve as instructors for their respective groups. Each driver will receive a sufficient amount of personal instructions to either qualify him or establish the fact that he is not qualified. Qualified men will receive a written certificate, with a copy going to their personnel folders. Only men holding certificates will be permitted to operate these coaches.

Delivery of the remaining 60 coaches has been delayed due to a strike in a plant supplying component parts to General Motors Corporation. Present information indicates that production has been resumed and partial delivery can be expected by September 13, 1948, and completion by October 15, 1948. These coaches will be assigned to Area runs as soon as they are placed in service.

b. The extent of Area bus traffic is indicated by the monthly total passenger count of 123,234 and the extent of Village Local bus traffic is indicated by the monthly total passenger count of 68,976.

c. The extent of automotive equipment usage is indicated by the monthly total mileage of 1,317,692 for all types of vehicles.

d. Off-the-Plant special automobile trips (company business and official visitors) totaled 242.

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

The Repairs Section received 222,204 gallons of gasoline, 91,753 gallons of Diesel fuel and 9,440 gallons of kerosene during the month for Project use.

Cleaned and repainted 16 instrument panels for White Bluffs Instrument Warehouse.

Bus Garage and Motor Room personnel received instructions in the repair and service of GMC Coaches from a factory representative during the period August 16 thru August 18.

LABOR ACTIVITIES

1. Roads and Streets

Project C-256 (Seal Coating of Plant Highway System) This work required 6,000 tons of chips, 68,000 gallons of road asphalt M.C.4, and a total of 3,437 man-hours.

Crushing and stockpiling of 2,500 cubic yards of road aggregate and pre-mix material required 1,202 man-hours.

Approximately 1,100 man-hours were expended in providing maintenance on Village streets.

2. Areas

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

a. 100-F

Project C-238 (Effluent Sewer Line 105-F to 107-F) Backfilled 1,200 cubic yards of earth on 107 line; hand graded 300 feet of trench for 1608 Building water line; and placed 85 cubic yards of concrete for floor slab in 105 valve pit, 107 line pipe supports and retention basin walls, and railroad encasements.

b. 200-East

Suspense Code 10225 (Precipitator Building ABC)) Excavated 100 cubic yards, completed the backfilling, and changed filters.

Project C-133 (Special Test Wells) Wells 20-20 and 36.5-60.5 were completed at depths of 158 and 390 feet respectively. Well 60-60 was changed to 60-80-A and then abandoned at a depth of 95 feet. Well 25-70 was started in July and has a present depth of 440 feet. Well 25-35 was started during the month and completed at a depth of 164 feet. Wells 62.5-90, 42-88.5, 34.5-69.5, 38-79 and 60-80B were started during the month and have present depths of 60, 170, 230, 180 and 135 feet respectively. Footage on all wells drilled to date totals 13,675.

Project C-196 (Excavation for Tanks at 2713 Building) Two tanks were set, 350 cubic yards of earth were excavated and 100 cubic yards of earth were backfilled.

Project C-225 (5-6 Waste Disposal near 361-B Tank) Excavation for pipe line, crib and tile field and necessary backfilling required 218 man-hours. Excavated 100 cubic yards for tie-in and backfilled 600 cubic yards. Excavation is complete. Well 361-B-15 was completed at a depth of 150 feet. Wells 361-B-12 and 13 were started during the month and completed at depths of 150 and 152 feet respectively. Footage on all wells drilled to date totals 1,352.

Project C-228, Work Order E-32632. Excavated 1,000 cubic yards for 200 series waste tanks. This phase of excavation is 80% complete.

c. 200-West

Suspense Code 10225 (Stack Gas Decontamination Facilities) Excavated 1,800 cubic yards on 291 Building. Backfilled 100 cubic yards on 291 Building piers and french drains. Placed 168 cubic yards of concrete in 291 Building floor slab and 241 Building tanks.

Project C-163 (Additional Waste Storage) Excavated 1,500 cubic yards for seven line encasements and 800 cubic yards for 154-U Diversion Box Catch Tanks. Backfilled 5,300 cubic yards on line encasements. Placed 440 cubic yards of concrete on line encasements, encasements lids, and 154-U Diversion Box.

d. 200 North

Approximately 15,000 cubic yards of stabilizing material was spread for resurfacing the patrol road around 212 N.P.R. exclusion areas.

e. 300 Area

Project C-104 (3707-C Building) Unloaded 1,500 concrete blocks, 150 bags of mortar mix, and 30 tons of sand. Placed 177 cubic yards of concrete for piers, lintels, and floor slab.

Project C-220 (3708 Building) Hauled 300 concrete blocks and placed 30 cubic yards of concrete in floor slab.

Project C-227 (3706 Building) Hand excavated water and sewer lines. Placed 30 cubic yards of concrete in floor slab.

f. 700-1100

Rebuilding of the 1100 Area coal dock was completed. Coal handling was resumed during the month.

Grading, seeding and watering of the 700 Area Parking Compound required 360 man-hours.

EQUIPMENT CONTROL

1. An inspection of all automotive fire equipment was made for the purpose of ascertaining their future requirements on a replacement basis.

2. Twenty-six International pickups and 77 sedans were transferred from the Construction Division to Operations.

3. Thirty-three units were transferred to the Construction Division on P.I.T.'s making a total of 492 vehicles transferred to date.

4. There are 220 units of equipment presently on order as 107 units were requisitioned and eight cancelled during the month. Thirty-two units were received on orders placed prior to August 1 and 107 units were received on requisitions placed during the month.

TRAFFIC SECTION

1. Temporary increases granted the railroads and carloading companies by the Interstate Commerce Commission May 6, 1948 were made permanent, effective August 21, 1948. The only changes made were a decrease from 25% to 22½%

on rates between Western Trunk Line territory and Zone 1 of Western Trunk Line Territory, and the following maximum increase changes: Coal increased from 30 to 40 cents per net ton; Sand, in open cars, reduced from 33 to 30 cents per net ton and increased from 33 to 60 cents per net ton in closed cars; Lime reduced from 10 to 6 cents per cwt.; Cement reduced from 6 to 4 cents per cwt.; Aluminum, Copper, Brass, Lead and Zinc Articles increased from 14 to 16 cents per cwt.

2. The Washington Department of Transportation approved our request of July 12, 1948 to include Richland in the present Cement rate item naming rates between Seattle and Hanford, effective August 9, 1948. This will provide a savings of four cents per cwt. or approximately $13.60 per tank truck on all shipments to Richland.

3. Effective September 1, 1948 most major airlines are increasing their fares approximately 10 per cent bringing the per mile rate up to six cents or slightly higher.

4. As a result of rate reductions secured from the carriers, there was a total savings in freight charges for the month of August amounting to $60,183.29.

TECHNICAL DIVISIONS

AUGUST 1948

SUMMARY

Pile Technology Division

As a safeguard against possible contamination of the Dr Pile, techniques were developed for measurements of the diffusion length of neutrons in the pile before the top shield is installed.

The quality of all graphite deliveries decreased during the month. This situation is being actively investigated. The graphite development program made a number of major advances, among them being (a) a demonstration that a nitrogen sweep during graphitization improves quality by about 0.3 dih; (b) identification of rare earth impurities as europium and possibly samarium and neodymium; and (c) a demonstration that pile exposures can be accelerated by a factor of at least 2.5 by impregnating the graphite test samples with boron.

The complexity of power coefficient behavior is pointed up by new evidence that the reactivity effects due to graphite temperature become smaller at higher temperatures. A rapid and unexplained rise in the "hot" reactivity of the D Pile is also commanding much attention.

The concentration of carbon dioxide in the D Pile atomosphere was raised from 25% to 40% during the month, with no adverse thermal effects and with the expected reactivity change.

An electric resistance heater which reached a temperature of 500°C. in one of the tube positions of the D Pile failed to produce significant annealing.

Magnesium washers were found to corrode too rapidly to be usable as sacrificial corrosion inhibitors for Van Stone flanges. Magnesium alloys are being investigated.

The feasibility of transferring Request 15 operations from the Argonne to Hanford was investigated.

Separations Technology Division

The 16" Redox Scale-Up column was placed in operation during the month and six nitric acid transfer runs carried out to obtain preliminary information on capacity, stage height and operating characteristics. The results indicate that the column, designed on the basis of small column performance with Fenske packing, is considerably overdesigned for service with the Raschig ring packing employed in columns of this size. H.E.T.S. improved with increasing mass throughput to an optimum value of about 1.8 feet at 275-370% of flowsheet rates. This value is much lower than that estimated in earlier feasibility studies, and if a proportionately low stage height is established for uranium transfer in the runs scheduled for September the packed tower will again become a strong contender for selection as the preferred contactor in full scale

Separations Technology Division (continued)

plants. In the meantime progress is being made on the installation of 1/100 scale and full scale mixer-settler units received from the fabricator during the month, and experimental studies with these units will be started at an early date.

The Research Section has continued its studies with various uranium feeds and extended the work to include comparisons of pretreated, distilled and water-washed raw hexone. Further work on the crossover oxidation step in Redox indicates that Ce^{IV} may be a satisfactory oxidant at room temperatures, and the use of H_2O_2 also has been shown to hold promise when side reactions with hexone are eliminated by stripping off the solvent before treatment. The extraction behavior of zirconium and the problem of ruthenium decontamination continue under investigation. Density, viscosity, solubility and molar volume relationships have been determined for the various Redox solutions, and the Statistics group has worked out equations correlating these properties and their temperature coefficients with composition to provide generalized relationships needed for design purposes.

Production tests to explore the possibility of reducing process volumes in the 200 Area have shown that a 30% saving in process volume (and thus in stored wastes) can be effected with no loss in yield or decontamination efficiency. Evaluation of the sand bed filter as a means of controlling active speck contamination has continued with emphasis on the effect of grain size and bed depth on efficiency and operating characteristics. An early choice of grain size must be made for the first plant unit, which is to be completed in the next 2-3 months.

Metallurgy and Control Division

300 Area Plant Assistance personnel continued to supervise the rolling of uranium rods for Hanford at Lockport, N. Y., and covered also the first production rolling by Vulcan Crucible Steel at Aliquippa, Pa. Tests with mechanical agitation of slugs in the bronze baths showed it to assure complete structural transformation of this metal in 12% less time than had been required with normal manual dipping. This improvement was put into practice by the P Division on August 27.

Eight uranium billets were gamma extruded to evaluate the effects of extrusion temperature and rapidity of quenching on metal structure. The resultant rods contained so little of the desired grain size that neither variable is considered sufficiently promising to merit further study.

Investigation of low canned slug reactivity observed recently in the Test Pile has shown it to result from abnormal contents of magnesium and nitrogen in some of the Mallinckrodt and Electromet metal. Since all billet analyses and egg reactivities have been satisfactory, these impurities evidently are segregated within the billets involved. Hanford remelt uranium continues

Metallurgy and Control Division (continued)

very satisfactory in quality.

Experimental facilities for metallurgical studies on irradiated uranium are being removed from the 212-N Bldg., as required for S Division resumption of operations in this storage basin early next month. This means that these important studies must be suspended until projected replacement facilities can be provided.

The T Plant analytical laboratory resumed its control function, in anticipation of the increased separations load to result from 3-pile operation.

In cooperation with the Accountability Unit, the Analytical Section and the Statistics Group are undertaking an extensive program for improving the accuracy and precision of the two most critical product solution analyses (8-1-MR and AT).

A. B. Greninger

A. B. GRENINGER, MANAGER
TECHNICAL DIVISIONS

ABG/khs

PILE TECHNOLOGY DIVISION

AUGUST 1948

VISITORS & BUSINESS TRIPS

Dr. B T. Feld of M. I. T. and Mr. T. W. Shore of Oak Ridge visited here on August 24-26 to discuss shielding problems.

Business trips of Pile Technology Division personnel during August were as follows:

J. C. L. Chatten visited the Argonne National Laboratory on August 4-6 to discuss the transfer of Request 15 operations to Hanford.

F. E. Kruesi spent August 16-17 at the Research Laboratory in Schenectady in consultation on pile physics problems.

ORGANIZATION & PERSONNEL

	July 31	August 31
Pile Physics Section	30	29
Pile Engineering Section	16	20
Administrative	3	3
Totals	50	52

Awaiting clearance at the end of the month were two physicists, two engineers, and two stenographers. One of the engineers has been loaned to Project Engineering pending receipt of clearance, but is included in the above report.

One physicist and one stenographer were terminated; one physicist, two engineers, and one laboratorian were added during the month.

PILE PHYSICS

Graphite Quality

To insure that any contamination of the DR Pile which may occur during layup will be detected before the top shield is put on, it is planned to measure diffusion lengths and absolute neutron density distribution by means of foils and calibrated sources as soon as layup is completed. During August three preliminary measurements were made in the 101 Building layups. These measurements served to develop the necessary techniques and demonstrated that the method will detect any significant contamination. It is expected that the final measurements will be made in late September or early October.

Functional test data on graphite received during the month may be summarized as follows:

Type	Number of Heats	Average Effective dih
CSF (purified	111	0.907
CSNF(purified)	12	0.875
CSO (unpurified)	25	0.017
CSN (unpurified)	23	-0.170

The average quality of all grades of graphite decreased during the month, and the reason for this is not yet apparent. The small drop in quality of purified graphite is not serious but the decrease in quality of C30 and CSN points toward a shortage of material for the intermediate zones of the H Pile, and means for handling this situation are under discussion.

Graphite Development

Functional chemical, and radiochemical tests on a number of experimental heats have established the following facts:

1. The rare earth impurities mentioned in last month's report almost certainly include europium (9.2 hr. activity) and probably samarium and neodymium. Pure rare earth oxides are being obtained for further studies.

2. Graphitization reduces the europium content by a factor of four; purification as mentioned last month, causes a further reduction by a factor of 600. Graphitization also reduces ash and vanadium by a factor of four but has little effect on boron.

3. The purification process works poorly at 2000°C. and appears to be very sensitive to temperature up to 2250°C. Between 2250 and 2500°C. the process works satisfactorily.

4. The amount of freon used in the purification process is not critical. Test runs using 135, 335 and 480 pounds of freon produced dih's of 0.94, 0.99, and 0.89 respectively.

5. Significant gains in quality can be obtained merely by sweeping the furnace with nitrogen, without using any chemically active gas. In one such test a dih of 0.35 was obtained. This offers a possible means of obtaining graphite for the intermediate zones and is being investigated further.

6. The quality of purified bars varies considerably and irregularly with position in the furnace, but the average purity of the eight sample bars is in close agreement with the average of the entire heat.

7. Bay City graphite said to have much lower ash and boron content than the National Carbon product, was found by functional test to be on a par with National Carbon's regular production material.

8. A single pitch impregnation increased density by 0.11 and effective dih by 0.06. An additional impregnation produced a further density increase of 0.06 and a dih gain of 0.15.

Acceleration of radiation damage has been observed in special graphite samples which contain 5 mg. of boron per gram of graphite. Both the dimensional and the c-axis expansion were 2.5 times those of the controls after a test hole exposure of 110 MD/CT. This method is of great importance to both the monitoring and the development programs, and is being developed further.

As a follow-up of earlier experiments which indicated that gas-baked material did not expand, partially graphitized samples are being studied. For ES graphitized

at 2400-2500°C. the physical expansion, c-axis expansion and thermal and electrical resistance changes were about 60% as great as those of KC graphite at a test hole exposure of 262 MD/CT. Graphites prepared at lower and higher temperatures have been received and are being prepared for pile exposure.

A molded, fine grained graphite prepared from Texas coke showed approximately the same change in properties as KC graphite for an exposure of 262 MD/CT. Since this graphite is practically unoriented, the increase in sample length was 1/3 that of transverse cut KC samples.

A test hole exposure of only 22 MD/CT changed the sign of the Hall coefficient from negative to positive for all four types of graphite examined. Lampblack graphite showed the greatest change with natural graphite next. KC and CS graphite showed about equal changes in the Hall coefficient. The effect of further exposure and annealing is being studied.

Calculations of the effect of holes in the graphite lattice on carbon-carbon bond lengths have shown that the contraction of the a-axis on exposure can be accounted for by lattice vacancies.

Power Coefficient Tests - Production Test 105-188-P

Evidence in support of a decrease in the graphite temperature coefficient (dih/dT) at higher graphite temperatures continues to accumulate. Formerly, the power coefficients measured with the pile in a xenon-free condition were explained on the assumption that the xenon cross section increases with increasing temperature of the thermal neutrons. It now appears that the latter is only a partial explanation.

The carbon dioxide content of the D Pile atmosphere was increased to 40 per cent during the month. The associated reactivity increase remained at approximately one inhour per per cent. Coefficient tests at this and higher carbon dioxide concentrations are expected to clarify the variations in the temperature coefficient of reactivity.

A power coefficient test was performed at the F Pile on August 25.

Xenon-Free Power Coefficient Test - Production Test No. 105-206-P

A critical review of coefficient data obtained at the startup of the B Pile in July, using after-the-fact calibrations which indicate that the true power was 35.5 MW instead of 48.5 MW as indicated at the time of the test, has produced the following set of data: C_o 0.81 ih/MW; C_g, 1.10 ih/MW; C_m, -0.29 ih/MW; and graphite period, 76 minutes. If allowance is made for differences in accumulated exposure, these results are consistent with those obtained at the F Pile in August; namely, C_o, 0.96; C_g, 1.25; C_m, -0.29 ih/MW; and graphite period, 80 minutes. The low-level, xenon-free coefficients appear to change at about the same rate as the coefficients obtained at nominal power.

Reactivity Gains

A rapid increase in the "hot" reactivity of the D Pile has been observed since June 1948, over and above the reactivity gains attributable to the addition of

carbon dioxide or to the charging of four tubes of enriched uranium-aluminum alloy. A plot of the "hot" reactivity of the D Pile since January 1947 shows a series of cycles with a spread of 20 inhours between maxima and minima and a period of 5.5 months. These cycles show a definite correlation with the frequency of discharge of metal in central process tubes and are consistent with long term metal gains insofar as these are known. The reactivity plot has been corrected for all known changes, but still shows a gain of about 50 inhours since June 1948. While the increase during the past three months has been at a high rate, the total increase since January 1947 is consistent with the normal increase in the over-all power coefficient. Over the same period, the F Pile has shown a more uniform increase of about 60 inhours. The reason why the D Pile shows a lag followed by a rapid rise is not understood.

Shield Studies

In collaboration with the Health Instrument Division, measurements of radiation leakage through the shield of the B Pile have been made. The results will be reported by H. I.

Tests on magnesium oxychloride-iron aggregate concrete have shown that, although the rate at which gas is evolved from the cement in the pile is lower than that of masonite, the concrete crumbles badly after 24 hours at 100°C. It is believed that an extensive development program, considerably beyond the present program at Clinton, will be required before this material will be acceptable for use as a shielding material.

Assistance was given the Design Division on a variety of shielding problems.

Reactivity Balance

The reactivity status of each of the piles at the beginning and the end of this report period is summarized in the following table.

	B Pile	D Pile	F Pile
	8/31/48	8/31/48	8/31/48
In rods	66 ih	65 ih	63 ih
In xenon	532	494	516
Due to CO_2	0	-40	0
Due to SR 52	0	-15	-18
Due to C_o	-105	-110	-127
Cold, clean reactivity	751 ih	847 ih	770 ih

The above table shows net gains of 13 inhours, 17 inhours, and 6 inhours for the , D, and F Piles respectively. The reduction in the amount of reactivity absorbed

by Special Request Material and the corresponding increase in the amount absorbed by lead-cadmium "poison" pieces is due to the unavailability of suitable Special Request Material during the month.

Status of Special Irradiations

The status of the Special Request program on August 31 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 "Quantity" the number of pieces, if given, will indicate that the materia 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	Dis-charged	Shipped	P.T.	in ab-sorbed
	3-3(ORNL)	Thorium	20 slugs	120 days	12/2/47	2082F	5/12/48		49F	
			20 slugs	120 days	12/2/47	1579F	5/12/48		49F	
			18 slugs	120 days	12/8/47	3274D	5/4/48		49F	
			11 slugs	120 days	1/8/48	2066D	6/6/48		49F	
			11 slugs	120 days	1/8/48	2666D	6/6/48		49F	
			27 slugs	120 days	1/8/48	2682D	6/6/48		49F	
			16 slugs	120 days	1/8/48	3169D	6/6/48		49F	
			13 slugs	120 days	3/2/48	1579D	6/29/48		49F	
	12-B(UCRL)	Pu^{239}	1 slug	1 year	5/25/48	1769D			200	5**
			30 slugs	6 mo.	11/4/47	2374D	5/12/48	8/2/48	70D	
*			30 slugs	6 mo.	11/4/47	1569F	5/12/48	8/2/48		
*			19 slugs	6 mo.	2/2/48	1569D	8/4/48			
			19 slugs	6 mo.	1/18/48	2374D	6/29/48			
			53 slugs	6 mo.	5/12/48	2374F				18
			53 slugs	6 mo.	5/12/48	1569F				18
			38 slugs	6 mo.	6/6/48	3169D				17
*			39 slugs	6 mo.	8/4/48	1569D				17
*			53 slugs	6 mo.	8/13/48	1579D				17
*			36 slugs	6 mo.	8/4/48	1474F				16
*			36 slugs	6 mo.	8/4/48	3274F				16
	15-16(ANL)	LiF	11 slugs	3-4 wks.	4/11/48	3179F	5/12/48	8/2/48	55F	
*			11 slugs	3-4 wks.	4/11/48	3169F	5/12/48	8/2/48		
*			11 slugs	3-4 wks.	4/11/48	2682F	5/12/48	8/2/48		
*			18 slugs	3-4 wks.	4/11/48	3179D	5/10/48	8/2/48		
*			15 slugs	3-4 wks.	5/4/48	3274D	6/6/48	8/2/48		
			11 slugs	3-4 wks.	5/12/48	3179F	6/6/48	8/2/48		
*			11 slugs	3-4 wks.	5/12/48	3169F	6/6/48	8/2/48		

**Tube 1769D also contains 1 pc. SR-64, 4 pcs. SR 63, UCRL-100-105, 1 pc. SR ANL-111, and 2 cobalt slugs.

Pile Technology Division

Req. No. & Source	Material	Quantity	Exposure	Charged	Tube& Pile	Discharged	Shipped	P.T.	ih absorbed
*15-16(ANL)	LiF	17 slugs	3-4 wks.	5/12/48	1579F	6/6/48	8/2/48		
*		15 slugs	3-4 wks.	5/10/48	3179D	6/6/48	8/2/48		
		11 slugs	3-4 wks.	6/6/48	3179F	7/6/48			
		11 slugs	3-4 wks.	6/6/48	3169F	7/6/48			
		17 slugs	3-4 wks.	6/6/48	1579F	7/6/48			
15-17(ANL)	LiF	11 slugs	3-4 wks.	6/6/48	2066D	6/29/48		55F	
		11 slugs	3-4 wks.	6/6/48	2666D	6/29/48			
		19 slugs	3-4 wks.	6/6/48	2682D	6/29/48			
		19 slugs	3-4 wks.	6/6/48	3179D	6/29/48			
		11 slugs	3-4 wks.	6/6/48	3274D	6/29/48			
*		30 slugs	3-4 wks.	7/1/48	2082B	8/4/48			
*		30 slugs	3-4 wks.	7/1/48	2682B	8/4/48			
*		39 slugs	3-4 wks.	7/1/48	3179B	8/4/48			
*		39 slugs	3-4 wks.	7/1/48	3169B	8/4/48			
*		39 slugs	3-4 wks.	7/1/48	1579B	8/4/48			
15-18(ANL)	LiF	10 slugs	3-4 wks.	6/29/48	2066D	7/19/48		55F	
		12 slugs	3-4 wks.	6/29/48	2666D	7/19/48			
		15 slugs	3-4 wks.	6/29/48	2682D	7/19/48			
		22 slugs	3-4 wks.	6/29/48	3179D	7/19/48			
		22 slugs	3-4 wks.	6/29/48	3274D	7/19/48			
		19 slugs	3-4 wks.	6/29/48	1579D	7/19/48			
		35 slugs	3-4 wks.	6/29/48	2374D	7/19/48			
*		39 slugs	3-4 wks.	7/1/48	2374B	8/4/48			
		39 slugs	3-4 wks.	7/1/48	1569B	8/4/48			
		17 slugs	3-4 wks.	7/6/48	3179F	7/27/48			
		6 slugs	3-4 wks.	7/6/48	3169F	7/27/48			
		17 slugs	3-4 wks.	7/6/48	1579F	7/27/48			
*		24 slugs	3-4 wks.	7/19/48	1579D	8/13/48			
*		10 slugs	3-4 wks.	7/19/48	2066D	8/13/48			
*		12 slugs	3-4 wks.	7/19/48	2666D	8/13/48			
*		35 slugs	3-4 wks.	7/19/48	2374D	8/13/48			
*		23 slugs	3-4 wks.	7/19/48	2682D	8/13/48			
*		22 slugs	3-4 wks.	7/19/48	3179D	8/13/48			
*		22 slugs	3-4 wks.	7/19/48	3274D	8/13/48			
*		17 slugs	3-4 wks.	7/27/48	3179F	8/19/48			
*		6 slugs	3-4 wks.	7/27/48	3169F	8/19/48			
*		17 slugs	3-4 wks.	7/27/48	1579F	8/19/48			
*		29 slugs	3-4 wks.	8/4/48	3169B	8/31/48			
*		28 slugs	3-4 wks.	8/4/48	1569B	8/31/48			
*15-19(ANL)	LiF	29 slugs	3-4 wks.	8/31/48	3169B			55F	30
*		28 slugs	3-4 wks.	8/31/48	1569B				29
*28-4(ORNL)	Iron	1 casing	2 mos.	6/29/48	BTHD	8/26/48		873	
28-5(ORNL)	Iron Enriched	1 casing	Indef.	4/4/48	BTHD			87C	0

Pile Technology Division

Req. No. & Source	Material	Quantity	Exposure	Charged	Tube & Pile	Discharged	Shipped	P.T.	ih absorbed
28-6(ORNL)	Iron Enriched	1 casing	6 mos.	4/4/48	BTHD			87C	0
29-5-10(ORNL)	P_2O_5	6 casings	60 days					96E	
40-5(KAPL)	Pu	3 slugs	4 mos.	5/25/48	3177D			148	5
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.	To be recanned.					
			1-90 da.	12/23/47	2666F	4/4/48	4/14/48		
			1-180 da.	8/4/48	3876F				0
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		
			1-180 da.	Has not been rec'd.					
52(ORNL)	Al-U^{235} Alloy	229 slugs	100 da.	7/27/48	100F			208	0
				7/30/48	100D				0
55(ORNL)	Stainless Steel	4 slugs	6 mo.	2/16/48	1774D	7/19/48		130	
					1666D	7/19/48			
56(ORNL)	Be-Cu Alloy	2 slugs	6 mo.	1/27/48	1368F	7/27/48	9/3/48T	136	
57(ORNL)	$CaCO_3$	3 casings	6 mo.	1/27/48	BTHF	7/27/48		137	0
58(ORNL)	Zinc	1 casing	6 mo.	1/27/48	BTHF	7/27/48		138	
59(ORNL)	Antimony	1 casing	6 mo.	1/27/48	BTHF			139	0
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.	3/2/48	BTHD	6/29/48	8/2/48	140	
+			1-6 mo.	2/16/48	BTHD	8/26/48			
			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	1774D	(4 pcs.	(2 pcs.	145	
				(2 pcs. 2/16/48	3179D	(3/15/48	(4/14/48		
				(1 pc.		(3 pcs.	(2 pcs.		
			5-5 mo.	(4/25/48	2382F	(7/19/48	(5/3/48		
							(3 pcs. (9/3/48T		

Pile Technology Division

Req. No. & Scurce	Material	Quantity	Exposure	Charged	Tube& Pile	Dis-charged	Shipped	P.T.	ih ab-sorbed
63(ORNL)	Al-U^{235} Alloy	21 slugs	7-3 mo. 7-6 mo. 7-12 mo.(4)	4/11/48 4/25/48 5/25/48	1671D 2382F 1769D	7/15/48	9/3/48T	146	5
64(ORNL)	Cu-Au Alloy	5 slugs	1-15 da. 1-30 da. 1-60 da. 1-150 da. 1-300 da.	4/11/48 2/16/48 8/4/48 2/16/48 5/25/48	2382F 3179D 2576D 1774D 1769D	4/25/48 3/15/48 7/19/48	5/3/48 5/3/48 9/3/48T	142	5
66(ORNL)	U^{234}	2 casings	2-4 mo.	1 casing 3/9/48	BTHD	5/10/48	5/19/48	160	0
67-76(ORNL)		Charged 2 samples of 68 and one of each of the other requests on 4/4/48							1
79(KAPL)	U^{235}	Experiment being carried out by J. B. Lambert							
80(ORNL)	HgO	2 casings	6 mo.	To be recanned				163	
81(ORNL)	Zn	3 casings	1 yr.	4/25/48	DTHF			164	0
82(ORNL)	Ni	1 casing 1 casing	1 yr. 1 yr.	4/25/48 5/12/48	DTHF DTHF			165	0 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
85(ORNL)	Se	1 casing	1 yr.	To be recanned				181	
86(ORNL)	$Tl(NO_3)_3$	1 casing	1 yr.	To be recanned				181	
87(ORNL)	WO_3	1 casing	6 mo.	4/25/48	DTHF			181	0
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.	4-6 mo.	To be recanned					
ANL-103	Rare Earth Oxides	1 casing	3 mo.	5/12/48	DTHF			186	
ANL-104	Gd	1 casing	3 mo.	5/12/48	DTHF			187	
*ANL-107	Bi	1 slug	6 mo.	8/4/48	2173F			211	0
ANL-108	ThO_2	1 slug	6 mo.						
ANL-109	Pa_2O_5	1 slug	3 mo.						
*ANL-110	PuO_2	1 slug	6 mo.	8/4/48	2974F			210	5
ANL-111	PuO_2	1 slug	1 yr.	5/25/48	1769D			200	
ANL-114	ThO_2	7 slugs	3 mo-1 yr	(1 slug received)					
ANL-115	Mo	4 slugs	6 mo-1 yr						

Pile Technology Division

Req. No. & Source	Material	Quantity	Exposure	Charged	Tube& Pile	Dis-charged	Shipped	P.T.	ih ab-sorbed
UCRL-100	Pu	1 slug	1½-5 yrs.	5/25/48	1769D			200	
UCRL-101	Pu	1 slug	1½ 5 yrs.	5/25/48	1769D			200	
UCRL-102	Pu	1 slug	1½-5 yrs.	5/25/48	1769D			200	
UCRL-103	Am	1 slug	2 yrs.	5/25/48	1769D			200	
UCRL-104	Pu	1 slug	1-3 yrs.	5/25/48	1769D			200	
UCRL-105	Am	1 slug	2 yrs.	5/25/48	1769D			200	
UCRL-106	Tissue Ash 72 casings 2-3 wks. (12 casings received)							189	
ORNL-100	$CaCO_3$	8 casings	18 mo.	9/3/48T				182	
ORNL-102	Zr	1 slug	6 mo.	8/4/48	3876F				
ORNL-103	Be	30 slugs	3 mo.-1 yr.					204	0
ORNL-105	NaCl	3 casings	6 mo.-1 yr.						
HW-100	Cu	1 casing	1 wk.	8/13/48	BTED	8/20/48	8/20/48	205	

The following requests have been approved but the samples have not been received: ANL-105, ANL-112, ANL-113, ANL-116, ORNL-101, ORNL-103, ORNL-104, ORNL-106, ORNL-107

PILE ENGINEERING

Corrosion and Blistering of Slugs

All the remaining alpha-extruded slugs were discharged during the month. These slugs were 8 inches long and canned by the lead-dip process. The F Pile was forced into an extended shutdown because of difficulty with discharge of all four of the tubes which contained alpha-extruded slugs at an average exposure of 145 MD/ton. Inspection indicated that at least 15 of these 116 had been bound in the tube.

Dimensional changes shown by these 116 extruded slugs and the companion rolled slugs are as follows:

Type of Slug	Diameter increase, mils		Length decrease, mils		Warp, mils	
	Average	Max.	Average	Max.	Average	Max.
Alpha extruded	12	22	101	238	29	> 60
Alpha rolled	8	17	63	142	14	40

The first four tubes containing 4-inch alpha-rolled lead-dipped slugs were discharged at 200 MD/ton. All slugs were free of blistering except for two slugs which were moderately blistered and which resembled irradiated gamma extruded lead-dipped slugs. Dimensional data had not been obtained at month end. Additional tubes are to be discharged at this exposure.

Tests with unirradiated material indicated that drilled graphite blocks have sufficient strength to restrain a warping slug without fracture of the block.

An attempt to anneal two blistered slugs in an oven for several hours at 500°C. resulted in rupture of both slugs and an accompanying objectionable contamination problem. The slugs had been stored underwater in a stainless steel bucket for about two years and the results of the test are attributed to penetration of the slug jackets by a pitting type of corrosion.

Pile Technology Division

Corrosion of Van Stone Flanges

Magnesium washers have been found to corrode at an inordinately rapid rate in process water and several such washers installed on pile tubes have had to be replaced under emergency conditions. The flanges which have been equipped with magnesium washers have not yet been inspected except for two flanges in the hot flow laboratory. No corrosion of the aluminum flanges could be detected in the hot flow laboratory. If the use of magnesium washers appears to be beneficial in pile tubes, washers made of certain aluminum-magnesium alloys will be tested.

The results obtained from aluminum inserts in the nozzles as reported last month indicate that corrosion of Van Stone flanges may be eliminated by use of aluminum washers, shaped to fit the contour of the flange, and suitably bonded to the flange. Such washers have been prepared for experimental use on subsequent newly formed Van Stone flanges.

Solution potential tests in flow cups indicate that in a tri-metallic cell (aluminum-alloy-stainless steel), magnesium alloys corrode sacrificially, protecting the aluminum and the stainless steel, but that aluminum alloys and the aluminum both corrode in the presence of stainless steel.

Nine aluminum samples have had a protective coating applied by various anodizing procedures. The stability of the coatings is measured by coupling the aluminum to stainless steel, submerging in process water, and observing the development of current flow. After several weeks of operation five of the coatings still show a very high electrical resistance, but several months of operation will be required to get practical results.

Graphite Expansion

The concentration of helium in the D Pile atmosphere was lowered from 75% to 60% during the month by the addition of carbon dioxide. The total increase in graphite temperature resulting from the presence of carbon dioxide is now about 53°C., but no significant thermal expansion effect in the end shields and no increase in temperature of the thermal shield has been observed.

The increase in carbon dioxide concentration during August required the addition of an extra 5000 cu. ft. of gas which appears to have been absorbed in the pile. This phenomenon has occurred during every increase in carbon dioxide concentration.

A Calrod heater was installed in an empty tube channel (Tube 2286-D) and operated for several hours at 500°C. but no significant change in the contour of the surrounding graphite block as viewed from a position inside the A Test Hole could be detected.

Installation of magnetic strain gages for monitoring strain produced in the top and far side biological shields of the B and D Piles has continued.

A core drill for removing graphite samples from process tube blocks is being developed

Technical Division personnel have been participating in mock-up tests on the effects on vertical rod operation resulting from thimble distortion, in conjunction with the Design Division. The tests are still in progress.

Pile Technology Division

Segmented Discharge

hanges in the original reel-and-spline mechanism are being incorporated in a Model II mechanism. These changes are intended to simplify and accelerate the operation and to reduce contamination problems. Design of the new model is complete and shop fabrication of a pilot model is 90% complete.

Equipment for withdrawing irradiated upstream dummy slugs into a cask and recharging into an empty process tube has been given satisfactory flow laboratory tests. Pilo tests are planned.

Beta Experiment

Slug B-5, which was irradiated and discharged last May, was opened in the can opener and the capsule was returned to Schenectady.

Irradiation of Slug B-1, which was charged on May 26, 1948, has continued without incident except that one of the two thermocouples is out of service.

Slug B-9 was charged in the F Pile on August 15.

Assistance to New Construction

Experiments indicate that mixtures of powdered boron carbide and various organic binders make films which have high boron contents, good physical properties, and good adherence to aluminum surfaces. Radiation stability has not been evaluated. Attempts to form films by mixing amorphous boron powder with binders were unsatis-factory.

At month end the use of anhydrous boron oxide in place of metallic boron for flame spraying of control rods was under investigation.

Assistance is being given the Construction Division in the salvage of reject graphite from the DR Pile for use in non-critical regions of the H Pile.

Request 15

Facilities for production of irradiation assemblies and extraction equipment at the Argonne National Laboratory were inspected with regard to the possible transfer of these facilities to Hanford Works.

SEPARATIONS TECHNOLOGY DIVISION

AUGUST 1948

VISITORS & BUSINESS TRIPS

Professor G. W. Watt of the University of Texas, formerly associated with the project here and at Chicago, has been engaged as a consultant. He arrived August 23 for a three weeks stay and will be concerned with process chemistry problems throughout the Division.

The Redox Steering Committee held its second meeting here on August 26-27. Those in attendance included S. Lawroski, Argonne National Laboratory; J. Marsden, General Electric Research Laboratory; M. D. Peterson, Oak Ridge National Laboratory; and F. W. Schumacher and C. E. Nelson, Standard Oil Development Company.

Dr. R. E. Connick of the Radiation Laboratory, University of California, arrived August 31 for a two day visit in connection with the research program on Redox problems.

