PRIVACY ACT MATERIAL REMOVED

REPOSITORY PNL

COLLECTION Atmospheric Releases

BOX No. N/A

FOLDER N/A

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HW 25533

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727793

HANFORD WORKS MONTHLY REPORT

FOR

AUGUST 1952

CLASSIFICATION REVIEW FOR DECLASSIFICATION BUT LEFT UNCHANGED

By..........

Date.......... U.S. AEC Division of Classification

46693

INV SEP 14 '83

Compiled By
Department Managers

September 24, 1952

HANFORD WORKS
RICHLAND, WASHINGTON

Operated for the Atomic Energy Commission
by the
General Electric Company
under
Contract # W-31-109-eng-52

DECLASSIFIED WITH DELETIONS

Classification Cancelled (Change to

Authority of RL0IG-4

3/19/92

4-6-92

4-7-92

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DECLASSIFIED WITH DELETIONS

PRIVACY ACT MATERIAL REMOVED

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12 - 13	700 File

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[redacted]

HANFORD WORKS MONTHLY REPORT
GENERAL SUMMARY

AUGUST 1952

Production Operations

New high records were established in the Reactor Plants, the Redox Plant, and the Isolation Building in spite of continued difficulties arising from ruptured slug jackets and leaking tubes. Production in the uranium oxide plant was but 62% of forecast owing to process difficulties that have apparently been overcome at month's end. Production runs started in the Busmuth Phosphate Plants were but 88% of forecast owing to the diversion of feed to the more economical Redox Plant.

Engineering and Technology

Work Authorities and Directives were received from the AEC relating to the Reactors, Water Plants, Separations Plant, Metal Preparation Plant and Railroad included in Program X. The procurement of graphite continues to be the schedule-limiting item. Designs of the K Reactor and Water Plant were 33.5% and 19.5% complete at month's end.

Major buildings and facilities of 100-C have now been completed except for incidental clean-up, painting, adjustment of ventilation, instrument calibrations, etc.

Fundamental constants of a 7-$\frac{1}{2}$" lattice spacing have been determined to be consistent with those previously found for the 8-3/8", 8" and 7" lattice spacings.

Results of preliminary pile testing of graphite manufactured from Texas coke, which is the future commercial source, indicate that it is suitable for pile moderator insofar as irradiation damage is concerned.

Personnel and Services

The plant roll continued to decrease slightly to 8,885, as the turnover rate increased to 2.01%.

There are now 210 employees in military leave status out of a total of 239 who have terminated to enter military service.

The industrial medical service standards were determined to be adequate for certification by the American Foundation of Occupational Health and by the Industrial Medical Association.

The first billings to residential leaseholders for metered electricity were issued for the month of July. This is a change from the fixed rates formerly charged.

There were 709 housing applications pending.

[redacted]

STAFF

Vice President in Charge	G. R. Prout
General Manager	W. E. Johnson
Manager, Schenectady Office	B. R. Prentice
Assistant to the General Manager, General Administration	G. G. Lail
Assistant to the General Manager, Technical	W. I. Patnode
Assistant to the General Manager, Evaluation of Division Activities	W. K. MacCready
Counsel	G. C. Butler
Manager, Finance	W. W. Smith
Manager, Employee and Public Relations	H. E. Callahan
Director, Radiological Sciences	H. M. Parker
Director, Medical	W. D. Norwood, M.D.
Manager, Engineering	A. B. Greninger
Manager, Manufacturing	C. N. Gross
Manager, Utilities and General Services	F. E. Baker
Manager, Community Real Estate and Services	L. F. Huck

FORCE REPORT
AUGUST 1952

	EXEMPT		NON EXEMPT		TOTAL	
	7-31-52	8-29-52	7-31-52	8-29-52	7-31-52	8-29-52
GENERAL	24	24	96	89	120	113
LAW	2	2	4	3	6	5
ENGR. DEPT.						
General	5	5	6	6	11	11
Design	128	134	60	64	188	198
Project	162	166	299	285	461	451
Technical Section						
Administrative	7	4	5	6	12	10
Pile Technology	154	156	136	131	290	287
Separations Tech.	127	130	51	45	178	175
Technical Services	29	34	143	135	172	169
Applied Research	139	179	198	161	337	340
MANUFACTURING DEPT.						
General	23	23	12	9	35	32
Reactor	216	215	979	989	1195	1204
Metal Preparations	73	74	396	415	469	489
Separations	271	274	1162	1161	1433	1435
MEDICAL DEPARTMENT	45	45	238	235	283	280
RADIOLOGICAL SCIENCES DEPT.						
General	2	2	2	2	4	4
Records & Standards	26	26	153	151	179	177
Biophysics	50	55	64	59	114	114
Biology	39	41	45	48	84	89
FINANCIAL DEPARTMENT						
General	4	5	18	16	22	21
Engr. Acctg.	13	13	54	51	67	64
Mfg. Cost	9	9	30	32	39	41
Gen. Acctg.	12	12	82	85	94	97
Payroll Section	11	11	72	70	83	81
General Cost	11	11	34	32	45	43
Internal Auditing	7	9	5	3	12	12
EMPLOYEE & PUBLIC RELATIONS	40	40	68	67	108	107
UTILITIES & GENERAL SERVICES						
General	18	18	13	14	31	32
Elect. Dist. & Telephone	33	33	143	145	176	178
Transportations	42	42	475	488	517	530
Purchasing & Stores	84	85	309	298	393	383
Statistical & Computing	24	28	54	49	78	77
Plant Security & Services						
Patrol & Security	59	59	571	558	630	617
Safety & Fire	44	43	103	104	147	147
Office Services	29	29	316	-314	345	343
COMMUNITY REAL ESTATE & SERV.	178	178	365	351	543	529
TOTAL	2140	2214	6761	6671	8901	8885

PERSONNEL DISTRIBUTION - AUGUST 1952

	100-B Area	100-D Area	100-F Area	100-H Area	101 Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Area	Total
GENERAL												
Exempt Pers.	-	-	-	-	-	-	-	-	-	-	24	24
Cler. & Other Non Exempt	-	-	-	-	-	-	-	-	-	-	89	89
Total	-	-	-	-	-	-	-	-	-	-	113	113
LAW												
Exempt	-	-	-	-	-	-	-	-	-	-	2	2
Clerical	-	-	-	-	-	-	-	-	-	-	3	3
Total	-	-	-	-	-	-	-	-	-	-	5	5
ENGR. DEPARTMENT												
GENERAL												
Supv.	-	-	-	-	-	-	-	-	-	-	5	5
Clerical	-	-	-	-	-	-	-	-	-	-	6	6
Total	-	-	-	-	-	-	-	-	-	-	11	11
DESIGN												
Supervisors	-	-	-	-	-	-	-	-	-	-	17	17
Other Exempt	-	-	-	-	-	-	-	5	-	-	112	117
Tech. Grads.	-	-	-	-	-	-	-	4	-	-	24	28
Clerical	1	-	-	-	-	-	-	1	-	-	34	36
Total	1	-	-	-	-	-	-	10	-	-	187	198
PROJECT												
Supervisors	27	-	-	-	2	-	1	-	1	5	29	65
Other Exempt	23	-	-	-	9	7	4	-	14	10	34	101
Draftsmen & Designers	1	8	-	-	-	2	7	9	-	-	86	113
Clerical	13	-	1	-	1	-	2	-	-	10	86	113
Others	24	-	-	-	10	-	-	-	-	5	20	59
Total	88	8	1	-	22	9	14	9	15	30	255	451
TECH. SECTION												
GENERAL												
Supervisors	-	-	-	-	-	-	-	-	-	-	4	4
Clerical	-	-	-	-	-	-	-	-	-	-	6	6
Total	-	-	-	-	-	-	-	-	-	-	10	10

	100-B Area	100-D Area	100-F Area	100-H Area	101 Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Area	Total
PILE TECH.												
Supv.	-	-	-	-	-	-	-	4	-	-	-	4
Metallurgist & Engrs.	5	19	-	4	4	-	-	33	-	-	-	65
Physicists	-	6	-	-	-	-	-	6	-	-	-	12
Engr. Assts.	8	26	1	6	6	-	-	28	-	-	-	75
Tech. Grads.	2	10	-	-	1	-	-	25	-	-	-	38
Technologists	-	1	-	-	-	-	-	3	-	-	-	4
Lab. Assts.	1	2	-	-	-	-	-	2	-	-	-	5
Clerical	1	4	-	3	1	-	-	19	-	-	-	28
Engr. Assts.	7	23	1	13	-	-	-	12	-	-	-	56
Total	24	91	2	26	12	-	-	132	-	-	-	287
SEPARATIONS TECH.												
Supv.	-	-	-	-	-	1	10	8	-	-	-	19
Chemists & Engrs.	-	-	-	-	-	11	49	44	-	-	-	104
Other Exempt	-	-	-	-	-	5	1	1	-	-	-	7
Clerical	-	-	-	-	-	1	5	8	-	-	-	14
Engr. Assts.	-	-	-	-	-	-	-	2	-	-	-	2
Lab. Assts. & Tech.	-	-	-	-	-	-	8	8	-	-	-	16
Tech. Grads.	-	-	-	-	-	5	4	4	-	-	-	13
Total	-	-	-	-	-	23	77	75	-	-	-	175
TECH. SERVICES												
Supervisors	-	2	-	-	-	-	2	7	-	-	4	15
Other Exempt	-	3	-	-	-	-	5	4	-	4	3	19
Tech. & Tech. Grads.	-	-	-	-	-	-	5	2	-	-	-	7
Lab. Assts.	-	-	-	-	-	-	15	-	-	-	-	15
Clerical	-	4	1	-	-	-	3	27	-	1	49	85
Others	-	2	1	-	-	-	7	17	-	-	1	28
Total	-	11	2	-	-	-	37	57	-	5	57	169
APPLIED RESEARCH												
Supervisors	2	-	-	-	-	-	22	11	-	-	-	35
Other Exempt	9	4	1	-	-	-	55	73	-	2	-	144
Tech. & Tech. Grads.	4	4	-	-	-	-	12	14	-	3	-	37
Lab. Assts.	4	3	2	-	-	-	72	31	-	-	-	112
Clerical	2	-	-	-	-	-	3	7	-	-	-	12
Total	21	11	3	-	-	-	164	136	-	5	-	340

MANUFACTURING DEPT.	100-B Area	100-D Area	100-F Area	100-H Area	101 Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Area	Total
GENERAL												
Supervisors	-	-	-	-	-	-	-	-	-	-	13	13
Other Exempt	-	-	-	-	-	-	-	-	1	-	9	10
Clerical	-	-	-	-	-	-	-	-	-	-	9	9
Total	-	-	-	-	-	-	-	-	1	-	31	32
REACTOR												
Supervisors	34	46	32	35	-	-	-	-	-	-	-	147
Other Exempt	21	12	10	21	-	-	-	-	-	1	3	68
Supv. In. Trn.	5	2	1	3	-	-	-	-	-	-	-	11
Operators (Operations)	38	69	38	40	-	-	-	-	-	-	-	185
Operators (Power)	98	116	68	71	-	-	-	-	-	-	-	353
Craftsmen	76	102	100	47	-	-	-	-	-	-	-	325
Inspectors & Lab. Assts.	8	15	7	11	-	-	-	1	-	-	-	42
Clerical	7	13	8	16	-	-	-	-	-	1	1	46
Others	4	5	9	6	-	-	-	-	-	-	-	24
Tech. Grads.	-	2	1	-	-	-	-	-	-	-	-	3
Total	291	382	274	250	-	-	-	1	-	2	4	1204
METAL PREP.												
Supv.	-	2	-	-	1	-	-	43	-	-	-	46
Other Exempt	-	1	-	-	-	-	-	27	-	-	-	28
Operators (Operations)	-	-	-	-	-	-	-	181	-	-	-	181
Operators (Power)	-	-	-	-	-	-	-	11	-	-	-	11
Craftsmen	-	29	-	-	9	-	-	123	-	-	2	163
Clerical	-	1	-	-	-	-	-	25	-	-	-	26
Others	-	2	-	-	1	-	-	14	-	-	-	17
Lab. Assts.	-	-	-	-	-	-	-	11	-	-	-	11
Tech. Grads.	-	-	-	-	-	-	-	6	-	-	-	6
Total	-	35	-	-	11	-	-	441	-	-	2	489
SEPARATIONS												
Supervisors	-	-	-	-	-	14	202	-	-	-	1	217
Other Exempt	-	-	-	-	-	1	53	-	-	-	3	57
Operators (Operations)	-	-	-	-	-	31	507	-	-	-	-	538
Operators (Power)	-	-	-	-	-	27	88	-	-	-	-	115
Craftsmen	-	-	-	-	-	41	295	-	-	-	-	336
Inspectors & Lab. Assts.	-	-	-	-	-	3	81	-	-	-	-	84
Clerical	-	-	-	-	-	3	52	-	-	-	1	56
Tech. Grads.	-	-	-	-	-	-	9	-	-	-	-	9
Others	-	-	-	-	-	6	17	-	-	-	-	23
Total												

	100-B Area	100-D Area	100-F Area	100-H Area	101 Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Area	Total
MEDICAL DEPARTMENT												
Supervisors	-	-	-	-	-	-	-	-	-	-	24	24
Physicians	-	-	-	-	-	-	-	-	1	3	9	13
Other Exempt	-	-	-	-	-	-	-	-	-	-	8	8
Technicians	-	-	-	-	-	-	-	-	1	2	15	18
Nurses	6	4	4	1	-	1	6	2	-	3	62	89
Clerical	-	-	-	-	-	-	-	-	2	8	43	53
Others	-	-	-	-	-	-	-	-	-	1	74	75
Total	6	4	4	1	-	1	6	2	4	17	235	280
RADIOLOGICAL SCIENCES DEPT.												
STAFF												
Supv.	-	-	-	-	-	-	-	-	-	-	2	2
Clerical	-	-	-	-	-	-	-	-	-	-	2	2
Total	-	-	-	-	-	-	-	-	-	-	4	4
RECORDS & STANDARDS												
Supv.	-	-	-	-	-	-	-	10	-	-	4	14
Other Exempt	1	-	1	-	-	1	1	3	-	-	5	12
Clerical	-	-	-	-	-	-	-	2	-	-	1	3
Others	10	5	7	7	-	11	32	59	7	-	10	148
Total	11	5	8	7	-	12	33	74	7	-	20	177
BIOPHYSICS												
Supervisors	-	-	-	-	-	1	6	1	-	-	-	8
Other Exempt	-	-	-	-	-	7	22	17	-	1	-	47
Clerical	-	-	-	-	-	1	2	2	-	-	-	5
Others	-	-	-	-	-	17	33	4	-	-	-	54
Total	-	-	-	-	-	26	63	24	-	1	-	114
BIOLOGY												
Supervisors	-	-	-	4	-	-	-	-	-	-	-	4
Other Exempt	-	-	-	37	-	-	-	-	-	-	-	37
Clerical	-	-	-	5	-	-	-	-	-	-	-	5
Others	-	-	-	43	-	-	-	-	-	-	-	43
Total	-	-	-	89	-	-	-	-	-	-	-	89

	100-B Area	100-D Area	100-F Area	100-H Area	101 Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Area	Total
FINANCIAL DEPARTMENT												
Supv.	-	-	-	-	-	-	-	-	-	6	36	42
Other Exempt	-	-	-	1	-	-	1	1	-	-	25	28
Clerical	2	-	-	1	-	1	-	-	-	60	225	289
Total	2	-	-	2	-	1	1	1	-	66	286	359
EMPLOYEE & PUBLIC REL. DEPT.												
Supv.	-	-	-	-	-	-	-	-	-	-	19	19
Emp. Rel. Counselors	-	-	-	-	-	-	-	-	-	-	2	2
Other Exempt	-	-	-	-	-	-	-	-	-	-	19	19
Clerical	-	-	-	-	-	-	-	-	-	-	54	54
Others	-	-	-	-	-	-	-	-	-	-	13	13
Total	-	-	-	-	-	-	-	-	-	-	107	107
UTILITIES & GEN. SERV. DEPT.												
GENERAL												
Supv.	-	-	-	-	-	-	-	-	-	-	18	18
Clerical	-	-	-	-	-	-	-	-	-	-	14	14
Total	-	-	-	-	-	-	-	-	-	-	32	32
PL. SEC. & SERVICES												
SEC. & PATROL												
Supv.	6	6	6	5	-	5	9	7	8	-	4	56
Other Exempt	-	-	-	-	-	-	-	-	3	-	-	3
Patrolmen	87	45	60	47	-	65	123	76	1	-	26	530
Clerical	-	-	-	-	-	-	-	-	16	4	6	26
Seamstress	-	-	-	-	-	-	-	-	2	-	-	2
Total	93	51	66	52	-	70	132	83	30	4	36	617
SAFETY & FIRE												
Supv.	14	-	-	-	4	-	4	4	5	-	2	33
Engineers	-	2	1	-	-	2	-	2	1	-	2	10
Firemen	48	-	-	-	8	-	16	16	9	-	-	97
Clerical	-	1	1	-	-	1	-	1	1	-	2	7
Total	62	3	2	-	12	3	20	23	16	-	6	147
OFFICE SERVICES												
Supv.	-	-	1	-	-	1	2	1	1	-	19	25
Procedures Analysts	-	-	-	-	-	-	-	-	-	-	4	4
Ldry. Operators	-	-	-	-	-	-	1	-	-	-	1	2
Janitors & Servicemen	7	7	6	7	1	3	28	13	-	-	45	117
Clerical	-	-	-	-	-	-	2	-	-	1	49	52
Others	1	-	-	5	2	-	46	9	-	3	77	143
Total	8	7	7	12	3	4	79	23	1	4	195	343

	100-B Area	100-D Area	100-F Area	100-H Area	100 Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Area	Total
PURCHASING & STORES												
Supv.	-	1	-	-	-	-	-	-	-	4	30	35
Other Exempt	-	-	-	-	-	-	-	-	18	2	30	50
Clerical	-	-	-	-	-	-	-	-	-	42	127	169
Others	11	2	1	1	1	-	6	1	-	47	59	129
Total	11	3	1	1	1	-	6	1	18	95	246	383
ELECT. DIST. & TELEPHONE												
Supv.	-	-	-	-	-	9	-	-	3	3	10	25
Other Exempt	-	-	-	-	-	2	-	-	-	-	6	8
Craftsmen	-	-	-	-	-	24	-	-	11	15	39	89
Clerical	-	-	-	-	-	3	-	-	-	1	22	26
Oper. & Dispatchers	4	4	4	4	-	-	-	-	12	-	-	28
Others	-	-	-	-	-	2	-	-	-	-	-	2
Total	4	4	4	4	-	40	-	-	26	19	77	178
TRANSPORTATION												
Supv.	2	-	3	2	-	1	1	-	3	-	26	38
Other Exempt	-	-	-	-	-	-	-	-	-	-	4	4
Bus Drivers	-	-	-	-	-	-	-	-	-	-	167	167
Journeymen	5	1	1	8	-	-	3	-	5	-	67	90
Trainmen	-	-	-	-	-	-	-	-	26	-	-	26
Servicemen	6	-	2	-	-	-	-	-	1	-	25	34
Equip. Opers.	7	-	10	-	-	1	-	-	-	-	34	52
Clerical	-	-	1	1	-	-	-	1	-	-	30	33
Others	9	-	8	10	-	9	3	-	1	-	46	86
Total	29	1	25	21	-	11	7	1	36	-	399	530
STATISTICAL & COMP. SERV.												
Supv.	-	-	-	-	-	-	-	-	-	-	9	9
Other Exempt	-	-	-	-	-	-	-	9	-	-	10	19
Clerical	-	-	-	-	-	-	-	2	-	-	33	35
Technologists	-	-	-	-	-	-	-	2	-	-	-	2
Bus. & Tech. Grads.	-	-	-	-	-	-	-	3	-	-	9	12
Total	-	-	-	-	-	-	-	16	-	-	61	77

	100-B Area	100-D Area	100-F Area	100-H Area	101 Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Area	Total
COMM. REAL ESTATE & SERV.												
Supervisors	-	-	-	-	-	-	-	-	-	15	103	118
Other Exempt	-	-	-	-	-	-	-	-	-	-	8	8
Firemen	-	-	-	-	-	-	-	-	-	22	30	52
Patrolmen	-	-	-	-	-	-	-	-	-	14	22	36
Journeymen	-	-	-	-	-	-	-	-		-	136	136
Servicemen	-	-	-	-	-	-	-	-	-	-	31	31
Truck Drivers	-	-	-	-	-	-	-	-	-	-	28	28
Power Operators	-	-	-	-	-	-	-	-	-	-	31	31
Clerical	-	-	-	-	-	-	-	-	-	-	54	54
Others	-	-	-	-	-	-	-	-	-	1	34	35
Total	-	-	-	-	-	-	-	-	-	52	477	529
GRAND TOTAL	651	616	399	465	61	326	1943	1109	154	300	2861	8885

[redacted]

MANUFACTURING DEPARTMENT

AUGUST, 1952

September 10, 1952

METAL PREPARATION SECTION

The production for the month was 53 tons of four-inch material and 91 tons of eight-inch material for a total of 144 tons. This production represents 101 percent of forecast. The machining yields were 79.0 percent and 79.5 percent respectively for four and eight-inch material.

The canning yield was 76.1 percent for four-inch material and 68.8 percent for eight-inch material. The decrease in the eight-inch yield was a result of non-seating and poor bonding. Although not fully explained, there is some corelation between the non-seat problem and warped slugs.

The melt plant produced 65 tons of billets with a yield of 84.5 percent and a solid yield of 95.1 percent.

There were no autoclave failures of the eight-inch material, however three failures occurred in the four-inch material for a frequency of 0.11 per thousand.

REACTOR SECTION

The reactor input production was 98.4 percent of forecast and was adversely affected by the large number of ruptured slugs which could not be discharged rapidly. A new total input production record was established on August 1 and the maximum operating level at the H Reactor was increased 15 MW during the month. The reactor output was 140 percent of forecast. This was the result of an unscheduled outage at month-end at the H Reactor during which time the discharge was taken and an accelerated pushing program to provide more material to the Separations Section.

There were 12 regular uranium slug jacket failures in August, eight of which were Group 8 and four were Group 7. In addition, a uranium receptacle slug in a production test tube failed at the D Reactor. Four of the jacket failures were discharged within the scram recovery time avoiding approximately 80 hours of potential outage time.

The operating efficiency of the reactors was 82.2 percent. This very low efficiency was primarily due to the large number of ruptured pieces, and several leaking tubes.

A total of seven process tubes were removed during this period because of water leaks into the graphite moderator for a total of 142.3 outage hours. Tubes found leaking were 3175-D and 1692-D at the D Reactor; 2660-B, 2252-B, 0569-B and 3293-B at the B Reactor; and 4068-F at the F Reactor. The water collection at all areas had returned to normal by month-end.

SEPARATIONS SECTION

A total of 44 runs and 11 acid washes was started in the Canyon Buildings representing 88 percent of forecast. The low production resulted when metal was diverted to Redox process. In Redox 150 runs were started representing 124 percent of forecast which represents a new high production for this building. A total of 206 runs and 2 acid washes was processed in the Isolation Building and was 124 percent of forecast, setting a new record for this building. A record operating efficiency of 97.2 percent was achieved at Redox.

"Cold" uranium runs from Redox UO_3 continued in the TBP process with waste losses from the RA Column varying from 2 percent to greater than 20 percent. Causes of the erratic performance of the RA Column have not been determined.

A total of 44.3 tons of uranium as UO_3 was produced this month which was 62 percent of forecast. The low production resulted from severe foaming in the pots of UNH from the TBP "cold" runs. After many different methods of suppressing foaming were unsuccessfully attempted steam stripping in a fractionating column of the UNH material resulted in a great reduction of foaming troubles.

It was necessary to start concentrating in the TBP plant approximately 60 tons of uranium as UNH, which could not be processed to UO_3. This material was diverted to tank cars for off-site shipment. One car load (31.2 tons as U) of UO_3 from Redox was diverted from Oak Ridge to Harshaw Chemical Company in Cleveland for further processing to reduce ionic impurities.

All TBP plant facilities for storage of blended waste metal from U farm are filled.

GENERAL

Personnel

Total on Roll July 31, 1952	3115
Accessions	75
Separations	42
Total on Roll August 31, 1952	3148

C. N. GROSS, MANAGER
MANUFACTURING DEPARTMENT

MANUFACTURING DEPARTMENT

PATENT REPORT SUMMARY
FOR
MONTH OF AUGUST, 1952

Richland, Washington
September 9, 1952

All persons engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during the period covered by this report except as listed below. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

INVENTOR	TITLE
None	

C. N. GROSS, MANAGER

MANUFACTURING DEPARTMENT

[redacted]

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8.

1215990

[redacted] INFORMATION

[redacted]

Section 10 Varified By V. D. Donihee
V. D. Donihee

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INFORMATION

1215991

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Richland, Washington
September 9, 1952

MANUFACTURING DEPARTMENT
METAL PREPARATION SECTION
AUGUST, 1952

I. RESPONSIBILITY

Responsibilities of the Section were unchanged during the month.

II. ACHIEVEMENT

A. Operating Experience

1. Statistics

	July	August	Year To Date
Bare Pieces Machined (4",Tons)	18	64	489
Machining Yield (4", %)	79.7	79.0	79.1
Bare Pieces Machined (8",Tons)	136	71	714
Machining Yield (8", %)	81.4	79.5	80.4
Acceptable Pieces Canned (4",Tons)	26	53	510
Canning Yield (4", %)	76.2	76.1	77.5
Acceptable Pieces Canned (8",Tons)	105	91	595
Canning Yield (8", %)	74.2	68.8	67.9
Acceptable Pieces Canned (4" & 8") (% of forecast)	97.0	100.7	102.7
Autoclave Frequency (4",No./M)	.00	.11	.07
Autoclave Frequency (8",No./M)	.00	.00	.07
Briquettes Produced (Tons)	16	19	192
Chip Recovery Yield (%)	85.8	84.5	86.6
Billets Produced (Tons)	54	65	452
Melt Plant Billet Yield (%)	83.9	84.5	84.7

[redacted] INFORMATION DECLASSIFIED

1. Statistics (Continued)

	July	August	Year To Date
Melt Plant Solid Yield (%)	93.5	95.1	93.8
Oxide Burned (Weight out Tons)	8	9	59
Poison Canned (Number Pieces)	989	6909	17108
Chemical 68-56 Canned (Number Pieces)	0	0	296
Chemical 10-66 Canned (Number Pieces)	386	0	2186
Special Requests (Man Hours)	469	459	3741
305 Routine Tests (Man Hours)	141	117	902
305 Special Tests (Man Hours)	305	342	2395
Maximum Steam Generated (M lbs/hr)	16	15.5	
Total Steam Generated (M lbs.)	7300	7300	
Average Rate Steam Generated (M lbs/hr.)	10	10	
Coal Consumed (Tons)	478	482	
Sanitary Water from 3000 Area (Million gal.)	35	39	
Well Water Pumped (Million gal.)	0.6	0	
Total Water Average Rate (gpm)	781	863	
Chlorine Residual (ppm)	.42	.42	

2. Activities

All rods machined this month were from virgin material; 50% were rolled in June and the other 50% in March, April, May and July. The slight decrease in machining yield is attributed to rod quality.

The statistical quality control program which was successfully applied to the machining of 8 inch slugs was introduced in the machining of 4 inch slugs. To aid in this program, hook gauges for setting cut-off tools were provided, similar to those used for 8 inch machining. Step gauges were fabricated for use of Process personnel in checking for discrepancies in the go, no-go snap gauges used by machining operators.

Canning yield on four inch material remained approximately the same as last month. The 8 inch material yields decreased approximately 7% due principally to non-seating and poor bonding. A study of the cause of non-seating was continued with inconclusive results. Abnormal rejection rates were found to occur during brief periods and a correlation between magnitude of slugs warpage and non-seating was found.

Analysis of the three autoclave failures of 4 inch slugs which occurred during the month revealed that two were the result of defective cans and one the result of operating techniques.

[redacted]

2. Activities (Continued

An increase in the solid yield for the melt plant of approximately 1.5% is considered to be the result of a decrease in the ratio of TXB to solid scrap. No significant change in the billet yield resulted as considerable machining of billets was necessary to maintain billet end quality.

3. Special Operations

Approximately 23,000 eight inch slugs were processed by the triple dip method. This totals approximately 50,000 slugs canned according to PT-313-105-2M Supplement.

4. Schedule Variance

Machining production was approximately 10% below forecast due mainly to inexperienced operators, newly hired, resulting in decreased over-all efficiency.

Canning production was 101% of forecast.

Billet production exceeded the forecast by 7.5%. This was possible through an improved operating time efficiency that was not forecast.

Slug recovery operated on a three shift, six day week schedule through August. The additional shift was added temporarily to decrease the backlog of rejected canned slugs.

B. Equipment Experience

1. Operating Continuity

Approximately 6% of the total canning production time was lost as a result of mechanical failures; 3% of these were bronze furnace failures.

A power outage occurred on August 14 from 7:19 A.M. to 7:37 A.M. as a result of a line failure north of the area. No production was lost. Another 30 minute outage occurred on August 28, beginning at 11:20 A.M. due to a circuit breaker opening at the Benton Sub-station. A complete black-out of the area resulted suspending production operation for the entire outage time.

C. Improvement Experience

1. Production Tests

PT-313-105-2M - "Triple Dip Canning and Irradiation of Eight Inch Uranium Slugs Fabricated in Heavy Walled Aluminum Cans" (HW-22463). During the month approximately 23,000 acceptable pieces were canned

[redacted]

1. Production Tests (Continued)

in accordance with this test. The over-all yield was lower than the preceding month primarily due to non-seating and poor bonding. Improvements were made in the number of slugs rejected for bad welds and AlSi slop-over.

PT-313-105-3M - "Fabrication of Alpha Lead Dip Canning and Irradiation of Salt Bath Heat Treated Alpha Rolled Uranium Slugs" (HW-22770). No slugs were canned during the month under specifications of this test. The Pile Technology Unit has been conducting tests to determine the desired time cycle in the salt bath which will incorporate an appropriate safety factor. The number of stations on the salt bath machine has been increased to permit an increased time cycle with the same through-put.

2. Process Tests and Revisions

Two pneumatic canning jacks were operated on one 8 inch canning line during the month. The jacks relieve two canning operators of manual jack operation and enable them to devote greater attention to proper cap pre-heat and cap seating. Greater uniformity of can pre-heat operation is also assured since there is less possibility of the cans being immersed in the AlSi prior to the start of the pre-heat cycle. Their use made possible a canning cycle reduction from 57 to 53 seconds which results in a 7% increase in production.

Revisions and rearrangement of cap and can inspection equipment has resulted in an over-all improvement by minimizing required movements and increasing inspection efficiency. It is expected to show a labor saving of approximately $1500 per year.

A SARCO automatic temperature regulating valve was installed on the final etch bath. This valve has made it possible to maintain the bath temperature within $\pm$ 1.0°C., resulting in more uniform etching of canned pieces.

3. Inventions and Discoveries

All people in the Metal Preparation Section engaged in work which might be expected to result in inventions or discoveries have reported that no inventions or discoveries were made during the period covered by this report.

D. Events Influencing Costs

1. Labor Variance

One hundred man-hours overtime were expended in maintenance of building 321 equipment.

[redacted]

1. Labor Variance (Continued)

Seventy-two man-hours were required to decontaminate the two rod cars received during the month.

Operations Unit personnel worked one Saturday more than was forecast.

2. Material Variance

Approximately 8000 caps of poor quality were rejected and returned to the vendor. Approximately 10,000 more are on hand and will be returned in September.

E. Plant Development and Expansion

1. Project Status

Project C-199 - Sewage Disposal System. Tests have shown faulty piping on septic tank influent, effluent and sludge suction lines. These lines will be repaired before further testing. The 2½ inch water line to septic tanks has been laid, but connections have not been completed. Construction is 96% complete.

Project C-394 - Outside Facilities and Utilities for Laboratory Area. Steam and condensate lines to all buildings are complete except for service to the Library and Files Building. Lines have been tested hydrostatically and under steam pressure. Work is in progress on manholes for trap installation. The 8 inch fire and sanitary water water-loop was completed except for testing and tie-in to existing 300 Area loop. Construction is 75% complete.

Project C-433 - Power House Addition. Building additions are essentially complete. The 700 K.W. turbo-generator has been set on its base. Installation of boilers #4 and #5 is nearly complete. Work on water treatment equipment is 90% complete. Construction on this project is 83% complete and the completion date of October 23, 1952 remains unchanged.

Project C-481 - Equipment for 8 Inch Slug Manufacture. Final design on the installation of winches in the vans used to transfer slugs to the 100 Areas has been completed. Estimates are being prepared and when complete, a revised proposal to cover 100 Area unloading facilities will be submitted.

Project C-451 - Extension of Underground Electric Power Distribution System for 300 Area. Start of construction is awaiting security clearance for construction personnel.

2. Plant Engineering

Labor cost standards for the dry canning operation were completed. Material cost standards for dry canning operation are near com-

2. Plant Engineering (Continued)

pletion. Studies are in progress to establish standards of labor costs for miscellaneous canning and inspection operations. In addition a study is being made in cooperation with the Operations Unit to reduce labor and material handling in autoclave inspection.

After having corrected some initial difficulty with the double acting air cylinders used to actuate the pneumatic canning jacks, this equipment has operated to date with a minimum loss of production time. Additional units are being fabricated for another canning line. Design has been completed on an accessory mechanism for slug seating and is currently being fabricated.

Contact engineering assistance is being given to the Process Engineering and Project Engineering Units of the Engineering Department on the preparation of a project proposal for 300 Area expansion under Program "X".