O. H. Greager visited Oak Ridge National Laboratory on August 2 to discuss the program of Redox studies which will be carried on there.

D. W. Haught visited the Radiation Laboratory, University of California on August 12-13 for consultation on laboratory design.

R. B. Richards and V. R. Cooper spent August 16 18 at Oak Ridge National Laboratory with M. D. Peterson for further discussion of work to be done there on the Redox program. On their return trip they visited Argonne National Laboratory August 19 to review recent developments at that site.

E. V. Plock left on August 23 for a visit to Knolls Atomic Power Laboratory where he will consult with L. B. Bragg for an extended period on stack gas problems.

ORGANIZATION & PERSONNEL

Personnel totals in the Separations Technology Division may be summarized as follows:

	July	August
Process Section	21	21
Development Section	103	107
Research Section	22	22
Administration	3	3
	149	153

New hires were as follows: One chemical engineer, four technical graduate B employees, and one operator were added to the Redox Development Section. A draftsman was transferred into the same Section from Design Engineering Division. Two terminations and one death accounted for the rest of the change in personnel.

At month-end there were one exempt and two non-exempt personnel on the rolls awaiting security clearance. These men are on loan to the Project Engineering Division until such a time as they receive their final clearance.

200 AREA PLANT ASSISTANCE

Canyon Buildings

Runs were processed at both B and T Plants under Production Test 221-T-13 with process volumes reduced to 70% of recent standards. Operation and yields have been satisfactory, although a somewhat higher incidence of turbid product solutions has been encountered. In an effort to reduce the frequency of this condition, the first and second cycle product precipitation wash procedures have been modified to reduce the size of acid heels. A higher level of first cycle by-product losses at B Plant than at T Plant is believed to be due to difficulties in transferring the by-product slurry from the precipitator to the centrifuge rather than Production Test conditions.

Another single run (T-8-08-D-3) was made under Production Test 221-T-13 with process volumes adjusted to 60% of previous standards in the decontamination cycles. No difficulties were encountered. The first cycle by-product precipitation loss, which was higher than average (1.5%) in the case of a previous 60% volume run, was lower than average (0.55%) for this run. This may have been due to the reoxidation which was deemed necessary following a twelve hour process delay after the normal oxidation.

Concentration Buildings

Further attention has been given to the possibility of reducing the metathesis waste losses from the present level of 0.14-0.16%. It was demonstrated that approximately 5% of each run remains in the metathesis tank (F-1) after the centrifugation prior to routine rework. This product was shown to be in the form of a slurry which can be transferred to the F Cell centrifuge by means of caustic flushes. Since the burden placed upon the routine rework is considerably reduced if this product heel is removed, such flushes were made on isolated runs in the June and July series. A reduction of the metathesis waste loss into the range of 0.03 to 0.09% was indicated. Installation of a line from the F-9 effluent tank to the F-1 precipitator tank to allow recycling of the metathesis wash solution as a precipitator flush prior to the routine waste rework has been recommended.

Incomplete transfer of the lanthanum fluoride product cake from the centrifuge to the metathesis tank was experienced during Runs T-8-08-D-2 and T-8-08-D-5. The difficulty with Run T-8-08-D-2, processed in B Cell, apparently was the result of a false indication of complete cake removal by the inadequately sensitive activity chamber which monitors the centrifuge. It is planned to replace this chamber with one of greater sensitivity (similar to that of E Cell). It is believed that the incomplete cake removal of Run T-8-08-D-5, processed in E Cell, was due to the fact that a large portion of the solution associated with the cake evaporated during a twenty-five hour hold-up period prior to cake removal. In both cases all product was recovered by additional operations.

REDOX DEVELOPMENT

Demonstration Apparatus

Uranium H.E.T.S. studies in the 2-inch IA Demonstration Column have been directed mainly toward determining the effect of total throughput on column

efficiency and the limiting capacity of 1/4 x 1/4-inch stainless steel Raschig rings. Previous studies employing Scale-Up process conditions initially indicated H.E.T.S. values of approximately 1.0 ft. at 100% of flow sheet mass throughputs. A more rigorous analysis of those data reveals H.E.T.S. values of 0.7-0.8 ft. The throughput studies tabulated below were conducted employing strict flow sheet compositions in order to compare uranium mass transfer with that obtained under Scale-Up conditions employing UO_3 feed, water-washed raw hexone, and omitting IAF dichromate.

DEMONSTRATION UNIT RUNS: TWO-INCH IA COLUMN

Run No.	Per Cent of Flow Sheet Throughputs	Total Mass Throughput (Gal./Hr./Sq.Ft.)	U Waste Losses, % of Feed U	H.E.T.S., Ft.(2) (Extraction Section)
29	100(1)	175.5	0.7	1.1
30	100	175.5	0.6	1.1 ± 0.2
31	200	351	0.4	1.1 ± 0.2
32	250	439	0.4	1.1 ± 0.2
33	350	614	1.0	1.4 ± 0.3

(1) Simple-column run (no scrub section). All other runs conducted in compound column.

(2) Values with ± limits are preliminary.

Further flow increase through the range of 350% to 400% of flow sheet gave evidence of slight local flooding. The exact nature of this flooding will be studied at a later date. The data indicate that flow sheet H.E.T.S. values are slightly higher than those produced employing Scale-Up process conditions. In addition, there appears to be little effect of throughput on column efficiency under the particular conditions of study. The slight increase in H.E.T.S. near the first flooding point is to be expected.

Three studies in the 3-inch IA Column were made to determine the efficiency of 1/2 x 1/2-inch Raschig rings at 100% of flow sheet throughputs and employing Scale-Up process conditions. In addition three HNO_3 transfer studies were conducted in order to monitor the Scale-Up HNO_3 shakedown runs described below. These studies were conducted at a 1:1 flow ratio and maintaining extractant rate at 100% of flow sheet. The pertinent data for the 3-inch IA studies are tabulated below.

DEMONSTRATION UNIT RUNS: THREE-INCH IA COLUMN

Run No.	Feed Source	Diam. Raschig Ring Packing	U Waste Losses, % of Feed U	H.E.T.S., Ft. (Extrac. Section)
9	Recovered U	1/2"	2.0	1.7
10	UO_3	1/2"	2.2	1.6

11	Canned Slugs	1/2"	1.7	1.7
12-N	8M NH_4NO_3-1M HNO_3	1/2"	4 g./l. HNO_3	1.1
13-N	8M NH_4NO_3-1M HNO_3	1/2"	4.8 g./l. HNO_3	1.1
14-N	8M NH_4NO_3-1M HNO_3	1/4"	2 g./l. HNO_3	0.9

As reported previously, there appears to be no effect of feed source on uranium' mass transfer. Under comparable conditions the uranium H.E.T.S. values for 1/4-inch Raschig rings average about 1.0 ft. Studies are now under way in the 3-inch IA Column to determine whether the diameter effect (2-inch to 3-inch) noted at 100% of flow sheet throughputs persists at elevated flows. In addition, an attempt will be made to determine the limiting capacity of 1/2-inch Raschig rings. This should be at some point above 400% of flow sheet throughputs.

Scale-Up Studies

Six HNO_3 transfer runs were conducted in the 16-inch diameter IA Scale-Up Column for the purpose of testing operational control and equipment performance prior to uranium H.E.T.S. studies. The column was packed with 1/2 x 17/32-inch split stainless steel Raschig rings. A feed composed of 8M NH_4NO_3-1M HNO_3 was contacted in approximate 1:1 volume ratio with an acid free water-washed raw Sheel hexone stream. HNO_3 H.E.T.S. values were then computed for a series of runs at progressively increasing total mass throughputs. The pertinent data for these runs are tabulated below.

SCALE-UP UNIT RUNS - SIXTEEN-INCH DIAMETER COLUMN

Run No.	Phase Flow, gpm Solvent	Aqueous	Total Mass Throughput Gal./Hr./Sq.Ft.	Per Cent of ANL Mass Throughputs Solvent	Total	Ave. HNO_3 H.E.T.S., Ft.
1	1.60	1.53	135	57	77	8.8
2	2.20	2.73	212	100	122	3.3
3(1)	2.77	2.64	233	98	134	3.2
4	4.13	2.98	306	111	176	2.8
5	5.40	5.70	477	211	274	1.8
6	7.60	7.40	645	274	370	1.9

(1) IAX contained ca. 14 g./l. HNO_3.

For the most part, operation of the unit was satisfactory. During steady state operation, the flow rates were controlled within ± 2% limits and interface variation was only slight. Runs were conducted in both the 16-inch Column and the 7-stage Service Extractor mixer settler for the purpose of recovering HNO_3 from the hexone stream. Essentially 100% HNO_3 recovery was obtained in each unit.

Separations Technology Division

Equipment Development

During the month, the two 21-stage 1/100 scale S.O.D. mixer settler units were received. Defects in workmanship necessitated modifications to render the units suitable for use. The necessary auxiliaries for installation and operation of the units have been completed and shakedown studies in one unit will be conducted in the near future.

Approximately 500 hours operation of the Demonstration Unit IAX flow controller (Fischer Scientific rotary vane pump-F&P recording controlling rotometer-Hammel Dahl valve) have been completed at controlled rates of 160 and 360 ml./min. Operation was satisfactory and flow variation did not exceed ± 2%. Similar automatic controllers are to be installed for the remaining Demonstration Unit feed streams.

Plans are underway to replace the Demonstration Unit box immersion filters with star elements manufactured by the Micro Metallic Corporation. These units provide greater surface area and are more compact. Studies in the semi-works filtration test stand have indicated that a 1/32-inch thick precoat of Standard Super-cel filter aid on an E porosity Micro-Metallic filter permits a flow rate (water) of 12.5 gal./min./ft.^{2} at a pressure differential of 10 psi. IAF clarity improvement studies are to be carried out in the near future.

Dynamic corrosion testing of stainless steels 347, 316 cb, 316 ELC and 309 SCB in IAX, IAF, and IAS solutions has progressed through the 30 day immersion period. Weight changes were negligible and within the range of 0 to 5.0 x 10^{-5} inches penetration per year.

The G. E. Turbine pump on preliminary tests with water indicated a hydraulic unbalance of the impeller which resulted in high friction against the housing as the discharge pressure was increased to 50 psig. The external inlet and outlet ports to the pump are being enlarged and the impeller ports are being relocated.

Stainless steel vats for the immersion of coated concrete blocks in process solutions have been completed. Flame sprayed polyethylene on concrete will comprise the first group of immersion tests.

Process Laboratory

Activities during the month have been devoted to miscellaneous process chemistry studies. Further exploratory studies with filter aids for dissolver metal clarification have been conducted preparatory to semi-works evaluation of Super Cel, Super Filtrol, and hydrated alumina. Experiments being carried out to evaluate ICU neutralization methods indicate that neutralization with aluminum and $Hg(NO_3)_2$ catalyst takes place rapidly at 25°.

REDOX RESEARCH

Effects of Feed Solutions on Stage Height

During the month of August six additional IAFS runs have been made in the experimental column, which is packed with 4 1/2 ft. of 3/16 in. stainless steel

helices. These and previous runs made with crystalline UNH show that the stage height for uranium transfer is lowered ca. 0.6 ft. by use of water-washed raw hexone instead of pretreated hexone. In a single run using distilled hexone a stage height similar to those obtained with pretreated hexone was found. The stage height was found to be lowered an additional 0.6 ft. in runs when aluminum, tin, copper, and iron were added to the crystalline UNH solution in amounts approximating those occurring in jacketed slug feed solutions. Uncertainty in the state of aggregation of the insoluble H_2SnO_3 and SiO_2 must be assumed in these runs. Simultaneous use of water-washed raw hexone and trace elements with crystalline UNH solution has yielded stage heights of 1.1 to 1.2 ft., whereas unfortified crystalline UNH solution and pretreated hexone give about 2.3 ft. Using jacketed slug feed solutions stage heights of 1.00 and 0.75 ft. have been obtained using pretreated and water-washed raw hexone, respectively.

Stage heights are found to be inversely proportional to the ratio of the hexone flow rates through the central and peripheral regions of the column and to the dynamic hold-up of hexone in the packed section.

Crossover Oxidation

Work on the crossover oxidation of IBP solutions has been continued. Production plant concentrations of plutonium and June 1, ANL flowsheet conditions were employed except as varied for purposes of experimental study.

Using Ce(IV) in slight excess and a hexone-saturated solution oxidation to Pu(VI) was complete in less than 10 minutes at room temperature. The excess Ce(IV) was destroyed by hexone in about one hour.

It was found possible to carry out the oxidation successfully with peroxide by air sparging at 55°C for 30 minutes prior to addition of the peroxide. Prior removal of the hexone in this manner avoids the formation of colored, insoluble reaction products. A mixture of about 60% Pu(IV) and 40% Pu(VI) was repeatedly obtained within one-half hour after addition of the peroxide and this distribution of valence states changed only a few percent over a 24 hour period notwithstanding the fact that in the presence of iron and plutonium the catalytic decomposition of peroxide was complete within a few minutes. In the absence of plutonium several hours were required for decomposition of the peroxide.

Ruthenium Chemistry

The possibility of using distillation procedures for specific decontamination from ruthenium is being checked with various oxidizing agents by measuring the efficiency of removal of ruthenium from synthetic dissolver solution, 2 M in UNH and 0.3 M in HNO_3.

Oxidizing agents tested include $NaBiO_3$, $NaBrO_3$, Co_2O_3, $KMnO_4$, $(NH_4)_2Ce(NO_3)_6$ and PbO_2, all at 0.1 molar, and mixtures of $NaBiO_3$ with $Na_2Cr_2O_7$ and Co_2O_3 with $Na_2Cr_2O_7$. On heating the synthetic dissolver solution containing Ru tracer at 75° for one hour by means of a water bath with a slow stream of air bubbling through the solution (2-3 bubbles/sec.), 25-30% of the activity remained in the residue. At a somewhat higher flow rate with $KMnO_4$, PbO_2 and $(NH_4)_2Ce(NO_3)_6$ from 3.3 to 1.5% of the total activity was not volatilized. In order to

supplement the results obtained, a study to determine the optimum conditions of time, temperature, and flow rate will be included in future work.

In an effort to find a method for the determination of the valence state of ruthenium in process solutions, solutions of RuO_4 collected in 0.5 N HNO_3 containing excess H_2O_2, and boiled to remove the excess, were treated with excess $KBrO_3$ and KI and the liberated iodine titrated with standard thiosulfate. The results were not reproducible and values varying from 3.6 to 5.7 were obtained for the number of equivalents per mole for the oxidation of the ruthenium to the volatile tetroxide by $KBrO_3$.

Distribution ratios for ruthenium obtained in batch extraction and scrubbing contacts were compared for various periods of preliminary aging of an aqueous feed of the composition: 1.3 M $(Al(NO_3)_3$, 0.1 M $Na_2Cr_2O_7$, 0.15 M HNO_3 to which 1% of hexone had been added. No differences in distribution ratios for comparable contacts were noted when the period of aging with hexone was varied from one to six days.

Adsorption tests using a variety of adsorption media indicate little likelihood of finding an agent which will adsorb ruthenium from hexone solutions without adsorbing plutonium as well. These tests also appear to indicate that anionic species of both ruthenium and plutonium exist in hexone extracts of nitrate-dichromate solutions.

Zirconium Chemistry

Experiments have been continued on the effect of different hexones on the extraction of zirconium in the presence and absence of dichromate in the aqueous phase. Recent data indicate that the trend of increasing values of the distribution coefficient (hexone/aqueous) with time of contacting observed with NH_4NO_3 systems is not evident with $Al(NO_3)_3$ systems. This is in contradiction of results given in the report for the month of June. Further, with $Al(NO_3)_3$ systems and with dichromate present, F_a^a values for the first scrub contact were lower than those for the preceding extraction contact.

No significant difference was observed between a pretreated and distilled hexone in the absence of dichromate using $Al(NO_3)_3$ but in the presence of dichromate distilled hexone was inferior in respect to extraction contacts and about the same in respect to first scrub contacts. This behavior may be related to the higher content of oxidizing impurity of the distilled hexone. It has previously been reported that removal of oxidizing impurity by a ferrous wash appears to improve zirconium behavior. In current runs pretreated and distilled hexones that have been freed from oxidizing impurity are being compared in order to disclose differences obscured by the influence of the oxidizing impurity in the present experiments.

A zirconium removal factor of 1.3×10^3 for canyon 8-1-MR solution (ca. 25% UNH, 0.6 M H_2SO_4) contacted three times with glass wool was reported last month. This value was obtained after diluting the solution eight-fold giving a pH of 1.3. A similar experiment has been performed with another sample of 8-1-MR wherein the sample was not diluted but the pH adjusted to 0.48 with concentrated NH_4OH. Analyses were made for zirconium and columbium. In three contacts a decontamination factor of 2.5×10^3 was obtained for zirconium and 41 for columbium.

Experiments were performed to test the efficiency of ramoval of adsorbed zirconium and columbium from glass wool using oxalic acid. After two hours agitation with 10% oxalic acid removal was 99.5% complete.

Physical Properties of Redox Solutions

Correlation of viscosity data for $Al(NO_3)_3$ - UNH - HNO_3 - Hexone - H_2O systems allows several qualitative conclusions to be drawn. At 25°C the viscosities of both hexone and water phases are increased by addition of the electrolytes listed above. At lower temperatures in water systems there may be an initial decrease in viscosity. On a molar concentration basis $Al(NO_3)_3$ has the greater effect, UNH slightly less and HNO_3 a much smaller effect. Both addition of water to hexone and of hexone to aqueous solutions raise the viscosity appreciably the effect in the latter case decreasing as the ionic strength increases. The temperature coefficient of viscosity for hexone solutions increases rapidly with UN concentration. For aqueous solutions there is an initial decrease from that of pure water and a rapid increase at UN concentrations greater than one. Roughly, in the latter case $\Delta \ln \eta$ over the interval 25° to 40° is equal to $1/10 \ln \eta_{25°C}$ for hexone solutions and for aqueous solutions containing > 1 M UNH.

There is some theoretical justification for expressing viscosity as a function of composition in the form

$$\log \eta = A + \sum K_i C_i$$

where A is $\log \eta$ for the pure solvent. The experimental data were fitted to equations of this form by the statistics group and the following relation obtained for 25°C. η is in millipoises.

(1) Aqueous solutions. 0-2 M UNH, 0-1.5 M ANN, 0.1 M HNO_3

$$\log \eta = 0.9509 + .2456_{UNH} + .00854_{HNO_3} + .2694_{ANN} + 0.0750_{ANN^2} + 0.00907_{UNH^2} \pm 0.0495_{ANN \times UNH}$$

$$R = 0.99996$$

$$\sigma^2 = 2.75 \times 10^{-5}$$

composition in mols/l.

(2) Hexone-saturated aqueous solutions.

$$\log \eta = 0.9692 + 0.2409_{UNH} + 0.00771_{HNO_3} + 0.2963_{ANN} + 0.0507_{ANN^2} + 0.0164_{UNH^2} + 0.0408_{UNH \times ANN}$$

composition in mols/l

$$R = 0.9989$$

$$\sigma^2 = 5.43 \times 10^{-5}$$

(3) Water-saturated hexone solution.

$$\log \eta = 0.7558 + 1.281 \times 10^{-3}_{UNH} + 2.154 \times 10^{-7}_{UNH^2} + 2.46 \times 10^{-3}_{HNO_3}$$

$$R = 0.9238$$
$$\sigma e^2 = 1.98 \times 10^{-4}$$
composition in gms/l

Additional equations for correlation of the density data have been worked out by the Statistics Group, supplementing those given in last month's report.

A density term was obtained for the addition of 0 to 0.1 M $Na_2Cr_2O_7 \cdot 2H_2O$ to the aqueous system. A value of 0.266 M $Na_2Cr_2O_7 \cdot 2H_2O$ is to be added to the equations for aqueous or hexone-saturated aqueous solutions.

Temperature coefficients of density were also determined over the range 15 to 40°C. T is in °C.

(1) Aqueous solutions.
$d_T = 0.9875\ d_{25} - 0.000145T + 0.000500 d_{25}T + 0.003625$

(2) Hexone-saturated aqueous solutions.
$d_T = 0.9877\ d_{25} - 0.000159T + 0.000491\ d_{25}T + 0.003975$

(3) Water-saturated hexone solutions.
$d_T = 1.03395\ d_{25} + 0.002029T + 0.001358\ d_{25}T - 0.05073$

Hexone Chemistry

In previous reports attention was called to the pronounced increase in absorption at 231 mμ on pretreating raw hexone. Absorption at 231mμ is characteristic of α, β unsaturated ketones, such as mesityl oxide. It has been shown that the increase in absorption - approximately a two-fold increase in optical density occurs in the caustic treatment step. When 1% NaOH was replaced with 5% $NaHCO_3$ in the pretreatment procedure no increase in absorption occurred.

The question of what component of raw hexone is responsible for the increase in absorption is unanswered. Several possibilities, hexone itself, methyl isobutyl carbinol and mesityl oxide were eliminated prior to last month's report. It has been further found that 2-methyl-2, 4-pentanediol and a combination of mesityl oxide and methyl isobutyl carbinol are not responsible. Attempts to isolate the material formed on pretreatment by fractionation of pretreated hexone are in progress.

STACK GAS DISPOSAL

Evaluation of the sand filter as a method of removing contamination from the Canyon air was continued. Tests were conducted with two grades of sand from White Bluffs. The first consisted of all material passing a 4 mesh screen (45% and 5% finer than 40 and 100 mesh respectively); the second consisted of sand passing 4 mesh and retained on 30 mesh. Other tests were made with Ottawa sand passing 30 mesh and retained on 40 mesh. These sands were tested at various thicknesses of filter beds at flow rates in the range of 2.5 to 10 feet per minute. Filtration data, based on instrument surveys of monitoring filters, indicated decontamination efficiencies ranging from 93 to 99.9%. In general greater efficiencies were obtained with the smaller sand particle sizes

and deeper filter beds. Consideration of pressure drop across the filter, however, places practical restrictions on both of these factors for plant scale design. The pressure drop across the sand filter charged with twenty-four inches of 30 to 40 mesh Ottawa sand with the air velocity at 5 feet per minute was approximately 5 inches of water. Pressure drop at other air velocities in the range of 2.5 to 10 feet per minute and at sand depths of twelve to thirty-six inches has been roughly directly proportional.

A test sand filter has been installed for an extended operation test to determine any difficulties which may occur with the continued use of a sand filter. It is planned to filter continuously gas drawn from the stack (after the addition of dissolver off-gas) with periodic sampling of the influent and effluent gasses. The air will be monitored for iodine before and after this sand filter in order to obtain data on the current iodine output from plant stacks and also data on the fate of iodine in a sand filter.

The eight-inch packed tower water scrubber was tested further with the water distribution system revised to minimize channeling. Decontamination with this unit, however, has been erratic and in general unsatisfactory with efficiencies varying from approximately 40% at 1 gpm water rate and 30 cfm air flow to approximately 90% at 2 gpm water rate and 8 cfm air flow. These tests are being continued concurrently with the sand filter tests.

A single run of 6.5 hours duration was made with the electrostatic precipitator. With wet operation at approximately 44,000 volts and 20 cfm air flow, 99.7% efficiency of activity removal was determined based on instrument surveys of monitor filters.

Activity in the Canyon ventilation air, determined in routine tests at B and T Plants, has been consistent with the operational status of the Canyon except for a short period of high activity at B Plant observed while highly contaminated process equipment was being moved. At T Plant a single run was processed through the Canyon while no other active operations were in progress. Judicious monitoring of this run indicated that while the activity level of the ventilation air was highest with the run in the extraction and first decontamination cycle sections, no particular operational manipulation was a prominent source of activity.

METALLURGY & CONTROL DIVISION

AUGUST 1948

VISITORS & BUSINESS TRIPS

D. Harker of the Research Laboratory, Schenectady, spent August 6 with the Metallurgy Laboratory Section reviewing present and proposed programs and techniques for X-ray crystallography.

D. W. Lillie, from the Washington, D. C. offices of the Atomic Energy Commission, visited the Metallurgy Laboratory on August 9-10 to review problems and program in uranium metallurgy.

Prof. H. H. Willard of the University of Michigan spent August 19-20 with the Analytical Section consulting on Redox analytical problems.

N. H. Nachtrieb of the Institute for the Study of Metals, at Chicago, was here August 28-30 in consultation with the Analytical Section on spectrographic methods for the 234-5 project.

Business trips of personnel in this Division were as follow:

W. A. Briggs spent August 10-11 at the Atomic Energy Commission offices in New York City attending conferences on (1) calcium metal purity and (2) source and fissionable standards preparation.

R. J. Hale spent August 16-20 at Schenectady in consultation with analytical personnel, and in the exchange of Redox analytical data at the Knolls Atomic Power Laboratory. One day was spent at Pittsfield visiting laboratory installations there.

W. T. Kattner and R. D. McGreal followed the rolling of uranium rods for Hanford at Lockport, N.Y. during the week August 23-28. T. S. Jones is supervising Vulcan Crucible Steel's first production rolling for Hanford which started at Aliquippa, Penn. on August 23.

ORGANIZATION & PERSONNEL

Personnel totals in the several sub-divisions are summarized below:

	July 31	August 31
300 Area Plant Assistance Group	10	10
Metallurgy Laboratory Section	18	21
Analytical Section	404	404
Statistics Group	9	9
Information Group	47	45
Administration	2	2
Totals	490	491

The Metallurgy Laboratory added three weekly roll people by transfer from within the Division: Two laboratory assistants from the Analytical Section, and one steno-typist from the Information Group. The latter lost two non-exempt Files personnel by termination and hired one motor-messenger. Analytical employed two monthly roll chemists (one by transfer from the Design Division), three non-exempt chemists, and ten laboratory assistants; however, terminations (including two non-exempt chemists) equaled these additions. Two of these terminations (one chemist and one laboratory assistant) were due to lack of housing.

At month-end this Division had 2 exempt and 27 non-exempt personnel on the rolls awaiting security clearance for classified work. Most of the latter were laboratory assistants in the Analytical Section.

300 AREA PLANT ASSISTANCE

Uranium Melting and Casting

Results of seven melting trials with specially pickled, oxide-free uranium turnings indicate that the casting yield is increased about 10% (to 94.8%) in 50% TXB scrap charges. It appears that a 5% turnings weight loss (of which about 2% is oxide loss) occurs during pickling, so that it would be more desirable to reduce oxidation during machining than to remove the oxide formed. A study of the machining operations is planned to determine whether turnings oxidation can be reduced at its source.

Uranium Rolling

Uranium billets were rolled at Lockport, N.Y. and at Aliquippa, Pa. during the month under the supervision of 300 Area Plant Assistance personnel. This is the first attempt by the Vulcan Crucible Steel Co. in Aliquippa to make a production run for Hanford.

Uranium Extrusion

Eight Type B (Hanford remelt) uranium billets were gamma phase extruded under P.T. 314-56-M, two billets each at preheat temperatures of 1525°F, 1600°F, 1700°F, and 1750°F. The resultant rods were quenched in a 10% brine solution immediately after extrusion to determine whether quenching directly from the gamma phase after extrusion would produce a fine-grained alpha uranium structure. Although it was anticipated that the rods could be quenched within 10 seconds after extrusion, the shortest practicable time before quenching proved to be 20 seconds. Since very little of the resultant rod structure showed the desired fine-grain size, it is concluded that neither billet temperature nor quenching control (within the limits of this test) can be expected to improve the gamma extrusion of uranium.

Eight Type S billets containing 25 to 200 ppm of nickel (submitted by the AEC for trial) were gamma phase extruded under P.T. 314-57-M. These rods, together with eight rolled rods of similar composition, will be evaluated in 300 Area fabrications.

Slug Canning

Another investigation of the bronze dip conditions (time and temperature) required to effect complete beta phase transformation of alpha rolled uranium slugs was made using motor-driven slug agitators. These agitators were specially developed to improve the ease and uniformity of the bronze dip. It was determined that, with an agitation rate complete slug transformation is assured with a dipping time A process change was authorized covering these revised dipping conditions.

Data obtained in an investigation to determine the cause for the recent marked drop in canned slug reactivity in Test Pile checks indicate that this decline is caused by residual impurities in the uranium and does not result from 300 Area processing. Since the use of rolled metal was started (in February), 47.4% of Type C (virgin) metal slugs and 21.4% of the Type S (virgin) slugs tested have been below the lower quality limit (dih = -0.29), but only 1.9% of the Type B (Hanford remelt) slugs have been out of control. The average canned slug reactivities for these three types of uranium have been -0.274 dih, -0.259 dih, and -0.081 dih, respectively.

The loss in reactivity of Types C and S metal was found to be due to the presence of abnormal amounts of magnesium (up to 2000 ppm) and nitrogen (up to 600 ppm) in the metal. These impurities also cause slugs to be porous after pickling, and this appearance can be used as a means to segregate low reactivity slugs. The weight difference (0.02 - 0.04 pounds) between the abnormal and sound slugs is too small to affect Test Pile results appreciably, and it is not sufficient for use in segregating abnormal slugs.

The current drop in virgin metal reactivity appears to have started with the metal furnished for rolling in April. However, billet analytical data and egg reactivity tests indicate this metal to have the usual good quality. From this it appears that N and Mg impurities are segregated within the billets, and were probably introduced by some change in the metal casting technique.

METALLURGY LABORATORY

Alpha Rolled Uranium

Examination of the microstructure of uranium rods alpha rolled by the Vulcan Crucible Steel Company on July 23 confirmed the preliminary results obtained by macro-examination. These rods showed a partially recrystallized structure and on the basis of these examination, and a general examination of the surface appearance along with other structural features, they were considered to compare very favorably with the rods fabricated at Fort Wayne and at Lockport.

Quick Quench Gamma Extruded Rods

Examination of rods quenched immediately after extrusion in the gamma phase, and with the billets preheated to different temperatures (all under P.T. 314-56-M), showed no marked refinement in grain size regardless of the temperature of the billet preheating. Small samples of rod which were quick quenched from the

gamma phase in the laboratory indicate that favorable microstructures can be obtained using this technique. However, heat treatment of these samples at 550°C for 1-1/2 minutes indicated that the grains generally coalesced into the large gamma-type structure.

Upsetting of Uranium

One sample of alpha rolled rod was upset (approximately 45% deformation) in the Universal testing machine, annealed, and examined visually for a determination of the degree of preferred orientation. Because metallographic examination yielded encouraging results, five additional samples were machined from alpha rolled rods, were upset to different degrees of deformation, and then annealed. Dilatometric and metallographic examinations will be made to determine the effect of upsetting on the overall orientation and structure.

Examination of Irradiated Uranium

Attempts were made to use again the original slug sectioning box, but corrosion prevented successful operation. Because corrosion is such a large factor in the misalignment of operating parts and consequent excessive wheel breakage, the extended use of stainless steel is being considered in the design of a new cut-off box. The previously sectioned blistered slug was returned to the S Division, but the unblistered slug is being retained for further investigation.

Removal of the underwater physical testing equipment from Bldg. 212-N was completed. All equipment released by the H.I. Division was processed for storage and removed to the 200 E Warehouse. The supporting structure of the Rockwell tester was discarded for burial.

Dilatometric Studies

Following last month's unsuccessful test on duplexed uranium, a re-run on longitudinal specimens was completed with some success. Duplicate samples of duplexed metal, having different final reductions, were heat treated to give stress-free recrystallized structures. These were then tested in the dilatometer by heating into the beta phase and cooling to room temperature.

Unusual behavior was noted in the alpha coefficients of thermal expansion, both on heating and cooling, and a relationship was found in the permanent dimensional changes of the sample. The results obtained indicated that the alpha coefficients of expansion of the three lowest reductions were about equal and had a value of approximately 10×10^{-6}; however, the highest reduction showed a large drop to a value of 2.5×10^{-6}. It was anticipated that the coefficient would fall steadily with increased reduction, and, to attempt to explain the actual results obtained, it was proposed that the lowest reduction (15%) did not respond correctly because of structural differences. Further, the intermediate reduction of 23% and 27%, being close together, may have coincidentally registered approximately the same value. The permanent temperature changes, both in length and diameter, followed the predicted course; that is, with increased percentages of reduction, a continued contraction in length was found, with a corresponding increase in expansion of the diameter of the samples.

One anomaly noted in the alpha coefficient upon cooling is that the typical curve is convex to the abscissa above 300°C, and forms a straight line below this temperature. No explanation can be offered for this action until further data are available.

X-Ray Crystallography

The testing of uranium orientation about the longitudinal axis was completed and the results were analysed by the Statistics Group. Although significant variations due to sample rotation and positioning were noted, the nature of these variations was such as to bear out the preliminary conclusion of a random orientation about the longitudinal axis.

Tests were run on specimens of duplexed uranium similar to that tested in the dilatometer. The results attained were too varied to allow any valid conclusions, and it was conjectured that the variations might be due to over-etching of the sample surface. In an attempt to test this theory the samples were taken through the alumina lapping wheels, and then tested after a two-minute etch in 50% HNO_3. The procedure was repeated using a four-minute etch in the same solution. In both cases the reproducibility of results was no greater than seventy-five per cent. Inasmuch as the duplex fabrication often results in an irregular structure, it may be that the variation in results is caused by the material itself rather than the sample preparation.

An integrating sample holder was redesigned to permit rotation rather than lateral movement of the sample. A stationary sample holder was designed which will accommodate a greater variety of specimens. With this equipment it is expected that orientation in the longitudinal direction may be investigated.

The line voltage and voltage input to the scaling circuit of the Philips Spectrometer were found to be varying as much as twenty per cent. These fluctuations, and the attendant experimental errors, were corrected by means of a 500 VA constant voltage transformer.

During the month the Geiger tube of the spectrometer was tested. It was found to count linearly up to 425 counts per second.

Deformation Studies

True stress-true strain tests are being made on uranium in the gamma extruded, alpha rolled, and alpha rolled and annealed conditions to determine how properties obtained in this test vary with metal condition. Specimens have been machined and testing is now in process.

Work on the determination of the twinning system in uranium from twin traces has been discontinued until equipment is available for back reflection Laue work. Some time ago angles between twin lines in a number of grains in a specimen of alpha rolled uranium were measured in an attempt to determine statistically the angles between the twin traces. Given a definite preferred orientation, these angles could be used to define approximately the twinning system. However, this method is useless until the type of orientation in alpha rolled uranium has been established.

Redox Corrosion Tests

One month exposure of stainless steels T-347, T-316 ELC, T-318 (T-316Cb) and T-309 SCb in Redox solutions IAF, IAS, and IBX under dynamic corrosion test conditions has been completed. Normal industrial procedure would consider a metal or alloy whose corrosion rate is less than 0.020 inches per year as being satisfactory for use. Since the maximum corrosion rate obtained in the above test was found to be 3.9×10^{-5} inches per year, indications are that these alloys are satisfactory for use in the above solutions.

ANALYTICAL LABORATORIES

Work Volume Statistics

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

	July		August	
	Samples	Determinations	Samples	Determinations
Routine Control - 200	2133	3685	2080	3633
Routine Control - 300	1351	7094	1720	8996
Water Control - 100,700	13154	24705	13512	25562
Redox Control	1776	6449	2526	7911
Process Reagents	956	1788	936	1777
Essential Materials	145	671	147	795
Special Samples	2336	3938	3599	7588
TOTALS	21851	48330	24520	56262

200 Area Process Control

The T Plant Control Laboratory, Bldg. 222-T, assumed its original function as control laboratory for all work associated with the Canyon Bldg. 221-T and the Concentration Bldg. 224-T on August 16.

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 Plant (222-B)	50.53	106
T Plant (222-T)	50.52	96
Isolation Bldg. (231)	50.55	66

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

Sample	July Precision (±%)	August Precision (±%)
8-1-MR	1.44	1.43
P-1	1.85	1.97
AT	1.72	1.84

As indicated previously, a special report covering the precision of these analyses is being distributed monthly.

A program is underway to improve the analytical precision and accuracy with the Canyon Building starting solution (8-1-MR). More precise evaluation will be attempted through technical improvement of the analysts using the present precipitation method. A development program for the investigation of new chemical and instrumentation methods is also to be started. Meetings pertinent to this program were held August 24 and 31 with representatives of the Accountability Unit and the Statistics Group.

As a means of additional control on the accuracy and precision in analysis of the Isolation Building final product solution (AT), nitric acid determinations will be made on each sample in order that a statistical correlation between specific gravity, nitric acid content, and plutonium assay can be accomplished. Thus, more specific information can be obtained as to the cause for any sample assay being out of the control limits. As a further means of insuring the accuracy of the AT sample assays, a standard plutonium metal sample is to be established. Conferences on a mutual program with Los Alamos in this connection are being requested.

The standard iron solution used in the Isolation Building Laboratory to check the chemical titration of plutonium was analyzed a total of 150 times during the month. There were 72, 48, and 30 results inside ±1%, ±2% and outside ±2% of the assay value, respectively. The average precision for duplicate titrations was ±2.62% as compared to ±2.33% for June. A summary of the results follows:

Assay Value	Group Ave.	% Diff.	No. Determinations	Precision (±%) Single	Precision (±%) Duplicate
14.84	14.89	+ 0.3	24	2.38	1.68
10.18	10.22	+ 0.2	32	4.68	3.31
12.68	12.66	- 0.2	24	3.36	2.38
14.84	14.74	- 0.7	36	3.42	2.42
10.76	10.82	+ 0.6	34	4.68	3.31

The synthetic 8-1-MR was analyzed 24 times in the B & T Plant Control Laboratories (222-B and T). The standard precipitation was used with the percent recovery based on 2.077×10^6 c/m/ml. The results were:

Month	Ave. Results ($\times 10^6$)	No. Assays	% Recovery
July	2.035	19	98.0
August	2.028	24	97.6

300 Area and Essential Material Control

With the concurrence of the P Division in the 300 Area, the Spectrochemical laboratory reverted to a one-shift schedule on August 30. This change was made in order to allow more effective use of the available personnel.