F. Significant Reports Issued

1. Routine

Number	Title	Author	Date
HW-25236	Metal Preparation Process Unit Monthly Report	E. W. O'Rorke	8-4-52

2. Non-Routine

HW-25369	Suspected Discrepancy of SF Material	J. A. Cowan	8-18-52

III. PERSONNEL

A. Organization

No change.

B. Force Summary

	Start of Month	End of Month	Net Change
Section General	5	4	- 1
Operations Unit	194	210	16
Power & Maintenance Unit	221	227	6
Process Unit	22	22	-
Plant Engineering Services Unit	18	19	1
Radiation Monitoring	3	3	-
Section Total	463	485	- 22

[redacted]

III. PERSONNEL (Continued)

C. Safety Experience

There was one major and one sub-major injury in the Section during the month.

D. Radiation Experience

An exposure of 325 mrep was recorded by the weekly badge film of a Melt Plant operator. The principal cause of this exposure was faulty scheduling of high exposure work among the crew.

E. Personnel Activities

The series of training meetings initiated in July was continued with E. A. Eschbach of the Pile Technology Unit speaking on "New Canning Methods" and L. A. Hartcorn of the same unit speaking on "Metallography." Additional meetings of this type are scheduled for the future.

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[redacted]

Richland, Washington
September 9, 1952

MANUFACTURING DEPARTMENT
REACTOR SECTION
AUGUST, 1952

I. RESPONSIBILITY

Assigned responsibilities of the Reactor Section were not changed during August.

II. ACHIEVEMENT

A. Operating Experience

The total reactor input production was 98.4% of forecast and 9.5% less than during July. Production was adversely affected by the large number of unscheduled outages for removal of ruptured slugs and correction of process tube water leaks. A new total input production record for one day was established on August 1 when the previous record of July 28, 1952, was exceeded by 58 MW. The established maximum operating level of H Reactor was increased 15 MW during the month. Reactor output production was 140% of forecast. The output forecast was exceeded in order to allow the Separations Section to meet additional commitments for the calendar year. Discharge of approximately 13 tons of metal at H Reactor during an unscheduled month-end outage also contributed to the excess.

There were 12 uranium slug jacket failures during August, only four of which were discharged within the scram recovery time limitation. In addition, a uranium receptacle slug (PT-105-269-E) ruptured at D Reactor and required 31.5 hours of outage time. No eight-inch slugs have failed since the two failures experienced during June. It is noteworthy, but unexplained, that only one slug jacket failure has occurred at DR Reactor during the last six months.

[redacted]

A. Operating Experience (Continued)

One process tube water leak was encountered at F Reactor during August. This was in a tube which also contained a stuck, ruptured slug. A total of six other leaking process tubes was located (four at the B and 2 at the D Reactor). Three of these tube failures were due to holes in the rear Van Stone Flanges.

Details of operation of the reactor and water area facilities are set forth below.

1. Statistics

	B	D	DR	F	H	Total or Average
Reactor Time Operated Efficiency (%)	78.5	74.0	93.4	71.8	93.5	82.2
Reactor Outage Time (Hrs.)						
Plutonium Production	152.5	147.2	29.0	208.9	37.7	575.3
Special Irradiation and Production Tests	7.8	46.5	20.0	1.0	10.7	86.0
Total	160.3	193.7	49.0	209.9	48.4	661.3
Reactor Unscheduled Outage Time (Hrs.)	121.2	149.6	0.3	177.1	25.1	473.3
Metal Discharged (Tons)	35.25	24.95	37.51	15.54	24.99	138.24
Water Quality (ppm Iron)						
Raw Water - Average	0.06	0.06	0.07	0.06	0.07	-
Raw Water - Maximum	0.15	0.14	0.13	0.10	0.15	-
Process Water - Average	0.019	0.006	0.024	0.006	0.023	-
Process Water - Maximum	0.038	0.018	0.034	0.020	0.032	-
Water Pumped (MM gals.)						
Bldg. 190 to reactor	1462	1448	1809	1383	1914	8016
Bldg. 181	2310	3960		1637	2273	10180
Steam Generated (MM lbs.)	115.2	186.7		90.4	88.9	481.2
Coal Consumed (Tons)	7472	12531		6287	6016	32306

2. Activities

Reactor outage time during the month was unusually high because of the percentage of ruptured slugs which could not be discharged within the scram recovery time limitation and because of outages for correction of water leaks in process tubes. Slug failures required 315.1 hours outage time including 31.5 hours for removal of a ruptured hollow uranium slug containing a graphite sample at D Reactor (PT-105-269-E).

Process tube water leaks required 142.3 hours of outage time for corrective action. Outages were initiated at D Reactor on August 7 and 24 due to indications that water was leaking into the moderator. Tubes 3175-D and 1692-D were found to be leaking after testing 600 and 1414 tubes, respectively. At month end, no further leakage was

2. Activities (Continued)

evident, the water recovery rate having returned to normal after removal of approximately 280 gallons of water. B Reactor was shutdown on August 15 to investigate indication of a process tube leak. Testing of 659 tubes revealed one major leak in tube 2660-B and three minor leaks due to holes in the rear Van Stone Flanges of tubes 0569-B, 2252-B and 3293-B. Approximately 380 gallons of water were removed from B Reactor and the rate of removal was normal at month end. One process tube leak occurred at F Reactor in connection with a stuck, ruptured slug in tube 4068-F. Water removal from the reactor was 171 gallons before the removal rate returned to normal. Outage time for this incident was charged to a slug failure.

On August 22, an unscheduled outage of 0.3 hour occurred at B Reactor due to failure of the power supply to half the electrical equipment in the area. Inadvertent tying in of a blocked relay during rearrangement of Building 151-B controls for 100-C Area caused an incoming breaker to trip. Normal water pressure and flow to the reactor was interrupted for a short period.

On August 8, capacity tests of the export water system to the 200 Areas were conducted. Test results, which will be reported by the Separations Section, will supply information as to adequacy of this system to meet future requirements.

In connection with revision of the radioactivity standards for the release of reactor effluent to the Columbia River, the practice of diluting this water to bring it within standard was discontinued.

The following breakdown indicates activities during August associated with special irradiations.

	Tubes Charged	Tubes Discharged	Casks Shipped
Chemical 10-66	10	11	4
Chemical 72-60	10	19	10
Rala	-	6	2
Production Tests	21	35	17
Total	41	71	33

The backlog of Instrument work increased approximately 50% during August due to the requirements of 100-C Area. This increase is expected to require the use of more overtime by this group during the coming months.

B. Equipment Experience

Equipment failures caused four unscheduled shutdowns during August; two at DR Reactor and one at B Reactor were due to panellit failures and one at H Reactor was due to an unexplained malfunction of a P-13 safety control instrument.

Stopgap repairs to the west Building 107-H retention basin were completed on August 13. The leakage rate from the 100-H Area basins has been reduced

B. Equipment Experience (Continued)

enough to be considered satisfactory until permanent repairs can be made during the Ball 3X outage.

Inspections of the Power House boilers were continued. One boiler in each of the four 100 Area Power Houses was inspected by the Traveler's Insurance Company representative during the month. The report of this inspection has not been received. However, no unusual items were verbally reported.

C. Improvement Experience

The most significant Production and Process Test activities are indicated below:

PT-105-313-2M (Irradiation of Eight-Inch Uranium Slugs)
An additional 13% of these slugs were charged during the month bringing the total charged to date to 57% of the currently authorized program. At month end, the percentage of regular process tubes charged with eight-inch slugs at the various reactors was: B - 26%, DR - 44%, F - 25%, and H - 66%. No eight-inch slug failures were experienced during August. A supplement to this test was issued which brings the number of slugs authorized for irradiation to 200,000.

PT-105-503-E (Use of Activated Silica as a Coagulation Aid for Aluminum Sulfate)
This method of water treatment at 100-F Area continued to produce high quality water at flow rates of 65% above the design rate.

PT-105-508-E (The Use of Aluminum Sulfate as a Process Water Coagulant in 100-D)
Use of alum as a coagulant at the D Reactor water plant, started during July. continues to be successful at the normal design rate. Film formation in the reactor process tubes was negligible during the month.

PT-105-509-E (Effect of Low pH Alum-Treated Water on Pile Operation)
At D Reactor, 15 hours of outage time were expended on the further installation of equipment for this test.

PT-MR-105-2 (Orifice Selection During Operation)
Study was continued of a double orifice pigtail assembly which permits the selection of either of two water flow rates to process tubes. Appreciable savings in water appear possible without reduction in power level.

The standard for release of reactor effluent water to the Columbia River was increased from 10 mrep/hr to 15 mrep/hr through joint agreement of the

C. Improvement Experience (Continued)

Radiological Sciences Department and the Reactor Section. Details are contained in Document HW-25167.

The number of poison pieces in the standard poison column was reduced from 45 to 37 pieces during the month. A reduction of approximately 15% in temporary poison material requirements is anticipated.

There were no inventions or discoveries reported by Reactor Section personnel during August.

D. Events Influencing Costs

An increase of 13 employees in the Section's force will result in a higher total Reactor Section cost.

Purchase of materials and equipment for 100-C Area will cause an increase in total costs during the next few months.

Water treatment chemical consumption was approximately 24% lower during August than in July principally due to seasonal changes in raw water.

The Reactor Section irradiation unit cost for August will be somewhat higher than the record low established during July because of the 9.5% decrease in input production.

E. Plant Development and Expansion

1. Project Status

The most significant Reactor Section projects are reported below. Further details concerning projects may be found in the report, "Status of Reactor Section Projects, Informal Requests, and Budget Items," dated August 19, 1952, F. A. R. Stainken to E. P. Lee.

CA-431 (100-C Plant)
The construction of the water plant is 95.7% complete; the reactor is approximately 97% complete. Acceptance testing of these facilities was in progress throughout the month. A flow test of the reactor water system at approximately 80,000 gpm was satisfactorily completed. The 24-hour run-in of all Building 190-C process pumps was completed. An initial process water flow of approximately 70,000 gpm was approved by the Design Committee.

CG-438 (Ball 3X Facilities for B, D, DR, F and H Piles)
Outages for this work were rescheduled during the month. The first outage is now scheduled for November 17, 1952, at F Reactor. Delivery of balls, scheduled for November 3, appears to be the controlling factor. Agreement was reached to install approximately 150 anodized process tubes at F Reactor during this outage.

[redacted]

1. Project Status (Continued)

CG-482 (Pile and Pile Water Plant Improvement)
Part II of the Project Proposal requesting $2,250,000 to accomplish the revised scope of this project was forwarded to the AEC on July 31, 1952.

CA-512 (100-K Facilities)
Design of KW Reactor is approximately 33% complete. Design of KW Water Plant is approximately 16% complete. Directive No. AEC-19 (Document HAN-46099) specifies Atomic Energy Commission management of the project and authorizes costs in the amount of $102,000,000. Physical completion date has been established as April 1, 1955.

IR-115 (Radiation Monitoring Offices Addition to 105-D Building)
IR-122 (Facility for Contamination Control-Shipping Casks)
Work on these Informal Requests was accepted during the month. Radiation Monitoring offices are now provided adjacent to the Building 105-D Monitor Room, in order to release the former offices in the Flow Laboratory for use by the Technical Section. The facility for contamination control provides a station in Building 108-D for this work and includes facilities for cocooning casks.

2. Plant Engineering

A number of engineering and development studies were active in the Reactor Section during August. These studies are, in general, aimed at decreased costs and/or increased production. Details are given in documents HW-25495 and HW-25522. The most significant are reported below.

Work in connection with boiler performance tests at Building 184-H was continued. Test runs were made using Kemmerer and Roslyn coal.

The review of Reactor Section power and water problems, previously reported, was interrupted by termination of the engineer assigned to coordinate this work.

A study is in progress to determine which of the effluent water monitoring systems at the various reactors should be adopted as standard. This study is aimed at improving the performance of these systems in detecting ruptured slugs before they have become stuck and require extended outage time for discharge.

F. Significant Reports

1. Routine

July monthly reports of Reactor Section Units will be found in the fol-

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1. Routine (Continued)

lowing documents: Operations Unit - HW-25524, Process Unit - HW-25522, Plant Engineering Services Unit - HW-25495, Radiation Monitoring Unit (Technical Report) - HW-25485.

Other routine reports were:

"Reactor Process Committee Meeting - July 31, 1952" - HW-25215.
"Slug Jacket Failures During August" - HW-25489.
"Production Summary - August" - HW-25517.

2. Non-Routine

"100-C Startup Program, Technical-Operational Process Items" - HW-25394.
"Manufacturing Department Operating Standards for the Release of the Reactor Effluent to the Columbia River" - HW-25167.
"The Expected Production Gains from Replacement of the F Reactor Blank Tubes" - HW-25434.
"Production Scheduling - Reactor Section" - HW-25405.
"The Evaluation of Filter Media for Use with the Alum-Activated Silica Process" - HW-25112.
"100-F Area Flow Tests Using Activated Silica and Alum" - HW-25113.
"Trip Report - Investigation of Aluminum Sulfate and Activated Silica", J. P. Langan and R. V. Andrews, (unclassified).
"Decontamination Equipment and Techniques" - HW-25190.
"Calibration of 105-D Process Water Flow Meters" - HW-251[illegible]9.
"Special Rear Face Nozzle with Pressure Relief Fixtures" - HW-25257.
"Thermal Switch Instrument to Cause Automatic Reactor Shutdown in Event of Process Tube Boiling" - HW-25479.
"Reactor Section Remotely Controlled Handling Equipment - Tool Dolly and Cab" - HW-25333.
"Temperature Monitor Leadwires, 105-F", R. L. Roy to T. M. Clement, August 19, 1952, (unclassified).

III. PERSONNEL

A. Organization

There were no appointments made in the Reactor Section during August. A number of organizational reassignments were made in the Section preparatory to startup of the 100-C Area facilities.

B. Force Summary

	Beginning of Month	End of Month	Net Change
Section General	3	3	0
Operations	260	261	1
Plant Engineering Services	19	18	- 1
Power & Maintenance	815	827	12

B. Force Summary (Continued)

	Beginning of Month	End of Month	Net Change
Process	34	34	0
Radiation Monitoring	58	59	1
Section Total	1189	1202	13

Changes during August consisted of 11 terminations, 12 new hires, 3 deactivations, 2 reactivations, 3 transfers out and 16 transfers into the Section.

C. Safety Experience

No major or sub-major injuries were sustained by Reactor Section personnel during August.

The Power and Maintenance Unit Safety and Housekeeping Contest for August was won by 100-H Area. The Operations Unit Contest winner for August has not yet been determined.

D. Radiation Experience

No employee of the Reactor Section received a known over-exposure to radiation during August.

There was one Radiation Incident during the month. This incident, Class I, Radiation Incident No. 38, involved the spread of contamination to a Mechanical employee's face during work in the F Reactor discharge area. The investigation is contained in document HW-25550.

The film "Radiation Hazard Control at Hanford Works" was shown to approximately 600 employees during August making a total of 850 who have seen the film to date.

There was an appreciable increase in the number of skin contamination cases at F Reactor, attributable to the large amount of tube channel broaching and slug transferring done during the month. A study is being made of the procedures and equipment in an effort to reduce the frequency of skin contamination. Increased emphasis has been placed on pre-job instruction of employees performing work involving contamination.

E. Personnel Activities

At month end, 28 employees are receiving on-the-job training in order to meet future engineering and supervisory personnel requirements of the Section. Fourteen of these employees are on assignment under the Rotational Training Program.

E. Personnel Activities (Continued)

Meetings were held during the month with appropriate Operations Unit supervision to review principal design changes incorporated in the C Reactor facilities.

In order to aid in meeting requirements for Trained Instrument personnel, a training program has been initiated for beginning Instrument trainees. Six such employees began this training during August.

Richland, Washington
September 9, 1952

MANUFACTURING DEPARTMENT
SEPARATIONS SECTION
AUGUST, 1952

I. RESPONSIBILITY

On August 11, 1952 agreement was reached with the Separations Technology Unit, Technical Section, Engineering Department whereby a division of responsibility for the process functions for the Bismuth Phosphate and Isolation Plants was mutually agreed upon. The Process Unit, Separations Section assumed responsibility for routine control of the process activities for these plants.

The Power and Maintenance Unit assumed full responsibility for carrying on Power and Maintenance functions in the Hot Semiworks during the month.

Minor Construction forces completed work on the second and third cascades of the U Tank Farm during the month. The Operations Unit has assumed full responsibility for all waste metal removal installations at 241-UR (West Area) and 241-CR (East Area).

II. ACHIEVEMENT

A. Operating Experience

1. Statistics

a. Bismuth Phosphate Operations

	B Plant		T Plant		Combined	
	Normal	Acid Wash	Normal	Acid Wash	Normal	Acid Wash
Charges started in Canyon Bldgs.	0	10	44	1	44	11
Charges completed in Conc. Bldgs.	3	2	49	1	52	3
Special charges - Conc. Bldgs.	2		19		21	

a. Bismuth Phosphate Operations (Continued)

	B Plant		T Plant		Combined	
	Normal	Acid Wash	Normal	Acid Wash	Normal	Acid Wash
Charges Completed - Isolation Bldg.	4	2	44	0	48	2
Average Waste Losses, %	5.8		3.0		3.2	
Special charges - Isolation Bldg.					17*	
Material balance thru process, %					108.4	
Yield through process, %					105.2	
Average cooling time (days)					58	
Minimum cooling time (days)					50	

*Includes Recycle from Redox

b. Redox Operations

	August	July
Charges started	149.8	126
Charges shipped to Isolation	157.2	119.1
Charges completed-Isolation Bldg.	158	99
Tons Uranium delivered to storage	106.8	77.2
Average Production Rate per operating day, Tons	3.55	2.94
Average Daily Operating Rate for the month, Tons	3.45	2.49
Average yield, %		
Uranium	97.7	100.13
Plutonium	102.2	103.28
Total Waste Loss, %		
Uranium	1.14	1.42
Plutonium	.87	1.09
Average cooling time, days	73	79
Minimum cooling time, days	64	59
Average purity thru Isolation, %	(Not Run)	99
Percent down time	2.96	15.3

c. 234-5 Operations

	August	July
Batches started in Task I (RG)	0	28
Batches completed through Task II	392	304
Runs completed through Task III	194	152
Reduction yield, RG	98.4	98.4
Reduction yield, RM	93.5	94.8
Waste Disposal, units	3.5	5.4

d. UO_3 Operations

	August	To Date
Uranium drummed, Tons	44.34	281.53
Uranium shipped, Tons	31.22	247.91

1210009

[redacted]

d. UO_3 Operations (Continued)

	August
Average cooling time, days	103
Minimum cooling time, days	95
Waste loss, %	.03

e. Power

	August	July
Raw water pumped, gpm	9,667	9,109
Filtered water pumped, gpm	1,439	1,465
Steam generated, M lbs/hr	109	118
Maximum steam generated, M lbs/hr	172	173
Total steam generated, M lbs.	81,025	87,619
Coal consumed, tons (est.)	5,156	5,477

f. Waste Evaporation

	August	To Date
Gallons feed processed, 200-W	154,000	7,309,000
Percent volume reduction	70.8	73.16
Gallons feed processed, 200-E	630,000	3,705,000
Percent volume reduction	67.8	70.5

g. Waste Storage

	Batches
Metal Waste reserve storage capacity - T Plant	290*
1st Cycle reserve storage capacity - T Plant	997*
Metal Waste reserve storage capacity - B Plant	598
1st Cycle reserve storage capacity - B Plant	72
Redox Waste reserve storage capacity	2558

*Space Reassigned

h. Analytical Control

Laboratory	Samples	Determinations
T Plant	2927	5542
Isolation	778	2097
Standards	1256	1630
Total	4961	9269

[redacted]

2. Activities

a. Redox Processing

The Redox Plant operated at a record rate during the month, maintaining an average production rate of 3.45 Tons/day. Use of a weak scrub solution during rework of a high waste solution required the processing of six runs through the Concentration Building.

b. TBP Processing

Operation of the TBP plant consisted of running cold Uranium diverted from the UO_3 plant in order to evaluate equipment changes designed to reduce waste losses. Losses ranged from about 2% at the start of the month to about 20% during the latter part of the month.

c. UO_3 Processing

UO_3 production was achieved with difficulty during the month due to troubles experienced with foaming of UNH material from the TBP plant during calcination. Failures of both ventilation and unloading system bag filters resulted in delays in pot unloading schedules. Operation of the UNH concentration equipment during the month was satisfactory at the reduced rates necessitated by lack of feed material suitable for pot operation.

A test is in progress to determine whether steam stripping will eliminate whatever TBP decomposition products present in the final product stream (RCU) which are responsible for foaming in the calcination furnaces. One nitric acid fractionator has been converted to a steam still for this test.

Further efforts to overcome the severe foaming encountered in the calcination furnaces when processing TBP plant material continued during the month. An extended digestion of feed solution at about 100° C. in the presence of excess nitric acid was not effective in eliminating the foaming agent. Nitric acid, water, Nonisol, Silicone Anti-Foam Agent, and heptadecanol were used as foam preventing and foam breaking agents with some success. However, the duration of improvement was short, 15 to 30 minutes. Varying quantities of anti-foam agent were added, and the material was introduced at various stages of processing, before and during the incidence of foaming. No suitable solution to the foaming problem was devised using the above listed agents.

Inability to process RCU containing varying amounts of TBP and DBP through the calcining pots made it necessary to return approximately 60 Tons of this RCU uranium to the TBP plant for concentration and temporary storage or shipment off-site in tank cars. All available

c. UO_3 Processing (Continued)

storage space in the UO_3 plant storage tanks had been utilized, and this method of RCU disposal was initiated to permit further experimental operation of the TBP plant solvent extraction equipment.

During the processing of one of the last calcination furnaces loaded with RCU solution for test purposes, foaming and pressure generation were severe enough to displace a heavy pot lid to the floor. The incident was investigated and a separate report has been issued.

d. Waste Metal Removal

Blends 1016 and 1017 were made and are currently being held at the U Tank Farm, as all available storage facilities at the TBP plant are filled. Sluicing activities continued intermittently for the first two weeks of the month, being discontinued when a leak developed in the seal bearing on the sluice pump.

Concentrated efforts have been made to determine a practical and effective method for the elimination of the fog that forms in the underground storage tanks during sluicing activities. A fog nozzle arrangement was installed and water was injected into the tank without success. Steam was also unsuccessfully tried. The fog in 101-U was finally displaced by pumping supernate into it from 102-U tank, then returning the supernate to 102-U. Less time consuming methods are being investigated.

3. Special Operations

a. Redox

Fabrication and installation work on the filter system required for Tygon-contaminated Aluminum Nitrate recovery was completed during the month and initial operations were carried out. The quality of the ANN recovered in the first test batches processed appeared to be excellent, but its suitability as a salting agent has not yet been evaluated in the extraction columns.

The use of KOH was discontinued and the use of NaOH resumed in the uranium cycle feed solutions. Sodium contamination had not been reduced in the final uranium stream produced during the 25-day use of KOH. Contamination of the Uranium with sodium ion is therefore attributed to the transfer of this ion from ANN solution.

b. UO_3

Five drums, approximately 3233.5 pounds of UO_3 powder, were produced using a procedure whereby about five gallons of water are

b. UO_3 (Continued)

mixed with the completed charge in the calcination furnaces and the contents re-dried, thus converting the UO_3 to its monohydrate form. The purpose of the test is to study any improvement in reactivity. Although preliminary results indicate a marked improvement in reactivity, the actual significance of this test is questionable since analyses of the powder from pots before hydration gave reactivity results of nearly the same magnitude as those after. Subsequent to this test, studies conducted at the K-25 site indicated that although the monohydrate form is significantly more reactive, the decreased density of the UO_3 seriously reduces the capacity of their plant during the UO_2 and UF_4 conversion steps.

On August 27, 1952 a meeting was held with Atomic Energy Commission and Oak Ridge representatives to discuss the sodium, aluminum and iron content of Hanford-produced uranium. Present quantities (about 750 ppm total) of these elements were reported to be causing extreme difficulty in the conversion of the UF_4 and UF_6 at the Oak Ridge plant. It was agreed that Hanford should take immediate steps to reduce these elements in its Redox and TBP uranium to the range of 100-300 ppm total. It is anticipated that, while these cleanup steps are being devised and installed, all Hanford UO_3 will be shipped to the Harshaw plant for further refining.

c. Bismuth Phosphate

In B Plant, ten acid washes were started during the month in order to clean out the plutonium preparatory to putting B Plant on a standby status.

4. Schedule Variance

Actual production of regular material processed through the Isolation Building was 132% of the forecasted amount. This was due to the excellent performance of the Redox Plant and the reduction of a fairly high inventory which was present at the start of the month. This production established a new record for Isolation.

Redox started 124% of the amount scheduled which was also a record performance.

Bismuth Phosphate started 88% of the amount scheduled, due to the necessity of processing six Redox runs through the Concentration Building.

The UO_3 Plant was scheduled to produce seventy-two tons of Uranium during the month. Due to operating difficulties this was rescheduled at mid-month to thirty-five tons, and by month end forty-four tons had been produced.

4. Schedule Variance (Continued)

The 234-5 Building met its commitment for assemblies.

B. Equipment Performance

1. Operating Continuity

At T Plant, the waste evaporator operated less than one-half of the month due to failure of the 118-TX feed pump and other mechanical failures.

2. Inspections, Maintenance and Replacements

a. Redox

On 8-17-52 the Tygon lined SS-112 ANN storage tank failed in a butt seam defect characteristic of previous failures in the other two tanks. Sufficient ANN was moved to the SS-113 stainless steel tank to bring the level below the leak point. Only 2500 gallons of ANN was lost through leakage because of the policy of using material from this tank in the process to the greatest possible extent.

Water introduced around E Cell blocks in conjunction with canyon cleaning operations was responsible for a short in the E Cell fire detecting system. Water to the fog sprays was turned on immediately and was left on until the cause of the difficulty had been ascertained. Approximately 900 gallons of water were introduced as fog to the cell without noticeable effect on processing activities or equipment.

Operation of the dissolvers was normal during the early part of the month. Indications of silver reactor failure were noted on 8-13-52 with the release of 6 curies of I^{131} through the 291-S stack during the 24-hour period. The rate of emission continued to rise to a maximum of 16.5 curies (8-21-52) while an off-gas sampling program was carried out to determine which reactor was involved. Sample results indicated that the efficiency of the B-3 reactor had dropped markedly and the unit was replaced on 8-24-52 with the C-3 unit, previously repaired and tested extensively. The B-3 unit was moved to C Cell where work is now in progress rejuvenating the silver nitrate coat by methods previously worked out in the phosphate plants.

b. 234-5

The electrodryer ventilation duct in building 234-5 was revised to provide a one-pass ventilation system for RMA and RMB lines. This is a dried-air ventilation system replacing the original helium system. The duct work in the one-pass system will allow air to be taken into the system from Room 320 or from the outside atmosphere. This supply of air will be directed to the RMA line through the

b. 234-5 (Continued)

electrodryer and then released to the E-4 system. This will eliminate many corrosion problems created in the past by carbon tetrachloride fumes picked up from the line and recirculated through the dryer.

c. Boiler Inspection

The No. 3 boiler in 284-W power house was inspected and approved by Travelers Insurance Company inspector on August 6.

d. TBP

Extensive modifications were made to both of the extraction pulse columns (RA) in an effort to obtain waste loss values consistent with the flow sheet. This work was not successful.

C. Improvement Experience

1. Process Tests and Revisions

a. Production Test

Several leaking filter boats in which filter paper had been used to aid filtering thereby preventing excessive material from entering the recycle solutions were processed according to Production Test 234-5-1-MS. Analysis of buttons and castings made from this material indicated that there was no carry-through of carbon from the filter paper into the castings. In the future, filter papers will be used with all filter boats known to be leaking.

b. Redox Capacity

Duplicate tests on both the second uranium and second plutonium cycles were carried out during the month in an effort to establish limiting throughput rates for the present equipment. Results were as follows:

Second Plutonium Cycle

First test indicated a flood point above 4.5 T/D, the actual rate not being determined because of a lack of in-cycle storage space. In the second test a 4.75 T/D rate was held successfully for an eight-hour period.

Second Uranium Cycle

First test indicated a flood point between 4.00 and 4.25 T/D. a second test established the rate at a point between 4.50 and 4.75 T/D.

C. Improvement Experience (Continued)

2. Adoptions, Inventions and Discoveries

There were no items of a patentable nature reported or adopted during the month of August in the Separations Section.

D. Events Influencing Costs

1. Labor Variance

Total force for the Separations Section dropped by one.

Combining the supervision of the RG and RMA Lines has made three supervisors available for other assignments in the Section.

By consolidating work of the clerks assigned to the 234-5 Building, one clerk was released during the month for assignment elsewhere.

2. Material Variance

Effective August 11, the practice of discarding prepared gamma plates was discontinued in the Isolation Building laboratory and a plutonium recovery program initiated. This was prompted through the Suggestion System and based on present production rates and sampling frequency, a saving of $720 per year may be realized.

3. Other

a. Laundry Costs

As a result of the combined efforts of the Separations Section and Laundry Services Group, the Separations Section laundry costs have been reduced by approximately $1000 a month, with additional savings to be realized by the Manufacturing and other departments.

b. Janitorial Charges

A review and revision of the distribution of janitor costs will result in a reduction of janitor charges to the Separations Section of approximately $3000 a month in that charges for this service will be billed to all users resulting in closer cost control.

c. Metal Waste Diversion

At T Plant, the 114 TX tank, which was originally allocated for waste evaporator bottoms, is being used for temporary storage of metal waste effluent from the 106 TX tank. The transfer is underway at month-end, using an 80 GPM pump and overground piping. Earth fill over the pipe and around the pump prevent any unusual Radiation Danger Zone. This unusual operation will provide space for T Plant metal waste without

c. Metal Waste Diversion (Continued)

use of the TY tank farm, thereby saving approximately $200,000 that it would cost later on to provide metal waste removal facilities at that location.

d. Purification and Recovery Operations - 234-5

Since all process material received on the RG Line from Isolation Building is in filter boats, the Purification and Recovery equipment has been retired from service. This will effectively reduce operating costs through the elimination of operating and maintenance labor and materials required to keep the equipment in operating condition.

E. Plant Development and Expansion

1. Project Status

TBP - Project C-362 - Percentage completion of TBP installations is estimated to be about 94%.

Vacuum Leak Detector - M-844 - Project M-844, Vacuum Leak Detector, 234-5 Building, was completed and accepted by the Operations Unit on August 29, 1952.

2. Plant Engineering

Active study was begun to determine at what outside temperature production would need to be curtailed if the fifth boiler is not installed in the 200-W Power House before the winter months of 1952 and 1953. It is also planned to calculate the amount of production that would be lost for various predicted weather conditions if the boiler is not installed in time to meet the heavy winter demands.

F. Significant Reports Issued

1. Routine

Document	Title	Author
HW-25501	Separations Section - Operations Monthly Report	V. R. Chapman
HW-25500	Separations Section - 234-5 Operations Monthly Report	V. R. Chapman
HW-25523	Separations Section - Process Unit Monthly Report	W. N. Mobley
HW-25531	Separations Section - Radiation Monitoring Monthly Report	A. R. Keene

1. Routine (Continued)

Document	Title	Author
Unclassified	Separations Section - Power & Maintenance Monthly Report	R. T. Jessen
HW-25562	Separations Section - Plant Engineering Monthly Report	C. P. Cabell
HW-25397	Separations Process Committee Minutes	L. M. Knights
HW-25568	Essential Materials - Operations Unit Separations Section	J. P. McBride

2. Non-Routine

Document	Title	Author
HW-25262	Report on the Investigation of the WR-008 and X-1 Tank Failures	F. A. Hollenbach
HW-25106	Study of Irradiated Metal Transportation and Purex Dissolver Charging Operations	C. F. Falk
HW-25214 (PES #29)	Redox Crane Equipment and Operation	B. D. Wilson
HW-25122 (PES #28)	Data to Assist in Formulation of Policy For As-Built Drafting Program 200 Areas	B. M. Stark
HW-25279	Determination of Neptunium (237) by Solvent Extraction	K. H. Hammill
HW-25302	Redox Particle Problem	J. P. Fichten

III. PERSONNEL

A. Organization

The Process Control group of the Process Unit assumed a more formal status during the month with the acquisition of personnel and the transfer of responsibility for the process functions of the Bismuth Phosphate and Isolation Plants.

B. Force Summary

	Start of Month	End of Month	Net Change
Section General	3	3	0
Operations Unit	716	711	-5
Power and Maintenance	552	552	0

B. Force Summary (Continued)

	Start of Month	End of Month	Net Change
Process Unit	72	72	0
Radiation Monitoring Unit	68	71	3
Plant Engineering Services Unit	20	21	1
Section Total	1431	1430	-1

C. Safety Experience

On August 11, an employee of Power and Maintenance Unit incurred a fracture of his left second rib when he fell upon a material handling pallet which he was attempting to move. The injury was classified as a sub-major.

D. Radiation Experience

In the Redox Facility, failure of a silver reactor in the B dissolver caused a maximum stack emission rate of 17 curies I^{131} per day. Replacement of the faulty equipment remedied the situation.

Boiling of stored Redox waste material in the 110-S tank, caused local tank condenser and ground contamination and indicated the early need for more efficient condenser action or other means to curb the emission of radioactive materials to the atmosphere.

E. Personnel Activities

Nothing to report.

ENGINEERING DEPARTMENT

AUGUST 1952

GENERAL

Work Authorities and Directives were received from the A.E.C. covering the Reactor Facilities, Water Plant, Separations Plant, 300 Area, and Gable Butte Railroad for the "X" expansion program. Funds totaling $2,670,000 were authorized to the General Electric Company for continuation of work on Program X.