Graphite Analyses

Continued investigation of rare earth activities in irradiated graphite has definitely established two active components whose half-lives are 9.25 hours and 46 hours respectively. A comparison of the analytical results obtained with known rare earth activities indicates that the 9.25 hour element is Eu 152. Similarly the 46 hour activity is probably caused by Sm 153, but the evidence supporting this latter hypothesis is not yet wholly convincing. Although other acitivities were not found at this time, their presence is not precluded for the following reasons: (1) The period of bombardment was relatively short, which limits the amount of longer-lived elements that might be present, and (2) the separations procedure, which requires about 10 hours, decreases the possibility of isolating significant amounts of short-lived elements. Results obtained on samples of ungraphitized carbon analyzed by the same methods indicate the presence of relatively large amounts of rare earth activities.

Redox Process Control

At month end, 133 people were assigned to the Redox Control Laboratories as follows: 73 in Bldg. 3706, 26 in Bldg. 222-T (200-W Area) and 34 in training for this work in the 100 Area laboratories. This reduction from July figures resulted from the return of 222-T to T Plant control service, and was consistent with the present volume of Redox analyses.

Analytical Development - Redox

The oxine method used for the determination of aluminum in Redox solutions was modified by decreasing the amount of oxine used to precipitate the aluminum. Previously, sufficient oxine had been added to react with both the uranium and the aluminum present in the samples. Investigation revealed that quantitative recovery of the aluminum was obtained by the addition of the oxine equivalent of the aluminum. This modification aids in the separation of aluminum and uranium, making possible the analysis of samples containing and UNH/ANN ratio as high as 30.

For the analysis of aluminum in samples containing iron, chromium, and uranium, a separation based on the use of a mercury cathode to remove the iron and chromium, was developed. An electrolysis of one-half hour using 6 volts at 2.5-3.0 amperes was found to remove all of the iron and most of the chromium. Following this, the sample is oxidized with perchloric acid and aluminum is determined by the oxine method. Another method for aluminum, based on an acidimetric procedure, was investigated. For pure aluminum solutions the method is quite rapid and is accurate to within 1 percent. For Redox solutions of the IAFS type, the use of high concentrations of NaOH to precipitate the U, Fe, and Cr while leaving the Al in solution failed to give results of sufficient accuracy. This procedure is

being investigated further. The use of a cation exchange resin, Dowex-50, to separate the Al from U, Fe, and Cr by absorbing all of the cations on the resin and then preferentially eluting the amphoteric aluminum with sodium hydroxide also failed to give precise results.

Satisfactory results were obtained for UNH in IAW solutions using the polarograph. The error in duplicate determinations of the diffusion current (the measured quantity) corresponds to an error in UNH of from 3 percent, at a concentration of 9 g/l, to 6 percent at a concentration of 0.2 g/l. A detailed analytical procedure for the analysis of IAW solutions containing from 0.2 to 10 g/l UNH is being written. This range could be extended to higher UNH concentrations if necessary. The use of a single current reading at a fixed voltage to replace the complete polarogram, is being investigated for use in the routine analysis of IAW solutions. For reference it is called the amperometric method, and offers the possibility of rapid determination of the UNH concentration in IAW samples. The apparatus used consists of a dropping mercury electrode, a calomel half-cell, a means for applying a fixed voltage, and a means for measuring the current. The fixed voltage source has been constructed and was used in conjunction with the polarograph. Preliminary experiments indicated that this method may approach the polarographic method in accuracy. The first model of the current measuring apparatus, however, was found to be considerably less accurate than the polarograph. An improved current measuring apparatus is being constructed.

The fluorometric method for the determination of UNH was tested by analyzing synthetic IAW solutions having UNH concentrations from 1.0 to 0.001 g/l. In the range of 0.1 to 0.001 g/l UNH, using a 50 lambda aliquot of the sample, the maximum standard deviation of duplicates was 16 percent and all average values were within 11 percent of the true value. In all cases it was necessary to correct for the quenching of the fluorescence caused by the presence of other ions. For samples above 0.1 g/l UNH a dilution of 1/100 is used, the accuracy and precision being slightly better than for the lower ranges. The amount of quenching was considerably less for the diluted samples, but it was too high to be neglected.

The method for the determination of hexone in aqueous Redox solutions was modified so that a smaller sample size (100 lambda) could be used. The precision and accuracy was approximately the same as for the previous procedure. In nine analyses of a known solution the recoveries of hexone varied from 99.1 to 103.5 percent.

Analytical Development - Miscellaneous

Methods for the determination of ruthenium and plutonium in uranium wastes were investigated and placed in use.

Special Hazards

Two stainless steel dry boxes were received from the Elizabeth Cornice Works of Elizabeth, N.J. These boxes are fabricated according to specifications set up by Merck and Co., Inc. for the handling of biological chemicals. They will be used to furnish basic information for dry box design, and will be converted to fit local problems at a later date.

An additional training period is being initiated in the T Plant Control Laboratory in an effort to reduce the frequency of hand contamination and minor spills, the major percentage of such cases being attributed to new personnel.

STATISTICAL STUDIES

Chemical Research Data

Difficulty has been encountered in obtaining reliable aluminum analyses in Redox solutions. The Chemical Research Section has been working on the problem of estimating the aluminum content from measurements of the physical characteristics of these solutions. The Statistics Group has been able to fit satisfactory equations by means of multiple regression analyses, relating the density to the UNH, HNO_3, and $Al(NO_3)_3 \cdot 9H_2O$ contents of aqueous solutions and hexone solutions and hexone-saturated aqueous solutions. The multiple correlation coefficient in the range corresponding to LAFS samples was 0.9998, and corresponding to the IAW range was 0.9993, where 1.0000 is perfect. At present the aluminum content can be more accurately estimated from the regression equation than by chemical analysis Charts prepared from these equations are being used by the Chemical Development Section for this purpose. When a more suitable aluminum analysis is available, these equations will provide a cross-check on the accuracy of all four determinations.

Analytical Laboratory Data

Data submitted by the Analytical Section were treated statistically to determine the difference in volatile matter obtained by the old muffle method and by the new A.S.T.M. method, and the difference in moisture obtained by the A.S.T.M. method and by the Dean and Stark method.

A rough draft of a standard practice for the statistical control of the analysis of AT solutions has been prepared, and work designed to improve the control of P-1 analyses is in progress. Range charts designed to promote more effective control of the 8-1-MR analyses have been submitted to the Analytical Section.

300 Area Plant Assistance Data

Data submitted by the 300 Area Plant Assistance Group revealed that slugs accepted after pickling could be sorted by surface examination into groups which differ significantly in Test Pile reactivity.

Van Stone Flange Corrosion Data

The most recent Van Stone flange corrosion data show evidence of unreliable measurements, and recommendations have been made for a recheck.

Slug Blistering

A pile loading plan for slugs fabricated under P.T. 314-55-M has been completed and submitted to the Pile Engineering Section.

Blood Count Data

An eighty-three page report of the statistical analysis of blood count data has been submitted to the Medical Division.

Food Price Data

An analysis of comparative food prices in North Richland, Richland, Kennewick, and Pasco was made from data submitted by the North Richland Realty Division. Forty-seven commodities at eight stores were included in the study. Price indices based on North Richland prices were computed and used in making comparisons.

LIBRARY AND FILES

Plant Library

Work on the acquisition, cataloging, and circulation of books proceeded routinely. A shipment of bound periodicals from the book-binders, including fine runs of the Transactions of the Faraday Society, London, and the Bell System Technical Journal, was received and processed. In this connection the August issue of the INFORMATION BULLETIN, which was prepared and distributed, contained a complete listing of the Library's bound periodical holdings for reference use by plant personnel who do not have ready access to the main 300 Area Technical Library. This list will be revised at periodic intervals.

The organization of the back files of MDDC's as outlined in the April and July reports was completed. Completion of this assignment has greatly eased the present handling of current copies of these unclassified reports.

Arrangements were completed to open the W-10 Building Branch of the main 300 Area Technical Library in the evenings from 6:00 until 9:00 PM. This will enable the Library to participate in the educational program of the School of Nuclear Engineering, and in addition will make its facilities more readily available to all Hanford Works personnel.

Indexing and abstracting of the current Hanford Technical reports is proceeding routinely, as is reproduction of the index cards by the Files Assistance Unit. Abstracting and indexing has been extended to include significant incoming technical correspondence and incoming unclassified technical reports. A further extension to include Research and Development reports received from off-site is under consideration. Records indicate that a delay of from three to five months between the receipt of the document from the Technical Information Division at Oak Ridge and the receipt of their catalog cards is not unusual. In this connection, a check of Hanford Works files of Research and Development reports against its catalog card holdings was completed and a list of documents in the file for which catalog cards are not on hand was submitted to Oak Ridge.

Library statistics were as follows:

	July	August
Number of books on order received	254	287
Number of books fully cataloged	300	452
Number of bound periodicals processed but not fully cataloged	408	6

Metallurgy & Control Division

	July	August
Pamphlets added to pamphlet file	122	254
Miscellaneous material received, processed, and routed (includes maps, photostats, patents, etc.)	31	34
Books and periodicals circulated	805	786
Reference services rendered	930	1005

Present book collection is as follows:

	Main Library	W-10 Branch	Total
Number of books	3107	1147	4254
Number of bound periodicals	2073	95	2168

Classified Files

Work on the receipt and issuance of classified documents proceeded routinely.

Files Assistance Unit statistics were as follows:

	July	August
Ditto masters run	711	757
Mimeograph stencils run	345	390
Ditto master copies prepared	27,474	33,011
Mimeograph copies prepared	14,089	26,240

MEDICAL DIVISION

AUGUST 1948

General

The Medical Division roll decreased by nine. This is inconsequential as replacements in process will nullify the change. A radiologist and two house physicians were added to the staff.

There was no evidence of injury to any employee during the month due to radiation. With encouraging progress being made on the sand filter for the stacks, the most pressing health problem at present is to get started on a long range experimental program to determine the effect of the inhalation of active particles.

Dr. R. R. Sachs attended a meeting of state health officers in Tacoma, and a Red Cross meeting in Yakima for discussion of a plan for setting up a regional blood center.

Dr. W. D. Norwood participated in several meetings of the disaster planning committee.

Employee physical examinations decreased slightly while first aid treatments reached a new high of 22,918, approximately 890 per day.

Absenteeism due to sickness reached an all time low of 0.56%.

Eighteen major and fifty-nine submajor injuries were treated. Of these, one major and three submajors were sustained by G. E. employees.

The health topic was "Some Common Skin Abnormalities".

The average daily hospital census was 88.9, a 10% increase. The average stay was 5.1 days.

Clinic visits reached a new high of 10,294 for Richland and North Richland, or 395 per day. This represents an increase of 32%. Dental clinic visits were up again to 3,970, a 20% increase over the previous high.

The mosquito control program has been effective in spite of the added problems created by high waters.

Nine milk producers were eliminated because of failure to meet minimum standards.

MEDICAL DIVISION

AUGUST 1948

Plant Medical Division

Physical Examinations	July 1948	Aug. 1948	Year to date
Pre-employment (G.E.)	301	257	3147
Annual	270	559	1226
Sub-contractors & food handlers	2827	4024	26279
Rechecks	478	535	4855
Interval Rechecks (Area)	360	625	5934
Terminations & Transfers (G.E.)	2192	259	5565
Army & Government	43	47	207
Assist to A & H Ins., Clinic, etc.	0	0	0
Total	6776	6530	47211

Laboratory Examinations

Clinical Laboratory

Pre-employment, terminations, transfers	16282	9968	137017
Annual	1777	3434	7569
Rechecks (Area)	5139	3307	30335
First Aid	43	108	358
Plant Visitors	0	0	12
Clinic	2386	3397	20712
Hospital	3167	3131	24085
Public Health (Inc. food handlers)	805	823	5799
Government	0	402	402
Total	28104	24800	216307

X-Ray

Pre-employment, terminations, transfers	2389	1576	22228
Annual	303	576	1275
First Aid	347	445	2254
Clinic	315	417	2514
Hospital	174	238	1780
Public Health (Inc. food handlers)	179	159	1479
Government	0	42	42
Total	4007	3466	31571

Electrocardiographs

Industrial	137	275	600
Clinic	15	21	93
Hospital	17	32	151
Total	169	328	844

Allergy

Skin Tests	39	57	306

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MEDICAL DIVISION

AUGUST 1948

First Aid Treatments	July 1948	Aug. 1948	Year to date
Occupational Treatments	3750	3815	22507
Occupational Retreatments	10207	12006	67021
Non-occupational (Welfare) Treatments	6295	7015	47251
Total	20252	22916	136775

Absenteeism Investigation Report

Total number calls requested	13	6	176
Total number calls made	13	6	176
Number absent due to illness in family	0	0	1
Number not at home when call was made	1	0	3

General

One industrial physician terminated his employment on August 15th. A replacement physician was also obtained during the month who has had previous industrial experience.

Examinations decreased from 6,776 to 6,200. In North Richland, termination examinations of construction employees far exceeded examinations of new employees. First aid treatments increased from 20,252 to 22,916. The heaviest load was in 100-H and 100-DR construction areas.

Major injuries were as follows, as compared to July:

	July	August
General Electric	3	1
Atkinson & Jones	17	16
Hudson Co.	1	0
Nettleton & Sound	0	1
Morrison-Knudsen	1	0

Sub-major injuries were as follows, as compared to July:

General Electric	5	3
Atkinson & Jones	38	54
Nettleton & Round	0	2
Morrison-Knudsen	2	0

The health topic for the month dealt with "Some Common Skin Abnormalities". Material on this subject was distributed throughout the plant, and discussions held. The Health Activities Committee, whose purpose is to help reduce absenteeism, was reorganized. Members now consist of one representative from each area council and a non-medical chairman (other than an industrial physician) has been appointed.

MEDICAL DIVISION

AUGUST 1948

Absenteeism was as follows:

Total absenteeism weekly employees, all causes	1.59%
Total absenteeism weekly employees, sickness only	.56%
Total days lost by male employees due to sickness	834
Total days lost by female employees due to sickness	716
Total days lost due to sickness	1550

During the month, permanent assignments of industrial physicians to the operating areas were made in an effort to give more responsibility to physicians for their assigned area, and to produce closer relationships of physicians with supervision as well as employees in the assigned area.

Village Medical Division

Clinic Visits	July 1943	Aug. 1948	Year to date
Medical	1751	1940	10598
Pediatrics	757	969	5987
Surgical	763	1001	6623
Gynecological	501	612	3838
Obstetric (new)	103	116	692
Obstetric (recheck)	684	805	5259
Venereal Disease	628	591	5398
Ear, Nose, Throat	349	434	2731
Eye	273	307	2290
Visits handled by nurses (Expo., dressings)	1147	2622	7989
Night clinic visits	816	917	6202
Total	7773	10294	57594
Total clinic visits per day	298	395	277
Seen in well-baby clinic	267	284	1797

Home Visits

Doctors	194	201	1790
Nurses	113	91	1267
Total	307	292	3057

Kadlec Hospital Section

Census

Admissions	452	538	3957
Discharges:			
Surgical	105	155	984
Medical	90	121	907
Obstetric & gynecologic	122	122	790
Eye, Ear, Nose, Throat	33	49	489
Pediatrics:			
Children	22	34	337
Newborn	75	70	503
Total Discharges	447	541	3950

MEDICAL DIVISION

AUGUST 1943

Kadlec Hospital Section	July 1943	August 1943	Year to date
Patient Days	2512	2758	21500
Average Stay	5.5	5.1	5.4
Average Daily Census	81.0	88.9	88.2
Discharged against advice	7	4	24
One-day cases	61	98	646
Operations			
Transfusions	52	50	294
Eye, Ear, Nose & Throat	16	38	238
Dental	0	3	8
Casts	16	27	155
Minors	59	76	467
Majors	42	64	381
Vital Statistics			
Deaths	4	6	27
Deliveries	71	64	500
Stillborn	1	0	4
Physio-therapy Treatments			
Clinic	125	170	1053
Hospital	56	84	530
Industrial:-			
Plant	345	325	3247
Personal	50	22	366
Total	576	681	5196
Pharmacy			
No. of Prescriptions Filled	3373	3605	23822
Patient Meals			
Regulars	3308	3698	28064
Lights	67	35	383
Softs	999	1326	12420
Surgical Liquids	87	108	733
Tonsils & Adenoids	39	71	651
Specials	1082	1089	6075
Liquids	230	275	3056
Total	5792	6534	51328

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MEDICAL DIVISION

AUGUST 1948

Kadlec Hospital Section	July 1948	Aug. 1948	Year to date
Cafeteria Meals			
Breakfast		67	67
Noon	2430	2687	19999
Night	396	432	2756
Total	2826	3186	22822
Nursing Personnel			
First Aid Nurses	54	54	
Clinic Nurses	17	17	
Public Health Nurses	15	13	
Hospital General Nurses	83	78	
Aides & Orderlies	61	60	
Total	230	220	

General

Clinic visits increased by about one-third over July.

Hospital admissions increased by about 20%, however the average daily census only increased by 9%. This is due to the fact that the average stay per patient dropped slightly from 5.5 to 5.1.

Dr. R. M. Crowder, radiologist, was added to the professional staff. We have been seeking a well trained radiologist for some time and his addition will assist in giving us well-rounded professional coverage.

Two house physicians were added to the staff.

The total medical division personnel dropped from 533 to 524. Replacements will be needed in most cases since the amount of patients cared for is increasing.

Public Health Section

Administration

Newspaper Articles	16	13	132
Committee Meetings	1	1	29
Attendance	4	4	109
Staff Meetings	2	5	26
Lectures & Talks	4	3	38
Attendance	40	25	2191
Conferences	1	3	71
Attendance	9	15	221
Radio Broadcasts	0	0	3

MEDICAL DIVISION

AUGUST 1948

Public Health Section

Immunizations	July 1948	Aug. 1948	Year to date
Cholera	0	0	3
Diphtheria	36	453	1967
Influenza	0	0	29
Rocky Mt. Spotted Fever	11	0	43
Schick Test	0	0	1
Smallpox	2	87	640
Tetanus	2	160	185
Typhoid	137	17	389
Whooping Cough	4	147	275
Total	192	864	3811

Social Service

Thirty-nine new cases were admitted to Social Service during August. This figure added to the number carried over from July made a total of 155. Sixty-five cases were closed, leaving ninety.

Sanitation Inspections	382	204	1749

Bacteriological Laboratory

Treated Water Samples	287	226	1942
Milk Samples (Inc. cream & ice cream)	148	116	1163
Other bacteriological tests	509	411	3052
Total	944	813	6177

Communicable Diseases

Chickenpox	10	3	92
German Measles	5	8	80
Gonorrhea	11	35	151
Impetigo	0	1	8
Influenza	0	1	66
Measles	73	11	744
Meningococcic Meningitis	0	1	2
Mumps	19	3	976
Pediculosis	0	0	4
Pinkeye	0	0	6
Ringworm	0	2	3
Scabies	0	4	37
Scarlet Fever	3	0	16
Syphilis	21	78	230
Thrush	0	0	2
Tuberculosis	4	5	12

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MEDICAL DIVISION

AUGUST 1948

Communicable Diseases (Continued)	July 1948	Aug. 1948	Year to date
Vincent's Infection	1	1	6
Whooping Cough	1	2	48
Malaria	1	0	1
Food Poisoning	7	0	7
Total	156	135	2497
Total number Nursing Field Visits	1036	631	11017

General

During the month of August, communicable and morbidity control visits continued to remain low. A total of 487 pre-school physicals were given. Arrangements have been made with the State Crippled Children's program to hold a clinic every three months in this area.

There was a notable increase in referrals to Social Service by doctors of the hospital staff during the month. For the first time, Social Service is to appear in the school health program. Service will be extended to parents who request it.

Recent inspections of milk products and laboratory analysis of their products resulted in the prohibition of nine producers from shipping milk to the processing plant. In collaboration with the Construction Division, all new water lines are being sterilized, followed by bacteriological tests to assure the sanitary quality of same.

Approximately 3,000 acres of mosquito breeding and harborage area was sprayed by aircraft. Results of this practice have been very satisfactory to date.

Dental Division	July 1948	Aug. 1948	Year to date
Patients treated	3230	5970	25668

MEDICAL DIVISION PERSONNEL SUMMARY

August 31, 1948

Areas	Physicians	Dentists	Nurses	Aides & Orderlies	Technicians	Office Workers	Others
100-DR			3			1	
100-H			2				
White Bluffs			3				
234-5			3				
3000	13	3	14	3	9	32	14
Pasco			1				
101			1				
100-B			5			1	
100-D					2*		
100-F					2*		
200-E			3		2*	2	
200-W			3		2**		
300			2		2**	1	
Plant General	1		12				
700-1100	26	11	106	57	29	95	68
Total	40	14	160	60	40	132	82

Number of employees on payroll:

Beginning of month	533
End of month	524
Net decrease	9

* One day per week.
** Two days per week.

HEALTH INSTRUMENT DIVISIONS

AUGUST 1948

Summary

The force increased by eight. There were four Class I Special Hazards incidents. One involved plutonium contaminated skin. In view of the new permissible deposition limit in the body, the incident gave concern since about 65% of the residual contamination disappeared overnight. One Class II incident occurred with the overexposure of four men to beta radiation in the Melt Plant.

In the Operational Division, heavy work loads continued to push to the limit the manpower currently available. Survey findings were normal except in a few instances where substandard contamination control was apparent.

In the Control and Development Section, no abnormal conditions were detected in the routine water, air and vegetation sampling program. The bioassay analyses showed no results above the warning limit for the plutonium excretion test. Uranium content of thirteen samples exceeded 20 μg U/liter.

In the Biology Division, monitoring of mammals and fowls proceeded without incident. Trout fingerlings in the Aquatic Laboratory were seriously affected by bacterial and protozoan disease which masked any biological effects produced by the effluent water. Radiobiological surveys of the Columbia River, discontinued last April, were started again along with the initial study in a series of Biological food chain investigations.

HEALTH INSTRUMENT DIVISIONS

AUGUST 1948

Organization

The composition and distribution of the force as of 8/31/48 was as follows:

	100-B	100-D	100-F	200-W	200-E	300	700	P.G.	Total
Supervisors	1	1	3	8	4	15	7	0	39
Engineers	4	4	6	10	13	9	0	0	46
Clerical	0	0	0	1	0	3	4	0	8
Others	7	13	17	52	31	55	11	7	193
Total	12	13	26	71	48	82	22	7	286

Number of Employees on Payroll	August
Beginning of Month	278
End of Month	286
Net Increase	8

Fifteen additions to the roll were made up of 5 technical graduates for training, 4 laboratory assistants for control work, and 6 general clerks for the still expanding personnel monitoring service. The seven losses were an Area Supervisor and an engineer transferred to Manufacturing Divisions, a laboratory assistant transferred to Communities Division, another terminated, a technical graduate terminated, and one engineer and a clerk removed from payroll.

General

In and around the 200 Areas, approximately 10^{10} particles fell during the month. There were approximately 10^{13} in the Hanford Works reservation. This is a further increase compared with previous reports, and it certainly exceeds any increase in detection efficiency. No cause for the increasing severity of the problem has been advanced.

Four Class I Special Hazard Incidents were reported. Two involved high hand or arm contamination, one concerned high level coverall contamination, and the fourth was a violation of rules for work in a Danger Zone. The high arm contamination gave concern because, after extensive washing, 0.3 μg Pu was left on one spot. This spot was bandaged and checked the following day. The residual activity was less than 0.1 μg Pu, and the bandages were clean. With the new permissible deposition limit of 0.1 μg Pu in the body, it became important to locate the missing amount. For this reason, a small piece of skin was removed and is to be sectioned for analysis.

One Class 2 incident occurred with overexposure of four men to beta radia-

tion in the Melt Plant, to a maximum of 1 rep per week. The exposure was traced to selective retention of UX1 and UX_2 in the crucibles. As this phenomenon was known from the early days in the Metallurgical Laboratories, its undetected repetition here is largely chargeable to poor performance by Health Instrument area supervision, which had been alerted to this possibility when the Melt Plant was installed.

There was no other high pencil meter or film badge reading, except one in the 100-DR Area, which is believed to be spurious.

Health Instrument Divisions

OPERATIONAL DIVISION

100 Areas

General Statistics

	July				August				1948
	B	D	F	Total	B	D	F	Total	To Date
Special Work Permits	460	561	938	1959	442	777	1141	2360	16,123
Routine & Spec. Sur.	718	458	462	1638	498	399	766	1663	7,812
107 Effluent Surveys	119	81	95	295	85	147	72	304	1,314
*Air Monitoring Samples	94	60	77	231	102	67	239	408	*

*Included with Routine and Special Surveys until July 1948

Retention Basin Effluent

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

		100-B	100-D	100-F
Power level	(MW)	275	275	275
Average beta dosage rate	(mrep/hr)	0.9	0.7	0.9
Average gamma dosage rate	(mr/hr)	1.9	1.8	2.0
Average total dosage rate	(mrep/hr)	2.8	2.5	2.9
Average integrated dose in 24 hrs.	(mrep)	67	60	70
Maximum integrated dose in 24 hrs.	(mrep)	79	70	86
Maximum integrated dose in 24 hrs. (1948)	(mrep)	94	115	86

A leak in the north wall of the Retention Basin at 100-B showed a surface dosage-rate of 100 mrep/hr.

A large leak was discovered in the effluent flume between the Retention Basin and the 1904 spillway at 100-D. The Maintenance Division encountered some contamination while attempting to repair this leak but protective clothing was adequate in preventing contamination to the person.

100-B Area

Contamination was discovered on the wall and floor of the "B" sample room in the vicinity of the equipment for measuring pressure drops across pile tubes. A sample of the contaminant, sent to the Methods Laboratory for analysis, showed most of the activity to be due to an alpha emitter with some beta emitter present. The floor was cleaned satisfactorily but the wall still read 2,000 d/m after successive decontaminations.

Radioactive gas was reported near the "A" and "D" experimental holes but was not present during subsequent surveys. Active gas at the storage and transfer area drains was prevalent when the seals were not operating properly. Air filter samples were generally low, but one sample at the #3 Storage Area drain gave a surface dosage-rate of 40 mrep/hr. This contamination was probably water vapor contained in the gas which backs up at this point from the effluent water system.

Contamination on the zero foot level catwalk in the Discharge Area was spread to the near stairwell and cushion chamber corridor. Contamination on the charge elevator resulted in several high shoe counts but decontamination was not difficult.

Film surveys of Tube #0453, which contains the PC tube, showed a crescent shaped beam emerging from the end of the tube and giving a dosage-rate of 30 mrem/hr. Additional shielding reduced this reading to nearly background.

100-D Area

Maintenance work to the vertical safety rods and thimbles was continued during pile shutdowns. High exposure-rates were encountered for short periods during the removal of rust from the thimbles, but average exposure-rates were generally low. Gross contamination continued to be a problem, and protective clothing and respiratory protection was required. No cases of personnel contamination were reported.

Following the discharge of two tubes on row 42, the recorders for the Discharge Area H.M. Chambers failed to return to background. Investigation revealed that active metal pieces remained on each of the tip-offs and both were pushed off from the front face. On another occasion, higher than normal radiation levels were observed when entrance was made into the Discharge Area. The increased levels were due to a lead dummy slug remaining on the tip-off of Tube #1569. This piece also was pushed off from the front face.

The entire front dummy column was removed from Tube #4290 during segmented discharge experimentation. With all dummy pieces removed, the corrected exposure-rate in the beam from the tube was 220 mr/hr. The dummy pieces removed from the tube were placed in lead lined boxes and taken to the wash pad. Lids were removed from the boxes at the wash pad and the pieces dropped into the Storage Area basin. Personnel exposure was limited to 100 mr/hr except for about 30 seconds when the pieces were dropped into the basin at which time exposure-rates were as high as 1 roentgen per hour.

Technical Division personnel removed samples from the "B" experimental hole and boroscoped the "A" experimental hole twice. Dosage-rates during both jobs were maintained at very low levels, but momentary rates of 2 roentgens per hour were encountered during the manipulation of the borescope. Contamina-

tion spread was limited to protective paper under the hole.

High level contamination was encountered on the concrete cushion under the discharge elevator during the installation of a 12 inch water line. Protective clothing adequately controlled contamination in most cases but one leather welding vest gave a dosage-rate of 100 mrep/hr. and was confiscated.

During the shutdown of 8/13/48, the shielding at the "A" experimental hole was removed and not replaced. High neutron dosage-rates totaling 56 mrem/hr (uncorrected) were observed in the vicinity of the hole and the area was restricted until the following shutdown when proper shielding was installed.

Neutron beams emerging from holes #2206 and #2287 were indicated by film exposures made with a paraffin and cadmium moderator. The process tubes were removed from these holes previously and a temporary shield installed. More shielding will be installed if dosage-rates are hazardous.

100-F Area

Contamination in the Discharge Area was spread to adjacent areas and to personnel when the Maintenance Division began the removal of the old aimer track. A large area in the cushion chamber corridor, including the step-off pad at the exit of the Danger Zone, became contaminated. Coveralls and gloves gave surface dosage-rates of 50 mrep/hr and sixteen cases of high hand and shoe counts resulted. Improper use of the step-off pad and poor handling of protective clothing were the causes of this contamination spread. Personnel involved were easily decontaminated.

Three stuck charges were encountered during the removal of special request pieces from process tubes. These charges were freed in exposure fields as high as 2.8 roentgens per hour. Three tubes were replaced and one tube borescoped without serious hazard.

Maintenance work to the vertical safety rods and thimbles was continued during pile shutdowns in moderate radiation fields. Decontamination of the rods was attempted and surface dosage-rates from 30 to 40 rep per hour were observed on the swabs. Contamination was widespread over the top of the Pile during all work and some personnel contamination occurred. High exposure rates were encountered briefly during the burial of the water separator which was used to collect the dust from the thimbles.

The #4 horizontal shim rod was removed from the Pile and a water leak repaired. Exposure-rates to personnel were never excessive, but contamination was spread through the inner and outer rod rooms during the transfer of plates and runners. Respirators were required until decontamination was effected.

The Technical Division removed samples from the experimental holes and encountered high dosage-rates on several occasions. Total exposures of 50 mr were received during an attempt to empty a sample capsule, and dosage-rates up to 1.5 roentgens per hour were experienced during the handling of samples at the "E" experimental hole. A momentary exposure rate of 7 roentgens per hour was encountered when a sample from "B" hole was inadvertently pulled into the hands of the man stationed at the end of the loading mechanism.

Contamination was usually confined to the paper spread beneath the sample ports, and surface dosage-rates here exceeded 8 rep per hour on one occasion.

The fixed monitors located in the beam emerging from the step arrangement of the biological shield at the top, far edge of the Pile showed a continually rising exposure-rate. The dosage-rate at the reference point on the 50 foot level roof has not increased appreciably however. Neutron surveys in this beam showed uncorrected exposure-rates of 42 mrem/hr.

Contaminated areas around the Retention Basin were carefully surveyed and the spots of contamination located. No definite clean-up program has yet been started. Dried algae samples taken from the northwest drainage ditch leading from the valve pit showed a maximum concentration of $.6 \times 10^{-4}$ μc/g.

200 Areas, T and B Plants

General Statistics

	July			August			1948
	T	B	Total	T	B	Total	To Date
Special Work Permits	340	476	823	326	436	762	5968
Routine & Special Sur.	371	288	659	206	246	452	4694
Air Monitoring Samples	497	586	1083	479	491	970	7264
Thyroid Checks	177	116	293	150	112	262	2490

Canyon Buildings

In the T Plant, the removal of a jet assembly from Section 12 was done remotely. An air sample taken during this work showed 8×10^{-6} μc f.p./liter and 1.1×10^{-10} μg Pu/cc. Contaminated paper removed from the

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deck showed a maximum dosage-rate of 10 rep per hour surface including 180 mr/hr at 2 inches, and was handled with a maximum exposure-rate of 300 mrep/hr. An air sample taken during paper handling showed 4.7×10^{-6} μc f.p./liter, and masks were worn. Decontamination work on sampling equipment used during a series of highly active 13-4 BP samples was done with a maximum exposure-rate of 6 rep per hour, with dosage-rates of greater than 45 rep per hour surface and 2.7 roentgens per hour at 2 inches reported on the sampling equipment. A jet from 17-1 was unplugged and gross product contamination was reported on the equipment used. An air sample taken during this job showed 2.4×10^{-10} μg Pu/cc, and masks were worn. Subsequent surveys of the deck indicated general product contamination from Section 11 through Section 18, and decontamination work is currently in progress.

In the B Plant, six defective agitators were removed from cells and placed in a transfer box on a flatcar in the railroad tunnel. The loaded box gave a dosage-rate of greater than 2 rep per hour at about fifteen feet as measured from the canyon deck overlooking the tunnel. Using four spacer cars, the flatcar was moved to the burial ground with exposure rate of 3 mr/hr in the locomotive cab. With the flatcar spotted on the burial ground siding, dosage-rates of 350 mr/hr maximum at the burial ground fence and 2 mr/hr at the paved road about 200 yards east of the flatcar were reported, and the general area was posted as a Radiation Danger Zone. Planned maximum exposures to personnel of about 225 mrep in a two-day period occurred during the placing of the box in the burial trench, with maximum exposure-rates of 4 rep per hour reported. The maximum exposure-rate to bulldozer operators during two days of backfilling over the box was 2 rep per hour. Contamination of the flatcar, ground, and railroad bed was noted with maximum dosage-rates of 230 mrep/hr. surface found.

A total of nineteen air samples taken during canyon work showed significant concentrations, with a maximum of 7×10^{-5} μc f.p./liter noted when Cell 6R was opened. Contaminated spots were found in a canyon stairwell as a result of investigation of the source of shoe contamination, and were cleaned.

Control Laboratories

In the T Plant, 128 items, not regulated with respect to handling, were found contaminated on surveys by Technical and Health Instrument Divisions personnel. In addition, 32 contaminated floor locations were reported. Thirty-two cases of fission product and twenty-four cases of product hand contamination were reported and all were successfully reduced.

In the B Plant, 306 items, not regulated with respect to handling, were found contaminated on surveys by Technical and Health Instrument Divisions personnel. In addition, 53 contaminated floor locations were reported.

Twenty-three cases of fission product and seven cases of product hand contamination were reported and all were successfully reduced. A case of high level coverall contamination was noted following routine door-stop slurping operations. Survey showed a spot on the shoulder of the coverall which indicated a dosage-rate of 80 mrep/hr surface with 2 mr/hr at 2 inches. Autoradiograph of the spot showed a source size of not greater than $\frac{1}{4}$ square inch, thus indicating a possible exposure-rate of about 1300 mrep/hr surface with about 30 mr/hr at 2 inches for the estimated one to two hour period which may have elapsed before discovery of the contamination. Of the used acid bottles surveyed for release, thirty-five were found contaminated.

Concentration Buildings

In the T Plant, a survey of the roof exhaust fans from the cells showed product readings of 6000 to 24000 d/m, with the maximum reading found on the F Cell fan. Gross product contamination was encountered during the installation of a skimmer in the F-2 centrifuge, some of which was spread to the balcony floor. Readings of greater than 50,000 d/m were reduced by subsequent cleaning.

In the B Plant, maintenance work included replacement of the F-7 to F-9 jet, replacement of sampler assemblies in the E Sample Room, and installation of a sampler assembly to allow sampling of the F-10 tank. All jets were done without personnel contamination and with a minimum of contamination spread.

Stack Areas

In the T Plant, construction of the sand filter is proceeding, with the hazard limited to particle contamination. Shoe counter checks have disclosed two particles picked up on shoes which were easily removed. Spot checks of the ground have disclosed particles with maximum reading of 1200 c/m at 1 inch.

In the B Plant, a burned out fan motor was removed, repaired, and replaced in a maximum exposure field of 1.5 roentgens per hour.

Waste Disposal Areas

In the T Plant, a special "core" sample was taken of the contents of the 101-T tank with a maximum exposure-rate of 160 mr/hr reported. During subsequent disposal of equipment used, dosage-rates of 36 rep per hour at 4 inches including 1.5 roentgens per hour at 4 inches were noted on equipment, and the work was done with a maximum exposure-rate of 2 rep per hour.

In the B Plant, during the jetting of second cycle waste from the 104-B tank

to the crib, turbid samples were obtained from the sampling laterals 10 and 20 feet below the crib bottom, and the crib appeared to be plugging up. Investigation resulted in an estimate of seven inches of sludge having been deposited in the crib. When the jet assembly was moved from the 104-B to the 105-B tank, a maximum reading of 50000 c/m at 12 inches was obtained. The 5-6 waste line was disconnected from the 224 waste line and tied in to the new 361-B crib and tile field system with a maximum exposure-rate of 30 mr/hr at the working distance of one foot from the exposed lines. An air sample taken near the crib vent during jetting was too active to count, and a temporary filter has been installed on the vent. An improved filter design is planned to prevent drippage onto the ground.

North Areas

At 212-N, the removal of underwater equipment is in progress, with the contaminated items being cleaned or buried. Clean equipment is being packaged for storage.

Work is being done on the slug wafer cutting equipment in preparation for additional sectioning of slugs. Exposure-rates around the open cutting box have been limited to a maximum of 1.7 rep per hour.

The beta capsule was removed from its holder with work being done underwater. The capsule showed a dosage-rate of 355 mr/hr through 12 inches of water and 2 inches of air, and after placed in the shipping cask showed a dosage-rate of 3 mr/hr at 2 inches through the cask wall. The holder and attached equipment was placed in the East Area burial ground.

Two active slugs were placed in a shielded muffle furnace and annealed at 500° C. for six hours. The exposure-rate while transferring the first slug with 13 foot tongs was 300 mr/hr. An air sample taken at the furnace during the heating of the first slug showed no significant concentration. When the first slug was removed to the basin, no breaks in the jacket were visible from the handling distance, but the empty furnace showed a dosage-rate of 500 mr/hr at the furnace door. The second slug was placed in the furnace with tongs and an exposure-rate of 100 mr/hr at thirteen feet was encountered. When the slug was removed about a foot from the furnace, it was observed that the jacket had ruptured and that black dust had fallen to the concrete steps and ground, and the slug was returned to the furnace. A very small volume air sample taken at the furnace door during this operation showed about 10^{-3} μc f.p./liter. The ruptured slug was photographed while in the furnace using a telescope through which an exposure-rate of 50 mr/hr was obtained. Dust from the slug showed surface dosage-rates of greater than 20 rep per hour. Decontamination of the work site is progressing with complete protective equipment including Chemox masks, and has been done with a maximum exposure-rate of 1800 mrep/hr. The furnace and shield were placed in a dust-tight box and buried in

the East Area burial ground. The ruptured slug was placed in a water-tight container and returned to the basin.

General

In the T Plant, 7513 Martindale filters were surveyed with a G.M. probe with no significant contamination found. A total of 1836 filters were surveyed with film, and the first filming showed 136 particles on 1368 filters.

In the B Plant, three of the 8351 Martindale filters surveyed with a G.M. probe showed contamination with a maximum reading of 450 c/m at 1 inch. Completed film survey data on 2877 filters showed 356 confirmed particles.

All thyroid checks in both areas were below the conservative warning level.

The Isolation Building

Air Monitoring

There were 235 spot air samples taken, of which three were above 10^{-11} µg Pu/cc. The maximum concentration of 7×10^{-11} µg Pu/cc occurred during SWP work in Cell #3 when masks were worn. Two other samples taken during normal cell operation showed a maximum of 2×10^{-11} µg Pu/cc. Sixteen continuous Little Sucker samples were all below 4×10^{-12} µg Pu/cc. Twelve continuous samples of the 903 exhaust air system showed 1.1×10^{-11} µg Pu/cc as a maximum concentration. While this one value is above normal, no cause could be determined and later samples showed the normally lower concentrations.

During the past few months, a total of 150 comparative air samples have been made during AT sampling with few positive results obtained. This program is continuing and will be evaluated in a later report.

Type #6 filter paper media breakdown tests have been in progress continuously since November 1947. Contaminated air of the approximate level of 10^{-9} µg Pu/cc is sampled after passing through the filter, and of all the 24-hour samples taken during this period, only ten have shown concentrations of greater than 2×10^{-12} µg Pu/cc (the limit of sensitivity of the test) with a maximum of 2.2×10^{-11} µg Pu/cc.

Surface Contamination

A total of 777 items, not regulated with respect to handling, was found contaminated on surveys by Technical, Health Instrument, and "S" Division personnel. Forty-six items showed greater than 20,000 d/m and 16 of these showed readings of greater than 80,000 d/m.

Health Instrument Divisions

In addition, a total of 19 contaminated floor locations were reported, fourteen in the laboratories, four in the operating cells, and one in the corridor. The maximum location involved about 0.5 µg Pu in Cell #4.

There were twenty cases of skin contamination, all except one of which were successfully reduced by standard decontamination methods. In one case, hand and arm contamination occurred to an operator during AT sampling or subsequent cleanup work, when solution was spattered during the removal of the sampling syringe from the pipette. The hand contamination of about 0.3 µg Pu was cleaned, but the arm contamination of about 2.5 µg Pu could be cleaned to only approximately 0.3 µg Pu before a tender skin condition made it advisable to temporarily discontinue decontamination. Further cleaning the following day reduced the amount remaining to about 0.03 µg Pu.

Gamma Radiation

P. R. Container	12.5 mr/hr (maximum)
Process Hood	2 mr/hr (maximum)
S. C.	4 mr/hr (maximum)

The 300 Area

General Statistics

	July	August	1948 To Date
Special Work Permits	297	281	2164
Routine & Special Surveys	106	80	1081
Air Monitoring Samples	103	61	636

Metal Fabrication Plant

Twenty-two of fifty-one air samples taken were above 1.5×10^{-4} µg U/cc as follows:

Location	No. Taken	No. Above 1.5×10^{-4} µg U/cc	Maximum Concentration µg U/cc
Melt Plant	10	10	*3.8×10^{-4}
Oxide Burner	16	10	**7.6×10^{-2}
Chip Recovery	8	0	---
Machining	9	0	---
Extruder Building	8	2	***2.5×10^{-4}

*Lines cooling
**Loading in progress
***Normal operation

Surveys in the Melt Plant revealed levels of radiation much higher than previously reported and much higher than is normally expected from natural uranium. This situation resulted when the high temperature and high vacuum in the Melt furnace caused a vaporization of the UX_1 daughter which condenses on the surfaces of the crucibles above the molten metal. Surveys showed dosage-rates up to 16 rep per hour on the underside of crucible lids and up to 10 rep per hour on the crucible extension rings. The beta radiation given off is the 2.3 MEV beta from UX_2 and the ratio of beta to gamma is about 40 to 1. Recent overexposures in the Melt Plant are undoubtedly due to these high exposure-rates and all operations in the Melt Plant are being studied to minimize exposure to these crucibles.

A special slug was observed at the fluoroscope by Technical Division personnel in a maximum radiation field of 70 mr/hr. Careful planning and work kept exposures at a minimum.

Surveys of plant-issue shoes showed that the sole surface was generally above 4 mrep/hr, but film surveys inside the shoes showed no significant exposures. In one case, contamination on the uppers caused some exposure on the inside of the shoes.

Technical Building

All air samples taken were below 2×10^{-11} µg Pu/cc, and 5×10^{-7} µc f.p./liter.

A spill of zirconium tracer solution occurred in Room 98. No personnel contamination occurred and all equipment was successfully cleaned. A routine survey in the same room disclosed a door-stop on the floor near the working area. The dosage-rate was 50 mr/hr at 2 inches.

321 Building

One air sample taken over an open drum during a transfer in the "A" cell showed a concentration of 4.5×10^{-3} µg U/cc. All other samples were below 1.5×10^{-4} µg U/cc.

Laundry and Hand Counting

Fifty two spot air samples and 42 Big Sucker air samples were taken in the Laundry, and had as a high result, 1.8×10^{-4} µg U/cc, behind washer #2 during the processing of clothing from 300 Area Operations personnel.

Hand Score Summary

There were 42,028 alpha hand checks and 49,261 beta hand checks recorded.

About 0.25% of the alpha and about 0.29% of the beta scores were above the warning level.

The high beta scores were distributed through all areas and the high alpha scores between the 200 and 300 Areas. Where decontamination was attempted it was successful in all cases of alpha contamination, but failed in 3 cases of beta contamination in the 300 Area all attributed to Uranium. No attempt was made at reduction in 27 cases of alpha and 36 cases of beta high scores.

Plant General

Frames exposed in the 200 East and 200 West Areas for the month of July indicated a deposition of 1.5×10^9 particles and 2×10^8 particles, respectively. All of 88 frames located throughout the reservation and at Benton City and Pasco gave positive indication of particles and 19 other traps have been located at other points much farther from the reservation.

The sand in a 100-foot square area was dyed and catch shelves located on three sides of this area. The amounts of sand picked up on each shelf were as follows:

Shelf Height above Ground	North	South	West
One foot	7.4 g	6.4 g	700 mg
Three feet	2.4 g	3.5 mg	Trace
Five feet	3.1 g	4.2 g	375 mg

As in previous tests the larger quantity collected in the shelves facing north was probably due to high velocity southerly winds. Shelves were partially damaged by wind which may have accounted for the large variation in weights.

Particle inhalation was estimated by the use of filters and maximum results obtained were as follows:

Location	Inhalation Rate
B Plant - Main Gatehouse (outside)	1.7 particles/day
B Plant - Main Gatehouse (inside)	1.4 particles/day
B Plant - Excl. Gatehouse (outside)	2.4 particles/day
T Plant - Main Gatehouse (outside)	2.7 particles/day
T Plant - Main Gatehouse (inside)	1.0 particles/day
T Plant - Paint Shop (outside)	1.4 particles/day

Health Instrument Divisions

Two filters analyzed for total beta activity at the Health Instrument Methods Laboratory gave the following results:

2701-W (outside) - 7.1×10^{-7} $\mu c/ft^3$
B Plant Gatehouse - 8.2×10^{-5} $\mu c/ft^3$

Health Instrument Divisions

PERSONNEL METERS

	100-B	100-D	100-F	E&N 200	200-W	300	Total	1948 To Date
Pencils								
Total Pencils read	9,896	10,553	15,743	31,442	45,031	40,938	153,603	1,069,999
No. of Single Readings (100 to 280 mr)	66	49	66	104	67	108	460	3,497
No. of Paired Readings (100 to 280 mr)	1	1	2	0	0	0	4	31
No. of Single Readings (Over 280 mr)	121	158	231	92	168	511	1,281	7,087
No. of Paired Readings (Over 280 mr)	7	4	5	0	1	4	21	109
Paired Readings Lost	0	1	3	2	0	0	6	43

No significant pencil result was confirmed by badge result. Investigation of lost readings showed no possibility of an overexposure.

Health Instrument Divisions

Badge Resume, Construction Areas

	105-DR	241-TX	384	241-BY	Total	1948 To Date
Badges Processed	9,043	9,558	316	158	19,075	123,514
No. of readings (100 to 500 mrep)	241	3	0	0	244	721
No. of readings (Over 500 mrep)	1	0	0	0	1	71
Lost readings	12	4	1	0	17	89

The 241 results between 100 and 500 mrep in the 100-DR Area were attributed to background radiation in the DR Gatehouse caused by the 100-D burial trench. Attempts to eliminate this background were unsuccessful.

Lost readings were due to:

Light leaks	2
Badge lost in area	10
Film not packaged	1
No film in badge	1
Stuck film	1
Exposed to x-ray	2*

*Shielded portion read zero

The result of over 500 mrep in the DR Area occurred when the film badge and a radium dial watch were carried in the same pocket.

Badges

	100-B	100-D	100-F	200-E	R.R.T. 200-N	200-W	300	Total
Badges Processed	1,700	2,008	2,222	2,346	316	3,290	6,751	18,633
No. of readings (100 to 500 mrep)	4	9	33	22	0	3	349	420
No. of readings (Over 500 mrep)	0	1	0	0	0	0	10	11
Lost readings	0	1	5	1	0	1	4	12

Lost readings were accounted for as follows:

Badge lost in area	6	
Light leak	1	
Badge dropped in liquid	2	
Exposed to x-ray	3	(Shielded portion read 0)

Total 1948 badges to date - Operations	182,569
Total 1948 badges to date - Construction	123,514
Grand Total	306,083

Investigation of lost readings where required showed no possibility of an overexposure. The result over 500 mrep at 100-D was for a two-week period and was below 1 roentgen. Five of the 300 Area results of over 500 mrep were due to contaminated badges and the others were overexposures received in the Melt Plant operation and reported separately.

In addition to the above, 3,688 items of a non-routine nature were processed bringing the 1948 total to 14,210

BIOLOGY DIVISION

Aquatic Biology

1. Effect of Pile Effluent Water on Aquatic Life

During the past month all 6 groups of rainbow trout fingerlings have been seriously affected by bacterial and protozoan disease organisms which have flourished in the high temperatures (20°C) of the river water. Prophylactic and remedial treatments have been administered regularly and the number of fish in each group has been further reduced to about 500 to alleviate crowding. At the end of the month the fish were generally much improved, but any biological effects produced by the effluent water were obscured by the greater effect of the disease organisms.

2. Biological Chains

A study is now in progress to determine the characteristics of the accumulation of activity in small shiners (Richardsonius balteatus). Two aquariums, each containing 28 of these minnows, are being used. One is supplied with river water and the fish are being fed snails which were exposed to retention basin water; the other is supplied with retention basin water and the fish are being fed snails which were reared in uncontaminated water. Activity counts are being made on three parts of each fish, the gastro-intestinal tract, a portion of the tail, and the gills. Preliminary observations indicate that the activity in the g.i. tract is greater in the fish feeding upon the active snails than in fish held in active water. Initial activity of the tail and gills of fish held in active water has been appreciably greater than that in like parts of fish fed the active food. However, the activity picked up by the fish held in the retention basin water has been predominately very short-lived, while that present in the fish fed active food is produced by much longer lived isotopes; a half-life of about 12-15 days currently predominates, which compares favorably with that found in some algal forms and in the snails. Two additional tests are to be started as soon as they can be fitted into the work schedule.

3. Radiobiological Survey

Field and laboratory work is again underway on this river program. Present sampling indicates that the growth of algae on the bottom is less now than in late April when collections were discontinued. The time elapsed since the flood waters covered these rocks evidently has not been sufficiently long to allow a maximum accumulation of this bottom algae.

Routine collection of Columbia River fish for activity determinations are being continued. In general samples show somewhat more activity than has been noted in the past. One chiselmouth (minnow) showed about 0.5 microcuries per kilogram in liver, kidney and bone.

Health Instrument Divisions

Zoology

1. Chronic Toxicology of I^{131} in Stock Animals

A. Phantom Thyroid Calibration: The 5 ml. (5g.) glass walled "gland" embedded in a block of paraffin of about the size of a sheep's neck was filled with a 100 uc solution and has been counted through 5 half-lives of decay. Counts (on probe) plotted against μc in the gland was graphed as a straight line function on cross-section paper. Two hundred and sixty counts per minute externally is equal to 1 μc in the 5 g. simulated thyroid.

B. Analysis of I^{131} Solution from Oak Ridge: A preliminary test of a spike solution indicated about 10 to 15 μc of active telurium for the 2 mc of I^{131} ordered on 8-3-48. This study will be repeated with the shipment to be received on 9-2-48.

C. Ewe on 10 μc of I^{131} per Day for 28 Days: Thyroid activity came up slower than the previous ewe studied, but leveled off at about the same activity, approximately 30 μc being present in the gland. As before, we have found about equal excretion of I^{131} via urine and feces.

D. Trial Study of Rubber Matting on Concrete: Strips of armorite rubber matting were cemented with pressure for 5 days to a concrete slab. A control ewe will be placed on the matting to further check its suitability for covering floors at the Experimental Animal Farm.

E. Transmittal of I^{131} to Hens Eggs: Eggs from two hens which have been fed daily tolerance (old value) amounts of I^{131} for various lengths of time have been assayed for activity:

Exposure Time at Laying	White of Egg, Activity in μc/kg	Yolk of Egg, Activity in μc/kg
12 days	0.028	0.13
16 days	0.015	0.28
22 days	0.010	0.32

2. Biological Monitoring

Organ or Tissue	200-W Albino Rabbit	200-N Pekin Duck	200-N Chicken Hen	100-F Mature Pekin Duck	100-F Swamp Rabbit	300 Pekin Duck	300 Teal Duck	300 Teal Duck
Thyroid	.84	.38	<.046	0.08	.83	*.072	.02	<.04
Feces	.077	*1.2	.012	0.023	0.27	*.009	*.01	*.003
Blood	.029	.013	<.005	.007	.034	~.003		<.03
Liver	.005	.047	~.0035	.016	.038	*.004	.01	.007
Kidney	.065	.034	.026	.011	.072	<.005	.01	.009
Spleen	.008	.003	.011	.012	.078	<.002		
Lung	.001	.019	.003	.009	.044	.05	*.008	*.009
Pancreas	.038	.034	~.004	.026	.026		.003	
Gonads or eggs	.015	*2.6	<.015	.011	~.1	<.02		
Bone	.035	.14	<.003	.016	0.11	<.002	*.007	*.005
Muscle		.014	~.003	.011	.017	*<.004	<.03	.004
Brain		.011		.012			.014	

*Indicates a positive alpha activity (direct plate count). These will be determined later by T.T.A. and fluorometric tests.

3. Miscellaneous

A. Histology: A rabbit testis that had had a 10 mc radon seed planted in it from the 3rd day until practically decayed, showed little, if any, evidence of damage. Sperm were found within a few microns of the seed. This might be due to partial recovery after the intense radiation had been dissipated. This observation is to be contrasted with a condition of aspermia within 4 mm of a hot speck (200 area stack) planted for about 50 days. The technique and location were similar.

B. P^{32} in Ashing and Counting: Eleven plates spiked with 2700 c/m of P^{32} and ashed with HNO_3 to about 800°C lost about 16% of the activity. This loss was partially due to accumulation of activity at the periphery of plates and to sublimation.

Forty similar plates containing 0.5 g. of ground fish muscle were similarly treated, except that the dried tissue (under infra red lamp at uniform distance and time) was counted before ashing. The loss was 20% on a dried plate (largely self-absorption) and 41% for the ashed plates. The loss, once accounted for as self-absorption, is probably a combination of distribution (or geometry) and evaporation.

CONTROL AND DEVELOPMENT DIVISION

Water Monitoring

Three hundred and forty-eight samples of drinking water were taken during the month. The maximum alpha activity of 440 dis/min/liter was found in 300 Area Well #2. These wells and the sanitary water averaged between 50 and 200 dis/min/liter of uranium. The maximum value, other than in the 300 Area wells, was 31 dis/min/liter at Benton City. Nearly all of the drinking water sources averaged between 5 and 25 dis/min/liter with the new ether extraction procedure. The results in Richland, 300 Area, and White Bluffs have been confirmed as uranium by fluorophotometer analysis. Twenty-six three gallon samples of water from these sources in general confirm the values. No sample of drinking water gave a value of beta activity as high as 5×10^{-5} µc/liter.

Thirteen test well samples were taken with no alpha result as high as 6 dis/min/liter or beta result as high as 5×10^{-5} µc/liter.

Seventy-eight samples of Columbia River water were taken with samples from 100-B and Pasco showing trace amounts of 9 - 15 dis/min/liter. No other sample had as much as 6 dis/min/liter of alpha activity. The maximum beta activity was 1.1×10^{-3} µc/liter from a Hanford sample. Fifteen samples of Yakima River water were taken with one positive alpha result of 16 dis/min/liter. This was not confirmed on a resample and all other samples indicated less than 6 dis/min/liter. No sample gave a value of beta activity as high as 5×10^{-5} µc/liter.

Atmospheric Monitoring

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

Location	Integrons (mrep/24 hours)		C Chambers (mrep/24 hours)	
	July	August	July	August
100-B	0.2	0.4	0.3	0.2
100-D	1.3	0.8	0.4	0.3
100-F	0.9	0.4	0.4	0.3
200-W	0.4	0.5	0.3	0.3
200-E	0.4	1.1	0.5	0.5
Riverland	4.3	7.3	- -	- -
Hanford	0.4	0.5	- -	- -
300 Area	0.3	0.8	0.4	0.4
700 Area	0.4	0.8	- -	- -
Kennewick	0.2	0.6	- -	- -
Pasco	0.5	0.5	- -	- -
Benton City	0.8	1.0	- -	- -

The high readings at Riverland have not been confirmed by detachable chambers, film packs, or surveys with Geiger counters. Detachable chamber readings in Hanford, TX, DR, and White Bluffs, averaged 0.63, 0.54, 0.69, and 0.42 mrep/24 hours, respectively. The maximum eight hour reading on a CI unit was 1.1×10^{-6} μc/liter in the 200-East Area. Air filters at Hanford, White Bluffs, and 105 DR gave average readings of 4×10^{-10}, 2×10^{-10}, and 2×10^{-10} μc/liter. Thirty-six rain samples were collected. The maximum rain sample was 0.12 μc/liter from the 200-West Area. The maximum off-area rain sample was 0.01 μc/liter from Richland.

Land and Vegetation Contamination

The average vegetation contamination was as follows:

	μc I^{131} per kg.		
	Average for	August	
Location	July	Maximum	Average
North of 200 Areas	0.04	0.37	0.04
Near the 200 Areas	0.07	1.13	0.12
South of 200 Areas	0.04	0.45	0.04
Richland	<0.04	0.09	0.04
Pasco	<0.04	0.09	<0.04
Kennewick	<0.04	0.09	0.04
Benton City	<0.04	0.14	<0.04
Richland "Y"	<0.04	0.04	<0.04
Hanford	<0.04	0.20	0.05

Seventy samples from Benton Gap gave a maximum value of 0.15 μc/kg at an elevation of 1000 feet. Eighty-nine samples were collected from the Wahluke slope. A maximum of 0.11 μc/kg and an average of 0.04 μc/kg was found. Nineteen samples from Goose Egg Hill gave a maximum of 0.28 μc/kg and an average of 0.11 μc/kg. Seventy-eight vegetation samples were analyzed by the new caustic extraction method which has been giving yields of 60 - 80%. Assuming an overall yield of 50%, samples from the 200-West Area gave 1.5×10^{-2} μc/kg; from the 200 West Gate, 1.4×10^{-2} μc/kg; from Route 4S - Mi. 4, 9×10^{-3} μc/kg; and from Gable Mountain, 4×10^{-3} μc/kg. All other samples from more remote points indicated less than 2×10^{-3} uc/kg. Five hundred and sixty top-soil samples were taken from routine vegetation sampling locations. A direct count on one gram without correction for self-absorption gave maximum values of 0.025 μc/kg with averages over the entire reservation of 0.01 - 0.015 μc/kg. The samples do not appear to be higher in the 200 Areas. Thirty-two samples from the 300 Area gave values as high as 0.9 μc/kg of beta emitters. Further analyses by ether extraction and alpha count indicated uranium contamination as high as 0.1% near the 313 Building.

Geology

The nine wells drilled about the 5 - 6 crib and tile field in the 361-B area were completed on schedule on August 4. Well 361-B-13, which is

12.7 feet south and 45° east from the crib center, was drilled at an angle of about 5° with the vertical so that the bottom of the well, at a depth of 150 feet, is directly beneath the center of the crib. Information as to the distribution of contamination directly beneath the crib will thus be more readily obtainable.

Liquid samples were taken daily from the laterals of the H. I. shaft during jetting into the second cycle crib from the 104-B tank. Results for alpha activity were very low to undetectable in the 10 ml samples which were taken. Beta activity averaged about 0.6 μc/liter in both laterals. After August 2, when some sludge was jetted into the crib, liquid samples from the laterals had up to 60,000 dis/min/liter and the beta activity was up to 5.7 μc/liter. Some sludge was also obtained in the sample cups and this had up to 8,000 μc/kg. No result for alpha activity was obtained. The sludge has plugged up the crib so that flow of waste has been restricted. A 3 gallon water sample from Well 224-B-4 was analyzed, but no significant alpha or beta activity was obtained.

The three test wells near the 241-T cribs which were filled with contaminated water have not changed much as determined by samples obtained on August 9. Samples obtained from Well 241-T-1, which is drilled directly through the #3 crib, have not yet indicated any contamination at the sampling point, which is 20 feet beneath the crib.

Fifteen of the twenty-five wells scheduled for drilling on the extended C-133 project have been completed with six being drilled at the present time.

The information obtained so far is serving to further delineate the two channels in the basalt which were mentioned last month. When all wells are completed then areas in which more wells should be put down can be determined so that a complete mapping of the basalt ridge can be determined.

Meteorology

The mean temperature for the month was 71.9 degrees, which is 2.2 degrees below normal. There were no days on which the temperature reached 100 degrees, the maximum being 97 degrees on August 1. The lowest temperature was 42 degrees on August 31.

There was a total of 0.38 inches of rain as compared to a normal value of 0.19. There were five days on which there were thunderstorms.

There were 93 eight-hour forecasts which were correct 85.2% of the time. There were 62 twenty-four-hour forecasts and the accuracy was 80.2%. Twenty-six special forecasts were made, both on request and as warnings on the occurrence of thunderstorms, and these had an accuracy of only 65.4%.

Bioassay

Five hundred and twenty-four urine samples were analyzed for plutonium. Twenty-nine resamples were taken this month because of low spiked samples accompanying each set of samples. Two of the resamples from last month

are being sampled again because of low spiked samples. All but eighteen of the other resamples from last month have been processed and found to fall within limits.

Two hundred and twenty-six urine samples and fifty-three water samples were run on the fluorophotometer. One hundred and seventy-four of these samples came from the workers in the metal fabrication area. Of these samples, 101 were less than 5 µg/liter, 37 were between 5 and 10 µg/liter, 23 were between 10 and 20 µg/liter, and 13 were greater than 20 µg/liter. Of 13 samples of personnel from other areas, none was greater than two µg/liter.

Methods Development

Further attempts to calibrate the two liter ion chambers on the vibrating reed electrometer are being made. The background, when filled with air, is about 2×10^{-15} amperes; when the chamber is evacuated with a hyvac pump this drops to about 2×10^{-17} amperes, indicating that only a small fraction of the background is due to insulator leakage. Equipment is being assembled to quantitatively transfer the CO_2 sample into the chamber. Samples are being prepared to calibrate the Simpson Methane Counter which is to be used for counting beta particles.

Several experiments are being run to determine the effect of various holding agents on the I^{131} analysis. No conclusions may be drawn at this time. An attempt is being made to obtain a method of electrolytically depositing plutonium on a platinum plate. Yields as high as 80% have been obtained on individual experiments using a KOH-K_2CO_3 medium. Several new source holders have been designed for the beta standards. An investigation into the performance of the counters has shown internally consistent results with either the alpha or beta counters.

Several more small particles from the 200 Area stacks have been measured. To date, five particles with major axis less than six microns have been obtained. Two of the particles with major axis 4 - 5 microns gave activities of 1 - 4 µ µc as estimated from the darkening of a film. Three other particles with major axis 4 - 6 microns gave activities estimated as one to eight µ µc.

Methods Control

A sample of dirt and algae, from the ditch in which the crud from the bottom of the 107-F basin was placed after the ruptured slug in May, was analyzed for fission products. Twenty-eight per cent of the activity carried in a total rare earth analysis, 5% in a zirconium analysis, 7% in a ruthenium analysis, and 2% in a strontium analysis. A sample of dirt from the inner rod room at 105-F showed 56% sulfur, 32% iron, 6% calcium, and 4% carbon on an activity analysis. Two tomatoes from the 100-D Area

indicated 3.4×10^{-4} μc total activity with approximately 12% due to K^{40}. A five gallon sample of water from the 105-B effluent was analyzed for total manganese. A value of 2×10^{-3} parts per million was found. A sample of algae analyzed for the Biology Division, gave 81 μc/kg with the majority (72%) of the activity as iron. About 9% sulphur and 12% phosphorous was found.

Two thousand, four hundred and thirty-one samples were measured for alpha activity and 4,486 for beta activity for a total of 6,917 measurements. In addition, 8 absorption curves, 128 decay points, and 646 control checks were taken. Two hundred and thirteen samples were analyzed for uranium on the fluorophotometer.

Physics

The man who has been working on the extrapolation chamber is terminating and has spent the past month summarizing his results and procedures.

At the request of Dr. B. T. Feld, M.I.T., an experiment was conducted at the 100-B pile to determine the fluxes of various radiations transmitted through the pile shield. In collaboration with Technical Division and H.I. Operations the measurements were made with the following results:

Type of Radiation	Probable Lower Limit	Probable Upper Limit	Best Value
Gamma	15 Micro r/hr	40 Micro r/hr	30 Micro r/hr
Slow Neutrons	1 nv	10 nv	2 nv
Fast Neutrons	0.02 mrep/hr	1 mrep/hr	0.1 mrep/hr

The hutment 3746-D has been essentially completed, and the Physics Group has taken possession. One laboratory in the hut is to be used by the Instrument Development Group.

Mr. Whipple presented a paper entitled "Health Physics and Related Instruments" at the Pacific General Meeting of the AIEE at Spokane on August 24, 1948.

Instrument Development

All portable poppies are in operation after having had all high voltage component surfaces cleaned. A prototype of the final model has been completed and is being laboratory tested before release to the Instrument Division.

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Two 2 x 7 poppy probes with 2 high voltage wires have been used successfully by 300 Area Survey for a month. The chief difference in operating characteristics is that the 2 wire probes break down and operate about 150 volts lower than conventional probes, but this condition is due almost entirely to the absence of a conductive coating on the window of the latter. The two wire design was slightly the more alpha sensitive, and is less likely to develop leakage troubles since the ground wires are eliminated.

The alpha Hand Counter probe with nylon back has operated successfully for a month according to the Instrument Division service mechanic in 3706, who found satisfactory geometry, but slight, though not serious, microphonics.

The water curtain beta monitor was returned to operation with a cylindrical lead shield to reduce extraneous radiation. At start up, a water count of 2100 c/m was obtained over a background count of 35 c/m.

The Polonium-Beryllium source was trapped in its cask when the uncased Borax-Paraffin plugs softened. It was freed by boring out the plugs with a special tool after which source and tube were cleaned with toluene to remove residual borax and paraffin.

A bread-board D.C. Amplifier giving 50 u microampere output current for a 0.01 volt input grid change was constructed. Stability will have to be improved, probably at the expense of some sensitivity.

A single wire argon flow proportional beta counter gave pulses from 0.01 volts at 1100 volts to 0.150 volts at 1300. This preliminary result is promising and work will be continued.

Calibrations

Inverted badge readings obtained at 100-F were duplicated in the laboratory by exposing badges edgewise to radium gamma radiation with or without another source of radiation normal to the badge face. Subjection to temperatures up to 50° C with radiation normal to badge faces gave normal contrast, heat alone was without unusual consequence. Considerable further work on the effect of heat and radiation source distribution is needed to amplify this exploratory work.

Health Instrument Divisions

The routine calibrations were:

RADIUM CALIBRATIONS	Number of Calibrations July	Number of Calibrations August
Fixed Instruments		
Gamma	568	618
Portable Instruments		
Alpha	43	53
Beta	82	116
Gamma	414	522
X-Ray	0	0
Neutron	0	2
Total	539	691
Personnel Meters		
Beta	1,107	881
Gamma	9,110	9,014
X-Ray	9,165	5,911
Neutron	---	---
Total	19,382	15,806
GRAND TOTAL	20,489	17,115

ACCOUNTING DIVISIONS

AUGUST 1948

GENERAL

During August, meetings of division accountants and others were held for the purpose of allocating the accounting personnel and work among the decentralized accounting divisions to be formed. It was decided that the decentralization of the accounting functions will be made effective as of October 1, except that the cost sections will operate as a central group until additional cost personnel is acquired.

K. L. Robertson, Accountant, General Division, issued organization announcements appointing W. S. Roe as Assistant Accountant, General Division and E. F. Charette as in charge of all Hanford Works payroll activities. H. A. Root, Community Accountant, issued an organization announcement appointing R. H. Hopkins as Assistant Community Accountant.

Revised cost codes were issued for the manufacturing and related service divisions, community and hospital, to make the new cost accounting systems effective as of September 1.

In compliance with a request received from the Atomic Energy Commission revised budget estimates for operating and maintaining Hanford Works for the fiscal years 1949, 1950 and 1951, were submitted during the month.

Government reimbursements are current. Following is comparison of unreimbursed charges as of August 31, 1948 with July 31, 1948.

	July 31, 1948	August 31, 1948
Billed on Public Vouchers	$ 7 822 026	$ 5 806 717
Submitted on Pre-Billing Audit Vouchers	3 136 086	3 933 273
Unbilled	4 483 001	4 150 881
	$15 441 113	$13 890 871

Accounting Divisions

STATISTICS

Employees and Payrolls	Total	Monthly Payroll	Weekly Payroll
Employees on payroll at beginning of month	8 662	1 777	6 885
Additions and transfers in	170	15	155
Removals and transfers out	(242)	(41)	(201)
Transfers from Monthly to Weekly Payroll	--	(3)	3
Transfers from Weekly to Monthly Payroll	--	18	(18)
Employees on payroll at month end	8 590	1 766	6 824
Gross amount of payroll - August (5 weeks)	$3 608 718	$883 633	$2 725 085
Gross amount of payroll - July (4 weeks)	$2 937 914	$840 985	$2 096 929
Annual going rate of payroll - August	$38 618 149	$10 589 195	$28 028 954
Annual going rate of payroll - July	$38 414 028	$10 083 900	$28 330 128
Average salary rate per hour - August	$1.886	$2.563	$1.704
Average salary rate per hour - July	$1.864	$2.542	$1.693

Overtime payments	July	August
Weekly Payroll		
Number	12 240	14 492
Amount	$243 673	$291 398
Monthly Payroll	$ 63 189	$ 10 774

Number of changes in Salary Rates and Job Classifications and transfers between Divisions: 7 943* (July); 1 275 (August)

*Includes 6 955 Revisions of non-exempt salary classifications effective 7/19/48

Employee Plans

Pension Plan

	July	August
Number participating at beginning of month	4 754	4 927
New participants and transfers in	217	314
Removals and transfers out	(44)	(44)
Number participating at month end	4 927	5 197
% of eligible employees participating	97.2%	96.4%

Employees Retired	August	Total To Date
Number	4	32
Aggregate Annual Pensions including Supplemental Payments	$522	$5 353
Amounts contributed by employees retired	$416	$1 751

Group Life Insurance

	July	August
Number participating at beginning of month	5 594	5 661
New participants and transfers in	169	186
Cancellations	(21)	(19)
Removals and transfers out	(81)	(66)
Number participating at month end	5 661	5 762
% of eligible employees participating	74.2%	72.5%

Employee Plans (continued)

Insurance Claims	August	Total To Date
Number of deaths	1	14
Amount of Insurance	$2 150	$75 173
Amount contributed by employees	$ 11	$ 614

Group Disability Insurance - Personal	July	August
Number participating at beginning of month	6 785	6 917
New participants and transfers in	236	222
Cancellations	(9)	(24)
Removals and transfers out	(95)	(118)
	6 917	6 997
% of eligible employees participating	90.6%	89.6%

Group Disability Insurance - Dependent		
Number participating at beginning of month	4 131	4 141
Additions and transfers in	62	113
Cancellations	(11)	(22)
Removals and transfers out	(41)	(43)
Number participating at month end	4 141	4 189

Group Disability Insurance - Claims		
Number of claims paid by insurance company:		
Employee Benefits		
Weekly Sickness and Accident	69	57
Daily Hospital Expense Benefits	64	76
Special Hospital Services	62	74
Surgical Operations Benefits	38	47
Dependent Benefits Paid		
Daily Hospital Expense Benefits	92	87
Special Hospital Services	97	89
Amount of claims paid by insurance company:		
Employee Benefits	$8 798	$9 032
Dependent Benefits	$3 505	$3 448
Total	$12 303	$12 480

Group Disability Insurance - Premiums		
Personal - Employee Portion	$11 755	$11 964
- Company Portion	7 117	7 327
- Total	$18 872	$19 291
Dependent - Employee Portion	$ 3 888	$ 3 758
- Company Portion	302	428
- Total	$ 4 190	$ 4 186
Grand Total	$23 062	$23 477

Annuity Certificates (For du Pont Service)	August	Total To Date
Number issued	2	54

Employee Plans (Continued)	July	August
U. S. Savings Bonds		
Number participating at beginning of month	3 701	3 788
New authorizations	198	24
Voluntary cancellations	(83)	(54)
Removals and transfers out	(28)	(30)
Number participating at month end	3 788	3 728
% participating	43.7%	43.0%
Bonds issued - maturity value	$208 525	$252 700
- number	5 246	6 406
Refunds issued	76	72
Revisions in authorization	107	47

Suggestion Awards	August	Total To Date
Number of Awards	16	171
Total Amount of Awards	$115	$1 700

Security Slogan Awards		
Number of Awards	--	7
Total Amount of Awards	--	$175

Employee Sales Plan	August		
	Total	Major Appliances	Traffic Appliances
Certificates issued	543	94	449
Certificates voided	19	4	15

Salary Checks Deposited	July	August
Weekly	1 029	1 022
Monthly	830	829
Total	1 859	1 851

Special Absence Allowance Requests		
Number Submitted to Pension Board	7	10

Absenteeism (Weekly Paid Employees)	1947	1948
January to August 31	1.73%	2.21%

Subcontractors' Payrolls	July	August
Number of Subcontractors' Employees on Payroll At End of Month		
Cost-Plus-A-Fixed-Fee Subcontractors		
Guy F. Atkinson Company and J. A. Jones Construction Company	9 490	8 246
Sub-subcontractors		
Newbery-Neon Electric Company	604	577
Urban, Smyth & Warren Company	1 080	1 102
*Newport, Kern & Kibbe	20	24
*Graysport Construction Company	101	57
*Pioneer Sand & Gravel Company	3	5
*Rust Engineering Company	8	8
*Pittsburg Des Moines Steel Company	0	17
*Warsaw Elevator Company	0	3
The Kellex Corporation	431	503
Giffels & Vallet, Inc.	191	196
National Carbon Company	275	284
C. C. Moore & Company, Engineers	147	161
J. A. Terteling & Sons, Inc.	910	1 021
Sub-subcontractors		
*Graysport Construction Company	0	32
*Estep Electrical Company	7	6
*J. P. Head Plumbing Company	22	21
Morrison-Knudsen Co., (Tank Farm)	544	479
Sub-subcontractors		
Trowbridge & Flynn Electric Company	10	9
Morrison-Knudsen Co., (Track Maintenance)	218	291
McNeil Construction Company	929	758
Sub-subcontractors		
*West Coast Painters	0	26
*Holaday & Edworthy, Inc.	0	2
*Asbestos Supply Co.	0	2
*Chris Berg, Inc.	0	8
*Richland Plumbing & Heating Company	0	5
*Estep Electric Company	0	4
*Holert Electrical	21	18
*Williams Paint & Glass Co.	0	4
*Seldon's, Inc.	0	12
*Arnold & Jeffers	59	56
*V. S. Jenkins Company	0	8
*Charles G. Swanson	0	8
*Fox Metal Products	12	8
Lump Sum Subcontractors		
C. C. Moore & Company, Engineers	5	5
John L. Hudson	1	0
Graysport Construction Company	0	63
J. Gordon Turnbull	75	75 **
Curtis Gravel Company	14	8
DeWitt C. Griffin & Associates	1	1
A. C. Grant	10	28
Strasser Drilling Company	1	4
Kelly Wells Company, Inc.	3	2

Subcontractors' Payrolls (continued)	July	August
A.B.C. Roofing & Siding Company	7	8
D. L. Cooney	52	86
Scott-Buttner	0	63
Nettleton, Baldwin, Sound Construction Co.	818	913
Sub-subcontractors		
Curtis Sand & Gravel Company	35	36
Paul Thorgaard Plumbing	57	59
Chris Berg, Inc.	52	76
Holert Electrical Company	11	28
Pacific Roofing	35	32
Central Service	7	11
Charles G. Swanson	26	66
Parsons Tile Company	0	3
Taylor Bros.	13	14
Martin Furniture Company	0	26
Builders Insulation Company	4	5
Total	16 309	15 573

* Lump Sum Sub-subcontractors operating under a Cost-Plus-A-Fixed Fee Subcontractor.