Several drafts of a proposed Special Agreement (G-12)with the National Carbon Company covering the procurement of an additional 4,125 tons of graphite were prepared, based on the National Carbon proposal, and these served as the basis for negotiations between National Carbon and the A.E.C. during the month. It is contemplated that the total of 8,000 tons of graphite required will be obtained by modifying existing Special Agreement G-5 for 3,100 tons to provide for an additional 775 tons. Although delivery of graphite under G-5 is to start in March 1953 (at 250 tons per month) and delivery under G-12 (550 tons per month) is proposed to start in November 1953, it is becoming apparent that the key to meeting these dates will be successful expediting assistance by General Electric and the A.E.C. to assist National Carbon in obtaining materials and equipment required to mobilize graphite-producing facilities.

TECHNICAL SECTION

Exponential pile measurements of the buckling, diffusion length and thermal utilization of the 7-1/2" lattice, wet and dry, have been completed. These results are consistent with those previously obtained for 8-3/8", 8", and 7" lattice spacings.

A method of measuring the reactivity of a lattice by the insertion of a small number of lattice cells into a reactor is being investigated. It has been shown that it is possible to obtain a constant energy spectrum of neutrons in the cells under test by adjusting the thickness of a graphite buffer layer.

Preliminary evaluation of 13 "as rolled" uranium rods irradiated at Chalk River indicates that the smallest dimensional changes occurred with the rods rolled at the high alpha temperatures.

Initial results of beta phase rolling, employing several experimentally rolled uranium rods, indicate that a random orientation can be obtained if proper temperature control is maintained. The rods exhibited good surface conditions and a relatively fine grain size around the outer periphery which increased gradually toward the center of the rod to a maximum size equivalent to that obtained by beta heat treatment.

In the analytical laboratories, the applicability of spectrochemical analysis for impurities in uranium billets has been extended to nine additional impurity elements, including iron and silicon now done

routinely by slower and less accurate or precise wet methods. A new Consolidate mass spectrometer for gas and heavy isotope analyses has been installed. Methods have been found for determination of mercury and turbidity in water to sensitivities of 0.01 and 0.10 ppm, respectively.

Additional studies of corrosion and erosion effects on tubes and slugs are continuing in an attempt to determine the cause of the slug ruptures and leaking tubes. The pitting which has been observed on both slugs and tubes appears to be caused or aggravated by irregular flow patterns. Experiments have been designed to determine the effect of different methods of water treatment on the rate of attack. Studies on designs of slugs which will help to prevent slug cocking are continuing.

The gas evolved from an irradiated sample of boron carbide has been analyzed. In addition to the helium, which is present in approximately theoretical amounts, large quantities of other gases were also found. These gases may result from decomposition of impurities present in the sample or apparatus. Two possible modifications of the design for the C Pile horizontal rod are being considered.

Preliminary results of in-pile experiments indicate that Texas coke base artificial graphite, a material which will be supplied for future pile construction, will be suitable from an irradiation damage standpoint.

Heat transfer calculations to determine the temperature distribution on the ends of slugs in piles operating at higher power levels than the present piles have indicated that tube powers may be limited by these cap-end temperatures. Additional calculations are being made to assist in the design of slugs to be used at these higher power levels.

The minimum residual can wall thickness for the four-inch slugs canned by sleeveless canning techniques is 22 mils as compared with a value of 12 mils for the slugs canned by the standard method using a canning sleeve. Additional studies with eight-inch slugs and standard canning technique have shown no definite reason for the excessive Al-Si penetration.

An examination for corrosion of irradiated slugs canned by the lead dip method and those canned by the standard triple dip procedure indicated no essential difference which could be attributed to the method of canning.

Equipment flushes are continuing in B plant with the objective of achieving a true standby basis in the near future.

The Redox plant operated at 97 percent on-stream (IAF) efficiency during the month and new production records were achieved. Capacity bottlenecks were determined at various points in the process and flowsheet changes to the plutonium cycles indicated the feasibility of processing at the equivalent rate of 6 T/day through these cycles.

Following "cold" solvent extraction studies in the TBP plant which gave uranium losses in the range of 0.5 to 2 percent, previous changes were converted for "remote" maintenance and confirming cold runs resumed. Losses were again high--6 to 30 percent--and efforts are now being made to determine the cause. Foaming of concentrated RCU in the UO_3 conversion pots has been reduced by steam stripping the RCU product before concentration. Plans are under way to include such a step in the routine operation of the plant.

The preparatory steps for Hot Semi-Works operation are well under way and cold operation is expected in a few weeks.

The Works Laboratory Area attained construction completion status as follows by month's end: CA-381, Radiochemistry Bldg., 37.4%; CA-394, Outside Facilities and Utilities, 71.2%; CA-385, Radiometallurgy Bldg., 63.~%; CA-414, Bldg. 326, 33%; and CA-421, Library and Files Bldg., 88.8%.

DESIGN SECTION

Direct engineering effort for August was distributed approximately 47.5% to the expansion program, 18% to research and development studies and 34.5% to other design projects and orders. This represents an increase in the effort devoted to the expansion program and a decrease in work on research and development.

Design progress for CA-512-R, 100-K Reactor Facilities, was 4.5% for the month, with design completion 33.5% at the month's end.

The Title I and Title II design for CA-512-W, 100-K Water Plant Facilities, being performed by C. T. Main, is approximately 19.5% complete. The design schedule is being revised to reflect changes in previously assumed design scope.

Design scope activity on the Purex separations facility was accelerated. A schedule for completion of design scope by late December 1952 was developed and issued. Major progress during the month included the development of Process Flow Diagrams and Engineering Flow Diagrams.

Special emphasis was placed on the development of design criteria for the 313 Building slug canning mechanization. Preliminary drafts of these criteria and specifications are currently being reviewed and revised to conform to the requirements of the slug canning mechanization program.

Preparation of design scope and the project proposal for the activated-silica alum test facility at 100-D was initiated and is proceeding. Design work on an activated-silica alum test installation at the 100-H Area was discontinued when it was determined that the existing water plant was adequate to supply the flows necessary for pile enrichment tests.

The preparation of the preliminary project proposal for the 100-K Area facilities was in the final stages at the month's end. The draft issue is scheduled for completion early in September with the final issue scheduled to be transmitted to the A.E.C. by September 30.

Design of the Recuplex Installation, CG-496, was advanced 13% during the month and is approximately 25% complete. Drafting has started on 77 vessels of an estimated 102 vessels required.

PROJECT SECTION

Major projects advanced during the month and attained construction completion status as follows: CG-349, Hot Semiworks, 99% (no gain); CA-362, Waste Metal Recovery (TBP), 94%; CA-431-A, 100-C Production Facility (Reactor), 97%; CG-438, Ball Third Safety System, 11%; CG-483, Downcomer Repairs in 100-B, D, DR, H and Replacement in 100-F, 5% (no gain).

The promised delivery of boron steel balls for the Ball Third Safety System (CG-438) has made possible a shutdown schedule of reactors beginning November 17, 1952. A design change in the Ball Third Safety System has been made to introduce greater reliability, and the final draft of work procedures for this System has been started.

Total value of work now assigned to Minor Construction is $8,523,000, of which $1,200,000 remains to be accomplished.

Project Engineering worked on 72 project items and 16 informal requests, totaling $20,554,400. Important projects now in progress include the Ball 3X Program, Pile and Pile Water Plant Improvements, Hot Semiworks, Downcomer Repairs, and Experimental One Tube Ink Facility.

Major buildings and facilities of 100-C Waterworks have been completed except for incidental work on clean-up, painting, instrumentation, balancing ventilation, switchgear tie-ins, and calibrations. The 105-C Building has likewise progressed to the stage of clean-up and installation of inside partitions. The hydrodynamic test on the Process Unit was completed satisfactorily on August 28. Work was essentially complete on installation of rear face thermocouples and the equipment and piping for gas supply to the unit. The three control systems are being installed and tested.

Because of unbalanced craft crews, with resultant delays, progress on CG-362 (TBP) was slow during the month. Work assigned to Minor Construction is about on schedule on the BX, BY, T, and TX Tank Farms. Revision No. V to the project proposal for CG-362 was issued by the A.E.C. on August 11, with a total estimated cost of $53,000,000. Continued Study of the slurry pumps indicated that the previous breakdowns were caused by misalignment of the pump bowl. The latest pump installed in the 101-U Tank has functioned without mishap for 450 operating hours.

The work stoppage begun by 100 millwrights on July 28 in protest against layoff of 100 millwright-inspectors was concluded August 4.

To avoid jurisdictional disputes it has been decided that all unloading in the fenced warehouse area in North Richland will be done by G. E. personnel.

ORGANIZATION & PERSONNEL

Total on Roll August 1, 1952	1,553
Accessions	38
Separations	44
Total on Roll August 31, 1952	1,547

A. B. GRENINGER, MANAGER
ENGINEERING DEPARTMENT

[redacted]

ENGINEERING DEPARTMENT

CONTRACT ACTIVITIES

During the month of August 1952, the following major items of work were handled by the Contract unit of the Engineering Department:

1. Special Agreement No. G-11 with Remington Rand, Inc., covering the microfilming of records, was approved by the Commission on August 14, 1952, and the formal Notice to Proceed was issued on August 15, 1952. Conformed copies of the Agreement were distributed on August 20, 1952.

2. Several alternate drafts of a proposed Special Agreement No. G-12, covering additional graphite production to be performed by National Carbon Company pursuant to continuing negotiations, were prepared. Proposed Agreement G-12 covers 4,125 tons of additional graphite production and it is contemplated that Special Agreement No. G-5 will be modified to add approximately 775 additional tons of graphite production in order to bring the total of Agreements G-5 and G-12 to 8,000 tons. Agreement G-12 was discussed at various meetings with the Commission and copies of a tentatively agreed upon draft were forwarded to Washington for comment. Negotiations continued during August and it is anticipated that negotiations will be completed during September.

3. Modification No. 2 to Special Agreement No. G-4, Prepakt Concrete Company, covering extension of time, was approved by the Commission on August 12, 1952. Executed and conformed copies of the modification were distributed August 19, 1952.

4. Preliminary negotiations for a possible engineering assistance contract in connection with the expansion program were continued during August. Various engineering firms were contacted and interviewed and several companies promised definite proposals subsequent to further study of Hanford requirements.

5. On August 19, 1952, the National Carbon Company was requested to submit a proposal covering an extension of Special Agreement No. G-3 for an additional period of one year for the purpose of continuing the present graphite experimental program. National Carbon Company's proposal is expected early in September.

6. Word has been received from Combustion Engineering Company that they would accept our proposed amount settling all claims outstanding under Subcontract No. G-182. All material has been submitted to the Legal Department for Study and recommendations before drafting a supplemental agreement to Subcontract No. G-182.

7. Modification No. 1 to Subcontract No. G-303, Morrison-Knudsen Company, covering a settlement due to an accident resulting from

removal of deaerator equipment, is being held by the Commission pending audit of the labor escalation claim. It is the desire of the Commission that both modifications be processed simultaneously. An audit has been made of the claim and certain differences and deletions furnished to Morrison-Knudsen Company. It is understood that Morrison-Knudsen will submit a new claim covering labor escalation, at which time Modification No. 2 will be drafted covering this claim.

[redacted]

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PILE TECHNOLOGY UNIT

AUGUST, 1952

[redacted]

VISITORS AND BUSINESS TRIPS

Visitor	Date	Address	Purpose
E. E. Hamer	8-1-52	Argonne National Laboratory	Consult on irradiation of samples
D. R. Reed E. R. Edmonson	8-11/16-52	American Cyanamid Arco Falls, Idaho	Study process techniques

Name	Date	Place Visited	Purpose
R. L. Dickeman A. B. Carson	8-4/5-52	Mallinckrodt Chemical Works	Discuss the egg testing program
	8-5/6-52	Lockland Plant	Consultation on nuclear problems
	8-5/6-52	National Lead Co. of Ohio - Fernald Plant	Discuss the egg testing program
	8-6/7-52	Mound Laboratory Monsanto Chemical Co. Miamisburgh, Ohio	Discuss continuing special irradiations and the revision of the "B" metal program
	8-7/8-52	The Brush Beryllium Company - Cleveland, Ohio	Consultation on thorium fabrication problems
G. E. McCullough	8-4/8-52	National Lead Co. of Ohio - Fernald Plant	Discussions on uranium fabrication
	8-5/6-52	Lockland Plant	Consultation on nuclear problems
	8-7-52	Mound Laboratory Monsanto Chemical Co. Miamisburgh, Ohio	Discuss continuing special irradiations and the revision of the "B" metal program
J. W. Riches	8-1/6-52	National Lead Co. of Ohio - Fernald Plant	Consultation on metallurgy of uranium

[redacted]

Name	Date	Place Visited	Purpose
R. L. Knecht	8-1/22-52	National Lead Co. of Ohio - Fernald Plant	Consultation on metallurgy of uranium
	8-1/22-52	Simonds Saw and Steel Company	Consultation on metallurgy of uranium
W. T. Kattner	8-1/14-52	National Lead Co. of Ohio - Fernald Plant	Consultation on metallurgy of uranium
	8-1/14-52	Simonds Saw and Steel Company	Consultation on metallurgy of uranium
R. M. Fryar W. R. Lewis	8-20/30-52	International Nickel Company	Technical consultations
	8-20/30-52	Alcoa	Technical consultations
	8-20/30-52	Fairbanks Morse Co.	Technical consultations
	8-28-52	Argonne National Laboratory	Consultation on corrosion problems
D. C. Worlton	8-19-52	Cal Research Livermore, Calif.	Consultation on problems concerning ultrasonic testing
	8-20-52	Douglas Aircraft Santa Monica	Consultation on problems concerning ultrasonic testing
	8-21/22-52	Electro Circuits, Inc. Pasadena, Calif.	Consultation on problems concerning ultrasonic testing
R. S. Dalrymple E. C. Pitzer	8-6-52	Columbia Electric Company	Discuss surface treatment of tube sections

[redacted]

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PROCESS CONTROL AND ANALYSIS

Restrictions to Operating Level

The operating levels of all piles were limited by vapor binding during the month; B Pile was also occasionally limited by outlet water temperature in one section of the fringe zone.

Process Specifications

Final approval was obtained for the specifications for reactor cooling water treatment using ferric sulfate as the coagulant, and the specifications are being published as HW-25317, "Process Specifications, Reactor Cooling Water Treatment". A rough draft of specifications for process water treatment using alum as the coagulant is being prepared.

Discussions were held with representatives of the Manufacturing Department on the specifications for the Pile Process and revisions are being made to prepare these specifications for final approval. Compilation of the revised specifications for C Pile was nearly completed.

Manual of Physics Standard Practices

Item II of the Manual of Physics Standard Practices, "Xenon Calculations", was completed and is being issued as HW-25076. This section explains the use of the tables and equations involved in the calculation of this important transient poison. Examples and charts are provided to illustrate the variation of Xe^{135} and I^{135} with pile power level and flattening. A rough draft of the section on long term reactivity changes was completed and is currently being reviewed.

Ruptured Slugs

Thirteen ruptures occurred during the month of which nine were Group 8, three were Group 7 fringe tubes, and one was a receptacle slug containing a graphite sample. Eight of the Group 8 failures occurred at F Pile. Six of these slugs were extensively pitted, and one was slightly pitted in a manner similar to that recently noted on a number of other slugs in F Pile. It was not possible to determine whether or not the pitting was responsible for the failures. It was also noted that five of the eight failures at F Pile were charged on January 18, 1952. Data from the failures occurring during the month, along with compilation of current rupture rates will be presented in HW-25499, "Ruptured Slugs and Comparative Rupture Rates for August, 1952", by L. W. Lang and R. J. Bartlett.

Leaking Process Tubes and Pitted Slugs

Seven process tube leaks occurred during the month, one at F Pile, two at D Pile, and four at B Pile. The leak in F Pile was in tube 4068-F which also contained a ruptured slug at the position of the leak, but it is not known whether the slug rupture caused the leak. Leaks occurred in tubes 3175-D and 1692-D in the region 8 to 10 feet from the rear Van Stone flange and in tube 2660-B in the five feet of the tube. Three additional tubes at B Pile had leaks in the rear Van Stone

flanges. The tube sections are being examined by the Pile Materials Sub-Unit.

The charges in five of the eight tubes at F Pile in which slugs ruptured during the month were examined and a total of 15 pitted slugs were observed. In addition, seven of the eight ruptured slugs were found to be pitted. Five other charges which were pushed from F Pile for reasons other than slug rupture were inspected and a total of five pitted slugs were observed. An examination of the slugs from leaky tube 3175-D revealed several slightly pitted slugs but the pits did not appear to be of the same type as those observed in the F Pile. Pitting was also observed in several dummy slugs from the downstream end from a charge of DR Pile.

A summary of the leaking tubes and pitted slugs that were observed in F Pile along with a review of a number of operating variables that may have been factors in causing these incidents during June and July, 1952, was presented in HW-25417, "Tube Leaks and Pitted Slugs at F Pile during June and July, 1952", by D. J. Foley. The operating variables discussed included tube bowing, cooling water temperature, tube and charge movement test programs, water flow rates, and water quality.