** Estimated

SUMMARY OF PAYROLL REIMBURSEMENTS TO SUBCONTRACTORS

Subcontractor	Payrolls		Taxes & Welfare Plans (Employer's Portion)	
	This Month	Total To Date	This Month	Total To Date
Atkinson-Jones	$3 272 667.65	$29 712 303.16	$ .00	$ 853 677.80
Newbery-Neon	249 389.64	2 216 602.48	19 139.21	78 856.01
Urban, Smyth and Warren	468 015.98	3 713 316.98	.00	100 750.72
Morrison-Knudsen	216 306.49	2 079 339.45	.00	59 890.92
Trowbridge & Flynn	4 854.91	65 655.61	568.51	2 572.36
J. A. Terteling	301 827.57	1 013 459.74	.00	19 107.43
C. C. Moore	36 670.80	118 968.06	.00	.00
Mc Neil	311 263.04	777 740.06	165.34	8 407.82
Kellex	138 823.48	912 417.22	6 090.88	43 392.37
National Carbon	.00	8 619.00	.00	120.00
Giffels & Vallet	91 959.02	496 924.98	.00	.00
Total	$5 091 778.58	$41 115 346.74	$25 963.94	$1 166 775.43

Subcontractors' Payrolls (continued)

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	7/17/48 to 7/31/48	7/25/47 to 7/31/48	$2 546 413.92	$27 687 024.21
Newbery-Neon	7/17/48 to 7/31/48	10/7/47 to 7/31/48	224 478.17	2 061 462.28
Urban, Smyth and Warren	7/17/48 to 7/31/48	10/8/47 to 7/31/48	337 808.21	3 408 746.61
Morrison-Knudsen	7/25/48 to 8/21/48	12/4/47 to 8/21/48	218 101.29	2 083 363.55
Trowbridge & Flynn	7/23/48 to 8/21/48	1/14/48 to 8/21/48	4 869.87	65 717.72
J. A. Terteling	7/26/48 to 8/22/48	3/1/48 to 8/22/48	314 035.29	1 044 767.25
C. C. Moore	7/22/48 to 8/18/48	12/17/47 to 8/18/48	40 976.30	133 074.89
Mc Neil	7/26/48 to 8/22/48	4/23/48 to 8/22/48	314 192.43	783 293.20
Kellex (1)	6/1/48 to 7/31/48	9/15/47 to 7/31/48	138 823.48	912 417.22
National Carbon (1)	-----	8/1/47 to 7/31/48	.00	8 619.00
Giffels & Vallet (1)	7/17/48 to 7/31/48	10/2/48 to 7/31/48	92 495.27	505 055.96
Total			$4 232 194.23	$38 693 541.89

(1) Audited by Atomic Energy Commission

Accounting Divisions

General Accounting

Payments Made to Subcontractors thru August 31, 1948

	Contract No.	Commitment To Date	Amount Paid To Date	Amount Withheld 8-31-48
Morrison-Knudsen Co., Inc,	G-110	$1 807 394.25	$1 807 394.25	Retainer Pd.
X-Ray Products Corp.	G-115	59 238.40	59 238.40	Retainer Pd.
Atkinson-Jones CPFF	G-133	69 667 566.76		
Payrolls			36 675 507.15	$493 801.76
Other (1)			24 551 277.36	-0-
Lone Pine Roofing Co.	G-134	52 875.13	52 875.13	Retainer Pd.
National Carbon Co., Inc.CPFF	G-135	2 008 000.00		
Payrolls			8 739.00	-0-
Other (2)			1 175 038.67	-0-
Graybar Electric Co.	G-136	422 981.00	105 342.60	-0-
G. A. Pehrson and Associates	G-137	18 700.00	15 895.00	-0-
John S. Villesvik	G-138	3 013.50	3 013.50	-0-
H. Brandt Gessel and Associates	G-139	10 766.50	10 766.50	Retainer Pd.
DeWitt C. Griffin and Associates	G-141	205 524.00	191 642.55	11 983.95
John L. Hudson and Associates	G-142	4 973 227.73	4 973 102.73	-0-
Catlow Transport Co.	G-143	313 640.92	313 640.92	Retainer Pd.
Northwest Hauling Co.	G-144	155 403.07	155 403.07	Retainer Pd.
Sperry Products Co.	G-147	1 875.00	1 875.00	-0-
The Kellex Corporation CPFF	G-148	1 690 023.82		
Payrolls			955 809.59	-0-
Others (3)			351 094.32	-0-
Catlow Transport Co.	G-149	25 426.00	25 426.00	Retainer Pd.
J. Gordon Turnbull, Inc. Graham, Anderson, Probst and White as Joint Venturers	G-150	529 413.00	-0-	-0-
Giffels and Vallet, Inc. CPFF	G-151	654 496.47		
Payrolls			496 924.98	8 130.98
Other (4)			77 502.64	-0-
Fixed Fee		270 000.00	131 754.60	14 639.40
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	G-155	4 145.00	4 145.00	-0-
C. C. Moore and Co., Engineers	G-157	133 074.89		
Payrolls CPFF			118 968.06	14 106.83
Lump Sum		304 287.00	92 523.87	10 280.43
Sturm Elevator Co.	G-158	2 218.00	2 218.00	-0-
Curtis Sand and Gravel Co.	G-159	305 000.00	89 139.83	9 904.43
Morrison-Knudsen Co., Inc.CPFF	G-160	3 342 247.55		
Payrolls			2 207 458.34	4 086.21
Other			1 004 104.88	-0-
Fixed Fee		95 000.00	72 675.00	8 075.00
J. A. Terteling and Sons, Inc. (5)	G-161	450 000.00	283 500.00	-0-
Haughton Elevator Co.	G-165	338 304.00	-0-	-0-
Chicago Bridge and Iron	G-166	35 454.00	35 454.00	-0-
Great Lakes Carbon Corp.	G-167	405 970.56	300 970.56	-0-

Accounting Divisions

General Accounting

Payments Made to Subcontractors thru August 31, 1948 (continued)

	Contract No.	Commitment To Date	Amount Paid To Date	Amount Withheld 8-31-48
Nettleton-Baldwin-Anderson and Sound Construction Co.	G-172	$9 727 81.00	$2 115 228.44	$235 025.38
J. A. Terteling and Sons, Inc.	G-173	1 916 144.12		
Payrolls	CPFF		1 032 567.17	31 307.51
Other			351 820.39	-0-
X-Ray Products Corporation	G-175	129 000.00	121 115.53	6 450.00
Morrison-Knudsen Co., Inc.	G-178	1 232 301.00		
Costs (Track Maintenance)	CPFF		1 166 301.00	-0-
Fixed Fee (6)			59 400.00	6 600.00
Kelly Wells Co.	G-181	18 125.00	10 012.50	1 112.50
Combustion Engineering	G-182	715 827.00	-0-	-0-
Link Belt Co.	G-183	223 527.00	-0-	-0-
Pacific Telephone & Telegraph Co.	G-186 CPFF	15 254.55	13 844.90	-0-
Graysport Construction Co.	G-187	20 500.00	18 450.00	2 050.00
Alvord, Burdick and Howson	G-189	30 000.00	30 000.00	-0-
McNeil Construction Co.	G-190 CPFF	2 538 298.26		
Payrolls			786 147.88	5 553.14
Other			416 265.01	-0-
R. J. Strasser Co.	G-194	11 590.20	2 697.75	299.75
Pittsburgh Des Moines Steel Co.	G-195	17 650.00	-0-	-0-
American Machine and Foundry Co.	G-197	100 000.00	-0-	-0-
Payrolls	CPFF		-0-	-0-
Other			-0-	-0-
A. C. Grant Co.	G-205	51 173.60	6 154.15	683.80
ABC Roofing and Siding Co.	G-208	54 000.00	-0-	-0-
Don L. Cooney, Inc.	G-210	192 781.00	-0-	-0-
Scott Butner Electric Co.	G-211	133 187.00	-0-	-0-
L. M. Yochem and C. Goodyear	G-212	7 500.00	-0-	-0-
		$105 481 100.04	$82 541 919.98	$864 091.07

(1) Amount Paid includes Provisional Reimbursement in the amount of $21 172 900.02 of which $20 621 145.50 was liquidated by Atkinson-Jones billings.

(2) Amount Paid excludes $1 000 000.00 in Advances.

(3) Amount Paid excludes $500 000.00 in Advances.

(4) Amount Paid excludes $50 000.00 in Advances.

(5) Amount of Commitment estimated.

(6) Amount withheld includes $2 640.00 withheld by duPont Company prior to September 1, 1946.

Construction Commitments and Expenditures		Commitments	Expenditures
	July 1, 1947 thru July 31, 1948	$124 810 327.00	$ 88 187 776.00
9.	July 1, 1947 thru September 4, 1948	$134 574 336.17	$100 556 387.24

Accounting Divisions

General Accounting

	July	August
Amount of Accounts Payable Vouchers Entered		
General Electric	$13 736 813.55	$12 849 755.85
du Pont	668.42	1 146.53
Total	$13 737 481.97	$12 850 902.38
Amount of Checks Issued		
General Electric	$14 303 623.11	$13 032 127.30
du Pont	605.50	834.45
Total	$14 304 228.61	$13 032 961.75
Number of Checks Issued		
General Electric	4 171	4 095
du Pont	2	6
Total	4 173	4 101
Public Vouchers (1034) Submitted to AEC		
Vouchers not reimbursed at beginning of month	$ 5 289 708.60	$ 7 822 025.81
Vouchers submitted for reimbursement during month	15 709 081.33	14 598 999.07
	20 998 789.93	22 421 024.88
Vouchers reimbursed during month	13 176 764.12	16 614 308.37
Vouchers not reimbursed at end of month	$ 7 822 025.81	$ 5 806 716.51
Public Vouchers (1034) Submitted to AEC		
Number of vouchers not reimbursed at beginning of month	130	208
Number submitted during month	496	401
	626	609
Number reimbursed during month	418	501
Number of vouchers not reimbursed at end of month	208	108
Public Vouchers not Submitted to AEC		
Pre-Audit Vouchers (1035) Issued	$ 3 136 086.06	$ 3 933 272.52
Pre-Audit Vouchers (1035) not Issued	4 483 001.19	4 150 880.63
Total	$ 7 619 087.25	$ 8 084 153.15
Number of Pre-Audit Vouchers Issued Awaiting AEC Approval	62	104

Accounting Divisions

General Accounting

Cash Receipts - General Electric	July	August
U. S. Government	$13 176 764.12	$16 614 308.37
Rents	114 385.49	114 630.40
Hospital	56 397.30	73 696.70
Telephone	6 827.42	7 278.98
Miscellaneous Accounts Receivable	6 873.71	39 494.71
Employee Sales	2 993.39	1 759.77
Bus Fares	9 383.50	9 539.40
Educational Program	-0-	816.15
Sale of Furniture	881.69	16 518.34
Advances	-0-	1 000 000.00
All Other	12 530.30	24 056.75
Total	$13 387 036.92	$17 902 099.57
Cash Receipts - du Pont		
U. S. Government	$93 558.17	$145.29
Hospital	47.50	45.00
Vendor's Refunds	-0-	-0-
	$93 605.67	$190.29
Cash Advance and Expense Accounts		
Cash Advance Balance at end of month	$49 518.07	$37 312.59
Cash Advance Balances Outstanding over one month	6 253.73	11 512.19
Traveling and Living Expenses		
Paid Employees	$44 683.24	$38 188.55
Billed to Government	44 515.26	39 652.92
Balance in Variation Account at end of month	13 925.67 Cr	15 390.04 Cr

Accounting Divisions

General Accounting

Hospital Accounting	July	August
Accounts Receivable Balance at Beginning of Month	$47 640.21	$54 087.65
Total Invoices During Month	83 072.81	104 491.63
Total	$130 713.02	$158 579.28
Less Cash Received and Payroll Deductions	76 625.37	101 387.48
Accounts Receivable Balance at end of month	$ 54 087.65	$ 57 191.80
Property		
Number of Transfer Notices Received	382	795
Number of Items Affected	2 338	2 206
Number of Receiving Reports Classified	10 498	11 734
Number of Receiving Reports Vouchered	1 202	1 475
Number of Items Tagged at beginning of month	123 438	92 423
Number of Items Tagged this Month-- Metal	2 108	1 483
Number of Tagged Items dropped from record	(33 123)	(2 334)
Total Tagged Items Recorded	92 423	91 572
Number of Items Recorded in quantity only		
At beginning of month	12 545	13 076
Items added to record during month	8 535 *	464
Dropped from record during month	(8 004)	(198)
Total Items Recorded in Quantity	13 076	13 342
Total Items on Record	105 499	104 914

* Includes adjustment of 7,915 in Quantity figures

PERSONNEL AND ORGANIZATION

	July	August
Number of employees		
On Payroll at beginning of month	279	275
Removals and transfers out	(22)	(12)
Additions and transfers in	18	12
Number at end of month	275	275
Net increase (or decrease) during month	(4)	0
% of terminations and transfers out	8.0%	5.0%
% of absenteeism	1.6%	2.2%

Changes by divisions in number of Accounting Division employees during August were as follows:

General Accounting: Decrease of two employees

Seven new hires
Six resignations
One transfer to Law
One transfer to Weekly Payroll
One transfer to Cost

Weekly Payroll: Net increase of one employee

Five new hires
One transfer from General Accounting
One transfer to Monthly Payroll
One transfer to Accounting General
Three terminations

Monthly Payroll: No change

One resignation
One transfer from Weekly Payroll

Cost: Decrease of one employee

Two terminations
One transfer from General Accounting

General: Net increase of two employees

One transfer (P. B. Lamphere) from Schenectady
One transfer from Weekly Payroll

Injuries:	July	August
Major	0	0
Sub-major	0	0
Minor	4	3

PERSONNEL AND ORGANIZATION (continued)

Number of Accounting Division employees and open employment requests as of September 1, 1948 as follows:

	Number of Employees		
	Non-Exempt	Exempt	Total
General Accounting	137	13	150
Weekly Payroll	61	6	67
Monthly Payroll	10	2	12
Cost	30	5	35
Methods	0	2	2
General	4	5	9
Total	242	33	275

Open employment requests were as follows:

General Clerk A	3
General Clerk B	5
General Clerk D	13
General Clerk E	4
Steno. Typist B	1
Steno. Typist C	1
Steno. Typist D	4
Office Machine Operator B	1
Accounting D	4
Clerical Working Leader	1
Total	37

SECTIONAL ACTIVITIES

Cost

Cost code books for the revised cost accounting procedures for Manufacturing, General, Medical, and Community Divisions were issued to become effective September 1. A series of instruction meetings was begun in the field in which groups of supervisors were assembled for the purpose of clarifying general questions as to proper application of the codes.

Under date of August 3, the AEC requested revised budged estimates for operating and maintaining the Works during fiscal years 1949, 1950, and 1951. This information was requested in considerable detail, and much work was involved in developing. Estimates prepared by Division Superintendents were reviewed by the Budget and Appropriations Committee, consolidated, and submitted to the AEC on August 27.

General Accounting

Accounts Payable

August reflected a reduction of $900 000. in the amount of accounts payable vouchers entered ($12 849 755.) as compared to those entered in July and disbursements also decreased by $1 200 000. and amounted to $13 032 127. This however is not an indication that a reduction in volume is taking place, since July was considered a heavy month and August volume was actually in line with the average volume of business during the past four month period.

A total of 1,806 freight bills were received during August and of the $367 139 involved, $20 550 was charged back to vendors. The month-end balance of freight to be distributed ($5 282) is the lowest it has been since March although the volume of bills received has increased.

Provisional reimbursements to Atkinson-Jones increased by $140 000 over the previous month and the unliquidated balance remained about average ($551 754).

During the month, a tentative physical decentralization of employees was agreed upon by the Division Accountants, and plans were made for actually segregating the employees by Divisions during September.

Accounts Receivable

Rent

Charges for rents during August amounted to $356 274.09. Cash received for rents totaled $114 630.40 and payroll deductions amounted to $195 510.21. A net decrease in outstanding rents of $27 525.45 was reflected.

Accounting Divisions

General Accounting

Rent (continued)

There were nine ranch type houses made available during August which was the only additional living facilities provided.

Cancellation of leases numbered 190 and 180 new leases were issued.

Dormitory rooms, barracks, and trailer spaces reflected little change.

U. S. Government

Total billings to the Government during August amounted to $14 598 999 which is about one million dollars less than the amount billed during July. The balance in the account of $5 806 717 represents the billings for the last two days of the month.

Reimburable charges entered during August amounted to $15 642 818. Unbilled items, including $3 933 273 submitted on a pre-audit basis, amounted to $8 084 153.

Telephone

Telephone charges amounted to $17 740.93 which included rental for 2,459 phones and approximately 13,000 toll calls.

Property

During August the main activity in the field was devoted to recheck or inventory adjustment work. The recheck program has accounted for some 80 per cent of the items charged to a given area which is an indication that the records have not kept up to the physical location of the material. Five men were located at various receiving depots and recorded and tagged 1,430 Class "B" items worth more than $50.

Office work has increased because of the necessary inventory adjustment work as a result of the area recheck work.

Cash Advances and Cash Change Funds

Advances during August for traveling and living expenses amounted to $29 676. Employees accounted for $41 881 and the outstanding balance in the Cash Advance account at month-end was $37 313 which is a reduction of $12 000 over the previous month. This balance includes 21 accounts over 30 days old valued at $4 373.

Two new change funds were established during August. One was for the Assistant Cashier for $500 and one for a hospital cashier for $100 which replaced a fund accounted for by a transferred employee.

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
9/10/47	9/10/47	Exempt job classification for Construction Purchasing

The AEC Audit Section has not completed audit of the Monthly Payroll for July. Complete audit by the AEC Audit Section of Weekly Payrolls for July revealed the following errors:

1. There were three cases of hours posted incorrectly on the Payroll Journal.
2. Twelve postings were illegible on the Government copy of the payroll.
3. There were eight cases of deductions posted incorrectly, but payments were correct.
4. There was one salary rate shown incorrectly on the payroll although no error in payment occurred.
5. Notations on the Payroll Journal were not clear, incorrect or omitted in six instances.

Weekly payrolls have been reimbursed by the government through the month of July 1948. Monthly payrolls have been reimbursed through the month of June.

The National Cash Register Payroll Posting Machine used in the Monthly Payroll broke down on August 24th after completion of approximately 1000 checks. The balance of 800 checks had to be typed. It was necessary to ship the posting machine to Yakima for repairs. The machine was returned on August 30th. Posting of the payroll journals and ledger cards for the 800 individuals was completed after the machine was repaired.

In connection with installation of time recorders in the 3000 Area, a survey was made to determine the location of the master clock, nine time recorders and time card racks. The Construction Division has been requested to secure an estimate of the cost of installation.

Group Life Insurance Records of Hanford Works employees which were formerly maintained by the Secretary's office in Schenectady are now maintained by Hanford Works Payroll Division. Group Life Insurance Certificates (Policies) are issued at Hanford Works and all changes to these Certificates are made locally. This work also was formerly done in the Secretary's office.

17.

Subcontractors' Payrolls

During the month further efforts were extended towards the completion of the examination of records pertinent to the termination of Subcontract G-161 with J. A. Terteling & Sons, Inc.

Unit prices of inventoried material have been checked for accuracy in those cases where the subcontractor's records were available for audit. As many items were purchased by the subcontractor's home office or transferred from other job locations, unit prices could not be verified from the records available and may require review at the subcontractor's home office. The mathematical accuracy of the inventories has been verified.

Equipment rentals have been checked for mathematical accuracy and the Associated General Contractor factors verified. The replacement prices and arrival dates at this project could not be verified from records retained by the Terteling's local office.

A statement itemizing expenditures approximating $39,000.00 that was omitted from the termination proposal dated July 6, 1948 is to be forthcoming from J. A. Terteling. Statements from outside auditors relative to the termination proposals submitted by J. A. Terteling's sub-subcontractors, Lent's and Process Engineers, Inc., are also to be submitted.

Approval was received during the month from the Atomic Energy Commission to pay increased hourly rates effective August 1, 1948 to Painters, Carpenters, Millwrights, Pile drivermen, Riggers, Boommen, Shinglers, Saw Filers, Power Saw Operators, Floor Sander Operators, Floor Layers and Floor Finishers. Approval was also received to pay increased rates of pay to Plumbers and Steamfitters retroactive to July 1, 1948 and to Electricians retroactive to April 22, 1948. Payrolls covering these increased rates of pay have not yet been disbursed by the subcontractors.

Approval of the Appendix C to the McNeil Construction Company Subcontract was received from the Atomic Energy Commission during August with the limitation that the approval of salaries and group insurance plan be restricted only to McNeil's present scope of work. In the event the subcontract is extended to include additional work, the Wage and Salary Schedules and Group Insurance Plan are to be resubmitted to Washington for reconsideration.

SERVICE DIVISIONS
SUMMARY - AUGUST 1948

Employee and Community Relations Division

Open requisitions for additional personnel increased from 443 at the beginning of the month to 533 at the end of the month. Due to scheduled layoff in Design and Construction Divisions plus terminations of summer employees total plant roll decreased 112.

There were 1,814 employee contacts made by Employee Relations Group. All divisions advised as to effect Selective Service would have on their organization. Seventeen suggestion awards totaling $170 were granted during August. Insurance program at this Works discussed in detail with Insurance Division, Schenectady, by Insurance Supervisor.

Six general news releases made to local and other newspapers in the Northwest. Radio broadcast script concerning G. E. Graduate School of Nuclear Engineering prepared for broadcast over G. E. "Voice of Washington". One hundred seventy-one women employees completed the six weeks training program.

Purchasing and Stores Division

The work load increased materially during the month. There were 1,524 purchase orders placed as compared to 1,399 during the previous month.

Stores Disbursements reached a record high of $341,237.78. Approximately $70,000 of this amount was for Construction.

Cancellations were effected without charge on four of the nine orders which were canceled at the request of the Project Engineering Division. Negotiations with vendors on the others were still underway at month end.

Negotiations were made for our fourth quarter steel requirements. A procedure was set up to facilitate and expedite purchases of emergency material requirements which should materially speed up the procurement of urgently needed materials.

We were advised by the Schenectady Purchasing Department to place orders for our requirements of all aluminum products to be used on the project through June, 1949. This is due to the increasingly critical situations with respect to this material.

Labor Relations and Wage Rate Division

The preliminary exempt salary personnel study has been completed. Tentative classifications have been agreed upon and results assembled and bound for submission to the General Manager.

A preliminary comparative wage analysis was made from data assembled by the Pacific Telephone and Telegraph Company involving Seattle, Portalnd, Tacoma, and Spokane. A community survey of these areas is in progress.

SERVICE DIVISIONS

AUGUST, 1948

EMPLOYEE AND COMMUNITY RELATIONS DIVISION

ORGANIZATION AND PERSONNEL

Employment

One general clerk E, assigned to the Investigation and Files Group, resigned effective August 20.

One stenographer and typist D, assigned to the Record and Statistics Group, resigned effective August 27.

One reproduction and photographic assistant E, assigned to the Records and Statistics Group, resigned effective August 13.

One general clerk D, assigned to the Procurement Group and one messenger assigned to Investigation and Files Group, resigned effective August 13 and August 4 respectively.

Employee Relations

No organization changes were made in this group during August.

Public Relations

One maintenance mechanic A doing commercial artist work terminated effective August 31.

Number of employees on payroll	August
Beginning of month	96
End of month	90
Net decrease	6

This decrease resulted from voluntary resignations.

SERVICE DIVISIONS

AUGUST, 1948

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Service Divisions
Employee and Community Relations Division

ACTIVITIES

Employment

The volume of applicants interviewed during the month decreased slightly. A total of 1,361 candidates were interviewed during August as compared to 1,509 during July. The volume of new cases received for investigation decreased from 605 in July to 425 in August.

At the beginning of the month there were 433 open requisitions for non-exempt personnel, 310 of which were covered by interim commitments. At the end of the month there were 506 open requisitions, 303 of which were covered by interim commitments. In addition, at the beginning of August there were a total of 55 requisitions for exempt personnel, 28 of the persons requisitioned having accepted offers, 22 having been made offers but no acceptances received and the remainder in the process of investigation. At the end of August there were 47 open requisitions for exempt personnel, 29 of the persons requisitioned having accepted offers, 13 having been made offers but no acceptances received and the remainder in the process of investigation.

A total of 172 employees were added to the rolls during August. On the other hand 284 employees were removed, reflecting a net loss in total employment of 112 employees. This net loss was due primarily to the terminations of temporary employees hired only for the summer plus the layoff scheduled in the Design and Construction Divisions.

During the month of August the employment was advised of the scheduled layoff of 132 employees in the Design Division between September 1 and January 1, 1949. Information was also received of a scheduled layoff in the Construction Division of 92 employees. By the end of the month practically all of the employees scheduled for layoff by the Design Division had been interviewed by members of the employment office. Arrangements had been made to transfer a total of 26 of these employees to other divisions at this Works. Offers were also made to six employees for assignments with the company at locations other than the Hanford Works. In addition six offers had been made for transfer to other divisions at this Works to which no answers have been received. It was also determined that it would be possible to transfer three other employees back to Schenectady if they so desire. Of the 92 employees scheduled for layoff in the Construction Division 19 notices were cancelled and these employees reassigned temporarily to other work in that division. Due to the experience of Construction employees it was not anticipated that many could be absorbed in operation work, however, by the end of August arrangements had been made to transfer three of these employees to other divisions at this Works. Of the remaining 73 effected in the Construction Division layoff 49 had reported to the employment office for interviews and by the end of the

month arrangements had been completed to transfer 24 of these persons to other divisions. Ten of these employees had obtained employment with one of the subcontractors at this Works. In addition offers have been made by subcontractors to two others, however, they have not accepted as of the end of the month. Three of the employees scheduled for layoff from the Construction Division terminated voluntarily and a number have indicated that they do not desire to remain at the Works.

During August 55 new requests for interdivisional transfers were received by the Procurement Group. Thirty of these employees requesting transfers were interviewed and as a result of these interviews 18 actual transfers were effected.

Employee Relations

During the month of August a total of 1,814 contacts with company employees were made by the Employee Relations Counselors. These contacts resulted in 2,187 inquiries summarized as follows:

Policy	444
Military Service	263
Group Life Insurance	212
Group Disability Insurance	304
Pension Plan	78
Suggestion System	29
G.I. Bill of Rights	18
Social Security	39
Employee Sales Plan	327
Housing	102
Community	36
Personal	184
Income Tax	47
Miscellaneous	104
Total	2,187

Employee Relations Counsellors attended 4 Area Council Meetings with a total of 65 members in attendance at which time area problems and items of general interest were discussed. Two meetings were conducted by the Employee Relations Group during the month of August with a total of 37 employees in attendance. The Group Insurance Plans, Pension Plan, and the Employee Sales Plan were discussed.

Service Divisions
Employee and Community Relations Division

Exit interviews were given to 206 terminating employees during August, and 158 new employees were given orientation. Of this latter number 69% elected to participate in the Group Life Insurance Plan and 74% elected to participate in the Group Disability Insurance Plan.

A total of 168 Traffic Appliance Certificates covering 214 appliances were issued by Employee Relations Counselors in the 100, 200, and 300 areas during the month of August.

The following employees retired during the month of August:

Homer C. Bates - Maintenance Division
Yancey W. Jones - Electrical Division
Homer A. Reid - Plant Security and Services Division
Peter L. Staley - Plant Security and Services Division
Ernest B. Sylvester - Electrical Division

These employees were interviewed by an Employee Relations Counselor prior to their retirement and fully informed as to all matters pertaining to the benefits they would receive under the Pension Plan.

The following employees on leave of absense because of illness during the month of August were contacted by an Employee Relations Counselor and given assistance in connection with their Group Disability Insurance:

John E. Irwin - "S" Division
George D. Petty - Maintenance Division

Three employee deaths occurred during August. They were:

- Construction Division
- Technical Division
Design Division

death occurred at Kadlec Hospital on August 5 as a result of injuries received from an automobile accident which occurred on the plant near White Bluffs. death occurred on August 24 as a result of injuries received from a fall at a skating rink in Pasco. death occurred on August 8 at Long Beach, Washington as a result of accidental drowning.

A report was prepared during the month of August on the number of employees in each division who would be affected by the Selective Service Act. Each division was advised of the number of employees that possibly might be required to report for military service. Information concerning the registration dates as well as the place of registration was furnished to the Works News and also to the Chief Supervisors in each of the areas.

Service Divisions
Employee and Community Relations Division

A new information pamphlet on the Group Life Insurance program at this Works has been prepared and distribution made to all new employees. This distribution began during the month of August.

Weekly Salaried Employee Rating Sheets were distributed to all divisions during the past month and in connection with this distribution three meetings were held with various supervisory groups for the purpose of reviewing this rating plan.

Suggestion System

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

	July	August	Total Since 7-15-1947
Suggestions received and acknowledged	102	151	2,473
Investigation reports completed	305	153	2,201
Awards granted by the Suggestion Committee	16	17	189
Cash Awards	$115	$170	$1,870

The August 13 issue of the Works News featured a front page story of the 16 award winners for the month of August.

Insurance

1. Insurance Coverage

-- An answer has been filed in the Superior Court of Benton County by the attorneys for the in the suit for damages instituted by this claimant. This answer alleges that the plaintiff was guilty of contributory negligence and that the injury received when he fell on the ice in the 300 Area was due to his own careless acts.

During the past month two days were spent by the Insurance Supervisor in Schenectady at which time the insurance program at this Works and the problems involved were discussed with L. W. Mosher, manager of the company's insurance division. Particular attention was given to commercial facility requirements. Mr. Mosher felt that it was essential that each commercial facility be required to maintain certain insurance coverage in order to protect the people of the village. Mr. Mosher also suggested that in view of the unique insurance arrangements that we had with the Department of Labor and Industry and also

with the Travelers Insurance Company any problems arising in connection therewith should be handled at this Works.

Mr. Mosher advised that the Atomic Energy Commission at the Knolls Laboratory had requested the General Electric Company to discontinue the Blanket Fidelity Bond and to operate on a self insured basis with any losses reimburseable by the Government and he felt that a similar request might be made of this Works.

2. Life Insurance

Code information for use by insurance companies in issuing insurance to employees at this Works was furnished to 32 insurance companies and investigation agencies during the month of August.

On August 27 a meeting was held in Hartford, Connecticut by the Insurance Supervisor with Mr. R. C. Stratton, Supervising Chemical Engineer of the Travelers Insurance Company, who was instrumental in establishing the existing code disignation for life insurance applicants employed at this Works. Mr. Stratton was advised of our recent job reclassification and also of the fact that complaints have been received because individuals were employed on certain positions who were requested to pay an additional premium because they work in a particularly hazardous area whereas other employees in the same area were not required to pay an extra premium. Mr. Stratton agreed that certain discrepancies would appear from time to time and for that reason it would be necessary to conduct periodic surveys in order to correct them. He advised, however, that the requests for such a survey must be initiated by this Works. Efforts are being made in this respect through the local Atomic Energy Commission at the present time.

3. Fidelity Bond

A review of the various job classifications at this Works was made with Mr. H. G. Anderton of the Liberty Mutual Insurance Company for the purpose of segregating Class "A", "B", and "C" employees for premium determination. Mr. Anderton requested that all employees who are authorized to withdraw materials from Stores be included under Class "A". A re-capitulation of the bonded personnel at this Works is being made at the present time in order that new classifications may be filed with the Liberty Mutual Insurance Company by September 15.

4. Compensation

In order to protect the company as well as the Atomic Energy Commission from compensation suits the Department of Labor and Industries has been requested to inform the Insurance Group of each subcontractor who has

qualified under the Workmen's Compensation Act where the protection under this act is not furnished by the company.

During the month of August a request was received from Mr. Earl Anderson, Director of Department of Labor and Industries, that the method of determining Administrative Expense be revised. In making this request Mr. Anderson submitted a recommendation that the present agreement be modified so that the amount of Administrative Expense can be computed based upon the average number of General Electric claims processed as against the average number of state-wide claims processed. He further suggested that the agreement be reviewed each six months to determine whether any changes are desired. This proposal has been submitted to the company's counsel with a recommendation that a modification to our existing agreement be prepared and submitted to the Atomic Energy Commission for signature.

Public Relations

Arrangements were completed during the month of August to accomodate press representatives from the San Francisco area during the "Atomic Frontier Days". Assistance was also rendered in this respect by the San Francisco representative of the Advertising and Publicity Department.

Efforts were made to secure a national radio broadcast on the Atomic Frontier Days subject and information in this connection was forwarded to the Advertising and Publicity Department in Schenectady. Unfortunately due to the limited nature of the celebration it was not possible to use the material.

A script describing the functions of the General Electric Graduate School of Nuclear Engineering for release on General Electric's "Voice of Washington" daily news broadcast was submitted for approval to the Advertising and Publicity Department.

A series of articles prepared by the editor of the Tri-City Herald, as the result of interviews with each division manager arranged by the Public Relations Group, were reviewed and edited before publication.

An article concerning the commercial portion of the Master Plan for Richland was prepared during the month of August at the request of the Commercial Facilities Group for use by the publishers of Harry Broderick Real Estate Company's "House Organ".

During the past month four news releases of general interest were made to the local newspapers as well as other newspapers in the Northwest.

Recruiting advertising was placed in both the weekly and daily newspapers in the vicinity of Richland during August and also in the Engineering News Record and in the Civil Engineering Magazine. Six general news releases were made to the Richland Villager during August.

Service Divisions
Employee and Community Relations Division

A radio broadcast script was prepared for use by the General Manager in Nucleonics Department and a broadcast scheduled for the month of August. This broadcast was subsequently postponed until the early part of September.

The "Joe Newcomer" folder for further publicising the General Electric Group Life Insurance Plan to employees was completed during the month of August and a copy inserted in the Works News issue of August 20.

A talk was prepared by the Public Relations Group for use by the Assistant General Manager at the 700 Area Maintenance Safety Meeting. A Works News story was prepared and published concerning this talk.

Four issues of the Works News were published during the month of August.

Women's Activities

The women's training program which began on June 14 was completed on August 6. A total of 171 women employees were scheduled for this program. At the end of the final instruction period a set of General Electric publications was furnished to each employee.

During the month of August 49 women attended orientation and exit interviews were given to 79 terminating women employees.

STATISTICS

Employment

Number of employees on rolls	7-31-48	8-31-48
Exempt	1,744	1,730
Non-Exempt	6,909	6,811
Total	8,653	8,541

Service Divisions
Employee and Community Relations Division

ADDITIONS

	Exempt	Non-Exempt	Total
New Hires	12	147	159
Reactivations	2	10	12
Transfers from other Works	1	0	1
Net Additions	15	157	172
Payroll Exchanges	18*	2**	20
Gross Additions	33	159	192

TERMINATIONS

	Exempt	Non-Exempt	Total
Actual Terminations	43	218	261
Removals due to extended leaves	2	21	23
Payroll Exchanges	2***	18****	20
Totals	47	257	304

Approximately 72% of all actual terminations were on a voluntary basis and most of these were for the following reasons: (a) return to school, (b) another job, (c) to return or remain home. Also, it should be noted that most of the employees that had been engaged for temporary summer work only were removed from the roll during the month of August.

*Transferred from Weekly Salary Roll
**Transferred from Monthly Salary Roll
***Transferred to Weekly Salary Roll
****Transferred to Monthly Salary Roll

Service Divisions
Employee and Community Relations Division

GENERAL

	7-48	8-48
Applicants interviewed	1,509	1,361
Photographs processed	3,224	11,041*
Fingerprint impressions taken (in duplicate)	518	462
Procurement letters written	1,585	1,133

ABSENTEEISM STATISTICS (Weekly Salary Roll)**

	7-48	8-48
Male	1.22%	1.48%
Female	2.42%	2.71%
Total Plant Average	2.75%	1.54%

INVESTIGATIONS STATISTICS

	7-48	8-48
Cases pending at beginning of month	1,948	1,782
Cases received during the month	605	425
Cases closed	771	629
Cases pending at end of month	1,782	1,558
Number found satisfactory for employment	338	264
Number found unsatisfactory for employment	9	4
Cases closed before investigation completed	13	15
Special investigations conducted	133	242

*A newly designed photograph identification badge was prepared for each employee of the Works.
**Statistics furnished by Weekly Payroll Division

Compensation and Insurance

Claims

	Reported in August, 1948	Reported in July, 1948	Total Since Sept. 1, 1946
Workmen's Compensation	110	100	935
Liability	14	19	227
Handled for duPont	0	0	

Compensation Payments Approved (Department of Labor and Industries)

	July, 1948		June, 1948		Total Since Sept.1,1946
	No. of Claims	Amount	No. of Claims	Amount	Amount
Medical Aid	5	$ 162.77	20	$ 823.70	$12,223.53
Accident Fund	59	$3,316.33	75	$8,080.14	$79,696.40
Pension	28	$1,280.32	27	$1,220.32	$32,313.10

Liability Payments Approved (Travelers Insurance Company)

July	Property Damage	$ 1,095.54
	Auto Property Damage	$ 898.05
		$ 1,993.59

PURCHASING AND STORES DIVISION
AUGUST, 1948

GENERAL

Purchasing

1,524 purchase orders were placed during the month as compared to 1,399 placed during the previous month. Requisitions received totaled 2,103 as compared to 2,268 the previous month. 2,372 requisitions were placed as compared to 2,351 the previous month. Requisitions on hand unplaced at month end totaled 523 as compared to 792 at the beginning of the month.

Of nine large orders on which cancellations were requested by the Project Engineering Division, we have effected cancellation of four without charge. Two cancellation claims were received on the forms prescribed by the Joint Termination Regulation and these were being reviewed at month end. Three vendors indicated that they will submit claims but will require additional time for preparation.

Procedures were established for identifying purchase orders under the decentralized accounting program. In lieu of a separate series of order numbers for each of the accounting divisions as was first requested, it was decided to use letter suffixes in connection with the current series of order numbers which are all in the same sequence. Following are the letter suffixes for each of the four accounting divisions:

G - General
H - Hospital
M - Manufacturing
V - Community

Invitations to bid were mailed on our fourth quarter steel requirements under the Voluntary Steel Allocation Plan.

In an effort to facilitate and expedite purchases of emergency material requirements for the several operating divisions Instructions Letter No. 98 was issued on August 13, 1948 to establish a uniform method of handling. In each such instance initial contact may be made by authorized individuals with the operating divisions by telephone and the necessary paper work accomplished after the fact. It is anticipated that this procedure will materially speed up the procurement of urgently needed materials.

The upward trend in prices of practically all materials continues. The majority of quotations received contain escalator clauses many of which are invoked by the time the material is shipped and billed. The average increase of prices is estimated to be approximately ten per cent.

We were advised by the Schenectady Purchasing Department that the situation with respect to aluminum was becoming increasingly critical and that we should endeavor to place orders within the near future for our requirements of all aluminum products used on the project through June, 1949. A review was being made at month end to determine just what steps should be taken to protect ourselves.

PURCHASING AND STORES DIVISION

GENERAL (Cont.)

Purchasing

Shipments of larger size coal from both our suppliers, Big Horn Coal Company and The Continental Coal Company, were received during the month in accordance with arrangements made during the previous month and it was found that the larger size slacked down to such a degree that each car contained approximately the same amount of slack as was contained in the cars of the smaller size heretofore supplied. As a consequence it was agreed by all concerned that future shipments will be made of the smaller size originally specified, ie. 1 5/8" x 3 1/4", as it is more easily handled.

Due to the enormous quantities of Ferric Sulphate used during the flood emergency for water treatment the maximum quantity covered by our contract was entirely withdrawn. Invitations to bid on a new contract have been mailed.

Stores

Disbursements from Stores stock including salvage and spare parts reached a new high during the month for a total of $341.237.78. Approximately $70.000 of

PERSONNEL (Cont.)

Total personnel at month end was 181 as compared with 185 at the end of July, 1948.

SAFETY AND SECURITY

Purchasing

Safety and Security Meetings Scheduled	1
Number of Employees attending	31

Stores

Safety and Security Meetings Scheduled	13
Number in attendance at meetings	136
Minor Injuries	3

STATISTICS

Purchasing

Requisitions on hand 8-1-48 (includes 56 assigned to Govt.)	792
Requisitions received during August	2,103
Requisitions placed during August	2,372
Requisitions on hand 8-31-48 (includes 30 assigned to Govt.)	523
HW Orders placed	1,524
TPS Orders placed	129
M.O.'s placed	0
O.R.'s placed	16
Alterations issued	207
Orders Expedited	228
Scrap Sales completed	1
Value of Scrap Sold	$82.79

Stores

Number of items added to Stores stock	268
Number of items deleted from Stores stock	143
Items in Stores stock at month end	51,768
Receiving Reports issued	4,086
Store Orders filled	21,094
Store Orders filled (Salvage)	544
Emergency Store Orders filled (Stores stock)	9
Returnable containers on hand at month end	5,591
Returnable containers on hand over six months	1,500
Value of Disbursements, not including cash sale items	$322,277.62
Value of Disbursements (Salvage)	18,960.16
Value of transfers from Salvage to Stores	565.85
Value of Disbursements to Construction	70,231.70

AUGUST 1948

LABOR RELATIONS AND WAGE RATE DIVISION

ORGANIZATION AND PERSONNEL

No additional employees were added to this division during the month of August.

Number of Employees on Payroll	August
Beginning of Month	10
End of Month	10
No change	0

ACTIVITIES

Exempt Personnel Salary Study

Bertram Miller, in charge of Labor Relations and Wage Rates, Erie Works, arrived in Richland August 2nd for the purpose of assisting with the preliminary classification of all Hanford Works exempt personnel below the assistant superintendent level except those individuals on engineering assignments.

Organization charts were obtained from each division and a series of conferences were conducted with the various managers, superintendents and their appointed representatives. Tentative classifications were agreed upon, listed on master sheets by divisions and operating groups (Manufacturing Divisions, Service Divisions, etc.) Further conferences were held in which the managers and superintendents of related divisions jointly reviewed their respective supervisory alignment.

The preliminary results were posted on individual payroll records and assembled in bound ledger for submission to the General Manager.

Community Wage Rate Survey

A preliminary comparative wage analyses was made from data assembled by the Pacific Telephone and Telegraph Company involving Seattle, Portland, Spokane and Tacoma.

A community survey was begun embracing the above area and is in progress at the close of the month of August.

Wage Rate Manual

A wage rate manual for limited distribution to supervision which was designed for the purpose of clarifying the non-exempt wage structure was virtually completed and will be ready for distribution in early September.

Labor Relations and Wage Rate Division

Non-Exempt Wage Structure

A conference was held with supervision of the Manufacturing Divisions for the purpose of discussing and clarifying the non-exempt wage structure.

The continuous process of reviewing and adjusting existing non-exempt classifications, screening requests for additional personnel and non-exempt personnel transfers continue to be the principal activities of the Division.

STATISTICAL

Requisitions for non-exempt personnel received and approved	239
Additions to Payroll	188
Removals from Payroll	199
Transfers from Weekly to Monthly Payroll	18
Transfers Approved	216
Job Reclassifications Approved	246
Automatic Increases	751

PLANT SECURITY AND SERVICES DIVISION

MONTHLY REPORT - AUGUST 1948

ORGANIZATION AND PERSONNEL

Number of employees on payroll:

	Beginning of Month	End of Month	Increase	Decrease
Staff	2	3	1(a)	-
Patrol and Security	671	674	3(b)	
Safety & Fire Protection	138	140	2(c)	
Office Services (General & Clerical)	319	311		8(d)
Total	1130	1129	6	7

NET DECREASE - 1

(a) - 1 Secretary transferred from Office Services.

(b) - 17 Hires (Patrolmen)
1 Transferred from Purchasing & Stores Division (Patrolman)
10 Terminations (8 Patrolmen - 2 Clerical)
5 Transfered to the "S" Division (Patrolmen)

(c) 3 Hires (Firemen)
1 Termination (Fireman)

(d) 8 Hires (5 Clerical Services - 3 General Services)
1 Transferred from Constr. Division (General Services)
10 Terminations (8 Clerical Services - 2 General Services)
5 Transferred to other Divisions (3 Clerical - 2 General)
2 Removal due to Leave of Absence

Service Divisions
Plant Security and Services

SAFETY & FIRE PROTECTION

Safety

Plant Safety Record - 25 days.

Injury Statistics

	July 1 thru July 20, 1948	July 21 thru August 31, 1948	Year to Date	Cumulative F/R - 1943
Major Injuries	3	2	10	0.886
Non-Tabulatable Major Injuries	0	0	0	
Sub-Major Injuries	2	5	29	
Minor Injuries	335	727	3922	3.48

Major Injury No. 51

July 31, 1948 - a material checker of the Construction Division in the White Bluffs Area incurred a skull fracture and chest injuries that resulted in death. The injured and a fellow passenger, Robert C. Eagle, were returning to White Bluffs within the Hanford Works barricade after checking freight cars. While driving along the river road he turned out to avoid a water puddle, causing a spike lodged in the right rear tire to rip the inner tube. The resulting flat tire caused the injured to lose control of the vehicle which swerved into a ditch and turned end over pinning the injured to the ground beneath the steering wheel.

Major Injury No. 52

August 6, 1948 - an employee of the Maintenance Division, 200 West Area, incurred abrasions, right and left arms, and internal injuries. The injured, with the aid of four assistants, was using a 12 foot platform scaffold that was raised and lowered by the use of two air hoists to paint the steel work on the underside of a coal conveyor. During the process of lowering the scaffold, the air hoist on the one end was lowering faster than the other. In attempting to level the scaffold, one air hoist held and the other did not until the platform scaffold was at a steep angle. This allowed the planks to slip causing the injured to lose his balance and fall approximately ten feet to the ground.

Sub-Major Injury No. 123

July 31, 1948 - a janitor of the Security and Services Division in the 300 Area, 321 Building, sustained a fracture right index finger, distal phalanx. The injured noticed that a stack of soft drink cases containing empty bottles had become disarranged as a result of the slamming of doors. In

an effort to re-align the pile he placed his hand under the bottom of the fourth case from the top and shifted the position of the four top cases. As he released the weight of the four cases his right index finger was caught between the bottom of the fourth case and the top of an empty bottle in the fifth case.

Sub-Major Injury No. 119½

July 2, 1948 - an employee of the Transportation Labor Division, 100-B Area, sustained a transverse fracture of the distal phalanx of the right small toe. The injured and two other employees were performing routine trash pick-up. They picked up some old Railroad ties with a load of other trash, and since the load could not be removed mechanically, the men started to do it manually. The injured was pulling out a tie when another one started to fall, and it struck his foot when he attempted to stop it.

Sub-Major Injury No. 123½

August 7, 1948 - , a carpenter of the Minor Construction Division in the 300 Area sustained a complete transverse fracture left ring finger, distal phalanx. The injured had been assigned the job of removing forms from pre-formed coping which is being made up in advance for use on the new 3708 building. Two slabs were on the ground and were approximately 20 inches apart for the purpose of easy pouring and protection. To remove these forms it is necessary to work in a kneeling or stooped position. While removing one of the double headed nails with a wrecking bar, the nail head broke throwing the injured off balance allowing his hand and the bar to strike the adjacent form with the full force of his pulling effort.

Sub-Major Injury No. 124

August 10, 1948 - , an ambulance driver of the Medical Division, 1100 Area, sustained a fracture of the fifth metatarsal. The injured was standing on the ambulance ramp as a car drove rapidly up the drive. The car stopped and a woman called excitedly, "Get the nurse". The injured jumped from the ramp suggesting that they get the patient, a child in convulsions, into First Aid. The mother was holding the child with one hand and his tongue with the other. The injured grasped the child with one arm and with the other was attempting to assist the mother who still held on to the child. As they started up the incline of the ramp, the injured's foot slipped off a small ledge approximately 3/4" high, formed by the blacktop ground level settling away from the concrete ramp incline.

Sub-Major Injury No. 125

August 20, 1948 - , an employee of the Fire Department, 101 Area, sustained a chip fracture of the distal phalanx, right index finger when it struck the end of a falling ladder which he attempted to catch. The injured employee was completing a job started on another shift. The ladder was on edge and fastened to the edge of a work bench by two 10" clamps, one at each end. The injured removed one clamp and as he was going to the other end to remove one, the ladder started to fall. He tried to catch the ladder and it struck his finger.

Service Divisions
Plant Security and Services

Safety Meetings

There were 478 Safety Meetings held during the period of July 21 through August 31, with a total attendance of 7,082.

Safety Spectacles

Orders were placed for 53 pairs of prescription safety spectacles during the period of July 21 through August 31; 39 pairs were checked, received, and fitted; and 121 adjustments and repairs were made to all types of safety spectacles.

Exposure Hours

There were 2,184,392 exposure hours from July 21, 1948, to and including August 31, 1948.

100 Area Activities

A study has been made of an outdoor spray painting job that has resulted in several bad cases of sunburn in the 100-F Minor Construction group. Sun rays reflected from a freshly painted rounded surface and focusing through the water-paint spray were found to be the trouble. The use of a long handled spray gun is being tried to prevent these burns. Should this prove ineffective, a sun shade may be necessary.

Investigation is still in progress to develop safer methods and equipment for the coal handling operations of the Power Divisions in the 100 Areas.

The Maintenance Division of the 100 Areas is planning to revise the storage facilities for compressed gas cylinders to eliminate as much as possible the need for manual lifting of cylinders.

On several occasions during the past month the Construction Division has made excavations in the 100 D Area proper close to the R.R. tracks and either failed to barricade or barricaded in such a manner that the railroad crew and the train were endangered. An understanding with the A. & J. General Superintendent has resulted in correction of these hazards.

200 Areas Activities

The Safety Leader's Training Program was conducted with all members of supervision in both areas.

The Safety Display Cabinet has been completed and set up in the 200 West Area. It is being moved from building to building throughout the area each week.

Area supervision of Maintenance and Minor Construction has launched a special drive in the prevention of injuries by making an urgent plea to all employees. Considerable interest is being shown and beneficial results have been obtained in the past week.

The Maintenance Division in each area has set up a definite weekly inspection of all activities in the areas. This inspection is being conducted by the Area Maintenance Engineer and the Safety Engineer.

Area supervision in the Transportation, Maintenance, and Minor Construction Divisions in the 200 West Area are putting forth extra efforts to eliminate accidents and injuries brought about by the increased activities in this area.

300 Area Activities

Controls of conditions and activities relative to the repair of the large Propane tank were recommended.

The Medical Division was contacted relative to the hazards involved in the use of the present type of boiler sealer, and requested more information before making a statement.

A work order was issued and work completed on a new Safety Record Board at the east entrance of the badge house.

A decision was made with the Maintenance Division to paint, color code, and place handles on all wooden manhole covers in the area.

700-1100 Area Activities

Recommendations have been made for installation of a manifold system for oxygen and acetylene in welding shop 722 hanger to permit safe handling and use of highly compressed and explosive gases. At present the cylinders are used within the shop and present a serious hazard.

It was requested by Construction Procurement that a study be made of the problems and hazards involved in the use of large amounts of ditto fluid. An analysis of the fluid was made by the Technical Laboratory, and recommendations were submitted on the basis of the analytical report.

Upon request of the Purchasing Division, special tests were run on eight ladders submitted by a vendor. A report was made to Purchasing.

Several supervisory meetings were attended for the purpose of launching the September Topic-of-the-Month Program.

An inspection was made of the Pasco Area and conditions were found to be satisfactory, and items in need of correction were routed to the proper divisions

An inspection was made of the North Richland Hospital, and a study of the evacuation system discussed. Several items are being given to proper groups for correction.

Service Divisions
Plant Security and Services

General

In Compliance with the request of the Program Committee of the Council, the Safety Division has prepared and will enter a float in the Atomic Frontier Day Parade.

The problem of providing adequate visibility through intersections in the Village has been studied and recommendations have been reported to proper authorities.

The schools' Safety Program has been discussed with the new school officials, and improved safety instruction is assured for 1948-1949.

The Sub-Major Injury Investigation No. 124 was conducted at the Kadlec Hospital.

Improvements have been made in the method of preparing the Government Safety Reports.

FIRE PROTECTION

Fires	Number of Fires		Estimated Damage	
	July	August	July	August
Plant Area	10	21	$7.50	$825.00
Miscellaneous	0	3	No Damage	No Damage

On August 20, 1948 at 11:32 P.M. a grease rack fire occurred in the 100-D Area. Shell cleaning fluid splashed on 300 watt light bulb breaking it and starting the fire. Damage $650.00.

Routine Duties

Fire Extinguishers

Inspected	1,907
Installed and Relocated	38
Refilled	42
Repaired	0

Gas Masks

Inspected	70
Serviced	4

Fire Drills & Lectures

Outside	58
Inside	66
Auxiliary Brigade	33
Safety Meetings	37

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
(7-21-48 - 8-31-48, Incl.)

	300 Area	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	700-1100 Areas	Misc. Areas	3000 Area	Pasco Area
Minor Injuries	180	38	37	74	80	119	140	10	40	9
Sub-Major Injuries	2	1	0	0	0	0	1	1	0	0
Major Injuries	0	0	0	0	0	1	0	1	0	0
Days since last Tabulatable Major Injury	321	97	579	1225	292	25	93	31	55	397
Days since last Sub-Major Injury	24	60	83	315	265	145	83	10	85	323
Days without a Minor Injury	3	16	18	11	5	4	8	33	21	34
Safety Meetings Conducted	75	28	39	37	34	50	193	6	12	4
Number in Attendance	1078	155	275	454	306	675	3597	32	482	28
Safety Spectacles Delivered	9	1	5	4	3	9	8	0	0	0
Safety Spectacles Serviced	9	8	17	13	21	35	18	0	0	0

MONTHLY INJURY ANALYSIS

Period - July 21 through August 20, 1948

Minor Injuries

	Misc. Burns	Abrasions	Contusions	Lacerations	Punctures	Splinters	Strains & Sprains	Foreign Body	Blisters	Unclassified	TOTAL AUGUST	TOTAL LAST MONTH
GENERAL	0	0	0	0	0	0	0	0	0	0	0	0
MANUFACTURING	64	67	40	69	11	22	13	17	12	19	334	176
MUNICIPAL	2	7	3	16	1	3	2	4	5	4	47	28
ACCOUNTING	0	1	0	0	0	1	0	0	0	0	2	3
LEGAL	0	0	0	0	0	0	0	0	0	0	0	0
TECHNICAL	15	17	3	18	4	1	0	0	1	1	60	39
MEDICAL	0	2	4	3	1	2	1	1	0	1	15	16
HEALTH INSTRUMENT	2	7	0	11	0	1	0	2	1	2	26	16
SERVICE	3	8	4	10	4	5	1	3	1	4	43	42
DESIGN & CONSTRUCTION	2	7	7	11	2	6	2	1	0	4	42	15
TOTAL	88	116	61	138	23	41	19	28	20	35	569	
LAST MONTH	42	63	38	83	22	25	14	22	12	14		335

Service Divisions
Plant Security and Services

OFFICE SERVICES DIVISION

General Services Division

Laundering volumes were as follows:

Plant Laundry (Building 2723)	July	August
Coveralls - Pieces	28,465	29,089
Towels - Pieces	8,968	10,563
Miscellaneous - Pieces	54,236	51,389
Total Pieces	91,669	91,041
Total Dry Weight - Lbs.	129,085	127,930
Richland Laundry (Building 723)		
Flatwork - Pieces	177,061	162,784
Rough Dry -Pieces	29,067	28,825
Finished - Pieces	4,908	5,584
Total Pieces	211,036	197,193
Total Dry Weight - Lbs.	137,174	128,175
Monitoring Section (Building 2723-W)		
Poppy Check - Pieces	57,998	61,240
Scaler Check - Pieces	76,292	106,657
Total Pieces	134,290	173,897

Due to breakdown of the 200-W laundry machinery, it was necessary to work extra time during this month in order to keep the operating areas adequately supplied with protective clothing.

The volume of work in the 700 Area Laundry has decreased considerably in the past month. If this trend continues we will be able to decrease our personnel proportionately.

Clerical Services Division

Telephone

Instruction Letter No. 28, Revision 1, on our new procedures on lease line and toll calls went into effect during the month. Notices are being sent daily to superintendents or managers on all calls made by people in their divisions.

Service Divisions
Plant Security and Services

Line capacity of the Telephone Exchange is as follows:

	July		August	
Lines working as 1 - O Lines	622		631	
2 - O	58		57	
O - PBX	19		23	
1 - N	21		21	
2 - N	3		3	
N - PBX	0		0	
2-O-R Combination Lines	1		1	
Total Official Lines		724		736
Lines working as 1 - F Lines	84		83	
2 - F	17		15	
F-PBX	2		6	
1 - R	8		8	
2 - R	1250		1255	
3 - R	8		5	
2 - RF	19		21	
3 - RF	1		2	
Total Non-Official Lines		1389		1395
Vacant Lines		87		69
Total Lines in Multiple Bank		2200		2200

Mail and Stationery

Classified Files will take over messenger service for classified documents effective September 13, 1948, relieving the Mail Room of this function.

	July		August	
Pieces of First Class Mail Received	46,521		47,864	
Pieces of Parcel Post Mail received	937		952	
Pieces of Registered Mail received	328		424	
Pieces of Insured Mail received	205		266	
Pieces of Special Delivery Mail received	270		305	
Total		48,261		49,811
Pieces of Mail sent out	21,908		17,602	
Amount of Money used in Postage Meter	$1,086.85		$1,176.75	
Teletypes sent	2891		2485	
Teletypes received	2978		2479	
		5869		4964

Service Divisions
Plant Security and Services

Office Equipment

The first lot of typewriters secured from the Federal Bureau of Supply have been received and are in good condition. Arrangements have been made to secure the balance of the order from them, which will fully satisfy present requirements.

The Marr Duplicating Company were unable to correct the mechanical difficulties of some new machines which were purchased from them and have taken the machines back and credited us with their cost.

	July	August
Office Machines repaired in Shop	225	250
Office Machine Service Calls	281	264

Printing

Volume of multilith work continues to increase causing a slight backlog.

A worn out Multilith was excessed and another secured from salvage and installed to take its place.

	July	August
Multilith Orders Received	177	217
Multilith Orders Completed	181	211
Multilith Orders on hand at month end	17	23
Mimeograph Orders Received	2039	3315
Mimeograph Orders Completed	2039	3315
Mimeograph orders on hand at month end	0	0
Ditto Orders Received	3272	3259
Ditto Orders Completed	3272	3259
Ditto Orders on hand at month end	0	0

Stenographic Services

Lack of space still hinders full operation of this unit.

Central Records Storage

Work is progressing on moving all duPont records to hut 712-B and all General Electric and AEC records to 712-A. This will make a physical separation of all records and allow better control on handling, receiving and shipping.

	July	August
Cartons of material received for storage	0	75
Cartons of material sorted, indexed, & stored	86	77
Cartons of material shipped	0	0

Service Divisions
Plant Security and Services

Summary of persons viewing records for the month of August, 1948:

General Electric Files

Accounting	30
Maintenance	6
Medical	3
Technical	3
Sub-Contractors Files	55
Transportation	1
Total	98

du Pont Files

Construction Files	4
Investigation Files	36
Operations Files	4
Total	44

Atomic Energy Files

General Files	2

PATROL AND SECURITY

General

To avoid confusion with other types of passes, the White Pass Card, form HW 4.35, was changed to "salmon" color. This pass indicates that the employees have not received their Formal "P" clearance, as yet, and must be escorted in "limited" areas.

On August 16, Supplement #1, Instructions Letter #81, entitled "Procedures for Processing Classified Matter" was issued to all General Electric personnel.

Effective August 30, a procedure was established whereby all employees upon terminating their employment are required to clear through the Main Classified Files, the Design and Construction Classified Files and the Blueprint Unit. Heretofore, only persons in possession of Authorization Cards were required to execute this clearance.

Effective August 30, the procedure for picking up the Photo Identification pass of employees was revised. Prior to this time, terminating personnel were permitted to keep the pass until they had received their final paycheck. Under the new procedure, the Photo Identification Pass will be picked up during the terminating interview and the individual supplied with an Employees Temporary pass with clearance to only the particular sections to which he will be required to visit during the termination procedure.

Service Divisions
Plant Security and Services

During the month, the check of unaccounted-for classified documents in the Works Inventory has been completed in both the 300 and 700 Classified File Sections. The personnel assigned to this function are now making a tabulation of the documents and routing which will be charged against them in listing. A complete summary of these unaccounted-for documents should be completed during the month of September.

The patrol discontinued manning the ambulances in the 105-DR, 100-H, 101 and White Bluffs areas on August 2nd. These duties were taken over by the Atkinson-Jones Construction Company.

Due to the extension of the 241-TX fence across "D" Street in the 200-West area on August 14th, a temporary post is manned twenty-four hours daily at the intersection of Third and "D" Streets, routing traffic to the #231 Building through the construction area gate.

A construction area within the 300 area was established on August 14th for the building of a new 115-KV sub-station. This area was fenced out of the 300 area proper and controlled by a badge house located on the north fence line. This badge house was opened on August 21st.

A practice blackout was held in the 100-B area at 10:05 p.m., August 13th. The "all clear" signal was given at 10:18 p.m.

Effective August 16th, the west 700 area badge house will be closed from 12:30 a.m. to 5:30 a.m., daily.

Effective August 18th, the Federal Bureau of Investigation established its offices in the #762 Building and the official Federal Bureau of Investigation pass will be recognized for identification and entrance. Another procedure covering the handling of Federal Bureau of Investigation visitors was also placed into effect.

On August 19th, work on building 2705-Z, temporary office for 234-5 Technical personnel, which had been fenced out of the 231 area, was completed. The inner fences were removed and the building was fenced in as a part of the 231 area proper.

A procedure for the issuance of badges and pencils to the train crew leaving the 700 area at 3:45 p.m. daily except Sundays, was established on August 23rd. Badges and pencils will be delivered to the 700 area west gate by a dead-head bus from the 200-East area. The badges and pencils will be turned in at Riverland Yards when the crew goes off duty.

Entrance gate to the 200-West Power Area was changed from the Intersection of Fourth and "A" Streets to a location at the construction area fence on Third Street on August 31st.

Effective August 30th, patrolmen assigned to the 221-B area badge house and vehicle gate will wear individual respirator type masks while on duty.

Service Divisions
Plant Security and Services

An evacuation notification system was installed in the 221-U area on August 27th, to be operated by the patrolman posted at the 221-U area badge house.

PATROL

The 200 areas handled 236 Process escorts between the areas.

Requests handled totaled 869, mainly consisting of opening doors, gates and escorts for employees of other departments.

A total of 47 construction employees were escorted into areas for first aid treatment.

There were 198 unusual incident reports received, consisting mainly of contraband picked up at barricades, lost badges, pencils and traffic violations

Twenty-six classified escorts were handled during the month.

Four employees were given emergency first aid treatment in the areas by patrol supervision during periods when medical personnel were absent from areas.

The Outer Area traffic car issued 16 citation tickets, 31 verbal warnings and handled 126 details in addition to their regular duties.

Practice evacuations were held at 2:06 p.m., August 3rd in the 100-F area and at 10:36 a.m. on August 20th in the 100-B area.

Training

For the next seven weeks, beginning August 23rd, the patrol training school is concentrating on M-8 operations in an effort to qualify any of the remaining Industrial area patrolmen who have not received this training. "Nomenclature of the Guns" will be stressed.

Basic and advanced training at the patrol small arms range was continued and qualifications in Army "L" course firing were as follows:

	June		July - August	
	No.	Percent	No.	Percent
Unqualified	42	11	67	14
Marksman	104	28	138	29
Sharpshooter	73	17	110	23
Expert	163	44	158	34

The machine gun course was not fired this period.

The safety meetings included a discussion on "Minor Injuries".

Service Divisions
Plant Security and Services

The security meetings were conducted by Mr. M. J. Headley of the Security Office, the topic being "Handling of Classified Material".

Health talks were given on "Appendicitis", the health topic of the month.

Federal Bureau of Investigation personnel attended the range on July 27th and 28th.

SECURITY

There were 376 Security Meetings held and attended by 6,575 General Electric employees.

Security Education talks by Security speaker M. J. Headley:

Operations	-	410 attendance
Construction	-	33 attendance
Patrol	-	405 attendance

Employee Clearances

Class "Q" clearances received on old employees this month.	420
Class "Q" clearances received on old employees to date	3,158
Class "Q" clearances received on new employees this month.	637
Class "Q" clearances received on new employees to date.	4,530
Class "Q" clearances received on both old and new employees since February 17, 1947.	7,688
Formal "P" clearances awaiting change to "Q"	415

Statistical Summary of Outstanding Area Badges

July

	A	B	C	Total
100-B	589	1230	687	2506
100-D	721	1235	662	2818
100-F	742	1196	668	2606
200-E	987	1303	597	2887*
200-W	1248	1392	545	1985
200-N	65	743	179	987
300	1422	1452	415	3289
100-DR	4431	348		4779
241-TX	2668	234		2902

* Includes 31 "A" badges at Riverland Yards.

August

	A	B	C	Total
100-B	597	1269	690	2556
100-D	710	1300	652	2662
100-F	732	1260	672	2664
200-E	1092	1332	575	2999*
200-W	1277	1429	522	3228
200-N	52	765	178	995
300	1454	1463	401	3318
100-DR	4484	376		4860
241-TX	2621	252		2873

* Includes 38 "A" badges at Riverland Yards

Service Divisions
Plant Security and Services

Visitors or Temporary Badges

Area	July	August
100-B	51	85
100-D	102	154
100-F	129	194
200-E	87	143
200-W	128	202
200-N	41	75
300	141	265
100-DR	132	201
241-TX	86	123
Total	897	1442

Special Clearance Section

Following is a statistical summary of emergency clearance status of vendor and consultant companies:

Total companies forwarded to AEC this month: 10 Personnel: 61
Total companies forwarded to AEC to date: 163 Personnel: 1,762

Total companies cleared for restricted data this month: 27 Personnel 140
Total companies cleared for restricted data last month: 28 Personnel 93

New companies forwarded to the Atomic Energy Commission this month:

Westinghouse Electric Corporation
Engineering and Service Division
309 S.W. Sixth Avenue
Portland, Oregon

Number and type of clearance granted by the AEC this month to vendors:

Formal "Q"	83
Formal "P"	55
Emergency "Q"	11

Emergency clearances requested for GE personnel this month 3
Emergency clearances requested for GE personnel to date 158

"QR" clearance requested for GE personnel this month 1

Emergency clearances granted to GE personnel this month. 8
Emergency clearances granted to GE personnel to date 113

"Q" cards were issued this month to vendor personnel 3

New "Q" photo passes issued this month to vendor personnel 15

Service Divisions
Plant Security and Services

As of September 1st, 6,665 new type "Q" clearance passes have been issued to eligible employees, (i.e., employees who have received clearance as a result of Federal Bureau of Investigation check and Atomic Energy Commission approval) There are 1,876 "Q" clearance passes being with-held pending receipt of this clearance.

HANFORD WORKS
General Electric Company
Richland, Washington

REPORT OF VISITORS FOR PERIOD ENDING AUGUST 31, 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	8-26-48	8-27-48	X	
CONSTRUCTION DIVISION						
I. Visitors to this Works						
W. Ladwig Kurt G. Joa, Inc. Sheboygan Falls, Wisconsin	Inspect machinery purchased from his company	H. A. Hauser	8-25-48	8-26-48		X
II. Visits to other Installations						
R. H. Burrell to: Alaskan Copper Works Seattle, Washington	Expedite bellow assemblies	E. T. Cahill	8-3-48	8-4-48	X	
H. A. Hauser to: Giffels and Vallet Detroit, Michigan	Purchase of air conditioning system for 234-5 Project	C. J. Steigleder	8-30-48	8-31-48	X	
DESIGN DIVISION						
I. Visitors to this Works						

[redacted]

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted data Classified	Restricted data Unclassified
R. L. Andresen C. C. Moore & Company San Francisco, California	Attend conference on Project C-190 - Additional Services - 300 Area	F. W. Wilson A. E. Rhodes	8-30-48	8-31-48	X	
E. Caferro Columbia Electric Company Spokane, Washington	Consultation on lighting fixture design, 234-5 project	J. A. Carlen	8-30-48	8-31-48	X	
E. Caferro Columbia Electric Company Spokane, Washington	Consultation on lighting fixtures for schools	C. L. Johnson	8-31-48	8-31-48		X
P. Davis Holophane Company New York, New York	Lighting fixture discussion for schools	C. L. Johnson	8-31-48	8-31-48		

II. Visits to other Installations

J. J. McCullough to: Kellex Corporation New York, New York	Technical consultation	V. L. Parsegian	7-31-48	8-8-48	X	
A. T. Strand to: Puget Sound Naval Shipyard Bremerton, Washington	Consultation on experimental work	Lt. Comdr. Eldridge	8-3-48	8-4-48		
H. J. White to: Kellex Corporation New York, New York	Technical consultation	V. L. Parsegian	7-31-48	8-8-48	X	
R. C. Hollingshead to: Williamette Iron & Steel Portland, Oregon	Consultation with vendor	C. M. Sigle	8-1-48	8-7-48	X	
R. C. Hollingshead to: Jansen Machinery Company Oakland, California	Consultation with vendor	Mr. Osborne	8-1-48	8-7-48		X

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
F. C. McInerney to: Northwest Copper Works Portland, Oregon	Coordinate design	H. S. Hilton	8-2-48	8-3-48		X
O. S. Petrescu to: Puget Sound Naval Shipyard Bremerton, Washington	Consultation on experimental work	Lt. Comdr. Eldridge	8-3-48	8-4-48		X
W. M. Wright to: Giffels and Vallet Detroit, Michigan	Consultation	C. J. Steigleder	8-2-48	8-8-48	X	
C. M. Burns to: General Electric Company Schenectady, New York	Technical consultation	G. R. Rede	8-3-48	8-19-48	X	
C. M. Burns to: Giffels and Vallet Detroit, Michigan	Technical consultation	M. Bush, Jr.	8-3-48	8-19-48	X	
S. W. Beekman to: General Electric Company Schenectady, New York	Consultation	M. M. Boring	8-2-48	8-17-48	X	
S. W. Beekman to: Giffels and Vallet Detroit, Michigan	Consultation	M. Bush B. Giffels	8-2-48	8-17-48	X	
G. S. Cochrane to: American Machine & Foundry Buffalo, New York	Engineering consultation	J. L. Lenton	7-30-48	8-16-48	X	
G. S. Cochrane to: Pa. Furnace & Iron Company Warren, Pennsylvania	Engineering consultation	R. Blodgett	7-30-48	8-16-48		X