Start-Up Procedure for a Nine Rod Pile

A survey of the transient conditions associated with start-ups of the nine rod piles indicates that in some instances at B, D, F, and DR Piles, a "forced poison" start-up will result in production gains of 300 to 500 MWD compared with a cut-back start-up, and 50 to 150 MWD compared with a regular poison start-up. In a forced poison start-up, pile operation after an outage is resumed at a high level, without temporary poison. When the control capacity of the horizontal rod system has been taken up, the pile is shut down and temporary poison added. After an appropriate period of operation, the temporary poison is discharged, and normal operation resumed. Recommendations for use of these several types of start-up procedures were presented in HW-25415, "Start-Up Procedure for a Nine-Rod Pile", by R. O. Brugge.

100 - 300 Area Process Development Survey

The purpose of the survey is to examine and evaluate the potential gains which can be realized from process development in the 100 - 300 Areas. Preliminary investigations were accomplished during July. During August considerable efforts were spent in securing and analyzing the production and cost statistics necessary for evaluating the means and methods of increasing production rates and of decreasing production costs. The project is scheduled for completion in October.

Production Test 105-313-2-M - "Eight-Inch Heavy-Wall Fuel Slugs"

Approximately 3300 tubes of eight-inch metal are now under irradiation. Two slug ruptures have occurred in this material and analysis of the rupture rate by the equivalent exposure method indicates that the rupture resistance of the four-inch and eight-inch metal charged since the first of the year is now approximately equal.

Ruptured Slug Analysis

The correlation of ruptured slug behavior with a number of slug manufacture and pile operating variables were presented in HW-25177, "Analysis of Ruptured Slug Data", by L. W. Lang. A survey of the probable limit on the power level of C Pile caused by slug ruptures indicated that the previous estimate of 650 MW now appears conservative because the Group 8 metal rupture rate apparently does not increase as rapidly with tube power as did Group 7, and also the rupture resistance of Group 8 metal charged since January 1, 1952, appears to have improved.

PILE PHYSICS

Pile Activation - C Pile

The basic planning of the C Pile start-up procedures and experiments has been completed and discussed with the responsible Reactor Section personnel. Estimates have been made of the time required for these operations, and a rough schedule has been drawn up. Consideration is now being given to the detailed planning of the technical experiments to be performed.

The preparations for the start-up itself are progressing as scheduled. The major portion of the instrumentation has been firmed. Special components are being fabricated; and data schedules, with the associated tabular date for preparation, are nearly complete.

Yield-Bismuth Irradiation

Report HW-25477, "Methods for Predicting Polonium Yields", was prepared for issuance during the month. This work revises formulae which are now being used in predicting polonium yeilds to include corrections for changes in operating conditions since the previous prediction methods were set up.

Neutron Flux Calculations

Polonium yield data, as reported by Mounds Laboratory from calorimetric measurements, have been used to calculate the average thermal neutron flux in a process channel containing a low neutron absorber. These calculations relate thermal neutron flux to the specific power output of the adjacent uranium bearing channels.

Gas Generation - "Ink" Facility

An attempt was made to evaluate the rate of gas formation in the proposed "ink" facility - a facility which would provide pile control by means of a circulating boron solution with variable boron concentration. Gas is produced through the $({}_0N^1 + {}_5B^{10} + {}_3Li^7 + {}_2He^4 + \text{energy})$ reaction; the reaction products dissociate the water by transfer of energy. The quantities of gases formed, particularly hydrogen and hydrogen peroxide, are sufficient to warrant special provisions in the design of the system to insure the removal of gaseous products.

Stability to Radiation - Thorium Slugs - Production Test 105-516-A

Fifty-five of the 90 slugs programmed for pile exposure under this production test to ascertain radiation stability characteristics of both extruded and rolled thorium metal have been charged to date. A portion of this material is being irradiated in standard flattening columns, while the remainder are being irradiated adjacent to natural uranium slugs in regular metal channels. These exposures will also serve as pilot exposures for the possible use of this material in front-to-rear flattening applications.

High Temperature Ionization Chamber - Production Test 105-441-P

Ionization current versus collection voltage characteristics of the high temperature gamma-compensated ionization chamber, which was developed at KAPL and will be utilized in the C Pile octant monitoring system, have been periodically measured during prolonged pile exposure. Operation is still satisfactory after an integrated exposure of 4×10^{19} neutrons cm^{-2} which would correspond in order of magnitude to a ten year exposure in the proposed C Pile application.

Pile Reactivity Dependence upon Uranium Slug Length

The effect upon pile reactivity of varying the uranium slug length between seven and nine inches, assuming constant can base and end cap dimensions and a specified active charge length, have been calculated and summarized in HW-25424, "Effects of Uranium Slug Length on Pile Reactivity", G. C. Fullmer, August 26, 1952. The magnitude of the total effect is small but the specified active change length parameter imposes discontinuities which may be relatively large for certain incremental changes in slug length.

Measurement of Fluxes in Hanford Piles

Inconsistencies previously observed in the Test Pile neutron flux calibration work have been eliminated, and the calibration program is now proceeding as planned.

Preliminary results have been obtained in the determination of the radial neutron flux distribution through a uranium slug.

Ruptured Slug Detection

The experimental slug rupture detection instrumentation, i.e., the delayed neutron detector, scintillating crystal gamma spectrometer, and the electronic equipment associated with these systems demonstrated good stability during operation this month. Performance to date indicates that these systems have reached a state of development which would permit the utilization of either system in a pile installation. However, some uncertainty still exists regarding the sensitivities of these systems as compared with the C Pile beta system for the detection of an actual rupture. It is this point that will receive the emphasis in future work on this problem.

A two chamber mock-up of the C Pile beta monitor was installed and tested at H Pile during the month. The C Pile system utilizes continous flow through

individual chambers on each crossheader with the signals from adjacent crossheaders being electrically balanced. Uranyl nitrate injection tests demonstrated the C Pile system to be five to ten times more sensitive than the existing beta monitor now being used at H Pile.

The operation of the scintillating crystal gamma ray spectrometer continues to be encouraging. The system has operated continuously for three months without component replacement. Minor voltage drifts have occurred but it is believed that these can be made negligible in an operational system. In uranyl nitrate tests the spectrometer system has been significantly more sensitive than the C Pile beta system and much more sensitive than the existing beta monitor. It is still not possible to relate these indicated sensitivities directly to the case of an actual rupture, however. The spectrometer system also possesses a degree of power level independence not present in other systems.

Gamma Spectrum of Irradiated Thorium

The gamma spectrum emitted from a thorium slug with an exposure of about 400 MWD/AT was both experimentally and theoretically determined with close agreement observed. The experimental measurement was made with the scintillating crystal gamma ray spectrometer with theoretical absorption corrections applied to yield the correct relative intensities.

General theoretical techniques were applied to yield the spectrum as a function of total exposure, exposure rate, and decay time. This study also yielded the anticipated U^{233} concentration in thorium as a function of the same parameters. A report summarizing this work is being prepared.

Uranium Exposure Determination

The possible utilization of the gamma ray spectrometer to determine the integrated exposure received by uranium slugs is being investigated. Present techniques are open to suspicion since the highest intensities come from short half-lived components and thus do not yield the integrated exposure. It is hoped than an appropriate long-lived component can be isolated by means of the spectrometer and used for monitoring purposes.

Automatic Tube Temperature Recording Facilities

The DR Pile IBM automatic tube outlet water temperature recording facilities has maintained the routine schedule of traverses during the month. Some intermittent operational difficulties were experienced and are being corrected.

The Flexowriter tube outlet water recording facility at B Pile has continued to operate in a satisfactory manner. The utility of this type of equipment which records the 2004 outlet water temperatures in about ten minutes, entering the data into perforated tape and simultaneously typing the temperatures on face maps, is rapidly being demonstrated. Data in this form are expected to enhance production through the almost continuous picture of temperature distributions which can be obtained, thereby guiding temperature transient control-both during

equilibrium and start-up operation. This equipment was also instrumental in quickly isolating a recent B Pile water leak. A schedule of routine traverses is being formulated in support of the Pile Physics program.

Test Pile - Routine Tests

Regular metal testing proceeded routinely during the month.

Eight lots of Mallinckrodt billet eggs were tested and yielded TDS values ranging from 14 to 17.

Test Pile - Special Tests

Graphite bars from five experimental heats were tested for reactivity effect during the month and the results reported to the interested groups.

SHIELDING STUDIES

Attenuation Studies

Data verifying the fast neutron distribution in an iron-masonite shield and confirming the thermal neutron distribution in a Brookhaven concrete shield, through the use of molybdenum rather than gold as a detector have been obtained. Sulfur detectors are now being activated to reproduce previous data describing the fast neutron distributions in both iron-masonite and Brookhaven concrete shields. It is expected that these latter data will conclude measurements of neutron distributions in both shield types. Major emphasis is being placed on the organization and analysis of the quantities of data thus far obtained.

Plans are being made to measure the gamma ray distribution in an iron-masonite shield. Photographic film is being seriously considered in this application.

Radiation Damage Studies

The necessary equipment for determining the water released from shielding material during pile exposure has been fabricated. The determination of the absolute rate of water loss, as well as the relative importance of pile radiations and temperature in inducing water loss, is the primary objective of this work. Equipment has also been fabricated and tested to determine the rate of water loss from concretes as a function of temperature.

Shielding Effectiveness of Gun Barrels

The basic measurements of the gamma and neutron leakage through a standard ring and donut gun barrel assembly have been completed. The A test facility at D Pile was utilized in this work.

A taper bore gun barrel assembly is now undergoing test and will be compared in performance with the standard. Some preliminary data have been obtained in regard to this latter assembly.

Special Tests

A sample of boron carbide was irradiated to determine the rate of gas evolution as a function of pile exposure to supplement calculations of gas production rates in the C Pile horizontal control rods. Both the quantity and composition of the evolved gases are of interest in this application. Helium, a reaction product of neutron capture in B^{10}, was collected at a rate considerably lower than the calculated production rate when the sample temperature was maintained at about 20°C. However, the theoretical yield rate was approached as the boron carbide temperature was raised to about 80°C, indicating a strong temperature dependence in the diffusion rate of helium from the boron carbide crystals. Large quantities of hydrogen and other gases were also observed, but no positive explanation of their origin can be advanced at present.

Neoprene pigtails and O-rings were given accelerated exposures in gamma radiation fields to ascertain the acceptability of this material for use on the rear face. Exposure in excess of 10^7 roentgens resulted in no apparent deterioration of these components.

HEAT STUDIES

Boiling Studies

The investigation to determine which types of tube instrumentation would be satisfactory to permit relaxation of the tube boiling limits has been continued. Efforts are being concentrated on three systems which seem to offer the most promise of suitability for the purpose and which can be put into operation relatively quickly. The three are: (a) a system comprising two Panellit gauges per tube, (b) a system consisting of one Panellit gauge per tube and a switching system which would permit very rapid scanning of the tube outlet thermocouple temperatures, and (c) a system in which only the present Panellit gauges are used but in which two tubes would be connected to each gauge.

The value of a Panellit gauge to detect abnormal flow conditions depends in part upon how fast it will respond to a change in tube pressure. Tests have indicated that this time is on the order of a fraction of a second. Its value will also depend upon the rapidity with which steam will be formed in a tube following a reduction in flow. Results of tests conducted on the full scale tube mock-up to determine these factors are promising.

Testing of a small scale mercury jet switch for the rapid scanning of tube outlet temperatures has been proceeding, and its performance to date has been satisfactory. In addition, tests have been conducted on the tube mock-up to determine whether high temperature damage could occur in a tube before the dangerous conditions would be detected by a temperature-sensing element at the end of the tube. The results indicate that in almost every case an element with a short response time would detect the condition before serious damage would occur.

Attention is being given to the third system since it is similar to the first in theory and additional Panellit gauges would not be required. A disadvantage of

the system is that Panellit gauges so connected would be less sensitive to changes in a single tube than would individual Panellit gauges. Nevertheless, the system may be sufficiently responsive to permit its use.

Calculations are also being made to permit specification of the tube boiling limits for the C Pile. Although boiling considerations are not expected to limit the pile power, the tube limits must be known to permit safe operation under transient conditions such as start-up.

Slug Considerations

Axial temperatures in some slugs in the piles are above 300°C. As high levels are reached, the temperatures will go higher. Since they may lead to excessive grain growth and stresses, calculations were made to determine the effect of removing a portion of the uranium at the axis of the slug. The results indicate, for example, that the maximum uranium temperature would be decreased from about 460°C to 360°C for 1000 MW operation if a 0.5 inch diameter hole were drilled at the center of the slug.

Extensive calculations have been made to investigate slug can-end temperatures under C Pile operating conditions. The maximum temperatures are expected to occur about two feet downstream from the center of the tube. The calculations indicate that the temperatures will reach about 160°C for (a) 40 gpm flow in the tube, (b) an anticipated 5 psi film build-up, and (c) a tube power of 645 KW when the inlet water temperature is 20°C. The saturation temperature of the water at this location will be about 176°C under the conditions specified. Since the effect of local boiling on the can-end and jacket is not known, it is recommended that the maximum permissible tube powers be based on can-end temperatures that are about 15°C below the saturation temperature of the local water. Should the saturation temperature of the water be increased by increasing the back pressure of the water system, the permissible tube power may be permitted to rise accordingly.

Additional calculations are being made to determine the manner in which can-end temperatures vary with can-end thickness. Such calculations will assist in the design of slugs which may be used at levels appreciably higher than those discussed above. It may be noted that can-end temperatures are, in general, identical to end-cap temperatures when the can-end and end-cap are of equal thickness.

A mock-up thermocouple slug containing a surface and an axial thermocouple has been completed by the Instrument Applications and Design group. An attempt will be made next to can this test slug by standard canning procedures. If the canning proves successful, efforts will be made to duplicate the procedure with a standard eight-inch slug.

Graphite Temperature Considerations

"Production Test 105-514-A - Installation of Thermocouples in Process Channels", by H. H. Greenfield, HW-24159, July 7, 1952, was issued. It provides for the installation of thermocouples in process channels to determine the relationship

between such temperature measurements and those indicated by graphite and C-Hole thermocouples. Procurement of the wire and stringer components is continuing. Special tools are being designed and tested to permit removal of the C-Hole stringer at the D Pile when the production test is performed.

A supplement to the same production test to permit installation of two channel stringers in the DR Pile is being prepared. Comparison of the reading between these thermocouples and near-by thimble thermocouples will establish maximum temperature readings for the channel thermocouples. This will eliminate the necessity of establishing the allowable readings by extrapolation of the data based on D Pile geometry and lattice conductance.

An investigation was made to determine the effect on local graphite temperatures at the C Pile of the use of cadmium as the neutron absorbing material in the horizontal control rods. The boron rods which were originally scheduled to be used have been indicated to be impractical. Replacement of the boron with cadmium offers a solution but the neutron - cadmium reaction releases considerable energy in the form of gamma rays, which are absorbed in the adjacent graphite, and the graphite is heated to higher temperatures than would exist elsewhere in the pile. Calculations indicate that this temperature difference will be on the order of 25 to 50°C for a pile power level of 600 MW. As a consequence of this, it may prove necessary to add helium to the pile atmosphere. Fringe graphite temperatures will then be lowered on the order of 20 to 30°C from their levels had boron rods been used.

General

It is possible that the boron rods could be used at the C Pile if the rods could be gas cooled rather than water cooled. Calculations were made to investigate the feasibility of gas cooling but the results indicated that such a method would be impractical. For the particular rod geometry which is available, it was calculated that the required gas pressures would be well above the 100 psi maximum which some of the rod components can withstand.

Thermal and biological shield temperature data have been obtained at the F Pile under Production Test 105-515-A. The water flow was shut off in selected thermal shield cooling tubes and both thermal and biological shield temperatures were measured. Additional data are to be obtained after analysis of the existing data.

Consideration is being given to the cooling water requirements of a shutdown pile. In particular, tests have been conducted to determine more accurately the pressures necessary to sweep steam from a tube being operated at very low levels.

Calculations necessary for establishing process specification for C Pile have been made. The specifications will cover such subjects as boiling limits, time delay relay settings, horizontal control rod cooling water flow, and many others. Calculations have also been made to determine the period for which flow may be stopped in either a single tube or a crossheader during pile shutdown. Equations were first established, and solutions were then obtained through use of the IBM facilities. An accurate estimate of the temperatures involved is quite difficult

to make because slight imperfections in geometry may make a very large difference in temperature. For example, in the case of a drained tube, a 2 to 3 mil air gap between the ribs and a slug may alter the slug temperature as much as 100°C. However, a 2 mil gap is not unreasonable since blisters on slugs and slight imperfections in geometry may exist.

MECHANICAL DEVELOPMENT STUDIES

Charging and Discharging

The investigation of the possibility that the present charging practices may cause slug cocking has been continued. It has been demonstrated that if a restriction is placed at the outlet of the tube such that abnormally high pushing forces are required, many of the slugs will be left in a cocked condition. It has not been demonstrated, however, that this will happen under normal charging condition. X-ray pictures show such cocking to be the result of misalignment of the charging machines. When the column of slugs is kept under compression by use of the outlet restriction, the pieces do not have an opportunity to drop into proper alignment. Under normal charging in the pile, with the use of lubricant, the pieces would be expected to align themselves properly.