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
G. S. Cochrane to: General Electric Company Schenectady, New York	Engineering consultation	Mr. Ackley	7-30-48	8-16-48	X	
R. C. Hollingshead to: Jensen Machinery Company Cakland, California	Approval of vendor's draw-	Mr. Osborne	8-19-48	8-23-48		X
E. J. Burda to: Giffels and Vallet Detroit, Michigan	Discuss insulation specifications	J. S. Laing W. D. Rausch	8-19-48	8-23-48	X	
E. E. Scott to: Giffels and Vallet Detroit, Michigan	Consultation	C. J. Steigleder	8-16-48	8-24-48	X	
C. A. Evans to: General Electric Company Schenectady, New York	Technical consultation	G. R. Rede	8-8-48	8-19-48	X	
C. A. Evans to: Giffels and Vallet Detroit, Michigan	Technical consultation	M. Bush, Jr.	8-8-48	8-19-48	X	
F. H. Ames, Jr. to: Giffels and Vallet Detroit, Michigan	Consultation	W. D. Rausch	8-11-48	8-20-48	X	
F. H. Ames, Jr. to: Roberts Filter Company Darby, Pennsylvania	Consultation	C. V. Roberts	8-11-48	8-20-48	X	
R. E. Tomlinson to: Oak Ridge Nat'l Lab. Oak Ridge, Tennessee	Design and technical conference	M. D. Peterson	8-13-48	8-23-48	X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
R. E. Tomlinson to: Argonne National Laboratory Chicago, Illinois	Technical consultation	S. Lawroski	8-13-48	8-23-48	X	
H. L. Friend to: Giffels and Vallet Detroit, Michigan	Discussion on special project	W. P. Ingalls (G.E. representative)	8-13-48	8-23-48	X	
A. W. Jonson to: Giffels and Vallet Detroit, Michigan	Consultation	W. D. Rausch	8-16-48	8-21-48	X	
R. T. Jaske to: Giffels and Vallet Detroit, Michigan	Arrange for requisitioning procedure	C. J. Steigleder	8-16-48	8-25-48	X	
E. V. Mills to: Giffels and Vallet Detroit, Michigan	Technical consultation	C. J. Steigleder	8-18-48	8-31-48	X	
E. V. Mills to: General Electric Company Schenectady, New York	Technical consultation	H. M. Boring	8-18-48	8-31-48	X	
G. E. Halm to: Kellex Corporation New York, New York	Conference	J. D. Hagy	8-21-48	Still gone	X	
H. W. Huntley to: Kellex Corporation New York, New York	Conference	J. D. Hagy	8-21-48	Still gone	X	
R. C. Hollingshead to: Williamette Iron & Steel Portland, Oregon	Approval of vendor shop	C. M. Sigle	8-26-48	Still gone	X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
R. C. Hollingshead to: Weber Showcase Company Los Angeles, California	Approval of vendor shop drawings	Mr. Morrison	8-26-48	Still gone	X	
R. C. Hollingshead to: Jensen Machinery Company Oakland, California	Approval of vendor shop drawings	Mr. Osborne	8-26-48	Still gone	X	
ELECTRICAL DIVISION						
I. Visitors to this Works						
K. R. White Northwest Electronics Spokane, Washington	Inspection of electrical equipment and installations on Gable Mountain	H. A. Carlberg G. R. McKinney	8-23-48	8-27-48		X
EMPLOYMENT DIVISION						
I. Visitors to this Works						
D. S. Roberts General Electric Company Schenectady, New York	Consultation and inspection	H. E. Callahan	8-16-48	8-17-47	X	
HEALTH INSTRUMENT DIVISION						
I. Visitors to this Works						
A. J. Cipriani HRC Chalk River Ontario, Canada	Consultation on Health Physics	H. M. Parker	8-18-48	8-20-48	X	
E. F. Edson Dept. of Atomic Energy Risley, Warrington, Lancashire, England	Consultation on Health Physics	H. M. Parker	8-18-48	8-20-48	X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
W. G. Marley AERE Harwell District Brles, England	Consultation on Health Physics	H. M. Parker	8-18-48	8-20-48		X
Dr. Brace Special Weapons Division United States Army	Training program	H. M. Parker	8-23-48	9-10-48		X
F. E. Church University of Washington Seattle, Washington	Meteorology consultation	H. M. Parker D. E. Jenne	8-20-48	8-21-48		X
S. T. Cantril Tumor Institute Swedish Hospital Seattle, Washington	Consultation	H. M. Parker	8-26-48	8-27-48		X

MANUFACTURING DIVISIONS' MANAGEMENT

I. Visits to other Installations

C. N. Cross to: Argonne Nat'l Laboratory Chicago, Illinois	Inspection of facilities in connection with Hanford	M. Rodin T. S. Chapman	8-4-48	8-5-48		X
V. D. Donihee to: Atomic Energy Commission Branch of Production Division Oak Ridge, Tennessee	SF Accountability	W. C. Youngs, Jr.	8-17-48	8-18-48		X

PROJECT ENGINEERING DIVISION

I. Visitors to this Works

D. E. Garr General Electric Company Schenectady, New York	Consultation on 313 Building mechanization	J. S. McMahon G. R. Moore	8-31-48	9-3-48		X

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
POWER DIVISION						
I. Visits to other Installations						
J. P. Langan to: Giffels and Vallot Detroit, Michigan	Consultation concerning design of the 100-H Area water plant	W. D. Rausch	8-16-48	8-21-48	X	
TRANSPORTATION DIVISION						
I. Visitors to this Works						
O. P. Cromwell General Motors Bus & Truck Division/ Portland, Oregon	Instruct GE personnel in maintenance and operation of GMC busses	R. T. Cooke	8-13-48	8-19-48		X
C. A. Thuener American Locomotive Company San Francisco, California	Engineering service on new Alco locomotives	R. T. Cooke	6-29-48	8-11-48		X
TECHNICAL DIVISION						
I. Visitors to this Works						
D. E. Garr General Electric Company Schenectady, New York	Consultation on 313 Building mechanization	R. J. Schior	8-31-48	9-3-48	X	
B. T. Feld Lexington Project Massachusetts Inst. Technology Cambridge, Massachusetts	Consultation on shielding	C.W.J. Wende	8-24-48	8-27-48	X	
T. W. Shore Oak Ridge Nat'l Laboratory Oak Ridge, Tennessee	Consultation on shielding	C. W. J. Wende	8-24-48	8-27-48	X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
S. Lawroski Argonne National Laboratory Chicago, Illinois	Technical consultation and inspection concerning Redox. Attend Redox Steering Committee meeting	O. H. Greager	8-26-48	8-27-48		X
J. Harsdon General Electric Research Lab. Schenectady, New York	Technical consultation and inspection concerning Redox. Attend Redox Steering Committee meeting	O. H. Greager	8-26-48	8-27-48		X
M. D. Peterson Oak Ridge Nat'l Laboratory Oak Ridge, Tennessee	Technical consultation and inspection concerning Redox. Attend Redox Steering Committee meeting	O. H. Greager	8-26-48	8-27-48		X
F. W. Schumacher Standard Oil Development Co. Bayway, New Jersey	Technical consultation and inspection concerning Redox. Attend Redox Steering Committee meeting	O. H. Greager	8-26-48	8-27-48		X
C. E. Nelson Standard Oil Development Co. Bayway, New Jersey	Technical consultation and inspection concerning Redox Attend Redox Steering Committee meeting	O. H. Greager	8-26-48	8-2 7-48		X
R. E. Connick Radiation Laboratory University of California Berkeley, California	Technical consultation on Redox	O. H. Greager	8-31-48	9-1-48		X
G. W. Watt University of Texas Austin, Texas	Consultation concerned with process chemistry problems through Separations Technology Division	O. H. Greager	8-23-48	9-11-48		X
N. H. Nachtrieb University of Chicago Chicago, Illinois	Consultation on spectrographic methods	R. E. Curtis	8-28-48	8-30-48		X
H. H. Willard University of Michigan Ann Arbor, Michigan	Consultation on Redox analytical problems	R. E. Curtis	8-19-48	8-20-48		X

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
D. Harker Research Laboratory Schenectady, New York	Discussion of X-ray crystallography	R. Ward	8-6-48	8-7-48	X	
D. W. Lillie Atomic Energy Commission Washington, D. C.	Discuss metallurgical program	R. Ward	8-9-48	8-10-48	X	
II. Visits to other Installations						
J. C. L. Chatten to: Argonne Nat'l Laboratory Chicago, Illinois	Consultation on special requests	W. H. Zinn	8-4-48	8-7-48	X	
F. E. Kruesi to: Research Laboratory Schenectady, New York	Consultation	B. R. Prentice	8-16-48	8-17-48	X	
O. H. Greager to: Oak Ridge Nat'l Lab. Oak Ridge, Tennessee	Technical consultation on solvent extraction	M. D. Peterson	8-2-48	8-3-48	X	
D. W. Haught to: Radiation Laboratory University of California Berkeley, California	Technical consultation and inspection concerning laboratory design	I. Perlman	8-12-48	8-13-48	X	
R. B. Richards to: Oak Ridge Nat'l Lab. Oak Ridge, Tennessee	Technical consultation and inspection of facilities concerning Redox	M. D. Peterson	8-16-48	8-18-48	X	
V. R. Cooper to: Oak Ridge Nat'l Lab. Oak Ridge, Tennessee	Technical consultation and inspection of facilities concerning Redox	M. D. Peterson	8-16-48	8-18-48	X	
R. B. Richards to: Argonne Nat'l Laboratory Chicago, Illinois	Technical consultation and inspection of facilities concerning Redox	S. Lawroski	8-18-48	8-20-48	X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
V. R. Cooper to: Argonne Nat'l Laboratory Chicago, Illinois	Technical consultation and inspection of facilities concerning Redox	S. Lawroski	8-18-48	8-20-48		X
E. V. Flock to: Knolls Atomic Power Lab. Schenectady, New York	Technical consultation on stack gas problem	L. B. Bragg	8-23-48	9-30-48		X
W. A. Briggs to: Atomic Energy Commission New York, New York	Conferences on analytical problems and standards	G. Marvin	8-10-48	8-11-48		X
R. J. Hale to: Knolls Atomic Power Lab. Schenectady, New York	Review analytical facilities and program	L. P. Popkowitz	8-16-48	8-20-48		X
W. T. Kattner to: Simonds Saw & Steel Co. Lockport, New York	Supervise metal fabrication	A. D. Potts	8-23-48	8-30-48		X
R. D. McGreal to: Simonds Saw & Steel Co. Lockport, New York	Supervise metal fabrication	A. D. Potts	8-23-48	8-30-48		X
T. S. Jones to: Vulcan Crucible Steel Co. Aliquippa, Pennsylvania	Supervise metal fabrication	J. Flower	8-23-48	Still gone		X

"P" DIVISION

I. Visits to other Installations

P. E. Lowe to: Giffels and Vallot Detroit, Michigan	Design study	R. J. Giffels	8-6-48	8-7-48		X

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Classified	Restricted Data Unclassified
P. E. Lowe to: Knolls Atomic Power Lab. Schenectady, New York	Equipment trials	W. R. Kanne	8-9-48	8-11-48	X	
P. E. Lowe to: Gen. Eng. & Consulting Lab. Schenectady, New York	Consultation	G. R. Rodo	8-9-48	8-11-48	X	
II. Visitors to this Works						
D. E. Garr General Electric Company Schenectady, New York	Consultation on 313 Building mechanization	R. O. Mohann	8-31-48	9-3-48	X	
PROJECT ENGINEERING DIVISION (addition)						
II. Visits to other Installations						
H. A. Lee to: Puget Sound Naval Shipyard Bremerton, Washington	Discussion in regard to stainless steel duct work being fabricated	Lt. Comdr. Eldridge	8-10-48	8-24-48		X

DECLASSIFIED

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COMMUNITY DIVISIONS

SUMMARY - AUGUST, 1948

ORGANIZATION AND PERSONNEL

Number of employees on roll:	Beg. of Month	End of Month
Community Administration	4	3
Community Accounting	1	1
Community Public Works	428	600
Community Commercial Facilities	17	19
Community Housing	41	43
Community Fire	127	128
Community Patrol	146	143
Community Activities	12	12
	776	949

This increase is due primarily to personnel engaged in operation of the sewage disposal system, underground irrigation system, sanitary water system, and steam plant being transferred to the Community Public Works Division on August 23, 1948; and to personnel from the Maintenance and Electrical Divisions doing work in the 700 area being transferred to the Community Public Works Division. on August 23, 1948.

COMMUNITY ACTIVITIES

The United Protestant Church Council of Richland announced, on August 26, 1948, the organization of a fourth United Protestant Church which will serve the northwest area of the community.

On August 31, 1948, the new center section (Unit 2) of the Columbia High School was officially accepted from construction.

The Richland Junior Chamber of Commerce opened its Atomic Frontier Days celebration on August 30, 1948.

COMMERCIAL FACILITIES

Sales by established Commercial Facilities remained constant during the month. There is an apparent, marked tendency by established facility operators to make improvements, at their own expense, to the buildings and equipment leased to them.

The interest of prospective facility operators in building their own facilities for operation in Richland has shown considerable decrease during the past several weeks. This is apparently due to a reluctance on the part of operators to invest the large sum necessary for building construction in Richland.

COMMUNITY FIRE

Forty fire alarms were answered during the month in both Richland and North Richland. Total loss amounted to $336.78 in Project owned property and $1,051.00 in personal property.

COMMUNITY HOUSING

Forty-two house leases were executed during the month of August.

Nine Nettleton Sound ranch type houses and seven "T" type houses were completed by construction and accepted for leasing to tenants.

COMMUNITY PATROL

A total of 170 Unusual Incident Reports was received and investigated.

Twelve individuals were jailed during August and $3,259.24 in fines collected from various law violators.

COMMUNITY PUBLIC WORKS

Responsibility for the operation of sewage disposal system, underground irrigation system, sanitary water system, and steam plant was transferred to the Public Works Division on August 23, 1948; this will be known as the Utilities Section.

As of August 23, 1948, the personnel and responsibility for maintenance of the 700 area was placed with the Public Works Division.

COMMUNITY DIVISIONS

COMMUNITY ADMINISTRATION

AUGUST, 1948

ORGANIZATION AND PERSONNEL

Number of employees on payroll	August
Beginning of month	4
End of month	3

GENERAL

Requests for appropriations were submitted to the Appropriations and Budget Committee as follows:

Power Loader for Coal Yard
Conveyors for Coal Distribution

Type A work authorities were requested of the Design Division covering the following:

Study on Multiple versus Single Unit Housing
200 Additional One-Bedroom Apartments

Public Work Division was requested to process purchase requisitions for the Power Loader at the coal yard and for conveyors for coal distribution.

The Traffic Sub-Committee of the Community Safety Committee reported completion of various traffic surveys in Richland and vicinity which will result in recommendations for establishment of traffic regulations in the new housing area and the by-pass highway.

The pedestrian safety campaign was completed during the month and agreement was reached to continue the program with future campaigns.

COMMUNITY DIVISIONS
PUBLIC WORKS DIVISION
AUGUST, 1948

ORGANIZATION & PERSONNEL

Number of employees on payroll:	Exempt	Non-exempt	Total
July 31, 1948	38	390	428
August 31, 1948	59	541	600

During the month of August the following personnel changes were made:

New employees:			15
Transfers:	From Maintenance Divn	8	99
	" Power Divn.	9	59
	" Electrical Divn.		9
	" Design Divn.	4	2
	Transportation Divn.		6
Terminations:			39

The large number of terminations was due to lawn tenders and temporary laborers returning to school.

GENERAL

Personnel engaged in the operation of the sewage disposal system, underground irrigation system, sanitary water system, and steam plant, were transferred to the Public Works Division on August 23, and will be known as the Utilities Section.

The sanitary water syetem includes operation of all well pumps in Richland as well as the new well pumps at North Richland. At the present time water is also being furnished to the 300 area. The sewerage system at the present time serves only the village of Richland, but it is anticipated that the effluent from the North Richland sewage system will be turned into the Richland disposal plant the fore part of the coming month.

At the Pasco storage depot the water system and heating system is also the responsibility of this group.

As of the same date personnel from the Maintenance and Electrical Divisions, who were formerly engaged in doing work for the Power Division on transferred functions and other 700 area work, were transferred to the Public Works Division.

In addition to functions in the village, this group assumed the responsibility for maintenance of those functions in Pasco operated by the Utilities Section.

Transportation equipment, machinery and tools used by these transferred groups were also turned over to the Public Works Division. The 722 combined shops building formerly occupied by the 700 area

maintenance group was also transferred. Rearrangements of the shops and relocation of crews is being accomplished as rapidly as possible.

In view of the fact that it would be some time before the corp of engineers would be able to construct a permanent dyke to replace the existing dyke, it was decided to level off the temporary dyke along Hains Ave., install a 28 ft. road and a new concrete walk and gutter on the west side of the road. It was further decided to move the temporary dyke away from the houses on Gowen at least ten feet and to reshape and seed it. The balance of the dyke was to be left in its original condition except at the east of the Desert Inn where it was to be pushed out and left for the hotel operator to seed and care for.

The project proposals for site preparation of new business areas were completed by the Architect Engineers, J. Gordon Turnbull, Inc., Graham, Anderson, Probst & White, and submitted for commission approval. It is anticipated that work will proceed on development of the areas immediately.

The possibility of installing a new steam line to the new apartment houses which could also be used for heating the contemplated additional apartment houses, is being investigated as the cost of operating the temporary boilers would consume approximately 65% of the income from rental of the units.

ENGINEERING SECTION

Organization & Personnel

Number of employees on payroll:	Exempt	Non-exempt	Total
July 31, 1948	5	7	12
August 31, 1948	7	7	14

R. F. Noland, Draftsman #2, transferred from Design Division.
M. B. Nelson, Assignment Engineer (Structural) transferred from Design Division. These men are necessary due to the expansion of facility sponsored construction. It is expected that several more engineers will be transferred from the design division within the next few weeks in order that sufficient personnel will be available to perform the functions assigned to this section.

GENERAL

The normal duties of inspection, scheduling, and follow-up consultation and general planning were performed during the month. Contacts with members of the Construction Group were continued relative to Richland houses, facilities, and dormitories. Necessary liaison work was performed with Design Division, where we were designated as the contact engineer.

ENGINEERING SECTION (Continued)

A business trip was taken on August 16 to Spokane by this group to review with the city officials and building inspection department as to fixed fees on various permits, as well as to determine division of responsibility between city and landlord on new building construction.

Work orders were issued and necessary follow-up on all public buildings, streets, and grounds was made.

The contractor has finished seeding around the multiple housing units, and has completed 60% of the interblock seeding in the west prefab section. This work is being done on project C-134, Dust Control & Landscape Program.

Preparation on project proposal for 500 additional houses--300 two-bedroom units, and 200 four bedroom units--was started.

The painting project for the 514 houses was reviewed with the contractor and other interested parties. It is anticipated that painting will start about September 8, 1948, on Gillespie between Goethals and George Washington Way.

New church and club construction was reviewed with members of the Community Facility Division relative to building inspection fees, procedure, and processing of this work to completion.

Procedures and schedules were prepared for control of Facility Sponsored Construction and included the following:

A. Preparation of permits and fee schedules.
   1. Preliminary fixed fee for license agreement
   2. Building permit fee
   3. Plan checking fee
   4. Electrical inspection fee
   5. Plumbing inspection fee.
B. Processing of procedures for architects and building contractors.
C. Coordination of functions and responsibilities assignable to Commercial Facilities Division and Community Engineering Section for operation of the building program.

A total of 26 back charge estimates were prepared during the month.

Proposals are now being considered requesting the assignment of ground space and preliminary approval for the following:

A. American Legion, Richland Post No. 71
B. Assembly of God church
C. Richland Supply - addition.

Community Public Works Division

ENGINEERING SECTION (Continued)

Drawings and specifications were approved and building permits issued for the following alterations and additions:

A. Diamond 5¢ and 10¢ Store - Modernization of store front.
B. Klopfenstein's Men's Apparel Store - New addition.

Drawings are being reviewed for the following facility:

A. V.F.W. Building.

Facility Sponsored Construction approximates the following schedule:

Facility	Construction Started	Status % Complete	Extimated Completion date.
Jewelry Store Alteration, Bldg. 92-X	June 22, 1948	65%	9-20-48
Klopfenstein's Addition	August 23, 1948	10%	10-22-48

Technical information and instructions were furnished facility operators and the Community Facilities Division prior to preparation of invitations to bid for the following type of occupancy:

Facility	Location
Food Store	Geo. Washington Way & McMurray Road
Drug Store	" " " " " "
Service Station	" " " " " "
Fountain Lunch	Existing Business Section
Furniture Store (Wilson)	" " "
Dry Cleaning Plan	Light Industrial Area
General Garage	" " "
Printing Plant	" " "
Furniture Store (Davis)	Central Commercial Area

Regular field inspections were made in compliance with building permit requirements.

Contact Engineer functions were performed with interested Project Divisions as well as necessary liaison with operators, contractors, and architects concerned with facility sponsored construction in Richland.

Assistance was furnished to divisions of the Public Works Organization in the obtaining of materials and equipment and also maintaining the necessary control records.

A modified version of Project Electrical Standards was prepared for use as a community code.

ENGINEERING SECTION (Continued)

A. C. Grant completed the sidewalks for 156 U and V type houses during the month of August.

A detailed inspection was made of 35 houses on Hains and Gowen to determine the flood damage. A report was made to determine the necessary repair so that work orders could be turned over to Maintenance and Labor Sections.

Many jobs were coordinated in connection with M, Q, R, and S type houses with Construction such as top soil and grading, structural failures, poor workmanship of construction, etc. Contractor has completed all exceptions and terminated all work on this contract.

An inspection was made of the streets, curbs, and finish grading in Area A. Several exceptions were noted, but were completed during the month.

The inspection and acceptance of new houses is as follows:

	Previously Accepted	Accepted during August
Y and Y-1 Ranch Type	0	21
T type units	0	8

An inspection was made on Tract House M-988 and house was accepted. Renovation has been completed and all exceptions have been corrected. This is the Red Brick Building on Gowen.

Jefferson School was inspected and accepted. Eleven exceptions were noted and carried on the CDC-3 Acceptance Sheet.

An inspection was made on "Q" type house at 1208 Gowen (Carleton Shugg's house). The exceptions which were noted will be corrected.

The acceptance of ranch type (Y and Z) houses has been moving very slowly, due to the difficulty the contractor is having in preventing the ceiling sheet rock from cracking at the joints and nail holes opening. This condition is being remedied and should step up the number of houses to be accepted.

Tract Houses Remodeling - August 1948

House No.	% Complete
K-784	100
K-780	100
O-1246	90
O-1247	90
L-859	50

86 inspections were made for Tenant Relations during the month.

Community Public Works Div[illegible]

UTILITIES SECTION

Organization & Personnel

Number of employees on payroll	Exempt	Non-exempt	Total
August 23, 1948	9	59	68
August 31, 1948	9	61	70

New employees: 2 Operators "C"

General

Steam Facilities: (700-1100 Areas) 784 Building.
Average Steam Load - 15,054 lbs. per hour.

During the period from Aug. 23 through the end of the month it has only been necessary to operate one boiler. On Aug. 27, the #3 boiler was put in service relieving #2. Repairs to blowdown valve, sampling valve and to brick work had been made in #3 boiler. Minor repairs and cleaning were made to the ash ejector jet, plus installing a new valve on the feed line. Overhaul work on the air compressor was completed and the unit was put back in service.

Domestic Water: (Richland & North Richland)
Average water load - 8,129,000 gal. per day.

The new water main on Stevens Road from Newcomer south to Torbett, plus connections at Wilson and Van Geisen and also including connecting main going west through the bus terminal to serve new ranch type housing area was placed in service on August 27. The "D" well at North Richland was put in use on Aug. 24, final acceptable tests having been made on water by Public Health. During the week the "E" well motor was pulled by Construction in order to repair an oil leak at the bearing. The well was returned to service on Aug. 27.

Irrigation System:

The #2 system was placed back in operation on Aug. 26, temporary bypass having been made in the main ditch so water could get to the suction intake.

Sewage System: Average Sewage Load - 2,257,000 gal. per day.

It is noted that the sewage load last week and the previous week indicates the flow has finally leveled off at the figure that is probably normal. All infiltration due to flood and high ground table water seemingly has now stopped. The average daily flow is expected to stay around the above figure until the effluent from the disposal system in North Richland is diverted from the present settling fields into the Richland system. It is anticipated that this diversion will take place the fore part of the coming month.

The #2 recirculating pump was taken out of service due to excessive vibration.

UTILITIES SECTION (Continued)

Pasco Warehouse Area:

Overhaul work on boiler at garage was completed.

A&J have started preliminary work on moving gasoline tanks to the outside of the pump house, and rerunning gas engine exhaust headers overhead instead of under the main floor where it is a fire hazard because of wood frame construction.

MAINTENANCE SECTION

Organization & Personnel

Number of employees on payroll:	Exempt	Non-exempt	Total
July 31, 1948	18	198	216
August 31, 1948	26	306	332

During the month the following personnel changes were made:

New Employees:	1 mechanic B - Carpenter	
	1 mechanic B - Millwright	
	1 Electrician B	
	1 Electrician C.	
Transfers:	From Maintenance Divn.	8 exempt, 99 non-exempt
"	Electrical Divn.	9 "
Terminations:	1 mechanic B - Carpenter	
	2 " - Painter	
	1 Electrician B	

General

During August 99 housing units were renovated. 14 orders not completed are on hand.

The reconditioning of Dorm W-21 is 100% complete.

The interior of 47 conventional type units were painted during the month. Forty bathrooms and the showers, wash rooms and toilets of sixteen dormitories were also painted.

Linoleum was replaced on the table tops of 178 kitchen cabinets during August. 50 orders not completed are on hand.

Carpentry repair of conventional type houses preparatory to the outside painting program has progressed as follows: Div. 7 - 50%, Div. 5 - 95%, Div. 4 - 95% complete.

The exterior painting of 6 tract houses was completed during the month.

Community Public Works Division

MAINTENANCE SECTION (Continued)

The installation of oil filters on A&J built homes is 35% complete. A service check of each unit is being made at the same time.

337 articles of furniture were recovered, repaired, or refinished, in the furniture repair and upholstery shops.

The inspection and repair of the school heating systems is in progress. The mechanical check, cleaning, and filter replacement of air vent heaters is completed. Steam system repairs are 30% complete.

The annual overhaul of the Worthington Air Compressor in 784 building is completed.

The installation of hose bib outlets for 761 and 762 buildings was completed so that the area could be seeded.

The foundation of the house at 1417 Heins was originally located on a fill. The flood caused serious settling requiring our removing the entire south and west walls and replacing by building up from a sound footing.

The outside paint hut previously located east of Jefferson school has been relocated at the south end of Jadwin.

The application of asbestos shingles on the roof of the 703 building is 100% complete. The shingles for 705 building have been received and will be applied as soon as the reroofing of the hospital is completed.

Project C-146, Installation of Irrigation Lines & Outlets, is completed at the multiple unit apartments, and on Swift. That part of the project on Duane Avenue has not been started. The work there is pending the cleaning up of materials stored in the area, grading and setting of grades, as well as ditching by transportation and project divisions.

Project C-158, Dormitory Air Conditioning, is 100% complete. Final inspection and acceptance was made on 8-9-48.

Project 229, Reconditioning of 722-H. Work is pending the approval of part II on the project to provide necessary funds. The job is 75% complete.

Project C-242, Mail Boxes in Dormitories, was inspected and accepted as of August 9, 1948. One work order was held open pending receipt of one lock for each complete unit by the Post Office Dept. and to be installed by project forces.

Project C-245, Remodeling Tract House L-859, is 60% complete. It is anticipated that this work will be completed Oct. 1, 1948.

Community Public Works Division

LABOR SECTION

Organization & Personnel

Number of Employees on Payroll:	Exempt	Non-exempt	Total
July 31, 1948	14	184	198
August 31, 1948	14	165	179

During the month the following personnel changes were made:

New Employees		9
Transfers:	From Design Divn.	1
	" Transportation Divn.	6
Terminations:	Lawn Tenders	24
	Temporary Laborers	9
	Laborers	2

General

Necessary routine work in connection with the care of the nursery, Project No. C-134, was carried on throughout the month.

Garbage and trash pick up continued during the month on a normal basis. New areas are being included in the routes as new houses become occupied.

Project orchards were maintained as usual.

A total of 40 personal moves were accomplished.

9 refrigerators and 9 electric ranges were installed in new houses.

9,992 pounds of grass seed were mixed and delivered. 19,500 lbs. of additional seed were received for distribution.

The public area irrigation crew is comprised of 28 junior laborers, all of which will be terminated by Sept. 3, 1948. The grounds maintenance crew is at present comprised of 14 men, ten of whom are temporary laborers terminating Sept. 23,1948.

Coal delivery to village started 8-2-48. Two semi-trucks have been in operation daily with the exception of a three day delay while construction forces were repairing track. Average daily delivery has been around 90 tons. 30% of the village has been covered to date. No coal has as yet been delivered to the ranch type houses. The new Unloyer trucks will be ready for use about Oct. 1st.

The responsibility for the operation of the main irrigation canal was transferred from the Transportation Division 8-23-48.

A crew is engaged in seeding work in connection with the temporary dyke.

Community Public Works Division

LABOR SECTION (Continued)

Fuel Inventory

Coal:	
On hand 8-1-48	1,166,500
Received during the month	10,161,300
Delivered to other areas	6,823,000
Delivered to village houses	2,188,000
On hand end of the month	2,316,800
Fuel Oil:	
Gallons on hand 8-1-48	15,675
Received during the month	none
Delivered to village houses	8,077
Gallons on hand 8-31-48	7,598

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COMMUNITY DIVISION

COMMUNITY COMMERCIAL FACILITIES DIVISION

August 1948

ORGANIZATION AND PERSONNEL — AUGUST

Number of employees on payroll

Beginning of month	17
End of month	19

COMMERCIAL FACILITIES

The following figures indicate trends in commercial activities as related to various basic items:

	JULY	AUGUST
Cafeteria meal customers	147,713	131,280
Percent of room-day occupancy - Desert Inn	95%	95%
Gallons of ice cream sold	23,920	22,501
Carnation milk and cream deliveries	90,975	92,765
Darigold milk deliveries (wholesale only)	7,198	6,821
Theater customer count	47,555	54,830
Gallons of gasoline sold	239,617	218,750

Total number of Commercial Facility operators' employees, full and part time, as of August 31, 1948 - 1109

Richland Supply Company has been authorized to proceed, at operator's expense, with a 28' x 75' addition to north side of building. New addition is to enlarge sales space and re-locate marking and storage room.

Klopfenstein's building expansion is proceeding, at operator's expense. Building is being enlarged on north side 26½' x 74', and show windows on east and west sides are being modernized.

Mickey's Shoe Renewing has re-located a portion of refinishing equipment, at operator's expense, in order to step up production.

Richland Recreation Hall has provided, at operator's expense, a new reach-in refrigerator for the Fountain Lunch operation. Bowling alleys and pool and billiard tables have been refinished at operator's expense. Construction work has been completed, at operator's expense, to enlarge the confection and tobacco department.

COMMERCIAL FACILITIES

Greyhound Post Houses, Inc. is installing, at operator's expense, a new dishwashing and pre-rinse facility to conform with Public Health requirements. Public rest rooms were repainted by the operator with project-supplied materials.

Work has been completed at Tidewater Associated Service Station, at operator's expense, to provide a new two-pump service island on west side of building. Public rest rooms were also repainted at operator's expense.

Installation of asphalt tile flooring has been completed at the Richland Thrifty Drug, with a portion of the expense being borne by the operator. A York Flake Ice Machine was installed at the soda fountain, at operator's expense.

Ground area directly east of Riverview Room at Desert Inn has been terraced and top-soiled. Operator is proceeding, at its expense, with seeding and landscaping.

Fluorescent interior lighting has been installed at Diamond's 5¢ to $1.00 Stores, at the expense of the operator.

Ganzel's Barber Shop was authorized to provide twelve shampoo bowl sinks, at operator's expense. General Electric will provide labor to install, inasmuch as shampoo-type bowls were not available at time of original installation.

CONTRACTS AND NEGOTIATIONS

An Operating Agreement dated July 3, 1948, was entered into by and between General Electric Company and Fay M. Honey, covering operation of the North Star Theater, North Richland.

A Supplemental Agreement dated May 13, 1948, was entered into by and between General Electric Company and Diamond 5¢ to $1.00 Stores, Inc., covering modernizing the front of their Richland facility.

The award of Recreation Hall #3, North Richland, to Theodore F. Spearman, Yakima, as reported on the May Monthly Report, was rescinded because of his inability to procure a State License, and this facility was awarded to Grossley & Jackson of Seattle, a partnership.

An Automobile Sales and Service location was awarded to a Studebaker dealer, who will construct his own building in Richland.

Tentative proposals to construct certain blocks of business buildings in the new commercial area and to construct a multiple business building in the existing commercial area, for subletting to individual business tenants, have been received and are being given consideration.

The Richland Branch of the Seattle-First National Bank has agreed to a negotiated monthly payment, retroactive to May 1, 1948, for building, utilities and municipal services.

COMMERCIAL FACILITIES

Invitations to Bid were mailed on the following prospective facilities:

Printing Shop - Richland.
Food Store - Richland.
Drug Store - Richland.
Automotive Service Station - Richland.
Dry Cleaning Plant - Richland.
General Repair Garage - Richland.
Laundry and Dry Cleaning Pick-up Station - North Richland.
Beauty Shop - North Richland.
Optometrist's Office and Watch Repair Shop - North Richland.

It is planned to mail Invitations to Bid on the following facilities during September:

Shoe Repair Shop - North Richland.
Fountain Lunch - Richland.
Book, Stationery and Related Items Store - Richland.
Bakery - Richland.
Milk Depot - Richland.
Service Station (2) - Richland.
Lumber and Building Materials Dealer and General Contracting Business - Richland.

INVENTORY AND PROPERTY

The annual 1948 inventories of Government equipment at the following locations were completed:

Coffee Shop Excess
Riverview Room

REQUESTS FOR ESTABLISHMENT OF BUSINESSES IN VILLAGE

A number of individuals expressed a desire during the month to establish and operate businesses in Richland. The types of establishments desired are shown in the following list:

Automobile Agency
Auto Accessories Shop
Barber Shop
Beauty Salon
Cabinet Shop
Candy Shop
Contractor - Electrical
Contractor - General
Dairy Products Storage Depot
Delivery Service
Drug Store
Dry Cleaning Plant
Fish Market
Flower Shop - Greenhouse
Food Store
Fountain Lunch
Funeral Home
Furniture Store
Garage and Service Station
Gift Shop
Golf Driving Range
Ice Cream and Sandwich Shop
Infants' and Children's Store
Insurance Office
Interior Decorating
Laundry and Dry Cleaning Pick-up Station
Legal Office
Lunch Trailers

COMMERCIAL FACILITIES

Requests for Establishment of Businesses (Continued)

Meat Market
Men's Clothing Store
Mortgage Loan and Real Estate Office
Music Store
Neon Signs and Display
Plumbing and Heating Shop
Pool Room
Portrait Studio
Printing Shop
Radio Station
Recreation Hall
Restaurant
Riding Academy
Self-Service Laundry
Sewing Center
Shoe Repair Shop
Shoe Shine Stand
Shoe Store
Sporting Goods Store
Tavern
Theater
Tire Sales and Service
Variety Store
Watchmaking Shop
Women's Wear

Written permission was granted to three (3) Village tenants to conduct the following part-time businesses in their homes:

Sell greeting cards and stationery
Do notarizing, public stenography and accounting
Take orders for "Readers' Digest"

Written permission was granted five (5) individuals living outside of Richland to contact Village tenants on an appointment basis on the following business matters:

Represent Utah Woolen Mills
Sell sewing machines and do sewing machine repair work
Sell "Rexair" home appliances
Sell "Guardian Service" cooking utensils
Represent Calif. Western States Life Insurance Co.

COMMUNITY DIVISIONS

COMMUNITY HOUSING DIVISION

August, 1948

ORGANIZATION AND PERSONNEL

Number of employees on payroll	August
Beginning of month	41
End of month	43
Net increase	2

RICHLAND HOUSING

Housing Utilization as of Month End

Houses Occupied by Family Groups	Conventional	Block	Pre-Cuts	Ranch	Prefab	Apts.	Tract	Total
Operations	2210	262	380	3	1118	63	36	4072
Facilities	143	2	15		115	1	11	287
Government	102	22	15		39	2	9	189
Kellex Corporation		6	6			1		13
Morrison-Knudsen	3		1			1		5
Atkinson-Jones	14	28	15		12	2		71
J. Gordon Turnbull		2	2		10			14
Giffels & Vallet		1	1		8			10
J. A. Terteling & Sons			2		2			4
McNeil Construction Co.	1		1		3			5
Newberry Neon Electric		2	2					4
Urban, Smythe & Warren	2	2	1			1		6
Graysport Construction			1				8	9
Newport-Kern Kibbe							1	1
Vernita Orchards							5	5
Scott Butner Electric			1					1
TOTAL HOUSES OCCUPIED	2475	327	443	3	1307	71	*70	4696
Houses utilized for special purp.							1	1
Houses assigned (leases written)	13	3	4	5	10	1		36
Houses assigned - awaiting tenants	12	3	3	1	15	2		36
Government houses - unassigned							**35	35
TOTAL HOUSES	2500	333	450	9	1332	74	106	4804

* Occupancy figure includes 4 houses occupied by Bonnerville Power in Priest Rapids and White Bluffs.

** This includes 29 Tract Houses boarded up for salvage.

1.

COMMUNITY HOUSING DIVISION

Housing Turnover During Month	Begin Month	Moved In	Moved Out	Month End	Difference
Conventional Type	2455	63	43	2475	Plus 20
Block Type	324	9	6	327	Plus 3
Precut Type	447	10	14	443	Minus 4
Ranch Type	0	3	0	3	Plus 3
Prefab Type	1318	27	38	1307	Minus 11
Apartments	74		3	71	Minus 3
Tract	71		1	70	Minus 1
Total	4689	112	105	4696	Plus 7

Dormitory Statistics

Dormitories		Occupants	Vacancies	Total Beds
Men - Occupied	14	552	* 4	556
Men - Unoccupied				
Women - Occupied	14	575	* 17	592
Women - Unoccupied				

Women's Dormitories Occupied By:

G. E. Office	1
Education	1
Apartment	1
	31

* 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.

GENERAL

The first Nettleton-Sound Ranch type houses were accepted on August 13. A total of nine houses was received during the month.

The Ranch house located at 2004 Trinpe is to be used as an inspection house and will be the last one accepted.

Seven "T" houses being built by J. A. Terteling and Sons were accepted and occupied this month. Leases have not been written because the rental has not been established.

During construction of the Ranch type houses it was necessary to move Tract house M-960 to a new location. Tenants of the tract house were moved to a house in the village.

Tract house M-988 was renovated and accepted this month.