The use of a "ball and socket" or modified doweled fitting between slugs has been demonstrated to be very beneficial in preventing the cocking which has resulted from the misalignment of the charging machines. It is felt that the use of such a device would lessen the possibility that slugs may at some time be left in a cocked position in the piles after charging.

High speed motion pictures of slugs being washed down a transparent tube do not indicate that the slugs are being lifted as they move along. These results are preliminary and the condition will be studied further.

Horizontal Control Rod Studies

Further testing of the C Pile horizontal rod has been suspended pending the final decision on the modifications which must be made to the design to alleviate the gas pressure difficulties. Further development of the washer seal has been carried on with good results. Its ability to withstand radiation, temperature, and age has not been demonstrated as yet but plans are being formulated to install one such seal on C Pile at start-up to make a complete evaluation.

Investigation of a possible substitute for the boron carbide filled cans in the C Pile rods has led to the conclusion that cadmium filled cans, or one large flame sprayed, internally cooled tube are the most promising possibilities. The chief drawbacks to the use of cadmium, as noted before, are the heating effect it will have on the graphite, and the increase in radioactivity. The use of the large flame sprayed tube, cooled only on the inside, would allow the outer shell to operate at temperatures which might damage the seals. Study and development of both possibilities are continuing.

Development of replacement rods for the presently operating piles is continuing. The design of one possibility, featuring external thimbles, has been completed. The method of applying the neutron absorbing material to this rod has not been definitely determined yet but recent developments with powder metallurgy techniques appear to hold considerable promise. Such a procedure would result in a hard dense coating of sintered Al-B_4C on the cooling surface which would not crumble and slough off as does the flame sprayed material.

Vertical Safety Rods and Third Safety

The functional testing of the C Pile vertical safety rod system has continued. The complete VSR and 3X systems have been installed in the test tower at White Bluffs. Data collected to date indicate that ball flow rates, rod drop times, and operation in general will be satisfactory.

It has been concluded that the sphincter seal on VSR 20-D is not leaking a measurable amount. A gas trap was connected to the seal for 72 hours, but no gas was collected.

Development of the seam-filler apparatus, for use in B, D, and F Piles during Ball 3X installation, has been completed and turned over to Minor Construction.

A Project Proposal is being prepared to authorize construction of a permanent vertical rod test tower to replace the temporary structure at White Bluffs. It appears that as long as there are piles with vertical controls, or vertical slots of any kind, it will be necessary to have a facility where such vertical holes can be mocked-up for test work.

IRRADIATION ENGINEERING

High Pressure Water Channel - ANL-M-140

The behavior of water, prototype fuel, and structural materials is being determined under conditions simulating those of the Shipboard Thermal Reactor as closely as is possible in the Hanford Piles.

Operation was on process water until August 13 and on recirculating water for the remainder of the month. One scram was caused by the Bailey Saturation instrument, but the reason could not be determined, and no additional scrams have occurred since replacing the instrument tubes. A water leak at the rate of 30 liters per day which has impaired the investigation of gas content of the water is scheduled for repair at the next outage.

Gamma Irradiation of Non-Metallic Materials - Production Test 105-246-P

Non-metallic materials are being irradiated in special underwater baskets and on racks on slug storage buckets by the fission product gammas from pile irradiated uranium pieces. The facilities were recharged with freshly discharged uranium pieces on August 28, and seven samples that had completed the-requested exposures were removed for shipment.

Miscellaneous Gamma Irradiations

Arrangements have been made for the short term exposure of various ion exchange resins to exposed uranium slug gamma irradiation. This program is being undertaken for Westinghouse Electric Corporation.

Fission Chamber Life Test - DPI-M-101 - Production Test 105-528-SR

Neutron flux monitoring chambers designed for the Savannah River Works were irradiated in tube 1972-D. The last chamber of a set of three failed on August 3, after an irradiation of 4-1/2 months. Details of the failure are presented in HW-25299. The second set of three chambers is being prepared for charging.

Electrical Resistivity Measurement of Cu_3Au - WAPD-M-112 - Production Test 105-513-SR

Final readings have been taken on slug no. 1 which is ready for discharge. The ordered Cu_3Au specimen has increased about 70 per cent in resistance while the disordered specimen has shown an over-all decrease of about 2.5 per cent.

Slug no. 2 was charged in tube 0962-B on July 23. The tabulation below shows the resistance changes to date:

	7-28-52	8-22-52
Ordered copper-gold	-7.0%	-4.5%
Disordered copper-gold	-7.7%	-12.8%
Zirconium tin	+0.2%	+0.4%
Zirconium	+0.6%	+0.9%

The copper gold specimens both decreased at the start and then the ordered specimen started increasing while the disordered specimen continued decreasing. The zirconium specimens both increased slightly.

Creep Rate of Fuel Pins - KAPL-M-105 - Production Test 105-400-P

The slug assembly for the second creep slug was discharged with difficulty from tube 1064-F during August. Because the condition of the process tube was unknown, the third slug assembly was not charged.

Heater Test for Graphite Thermal Conductivity Determination - KAPL-M-109 - Production Test 105-530-SR

The KAPL-109 experiment was designed to test the ability of a silica and an alumina heater cement to withstand in-pile radiation damage. The silica coated heater failed shortly after charging on April 1, 1952. Good temperature control at 300°C is being given by the alumina-coated heater and no significant change in thermal conductivity has been observed.

Considerable data have been accumulated on the rectification and power generation properties of the alumina cement. These properties, which exist only when the pile is in operation, appear to be independent of temperature. A directional resistance ratio of 1:45 and a power generation responsible for a 0.8 volt potential drop across a 5 megohm load have been observed at 50 per cent of full pile power level.

Irradiation Studies for KAPL Fuel Research and Development Program - KAPL-M-111 Production Test 105-546-SR

These tests continue the former beta slug program (KAPL-M-079) to investigate the effects of pile flux on the behavior of fuel elements in contact with sodium.

The annulus tube was installed and the sample charged in tube 1078-DR on August 5. Operation has been satisfactory with a central slug temperature at 448°C ± 2°C. The first slug is to be exposed for approximately one month.

Radiation Outgassing of U^{235} Impregnated Graphite - NAA-M-106 - Production Test 105-543-SR

This test is designed to determine the gas pressure to be developed by radiation outgassing in the fuel core of the North American Aviation Low Power Research Reactor. The NAA-106-1 slug was discharged on August 5 after satisfactory performance during a 13 week exposure. The 106-2 slug was charged but removed because the instruments recorded a one atmosphere pressure in the supposedly evacuated slug. The slug was returned to North American Aviation and may be recharged at a later date.

Thermal Conductivity of U^{235} Impregnated Graphite - NAA-M-107 - Production Test 105-544-SR

This experiment is being conducted to determine the effect of pile irradiation on the thermal conductivity of U^{235} impregnated graphite. The first sample was charged into 0174-D on July 5 and discharged August 10. Performance was satisfactory except for instrument failure during the first pile start-up. The second slug was, therefore, charged August 10 to obtain information for this section of the curve. The data are being analyzed and will be published when results have been obtained.

Controlled Gas Atmosphere Experiment - Project C-410

There has been little change in the status of the gas circulation and analysis system to be used for measuring the effects of pile radiation on the chemical reactions between different gases and graphite. No replacements for the unsatisfactory gas pump, reservoir bellows or flow meters have yet been obtained.

The assembly of the special controlled temperature test hole facility was completed and the water system was found to be leak-tight. The resistance to ground of the two heater wire circuits was over 1 megohm. The assembly was, therefore, moved to the X-1 level of 105-DR for operational testing before charging.

Measurement of Slug Operating Temperatures - Production Test 105-411-A

The thermocouple assembly which will be used to measure slug central temperatures, change in uranium thermal conductivity, heat generation after shutdown and heat flow from a tube to its surrounding tubes is complete and ready for charging. The accessory equipment installation is progressing with the manifold and solenoid valves installed and work continuing on the front face piping.

The thermocycling autoclave for testing thermocouple slugs with surface welds and other special slugs has been completed and has been used by Pile Materials Sub-Unit personnel.

Irradiation of Reactor Construction Materials - ANL-M-179 - Production Test 105-539-SR

The purpose of this test is to study the annealing of radiation damage on various reactor construction materials. Water-cooled samples are being irradiated in a process tube and samples are being irradiated in annulus tubes where gamma heating and purposely poor heat transfer allow irradiation at higher temperatures. Sixteen test pieces and one dummy piece containing thermocouples were charged in tube 2379-D on July 4, and 15 pieces and a dummy were charged in 2768-DR on August 5. The recorded temperatures vary between 125 and 130°C and 110 to 120°C, respectively.

Gas Graphite Reaction Studies - Production Test 105-504-E

Samples of gas and graphite in quartz capsules have been irradiated in tube 0776-H for over three months. Additional samples have been prepared but could not be charged during August because of insufficient downtime. The charge-discharge has been rescheduled for the September outage.

Xenon Generator

Assistance is being given Applied Research personnel in the design of a xenon generator to be used in conjunction with the neutron spectrometer at 105-DR. A rear face installation is now being investigated because of shielding and discharge difficulties arising from front face and side hole installations. It is planned that the charcoal trap for I^{131} pickup be located in the biological shield instead of near the test slug, because of the possibility that intense neutron bombardment could cause outgassing from the charcoal.

In-Pile Test Facility for W-Through Hole - H Pile

Construction of a mock-up for a large, 3.125 inches I.D., water cooled annulus tube sample exposure facility is continuing at the 189-F Building. The mock-up will test the proposed design and be available for checking experimental assemblies before charging into the pile. Completion of the mock-up rquires only the connection of water supply and drain lines.

In-Pile Calibration of Thermocouples - Production Test 105-510-A

The first check readings have been made on an experiment designed to test the effect of pile radiation on thermocouples. The assembly consists of a thermocouple

block containing three chromel-alumel and three iron-constant thermocouples surrounded by a lead bath. An electric heater permits the determination of lead melting and freezing points during the course of the thermocouple exposures. The readings of all thermocouples have shifted downward after one month exposure by amounts ranging from 0.7 to 3.3°C. The possibility that the lead melting point may have shifted will be checked at a future shutdown by inserting a calibrated thermocouple into the slug.

Heater Test and Gas-Graphite Reaction Slug

This assembly is being designed to provide information on the in-pile performance of a simplified type of high temperature in-pile heater, as well as, to provide kinetic data on the reaction of graphite with various in-pile gases.

An initial test slug has been made and one out-of-pile test using CO_2 only has been run at 500°C for 30 hours. A pressure drop of 1.5 centimeters of mercury was observed apparently due to absorption of CO_2 on the walls of the container or to a reaction with stainless steel.

SPECIAL IRRADIATIONS

Status of Special Requests

P-10-A pieces charged	241
P-10-A pieces recharged	179
P-10-A pieces discharged	314
P-10-A reaching scheduled exposure	0
P-10-A pieces under irradiation	554
P-10-A pieces in storage basin	665
Thorium pieces charged	275
Thorium pieces discharged	170
Thorium pieces being irradiated	821
Thorium pieces shipped during month	828
Special request samples charged	46
Special request samples discharged	46
Samples being irradiated	415
Samples shipped during August	25
Samples awaiting charging	180
Samples awaiting shipping	23

Outlet Temperature Monitoring Switches

The installation of a 60 point switch to monitor the average outlet temperature of the four tubes surrounding each sample-bearing tube has been completed at F Pile. The installation at B Pile is approximately 75 per cent completed. This device is similar to the one which was installed at D Pile in August, 1951. When completed, this equipment will enable the Special Request Program to obtain daily exposure data on all samples charged into the piles and thus increase the accuracy of the information supplied to each requestor.

X-Levels

During the month of August, the following X-level work was completed:

15 samples were discharged - 6 graphite samples and 9 ORNL samples.

22 samples were charged - 17 graphite samples and 5 ORNL samples.

8 samples were loaded into casks.

Borescoping

Tubes 2472-D and 3473-D were borescoped from the front face during the month and tubes 3769-F and 3870-F were borescoped from the rear face.

Vertical Traverse

A vertical manometer traverse was made of tube 4574-B during the month.

Air Column Weasel

An electric motor has been installed on the air column weasel at H Pile. This installation greatly increases the speed and accuracy with which samples may be monitored and eliminates to some extent the necessity of having to make corrections for decay when a number of samples are being measured.

Single Channel Experiment - Production Test 105-507-A

Information developed from this experiment will supply an accurate correlation between exposure, plutonium production, burn-up and the production of various fission products.

The pieces from the second charge were "weaseled" for relative activity and are ready for shipment.

Instrumentation repairs were made, and the third and last series were charged.

GRAPHITE STUDIES

X-Ray Diffraction Studies

Measurements are being made to compare integrated intensities for the various graphite diffraction peaks. This will allow a more complete characterization of damage to the crystal and should permit an interpretation of stored energy in terms of the thermal energy necessary to produce a comparable mean square displacement in the carbon atoms.

Stored Energy

Results have been received from the National Bureau of Standard on the first set of temperature controlled graphite samples exposed in the B Pile. These samples had an exposure of 193 MD/CT. The total stored energy for these low exposure samples compared very well with the integrated energy release to 600°C which is measured on site. The stored energy release for different heating rates at different temperatures is being investigated. The construction of a new calorimeter, which is designed for stored energy spectra studies up to 1200°C, is being started.

Measurements of the Real Density of Graphite

A liquid suspension method is being developed which will allow measurement of the change of real graphite density upon radiation.

Controlled Temperature Exposure of Graphite

Samples of graphite continue to be exposed in tube 1684-B at four constant temperatures. Pre-operational testing of the control apparatus for the second facility is under way and the facility itself is ready for installation.

In-Pile Controlled Atmosphere Program

New designs for the gas recirculating pumps and the use of mass spectrometric analysis have been investigated. Fabrication of a substitute sample container is under way. It is estimated the substitution of granulated graphite samples and reduction of dead volumes in the system may reduce operating time 75 per cent.

Surface Studies

Information is being obtained as to the surface characteristics of a stringer of KC graphite removed from the C test hole at the B Pile in December, 1950. Three samples of virgin KC graphite that were irradiated in a test hole in vacua have been discharged. These samples will be studied for their surface characteristics. Information is being obtained as to the relationship between the extent of oxidation of graphite and the surface area.

Thermal Conductivity of Gases

Twenty-one runs were completed on various gases at 0°. These runs determine the characteristics of the cooling curve. New vacuum equipment will allow the determination of the contribution of the cell, exclusive of gas conductivity, to the experimentally determined cooling rate. With this information, the thermal conductivity of the gases can be obtained.

Damage Mechanism

The electrical resistivity-thermal cycling experiment is delayed because of the unavailability of 2S aluminum tubing.

Use of infrared spectra, obtained by reflection technique, is being surveryed as a method of characterizing the bonding in damaged graphite.

Mechanical Properties of Sample Containers

Mechanical testing of the standard Hanford receptacle slug and the standard aluminum sample capsule indicate that a maximum axial load of 10,000 pounds may be used safely to discharge either type piece. It is shown that eccentric loadings decrease this value.

Experimental Graphite Program

The first discharge of TSGBF impregnated and non-impregnated graphite has been made. The samples received a cold test hole exposure of 95 MD/CT. The expansion characteristics of both impregnated and non-impregnated TSGBF graphite were found to be similar to those of CSGBF graphite. This information must be considered preliminary to the evaluation which will be obtained from a series of higher exposures.

Exposures at the Arco MTR

The present start-up date for experimental irradiation in the MTR at Arco is September 10. As previously planned, samples will be charged to study the neutron energy dependence of graphite damage. In addition to this program, three more exposure positions at Arco have been obtained to study TS and WS graphite for the TS evaluation program.

Heat Generation in the Graphite

The heat generation experiment is in the stage of assembling materials and equipment from commercial vendors.

Pile Sampling

Graphitized lampblack, the abrasiveness of which approximates irradiated pile graphite, has been satisfactorily cored using the new carbolay edged pile graphite core cutter.

General Monitoring

Physical length changes of WSF graphite, transverse cut, under irradiation indicate about one per cent expansion per thousand megawatt days capsule exposure. Within experimental error, this is the same as for CSF graphite, transverse cut. Considerable scatter of the data from CSF graphite, the samples of which were chosen on the basis of uniformity of electrical resistivity, indicates the undesirability of using electrical resistivity as a criterion for graphite uniformity.

Electron Microscopy of Graphite

Preliminary work is being done to evaluate the feasibity of using the electron microscope belonging to the Biological Services Unit to study the role of the binder in graphite expansion and burn-out.

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WATER PLANT DEVELOPMENT

In-Pile pH Tests

Two experimental tubes in D Pile supplied with low pH alum-treated water from the flow laboratory were loaded with regular metal slugs during the month. The three remaining tubes supplied with low pH alum-treated water were loaded with dummy slugs. In conjunction with these tests, experiments designed to correlate flow laboratory and in-pile corrosion and film rates were initiated. For each pH of 7.0, 7.3, and 7.65, two mock-up tubes containing canned aluminum test slugs will be operated, one at 65°C and the other at 95°C. The duration of these tests will be approximately the time of exposure of the regular slugs in the pile tubes. Also, several coupon tests are being initiated to give comparisons of pH adjustment methods and heating methods in the different types of tests.