TENANT RELATIONS

The processing of patrol orders and work orders during the month is as follows:

	Incomplete 7-30-48	Issued Dur. August 1948	Incomplete 8-30-48	Issued Prev. Month
Patrol Orders - Days	1668	3165	1489	3199
Maintenance & Electrical				
Patrol (off shift elect.)	0	434	0	409
Patrol (off shift Maint.)	4	187	2	291
Regular work orders	187	35	191	20
Backcharge Tenant Relations orders	38	72	24	116
Routine Work Requests	58	1	59	3

62 Scrap Lumber Permits were issued during the month of August as compared to 107 during the previous month.

31 Conventional type dwellings were painted by Project forces.

150 Grass Seed Permits were issued, which amounted to 4442 pounds of seed.

471 Home Fire Inspections were reported and processed. 822 homes were visited.

Items of Interest:

	August 1948	Outstanding
1. Window glass replacement requests (all types)	71	111
2. Sink Linoleum replacement requests	59	80
3. Bathroom Painting Requests		51
4. Kitchen & bathroom faucets in need of repair and exchange	78	328
5. Screen door requests	18	32
6. Miscellaneous Requests	446	938

Alteration permits issued to tenants during the month of August 1948 amounted to 136. Permits consisted of the following:

Air conditioners (conventional houses & prefabs)	73
Air conditioners (A & J houses)	5
Air conditioners (precuts)	5
Air conditioners (Apts. on Geo. Wash. Way)	2

3.

Refinish floors	5
Basement excavation	10
Install automatic washers, dryers & dishwashers	20
Install partitions in basements	2
Install 20 amp circuit in basement	1
Install concrete curbing & walks around house	1
Erect greenhouse 20 ft. from house	1
Install electrical receptacle in house	1
Change position of range	1
Reverse position of range & refrigerator	1
Install back door and porch in prefab	1
Fence in area - five acres	1
Erect lattice-work around front or back doors	2
Install shelves in basement	1
Paint exterior of prefab	1
Install shower bath in basement	1
Install electric door chimes	1
TOTAL ALTERATIONS FOR MONTH OF AUGUST 1948	136

Inspection Information:

496 inspections were made during the month. A break down of the inspections shows the following distribution:

a. 191 Grass Seed Inspections
b. 47 Lot line inspections
c. 63 Top Soil Inspections
d. 6 Side Walk Inspections
e. 7 Leaking Basement Inspections
f. 10 Linoleum Inspections
g. 7 Floor Board Inspections
h. 4 Wall inspections
i. 161 Miscellaneous

COMMUNITY DIVISIONS

COMMUNITY FIRE DIVISION

AUGUST, 1948

ORGANIZATION AND PERSONNEL

Number of employees on payroll:	August
Beginning of month	127
End of month	128
Terminations	1
New employees	2

	Richland	North Richland
Response to Alarms	25	15
Fire Loss (Estimated)		
Hanford Works	$314.13	$22.65
Personal	751.00	300.00
Investigations of Minor Fires and Incidents	10	5
Inspections Made (Buildings)	755	0*
Extinguishers		
Inspected	1096	0*
Installed	16	0*
Recharged	65	0*
Removed	16	0*
Safety Meetings	17	8
Outside Drills	61	91
Inside Drills	80	41
Fire Alarm Boxes Tested	130	0*
Fire Hose Tested, 2½-Inch	3100	1250

* Not the responsibility of the Community Fire Protection Division.

COMMUNITY DIVISIONS

COMMUNITY PATROL

AUGUST 1948

ORGANIZATION AND PERSONNEL

Number of employees on payroll:		August
Beginning of month		146
End of month		143
Net decrease for month		3
Reason: V. T. Personal	4	
Less New Hires	1	
Net decrease	3	

GENERAL

A road block test was made in the North Richland Area on August 4, 1948. Time consumed was 8 minutes.

On August 6 and 7 Community Patrol Chief H. W. Strock attended the Annual Washington Association Chiefs of Police Convention in Olympia.

On August 9, 1948, a requisition was placed with Employment Division for 21 additional patrolmen to report on September 22, 1948. The purpose of this requisition is to obtain a sufficient number of men to return to a 5 day week on October 4, 1948. By having them report on September 22, it will be possible for us to give them approximately 10 days training prior to returning to a 5 day week on October 4.

Effective August 10, 1948, one additional patrolman was assigned to No. 2 Mess Hall in North Richland for 2 hour periods during each meal.

Beginning August 10, 1948, and extending through the balance of the month, frequent checks were made of the Well Area Pump House east of the football field and the Pump House west of the trailer lot, to watch for children climbing over the fence and tampering with machinery.

Beginning August 10, 1948, and throughout the balance of the month, checks were made of the swimming pool through the nocturnal hours for persons throwing bottles, etc. into the pool.

Beginning August 11, 1948, and extending over a period of three weeks, semi-hourly checks were made of the Pipe Yard, north of Thayer Drive between Duane and George Washington Way, on the swing and graveyard shift, Monday through Saturday, and for 24 hour periods on Sundays and Holidays. Results of such checks were recorded via radio to headquarters. Patrol was requested to make this check due to part of the fence being down.

On August 12, 1948, a Blockade Procedure was drawn up for use in the Richland and North Richland Areas. This procedure provides for periodic practices to perfect the method of operation.

On August 16, 1948, and extending through September 4, 1948, Justice of the Peace Earl W. Brown was absent from his office on vacation. During this period Patrol transported all cases coming before the court to Judge Dellere's court in Benton City.

Effective August 16, 1948, periodic checks were begun of the Nettleton Sound barracks area for gamblers and vagrants.

On August 17, 1948, periodic checks were begun on the A & J Excavation Pit located at Lacy and McCullon Road, watching for petit larceny thefts or damage to the pit during the nocturnal hours, Monday through Friday, and at all hours on Saturdays and Sundays.

On August 23, 1948, a point control traffic post was established at the intersection of Lee and Goethals, to be in effect between the hours of 7:45 A. M. and 8 A. M. daily except Saturdays and Sundays.

On August 25, 1948, Patrol established a foot patrol in the North Richland business district. This patrol was to remain in effect until further notice.

On August 26, 1948, a Master Index Card File was established in Patrol Central Records, providing for a central reference point for any cases handled by Patrol, regardless of the division in which report of the incident originated.

Effective August 27, 1948, and for an indefinite period, an escort is to be furnished the manager of the Pennywise Drug Store to assist in transporting funds to handle their check cashing service.

On August 31, 1948, Patrol received a green, 1949 Fourdoor Ford sedan, motor No. 98 HA 17490, through the courtesy of the Richland Motor Company, to be used as a "Student Drivers Training Car". The car is to be used mornings, five days per week for "Student Drivers Training" and will be available in the afternoons for "Adult Drivers Training" in addition to our present company car assigned for this purpose. The car is to have the following wording lettered on the sides and back: "Student Drivers Training" "Courtesy Richland Motor". Insurance on this vehicle is to be handled by the local school district.

On August 31, 1948, Asst. Chiefs R. L. Soule and D. F. McCall, who have been employed as instructors and consultants during the summer months, terminated their employment to return to their regular positions as instructors in Police Science at Washington State College at Pullman.

During the month of August, 1948, frequent checks were made by Motor Patrol of persons observed hauling lumber or scrap lumber in private cars. Persons observed were requested to show permits.

Throughout the month of August, 1948, frequent checks were made of all irrigation ditches and all other waters, and all children found wading, swimming, etc. were ordered out and warned of the many dangers existing in such practices.

A dormitory to dormitory check with the Housemother was made daily on the graveyard shift and twice on each Saturday during the month. Total of time required for this detail was 26 hours.

During the month of August, 1948, 100 prisoners were processed through the Richland jail.

The Patrol motor boat was checked on the day shift, once each week, throughout the month.

Fifty nine gun registrations were taken by Patrol during the month of August.

Motor Patrol continued to make occasional checks of the Nettleton Sound Construction Area during the month.

Patrol received during the month of August, a quantity of film, camera parts and supplies, and 25 pairs of Peerless handcuffs and cases.

TRAINING

Asst. Chief R. L. Soule served on the Health Activities Committee during the month of August, and information derived from this meeting was passed on to Patrol personnel during classes of instruction conducted by him.

Training topics covered during the month consisted of routine field problems and subjects of common interest to Patrol. Police tactics and photography methods were stressed.

Police Training Instructors R. L. Soule and D. F. McCall completed their courses of instruction with the Community Patrol Division on August 31, 1948.

An additional quantity of police reference books were received during the month of August and were added to the Patrol library now in operation.

Qualifications in Army "L" course firing were as follows:

	June	July	August
Unqualified			
Marksman			
Sharpshooter			
Expert			

Note: No Army "L" course firing was given during the month of June due to the flood emergency. No Army "L" course firing was given for the months of July and August in order to utilize the full time of Instructors R. L. Soule and D. F. McCall, who were with us only during the summer months.

RICHLAND AREA (VILLAGE)

	June	July	August
Check on absentees	11	9	3
* Persons assisted	305	284	274
Doors and windows found open in commercial facilities	14	15	8
Lost children found	6	7	12
Ambulance runs	61	50	62
Lost dogs reported	1	1	3
Dog and cat complaints	33	31	26
Persons injured by dogs	7	8	4
Bank escorts and details	42	36	39
Fires investigated	37	28	19
Misc. escorts	40	52	56
Complaints investigated	76	100	86
Missing persons reported	7	3	3
Totals	640	624	595

* Includes: Persons admitted to residence; delivery of messages to residents who have no telephone; relay of messages; handling requests of out of town police; miscellaneous aids to private parties; and opening trailer parking lot for individuals.

RICHLAND AREA (NORTH)

	June	July	August
Check on absentees	0	13	9
* Persons assisted	717	596	509
Doors and windows found open in commercial facilities	22	31	48
Lost children found	3	3	5
Ambulance runs	9	4	10
Lost dogs reported	0	4	0
Dog and cat complaints	1	7	9
Persons injured by dogs	0	4	1
Bank escorts and details	26	27	49
Fires investigated	18	26	17
Misc. escorts	79	60	86
Complaints investigated	149	133	139
Missing persons reported	0	0	0
Totals	1024	788	882

* Includes: Admitting persons to their rooms; contacting parties on long distance calls; issuing rooms and bedding; locating persons wanted for various reasons: relaying messages; assisting outside police agencies; assisting other departments; aiding private persons, etc.

TRAFFIC SECTION

During the month of August, seventeen traffic safety lectures were given to civic and departmental groups, at the request of group chairmen.

Donald F. McCall, Police Science Instructor at Washington State College, has completed studies and surveys of high accident frequency roads and intersections. Mr. McCall has submitted a comprehensive report of his studies and analysis, offering certain recommendations for correction of unfavorable conditions existing. It is felt that the result of the Traffic Engineering studies will be of much value to the Traffic Section in the prevention of accidents.

The bicycle Safety Training Classes conducted by Patrolman E. L. Edgar, were completed on August 13. 357 students between the ages of eight and sixteen years attended the course. This is the largest group to attend the classes during the three year period that such classes have been conducted. Value of this training is reflected in the small number of auto-bicycle accidents occurring in Richland and North Richland. Traffic records reveal that not one child who has attended a bicycle safety training school, conducted by Patrol, has been involved in a traffic accident while riding a bicycle. A total of 13 children who did not attend the classes were involved in auto-bicycle accidents during the past three years.

The following booklets relating to bicycle instruction, were received by the Traffic Section during the month: "Ride It Right", "Bikes and Boys and Girls"; "Bicycling for Health and Pleasure". A Traffic Engineering periodical was also received.

Practical instruction in Adult Drivers Training was continued for the month.

TRAFFIC AND OFFENSE STATISTICS

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

PATROL

A total of 170 Unusual Incident Reports was received, which consisted mainly of Accidents, Traffic Violations, and Intoxications. Regular Traffic Violation Reports, not accompanied by an Unusual Incident Report, are presented in separate tables in the Traffic Statistics attached to this report.

RESTRICTED

September 1, 1948

COMMUNITY DIVISIONS

COMMUNITY PATROL

Community Manager - E. L. Richmond

- Community Patrol Chief - H. W. Strock
  - Division Supervisor - A. A. Layman
    - Captain - (Administration) - C. F. Klepper
    - Captain - (Crime Prevention) - J. S. Johnson
      - Lieutenant - (Richland) - L. M. Linkous
        - Sergeants - R. L. Jones, A. L. Reil
      - Lieutenant - (North Richland) - F. J. Schultz
        - Sergeants - O. G. Scheffner, G. A. Mumper, J. F. Banta
    - Captain - (Richland) - W. A. Ziegler
      - Lieutenants - J. K. Holmes, R. H. Kays, A. F. Novotny, T.J. McGuire
        - Sergeants - M. E. Lowman, C. B. Conrad, D. F. Metz
          N. H. Woehle, J. A. Schmitz
    - Captain - (North Richland) - C. H. Overdahl
      - Lieutenants - W. W. Kerr, H. V. Meigs, G. R. Reese, G. M. Everett
        - Sergeants - R. R. Robertson, W.Cotton, N. F. Neighbors
    - Captain - (Traffic & Accident Investigation) - A. E. Barron
      - Lieutenant - J. A. Ramsey, Jr.
      - Lieutenant - J. E. Coleman
        - Sergeants - F. W. Knauer, H. E. Thomas, R. Smertz, W.H.Gordon

PATROL DIVISION REPORT

COMMUNITY

AUGUST 1948

FORCE REPORT		Entire Patrol 7/31/48	Entire Patrol 8/31/48
Patrol			
Patrol Supervisor		1	1
Division Supervisors		3	1
Captains		5	5
Lieutenants		12	12
Sergeants		17	17
Patrolmen		103	102
	Total	141	138
Clerical			
Steno-Typists		5	5
	Total Clerical	5	5
	Grand Total	146	143

Additions

1 New Hire - Patrolman

Terminations

2 Patrolmen
2 Division Supervisors

TERMINATIONS CONSIST OF

4 V. T. Personal

DECLASSIFIED

PATROL DIVISION – TRAFFIC CONTROL STATISTICS
August – 1948

MOTOR VEHICLE ACCIDENTS

	Total Number July	Total Number Aug.	Fatalities July	Fatalities Aug.	Major Injuries July	Major Injuries Aug.	Minor Injuries July	Minor Injuries Aug.
Plant	6	3	0	1	2	0	1	1
Richland	25	22	0	0	1	2	7	7
North Richland	20	25	0	0	0	0	9	8
Totals	51	50	0	1	3	2	17	16

ACCIDENT CAUSES

	Negligent Driving July	Negligent Driving Aug.	Failure to Yield Right-Of-Way July	Failure to Yield Right-Of-Way Aug.	Reckless & Drunken Driving July	Reckless & Drunken Driving Aug.	Other Causes July	Other Causes Aug.
Plant	6	1	0	6	0	0	1	2
Richland	12	12	9	9	1	2	4	3
North Richland	9	0	7	17	1	0	5	8
Totals	27	13	16	26	2	2	10	13

PLANT WARNING TRAFFIC TICKETS ISSUED

	Speeding July	Speeding Aug.	"Stop" Sign July	"Stop" Sign Aug.	Parking July	Parking Aug.	Imp. License July	Imp. License Aug.	Def. Equip. July	Def. Equip. Aug.	Other Violations July	Other Violations Aug.	Totals July	Totals Aug.
Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Richland	2	4	4	0	204	208	2	4	28	49	0	2	240	267
N. Rich.	0	1	0	0	754	627	8	3	35	12	0	1	797	644
Totals	2	5	4	0	958	835	10	7	63	61	0	3	1037	911

COURT CITATION TRAFFIC TICKETS ISSUED

	Speeding July	Speeding Aug.	"Stop" Sign July	"Stop" Sign Aug.	Drunken Driving July	Drunken Driving Aug.	Reckless Dr. July	Reckless Dr. Aug.	Neg. Dr. July	Neg. Dr. Aug.	Parking V. July	Parking V. Aug.	Other V. July	Other V. Aug.	Totals July	Totals Aug.
Plant	12	10	3	2	0	0	1	0	1	6	0	0	1	1	18	19
Richland	41	45	47	35	2	4	2	3	24	15	28	21	32	32	178	155
N. Rich.	52	25	53	34	2	7	2	1	32	19	28	21	38	35	206	142
Totals	105	80	103	71	4	11	5	4	57	40	56	42	71	68	[illegible]	316

TRAFFIC VOLUME: Count taken on August 13, 1948, on Stevens Drive at Spengler Road, outbound traffic, 24 hr....4,044 Cars.
Count taken on August 13, 1948, on Stevens Drive at Spengler Road, inbound traffic, 24 hr....5,879 Cars.

Note: Due to late reporting, ten accidents that occurred in Richland, one that occurred in North Richland, and one that occurred in the Plant Area during the Month of July are included in August totals.

PATROL TRAFFIC SECTION
****
RICHLAND JUSTICE COURT CASES
****
AUGUST, 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------	6	6	$315.00	$25.00	0	0	6	$48.33	0	0
Reckless Driving-----	3	3	132.50	None	0	0	3	44.13	0	0
Negligent Driving----	15	15	337.50	None	0	0	0	None	0	0
Speeding-------------	65	65	840.67	42.50	0	0	0	12.28	0	0
Stop Signs-----------	64	64	372.50	15.00	0	0	0	5.50	0	0
Failure to YRO!------	10	10	101.25	12.50	0	0	0	8.87	0	0
Improper Passing-----	10	10	71.75	3.75	0	0	0	6.80	0	0
Improper Parking-----	23	23	84.50	7.00	0	0	0	3.37	0	0
No Driver's License--	24	18	100.41	15.00	0	0	0	4.75	6	0
Defective Equipment--	6	4	21.66	13.75	0	0	0	7.91	2	0
No Vehicle License---	2	2	13.00	5.50	0	0	0	3.75	0	0
Following Too Closely	1	1	7.50	None	0	0	0	7.50	0	0
Permitting Unlicensed Driver to Drive------	1	1	5.50	None	0	0	0	5.50	0	0
No Muffler----------	1	1	5.50	5.50	0	0	0	None	0	0
Disregarding Traffic Officer-------------	1	1	5.50	None	0	0	0	5.50	0	0
Public Intoxication--	46	46	605.00	None	4	0	0	13.15	0	0
Public Nuisance------	13	13	197.50	None	2	0	0	15.17	0	0
Vagrancy-------------	17	15	147.50	112.50	4	0	0	2.33	2	0
3rd Degree Assault---	5	5	130.00	None	1	0	0	26.00	0	0
Petit Larceny--------	2	2	17.50	None	1	0	0	8.75	0	0
Grand Larceny--------	1	0	None	None	0	0	0	None	0	1
TOTAL----------	316	305	$3517.24	$258.00	12	0	9		10	1

Total Fines Received ---------- $3517.24
Less Fines Suspended---------- 258.00

Total Fines Received---------- $3259.24

The above includes violations that occurred on the Hanford Works Project.

ROL DIVISION - RICHLAND OFFENSES - AUGUST 1948

ses Known orted to trol	Offenses Unfounded	Actual Offenses July	Actual Offenses August	Offenses Cleared By Arrest	Offenses Cleared By Other Action	Perpetrators Involved
2	0	1	2	2	0	3
0	0	0	0	0	0	0
3	0	6	3	0	1	2
2	1	1	1	0	0	(u)
0	0	0	0	0	0	0
8	0	9	8	1	1	1
21	2	25	19	0	1	1
4	2	3	2	0	0	(u)
0	0	0	0	0	0	0
12	4	9	8	0	0	(u)
0	0	0	0	0	0	0
3	0	6	3 (a)	0	1	2
2	0	2	2	0	1	1
0	0	0	0	0	0	0
6	0	4	6	0	6	8* 1 (c)
19	0	12	19	19	0	19* 4 (c)
2	0	6	2	5	0	1
0	0	1	0	0	0	0
0	0	0	0	0	0	0
1	0	1	1 (b)	0	0	2
0	0	0	0	0	0	0
0	0	1	0	0	0	0
3	0	1	3	0	0	(u)
3	0	0	3	3	0	7
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
3	0	2	3	0	1	1
4	0	0	4 (c)	0	3	8
98	9	90	89	30	15	56

(Continued on Next Page)

PATROL DIVISION - RICHLAND OFFENSES - AUGUST 1948 - Continued

(a) - One of the offenses was perpetrated by two juveniles, of ages 10 and 12 years.
(b) - The one offense was perpetrated by two juveniles, of ages 16 years.
(c) - Two of the offenses were perpetrated by eight juveniles, of ages 6, 8, 10, 11 and 12 years.
(u) - Represents 'unknown'
(*) - Total of five colored males involved in the two offenses.
Value recovered for the month of August was, $735.00 (includes 8 bicycles).

PATROL DIVISION - COMPARISON CHART OF RICHLAND OFFENSES

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

Classification	Wash., Oregon & Calif. Six Months (Jan-June 1947)	Wash., Oregon & Calif. One Month Average	Richland Six Months (Jan-June 1947)	Richland July 1948	Richland August 1948
Murder	.688	.114	0	0	0
Robbery	19.57	3.26	0	0	0
Aggravated Assault	11.23	1.87	.22	.66	1.33
Burglary	114.53	19.09	1.66	4.0	2.00
Larceny	296.10	49.35	12.33	29.0	23.33
Auto Theft	57.73	9.62	.22	2.0	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 July 1948	Richland August 1948
Murder	.184	.30	0	0	0
Robbery	5.11	.85	0	0	0
Aggravated Assault	1.62	.27	.22	.66	1.33
Burglary	36.20	6.03	1.66	4.0	2.00
Larceny	91.39	15.23	12.33	29.0	23.33
Auto Theft	19.79	3.30	.22	2.0	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 July 1948	Richland August 1948
Robbery	56.1%	0	0	0
Burglary	61.0	30%	0	0
Larceny	46.0	19%	16%	0
Auto Theft	74.1	33%	33%	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 - NORTH RICHLAND OFFENCES - AUGUST 1948

Classification	Offences known: or reported to: Patrol	Offences: Unfounded:	Actual Offences: July	Actual Offences: Aug	Offences Cleared: By Arrest	Offences Cleared: By Other Action	Perpetrators: Involved
Assault	3	0	7	3	2	0	2
Attempted Suicide	0	0	0	0	0	0	0
Burglary-breaking and/or entering	2	0	10	2	1	0	1
Larceny-Theft (except Auto & Bike)							
(a) $50.00 and over value	11	1	13	10	0	1	1
(b) Under $50.00 value	28	1	13	27	2	0	2
Auto Theft	1	0	4	1	0	1	1
Bicycle and Motor Bike Theft	0	0	2	0	0	0	0
Carrying Concealed Weapon	0	0	1	0	0	0	0
Destruction Government Property	2	0	2	2	0	2	2
Destruction School Property	0	0	0	0	0	0	0
Destruction Personal Property	1	0	1	1	0	1	1 a
Disorderly Conduct	0	0	0	0	0	0	0
Drunkenness	30	0	23	30	30	0	30
Embezzlement and Fraud	0	0	0	0	0	0	0
Forgery	0	0	0	0	0	0	0
Gambling	0	0	6	0	0	0	0
Missing Person	0	0	2	0	0	0	0
Offence against Family & Children	0	0	0	0	0	0	0
Prowlers	1	0	2	1	0	0	0 u
Public Nuisance	10	0	11	10	10	0	10
Rape	0	0	0	0	0	0	0
Robbery	0	0	3	0	0	0	0
Sex Offence	0	0	1	0	0	0	0
Swindling	1	0	0	1	1	0	1
Vagrancy	15	0	15	15	15	0	15
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	5	2	5	3	0	2	2
Juveniles (other than reported above)							
Disorderly Conduct	0	0	0	0	0	0	0
	110	4	121	106	61	7	68 b

(a) One of the offences was perpetrated by one juvenile, age 12.
(b) Twenty eight of perpetrators involved are colored.

Value of property recovered during the month of August - $150.00

PATROL DIVISION - NORTH RICHLAND - COMPARISON OF OFFENCES

AUGUST 1948

Number of offences 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	North Richland Six Months (Jan-June 1947)	North Richland July 1948	North Richland Aug 1948
Murder	.688	.114	0	0	0
Robbery	19.57	3.26	0	2.0	0
Aggravated Assault	11.23	1.87	0	4.6	3.0
Burglary	114.53	19.09	0	6.6	1.3
Larceny	296.10	49.35	0	17.3	24.6
Auto Theft	57.73	9.62	0	2.6	.6

Number of offences known to Police per 10,000 inhabitants regardless of whether offences occurred in Cities of rural districts:

Classification	State of Washington Six Months (Jan-June 1947)	State of Washington One Month Average	North Richland Six Months (Jan-June 1947)	North Richland July 1948	North Richland Aug 1948
Murder	.184	.30	0	0	0
Robbery	5.11	.85	0	2.0	0
Aggravated Assault	1.62	.27	0	4.6	3.0
Burglary	36.20	6.03	0	6.6	1.3
Larceny	91.39	15.23	0	17.3	24.6
Auto Theft	19.79	3.30	0	2.6	.6

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

Classification	National Average Six Months (Jan-June 1947)	North Richland Six Months (Jan-June 1947)	North Richland July 1948	North Richland Aug 1948
Robbery	56.1%	0	0	0
Burglary	61.0	0	0	0
Larceny	46.0	0	0	0
Auto Theft	74.1	0	5.0%	0

Note: Statistics of juvenile offences 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 arrests recorded is doubtless incomplete in the lower age group because of the practice of some jurisdiction not to fingerprint youthful offenders."

In North Richland every delinquent is entered in the records.

COMMUNITY DIVISIONS

COMMUNITY ACTIVITIES DIVISION

August, 1948

ORGANIZATION AND PERSONNEL

	August
Number of Employees on roll	12
Beginning of month	12
End of Month	12
	0

CHURCHES

The following is a tabulation of full time paid personnel, as of August 31, 1948:

	Ministers	Staff	Total
Assembly of God	1	0	1
Catholic	2	2	4
Central United Protestant	3	1	4
Church of Christ	1	0	1
Church of God	1	0	1
Episcopal Church	1	0	1
Free Methodist	1	0	1
Latter Day Saints	4	0	4
Mission Baptist	1	0	1
Mo. Synod Lutheran (Redeemer)	1	1	2
National Lutheran	1	2	3
Regular Baptist	1	0	1
United Protestant - North Richland	1	1	2
United Protestant - West Side	1	0	1
United Protestant - South Side	1	0	1
	21	7	28

The United Protestant Church Council of Richland announced on August 26 the organization of a fourth United Protestant Church which will serve the northwest area of the Village. The Disciples of Christ (Christian Church) has been assigned sponsorship of the new church which will include 11 cooperating denominations.

The Richland Lutheran Church sent 12 adults and 11 children to the Teachers' Institute held at Luther Haven on Lake Coeur-d'Alene from July 28 through August 1. Two additional Richland Lutheran members officiated on the staff.

The Director of the Westminister student work of the Presbyterian Church at the University of Washington, was the guest minister at the Central United Protestant Church, August 15.

Community Activities Division

SCHOOLS

The following is a tabulation of full-time school district paid personnel, as of August 31, 1948:

Clerical	12
Principals & Supervisors	13
Teachers	6
Building Custodians	23
Cooks	0
Nursery School, Ex. Day Care	15
	68

On August 31, 1948, there were 78 children enrolled in the Richland Nursery School with an average attendance of 52. There was an increase in enrollment during the month of 1. On this day there were 20 children enrolled in the Extended Day Care program of the Nursery with an average attendance for the month of 14. There was a decrease in enrollment during the month of 10.

The new principal of Columbia High School arrived in Richland August 2 to prepare for his duties this Fall term.

The bicycle safety training classes which were sponsored by the Traffic Patrol completed three sessions with a total enrollment of 250 trainees.

Pre-school physical examinations were conducted by Public Health representatives August 2 through August 5 in Richland, and August 17 and August 24 in North Richland. A total of 282 children were examined in the first section of the health roundup and 200 during the second.

Registration for the Richland High School, elementary grades, and kindergarten opened August 23 and continued through August 26.

Registration for grade school pupils was reopened on August 31 to permit the signing up of pupils unable to make the earlier registration.

It was announced on August 31 that an estimated 5500students and 224 teachers will be in attendance when the Richland and North Richland schools open this season. The system's staff will have added 50 members and the student body will have increased by approximately 1,360.

On August 31, representatives of General Electric Company and the Atomic Energy Commission officially accepted the new center section (Unit 2) of the Columbia High School

Community Activities Division

COMMUNITY

As of August 31, 1948, organizational personnel included:

State Game Commission	1
Villagers, Inc.	6
American Legion	3
Coordinate Club	1
Youth Council	1
Boy Scouts	1
Camp Fire Girls	1
Hi-Spot Club	1
Jr. Chamber of Commerce	2
Red Cross	3
Castle Club	1
Post Office	68
Veterans Administration	2
Girl Scouts	1
	92

The Community Manager issued a proclamation setting aside the period from August 30 through September 6, 1948, as Atomic Frontier Days.

The Richland Junior Chamber of Commerce opened its Atomic Frontier Days celebration on August 30. Local citizenry was encouraged to wear western or pioneer garb in keeping with the theme of the occasion. A decoration committee supervised the hanging of bunting, streamers, and similar colorful material across streets, at intersections, and on store fronts. The decoration program was completed August 29. The Division made the necessary arrangements as required for use of public facilities and for patrol and fire protection.

The Village Park facilities were reserved for the second annual celebration of the 200 area production workers on August 5 and 600 employees attended.

The Lind and Pomeroy girls softball team returned to Richland August 30 for an exhibition game of jungle ball with the Hawaiian All-Stars of Honolulu.

The team sponsored by J. A. Terteling and Sons won the 1948 City Softball Tournament by defeating G. E. Stores which finished in second place, followed by the American Legion, Pasco Elks, S.D.R.A., H.I., Campbell's O.M.A.C., and U.S.W. in that order. The City Tournament netted a profit of $142.40.

The Blue Mountain Baseball League closed its season August 15 with the Richland Orphans finishing second.

Richland sent two teams to the Washington State Softball tournament held in Tacoma the weekend of August 20. The Terteling team won six straight games and the State Championship. The American Legion team won five and finished fourth.

Community Activities Division

The Richland Girl Scout carping period at the Richland Clear Lake site closed August 9 with 49 girls attending.

The national President of the American Institute of Electrical Engineers was the guest speaker on August 23 at the inaugural meeting of the Richland section of this organization.

The newly-formed Village Band presented a series of six concerts on succeeding Thursday nights in the Village Park under the sponsorship of Villagers, Inc. starting July 29 and ending September 2, 1948.

The deadline for applications to the Board of The Villagers, Inc. was set for 5:30 PM on August 3 and no applications were accepted after that time. Three new Board members were named to the Board of Directors of Villagers, Inc. at a meeting August 18, 1948. The new members are Micky McGuire, Dave Haley, and Oscar Hardigg.

Richland Post 71, American Legion, sent 14 delegates and 14 alternates to the annual convention of the Department of Washington which was held in Tacoma, August 25, 26, and 27.

The Richland Post 71, American Legion, was awarded the "Americanism Trophy" for outstanding work in the community, the Coopey Trophy for the most effective publicity campaign, and the only Certificate of Distinctive Merit issued this year by the Washington Department.

Three members of the Richland group of Civil Engineers represented their group at the National Convention of the American Society of Civil Engineers held in Seattle.

First step in the expansion program of the Richland Villager was announced August 5 with the acceptance of the village paper as an outlet for the United Press, the world's largest independent news service.

The Richland Post Office acquired and installed automatic stamping machines August 5 to facilitate handling mail and simplify accounting.

Articles of Incorporation for the Richland Swimming Pool Association, Inc. were signed August 2 by temporary officers of the group and were filed the following week at the State capital in Olympia.

Red Cross-sponsored swimming and life saving classes were started at the Richland Park swimming pool August 8.

The total attendance for the Richland Park Swimming Pool for the month of August was 18,838.

On August 8, the Richland Squadron of the Civil Air Patrol played host to cross country pilots, miniature car racers, and model airplane jockeys from the northwest area when it conducted its "Atomic Aerodeo".

Community Activities Division

On August 8, the Richland Tennis Club sponsored tennis matches featuring Dr. Clint L. Knox and Gene Russell of Richland, and Emery Neal and Sam Lee of Portland. Two singles matches and one doubles matches were played. Approximately 300 spectators turned out for this event.

Five members of the Richland Writers' Workshop represented that organization at the Pacific Northwest Writers' conference July 19 to 24 in Seattle.

The League of Women Voters opened registration booths in the five public schools August 12 and 13 and on the Greenway August 14. As a result of their 1948 registration campaign, 7,000 qualified voters were listed.

In addition to the normal Village Park recreational programs, during the month of August, four band concerts were given with an average attendance of 300 persons per concert. The park facilities were also reserved for 21 picnics and 1 political rally with a combined attendance of more than 2700.

The following organizations were granted permission to use the Village Park swimming pool for private swimming parties: the United Protestant Church College Age Group on August 14 , the Electrical Department on August 17, and the General Electric Stores Recreation Club on August 18.

On August 2 and 3, Mr. Willard E. Shumard, Field Representative for the National Recreation Association visited Richland and conferred with Community Activities personnel with reference to recreational activities on the Project. He was taken on a guided tour of the unrestricted areas and given a close-up view of the Village recreational program after which suggestions and recommendations were made.

On August 31, 1948, the Recreation Advisory Committee held its regular monthly meeting. The Committee recommended that the following organizations be approved subject to the required security clearance: Northwest (4th) United Protestant Church (Christian), Tri-City (Richland Branch) Organized Reserve Corps Rifle and Pistol Club, Benton County (Richland Section) Republican Club, and International Association of Machinists (Richland Section).

On July 30, 1948, the Atomic Energy Commission approved the minutes of the April 27, May 27, and June 24, 1948, meetings subject to further Security investigation of the Kelly Piano School, Singer Sewing School, Irish Stringed Instrument School, and Child Evangelism Fellowship School.

The number and types of organizations presently served by the Community Activities Division include 15 Fraternal Organizations, 27 Churches, 6 Public Schools, 6 Parent-Teachers Associations, 17 Private Instructors, 16 Boy Scout Troops, 27 Girl Scout Troops, 14 Camp Fire Girls Troops, 5 other Youth Organizations, 23 Recreational Organizations, 12 Social Organizations, 9 Business and Professional Organizations, 7 Political and Labor Groups, 5 Veterans Organizations, 7 Music Organizations, and 3 Welfare Organizations.

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Community Activities Divis

MAJOR ACTIVITIES DURING MONTH

August	5	Village Band Concert	Village Park
	8	Portland vs. Richland - Tennis	Village Park Courts
	12	Village Band Concert	Village Park
	12	Thelma Pearson Art Exhibit	Jefferson Grade School
	19	Village Band Concert	Village Park
	26	Village Band Concert	Village Park
	28	Fisher's Ghosts vs. Torteling Softball	Village Softball Field
	29	Donkey Softball Game	Village Softball Field
	30	Lind & Pomeroy vs. Hawaiian All Stars Jungleball	Village Softball Field

HW-1099
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PROJECT AND RELATED PERSONNEL

	7-30-48		8-31-48	
GOVERNMENT EMPLOYEES				
Civilian Personnel - Atomic Energy Comm.	342		338	
Civilian Personnel - G. A. C.	3		3	
Total		345		341
RICHLAND VILLAGE PERSONNEL				
Commercial Facilities (Including No.Rich)	1206		1598	
Organizations, Clubs, Etc.,	92		92	
Schools	59		68	
Churches	26		28	
Total		1,383		1,786
MORRISON-KNUDSEN PERSONNEL(Columbia Camp)		233		252
CONSTRUCTION SUB-CONTRACTORS				
Atkinson-Jones	9557		8246	
Newport, Kern & Kibbe	20		24	
John L. Hudson Co.,	1		-	
Chicago Canteen Co., (Included in Facilities)	276		-	
Newberry Neon	605		577	
Urban, Smyth, Warren Co.,	1084		1102	
J. B. Head Co.,	22		21	
Kellex Corp.	431		432	
J. Gordon Turnbull	55		76	
Giffels & Vallet, Inc.,	191		197	
Morrison-Knudsen Co.,	555		479	
C. C. Moore	145		165	
V. S. Jenkins Insulating Co.,	26		8	
Curtis Sand & Gravel	17		44	
National Carbon/Carbide Co.,	186		186	
Trowbridge & Flynn Electric Co.,	11		9	
J. A. Terteling & Son	893		1021	
Graysport Construction Company	102		152	
Estep Electric	7		10	
Nettleton-Sound	822		913	

(continued on page #2)

HW-10993
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DECLASSIFIED

	7-30-48	8-31-48
CONSTRUCTION SUB-CONTRACTORS		
Thorgaard Plumbing	57	59
Chris-Berg Co.,	51	84
Holert Electric Co.,	21	46
Strasser Drilling Co.,	2	4
Kelly Wells Co.,	3	2
McNeill Construction Co.,	894	758
Rust Engineering Co.,	8	8
Arnold & Jeffers Co.,	60	56
Pacific Roofing Co.,	37	32
Central Service Co.,	7	11
Charles Swanson	27	74
Taylor Bros.,	13	14
Builders Insulating Co.,	4	5
Fox Metal Products	12	8
Pioneer Sand & Gravel	3	5
A. C. Grant	10	28
A. B. C. Roofing	8	8
D. L. Cooney	52	86
Scott-Buttner	0	63
Pittsburgh Des Moines Steel	-	17
Warsaw Elevators	-	3
Martin's Furniture	-	26
Parson's File	-	3
Williams Paint & Glass	-	4
Feldon's Inc.,	-	12
Richland Plumbing & Heating	-	5
West Coast Painters	-	26
Holaday & Edworthy	-	2
Asbeston Supply	-	2
Total	16,275	15,113
GENERAL ELECTRIC PERSONNEL	8,653	8,541
GRAND TOTAL	28,889	26,033

26,689

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