Flow Laboratory Tests

Further inspection of the slugs discharged from the high chloride corrosion test showed that at 5 ppm chloride and 65°C, the slugs had an average of 29 pits per slug or about twice the number of pits which occurred with no chloride addition. The portions of slugs most vulnerable to pitting attack are the weld bead, 60 per cent of which were attacked, the outer parts of the upstream face, and scratches on the lateral surface of the slugs. Although the weight loss of slugs in water at 95°C was five times that of slugs at 65°C, no pits were evident at the higher temperatures.

The tetraborate corrosion test operated satisfactorily during the month. Preliminary results show that the corrosion rates in 10 per cent sodium tetraborate at 40°C are roughly 10 times those encountered with process water at that temperature.

Water Treatment Tests at 100-F and 100-D

The test at F Area using alum-activated silica coagulation continued to operate satisfactorily during the month with a filtering rate of 4.45 gpm/sq. ft. being maintained except for the 5.2 gpm/sq. ft. operation of the all-Anthrafilt filter. Improved river water quality enabled a reduction of feed rates of alum and silica from 12 to 10 ppm and from 2 to 0.5 ppm, respectively.

The operation of 100-D Areas with alum coagulation alone has also been satisfactory. Filter runs have been 44 hours as limited by head loss. This effect is different from F Pile operation with alum alone during the fall of 1951, where filter runs were limited by breakthrough; this effect is probably due to the higher water temperatures at present.

Physical Water Plant Studies

A review of the feasibility of by-passing the 190 tanks has been made in view of recent pile pressure requirements following a power failure. Calculations show that by limiting the suction head to the 190 pumps to 65 psi, the combined decay

curve of the 183 and 190 pumps will meet the pile pressure requirement. A document discussing the technical aspects of this problem is now being prepared.

The compilation of data concerning water surface and pump elevations at all areas has been completed. The information collected, together with characteristic curves for the various pumping units, will soon be issued as a reference document.

Effluent Activity Studies

Decay curves of effluent water were obtained from a tube at F Pile during the month. The samples were placed in the Shonka counter less that 45 seconds after leaving the tube. Results of the test are in agreement with scintillation counter measurement obtained by the Pile Physics group.

PILE COOLANT EFFECTS

Corrosion

Laboratory tests are under way to determine the cause of the recently observed pitting of process tubes and slugs. The appearance of the pitted tubes and slugs has led to the belief that the attack is mechanical in origin. Because identical pitting has occurred in the pile and in the flow laboratory, in raw water, alum water, and in Ferrifloc water, the water treatment is probably not a factor.

Rather than ignore the water treatment as a factor, accelerated tests to evaluate the various treatments are in progress. A rotating disk test is being carried out in Ferrifloc and alum water, with and without dichromate. Peripheral speeds up to 80 ft/sec. will be attained to demonstrate the effect of each water on cavitation or erosion of the aluminum disks. Impingement tests of the various waters are also being made by means of high velocity jets directed at aluminum samples.

It is believed that cavitation occurs at points in the tube where a cocked slug restricts the annulus. High flows and temperatures would accelerate this attack. A glass process tube containing cocked slugs has been operated at flows up to 25 gpm, with temperatures up to 95°C. High speed motion pictures were taken of bubble formation that occurred at a slug junction, and will be studied after they are developed. Observations on pitting areas are being made as the test progresses.

Stressed tubes were tested as a possible cause of the attack, but it was concluded that the contribution of stress in the tubes is negligible. The effect of velocity on the corrosion of slugs that are properly charged in a tube was found to be of minor importance.

The third weighed tube test was started, this time using alum water without dichromate. Because barnacle-like formations were found in the empty sections of the second test in which Ferrifloc water without dichromate was used, the 50 tube mock-up is being used for a test to compare water with and without dichromate for this effect.

The Probolog was found successful in locating flaws or pits in process tubing. The tests were carried out in mock-up tubes within graphite blocks and gun barrels. The instrument is being calibrated for possible in-pile use.

A two-month study of the effect of pH of both alum and Ferrifloc waters on aluminum corrosion was completed. The results are being published in a separate document.

Film Studies

Preliminary electron microscope studies of film formation in process water have been completed. A mechanism involving the deposition of a layer of five to ten millimicron diameter particles followed by 0.1 to 0.5 micron particles has been proposed. Further study to confirm this mechanism and to determine the effect of process variables is under way.

Analysis of films for anions has begun with the determination of sulfate and carbonate in alum water film. Although no sulfate was found, appreciable amounts of carbonate were present.

Recirculation

The in-pile test of recirculating cooling water has operated since August 15, 1952 without interruption. The test will continue with the present dummy load for approximately one month when regular metal will be charged.

The fifth flow laboratory recirculation test, this time with 32 ppm total solids, is now in operation. A document describing the first four tests has been prepared for publication.

Correlation Studies

The test assembly to determine the effect of pile irradiation on corrosion has operated satisfactorily since August 15, 1952. After approximately one month of operation the in-pile samples will be compared with the out-of-pile samples to detect any difference that may be due to radiation.

Dummy slugs have been prepared with different periods of autoclave treatment. These slugs will be tested to determine the effect of the autoclave film on corrosion of the aluminum cans.

The effects of various metallic and non-metallic materials on the conductivity of water in a radiation field were compared. No interpretation can yet be placed on the results obtained.

CORROSION STUDIES

Anodization Studies

After contacting several vendors unsuccessfully, the Columbia Electric Company of Spokane has agreed to anodize the projected 200 process tubes requested by the

Manufacturing Department. The employment of a commercial vendor will represent a saving over the proposed alternate plan, which was to build and equip facilities to do the work on the plant.

In support of the recently announced new slug program, facilities for applying the "Martin Hard Coat" to slugs have been installed and are in partial operation. Additional demonstration samples have been prepared in the small size laboratory equipment.

A sample of tubing which had been given the Alumilite anodizing treatment has been coupled to graphite in a corrosion test setup.

IRRADIATED MATERIAL EXAMINATIONS

100-C Slug Examination Facility

The examination basin and building are essentially completed, with some services and accessories yet to be installed.

Equipment design and construction are quiescent pending approval of the project proposal. Preliminary specifications, to be used as a basis for the equipment design will be issued as a document in September, 1952.

108-B Irradiated Materials Examination Facility

Examination of process tubes 3883, 1475, and 3668, removed from F Pile during the latter part of July, 1952, is continuing in the 108-B Cave.

A hole through tube 3883-F was found about ten feet upstream from the rear Van Stone flange. The hole was in an area of pitting attack which appeared to be caused by cavitation erosion. A dark spot was also noted on the inside of the tube adjacent to this pitting attack. The spot was about three-fourths of an inch in diameter with a bright area in the center. It is likely that a slug made contact with the tube at this point, and that cavitation attack in the vicinity of the hole was aided by this condition. Several other areas of pitting attack were evident in the downstream half of this tube, one of which was located opposite the hole mentioned above.

A hole in tube 1475-F was also located about ten feet upstream from the rear Van Stone flange. This hole was at the bottom of a pit which apparently was caused by the same mechanism that caused the hole in 3883-F. In addition, several inches of the rib opposite the hole in this tube were badly pitted.

A pit which penetrated tube 3668-F was found about 12 feet upstream from the rear Van Stone flange. Pictures of this hole, as well as those found in tubes 1475-F and 3883-F will be included in document No. HW-25387, "Technical Activities Report for August, 1952", R. A. Rohrbacher to Files, September 10, 1952.

Tube 3175-D, removed from the pile on August 8, 1952, because of water leakage, was visually examined in the 108-B Cave. A hole was found in the tube about

eight feet from the rear Van Stone flange; the pit which penetrated the tube at this point was very similar to those observed in the F Pile tubes described above. In addition, about five feet of the central portion of this tube did not exhibit the usual brown film on the inside, but rather a dull light tan surface regularly interrupted about every four inches by one-inch or wider circumferential bands which were devoid of all film. The metal appeared bright and scoured on these bands. This film-removing and/or scouring action is similar to the phenomenon described in the literature as erosion corrosion. It can be anticipated that removal of protective films by this action may lead to rapid attack on the interior of process tubes.

Slug Examination

A different type of slug jacket attack was observed on some slugs discharged from tubes 3773-F and 3668-F on July 29, 1952.

The attack was of the pitting type and may be associated with the mechanism which has caused process tube leaks. Twenty slugs discharged from tube 3773-F showed this type of attack with four attacked quite severely. In some cases the pits were in rows parallel to the long axis of the slugs. The pitting attack on two of these slugs covered about 80 to 90 per cent of the can wall. In addition, the surface of one slug from this tube was blistered or rippled. Pictures of four of these slugs will be included in document No. HW-25387.

The slugs from tube 3668-F were similar to those from 3773-F. The process tube containing these slugs was removed from the pile because of water leakage and has been examined as mentioned earlier.

Fabrication of the new slug air weigher is continuing and completion is anticipated early in September, 1952. The new slug cleaner will be fabricated after the slug air weigher is completed.

PRESENT CANNING DEVELOPMENT

Eight-Inch Slugs - Production Test 313-105-2-M

Hydraulically operated canning jacks (designed and built by the Metals Preparation Section) were in intermittent use from August 5 to August 13 and were in constant use thereafter. These jacks differ from the manually-operated type in that the motions are timed automatically on a preset cycle and that the Al-Si filled can-sleeve assembly is raised to the preheat position for five seconds to allow the operator to position the slugs. The actual assembly takes place below the bath surface; apparently no slug defects have resulted from use of this technique.

There were no autoclave failures during the month.

Penetration data obtained from eight- and four-inch slugs, canned simultaneously in the same jack, were similar to data obtained from previous runs of eight- and

four-inch slugs canned separately following standard production practices. All results have shown that the cans of the eight-inch slugs show a greater and more variable maximum penetration than is exhibited by the four-inch slugs.

Comparison of these data with the results of previous penetration experiments on eight-inch slugs, indicating that the slug warps, can-sleeve fit, and slug-can fit have little or no effect on maximum penetration, strongly suggests that the observed penetration distributions are caused mainly by differences in length of the slugs and cans.

The probability of a thin, minimum residual can wall area coinciding with a charging gouge deep enough to expose the Al-Si was computed by the Statistics Unit to be roughly 1×10^{-9} for a single eight-inch slug.

Sleeveless Canning

An analysis of sleeveless canning penetration data on four-inch slugs, performed by the Statistics Unit showed that about 22-24 mils minimum residual can wall could be expected with a confidence limit of 99 per cent. Analysis of data from four-inch slugs from normal production indicated an expected thickness of 12 mils using the same confidence limit.

External wetting of the can base by Al-Si was largely eliminated during a trial run by coating the base of the anodized can with magnesium hydroxide.

High Amperage Welding of Four-Inch Slugs

The final portion of Production Test 313-120-M, concerned with welding with slug rotation speeds of seven and eight revolutions per minute, was finished during the month with satisfactory results. Document HW-25348, Interim Report No. 2 on this Production Test, was issued.

Calibration of the Frost Test for the Thick-Walled, Eight-Inch Slug

A program was initiated for the purpose of developing a better method for calibration of the frost test for eight-inch slugs. The present procedure is costly and time-consuming, considering the frequency with which the frost test coils are replaced due to failure.

Canning Bath Fluxing

A study of the effects of dry flux additions to the Al-Si canning bath was completed. The test data are of little value in determining whether the flux would reduce the oxide in the canned pieces for neither the used bath nor the fresh bath had oxide in excess of 0.25 per cent, a low oxide concentration. The limited reduction of oxide accomplished had no effect on the metallographic appearance of the compound layers. It did not improve either slug seating or wetting, and the reactivity of the Al-Si was apparently unaffected.

MECHANIZED CANNING

Fabrication of all the units, except the quench mechanism, involved in the prototype mechanized slug canning system was completed. The electrical and pneumatic hookup of these mechanisms is being made. In order to permit these units to function together, it has been found necessary to make a number of modifications. However, it is expected that most of these necessary changes will be completed by the time the development canning line is in operating condition.

The work of setting up the development line in Building 314 is proceeding. The electrical controls and power supply accessories were installed and the hoist cranes were being installed at the end of the month. A concrete safety dike surrounding the furnace area was poured, and work on building the mezzanine floor over this area has been started. It is expected that the development line installation will be sufficiently complete to permit partial use by the middle of September.

Continued adjustment and revision of the canning machine has made possible its consistent successful functioning in cold dry runs for extended periods, using pre-clad caps. An insulating material recommended by Alcoa for protecting steel parts submersed in molten aluminum has been ordered for trial.

Efforts to augment the limited supply of steel sleeves by resizing some distorted ones were unsuccessful.

NON-DESTRUCTIVE TESTING

Ultrasonics

A modification of the previously reported ultrasonic test was used to check transformation on a group of partially transformed and fully transformed slugs. Results showed that slugs with greater than 90 per cent volume transformation but less than 100 per cent transformation as determined from macro-etched sections could easily be distinguished from completely transformed material. Mechanical devices are now being designed to permit a more extensive study and possible application of this procedure to testing of rods or slugs on the production line.

Eddy Current Tests

Circuit improvements were made in the experimental equipment for determining the extent of Al-Si penetration into the can wall. The test frequency was increased to reduce unwanted defects of bonding layer variation, and a mechanism was built to permit automatic scanning of slugs. This modified equipment will be used to obtain penetration patterns of several slugs which will then be stripped in caustic for comparison.

Radiographic Inspection

Design was finished and shop work started on an automatic cassette for taking X-ray photographs of the brazes of 22 slugs in three positions, 120° removed, with

a minimum of handling. It is intended to use this cassette in the Triplett and Barton machine, now being repaired, for radiographing the cap ends of about 1000 slugs to check the value of this type of inspection in production.

Water Autoclave

An experimental autoclave was installed in the 314 Building under the main autoclave platform. The equipment is heated using the autoclave steam supply and operates at about 170°C. The slugs to be tested are drilled with 1/16-inch diameter holes through the can wall and at each end. After being autoclaved for 16 hours, the slugs are removed, and the sizes of the undercut areas around the drilled holes measured. Tentative data indicate that recently canned lead-dip slugs are more severely undercut than triple-dip canned slugs, and that the lead-dip slugs are more adversely affected by a low-temperature bake before autoclaving. Additional data are being obtained.

METAL QUALITY

Uranium Rod Quality

The rolling of uranium rods at Simonds was followed by a Hanford representative to obtain further information on the effect of variables in the rolling practice and to make improvements in the uniformity of the rolling procedure. Red Tag lot samples were segregated so that variations in the rolling practices and in the resultant structures of the rods may be investigated at Hanford.

63S Aluminum

Efforts to reach an agreement with fabricators on a purchase order for process tubes of 63S aluminum alloy have not been successful. Negotiations were continued.

Heat Treatment of Rods

About 14 tons of uranium rods, rolled at Simonds Saw and Steel in June, 1952, were successfully beta heat-treated in a salt bath at Fernald following the procedure specified by the Hanford representatives who supervised the work. Control tests indicated that all of the rods were 100 per cent transformed. It is estimated that to complete the balance of the 160 ton order, using the equipment now available at Fernald, will require approximately 40 uninterrupted eight-hour shifts. The Hanford representatives accordingly requested that the furnace be redesigned with a greater heat capacity, with equipment for mechanical handling, and with electrically controlled lock-in devices.

Heat Treatment of Slugs

The equipment for the salt bath beta heat-treatment of machined slugs for Production Test 313-105-3-M was modified to increase the rate at which slugs may be completely transformed while maintaining a time safety factor of 50 per cent in excess of the minimum transformation time in a non-circulating salt bath.

A procedure was established for checking the transformation of slugs in the bronze bath of the triple-dip process. This weekly procedure includes checking the completeness of transformation on random slug samples by studying the grain size of the macrostructure, by determining the grain size of the microstructure, and by determining the orientation by X-ray diffraction.

NEW CANNING PROCESSES

Warm Pressed Slug Program

Coated Slugs

An uranium slug coated with 0.004 to 0.005-inch of nickel was hot-press canned into aluminum by the method described above. Metallographic examination showed some bonding had occurred between the uranium-nickel and aluminum-nickel surfaces.

The 0.005-inch nickel plated slugs subjected to boiling water tests survived 37 days with no visible effects other than two 1/32-inch diameter blisters which developed after three days of testing. Arrangements are being made to obtain more of these slugs for further evaluation.

Evidence of diffusion bonding of nickel to uranium has been obtained by heating wafers of nickel-plated uranium at temperatures in excess of 600°C in an argon atmosphere.

Equipment for the experimental coating of uranium with zirconium, niobium, and chromium was designed, and procurement of component parts was begun. The equipment

is to include a cathodic sputtering unit, a metal evaporation unit, and halide decomposition equipment.

Criteria for New Slug Designs

Preliminary reactivity tests were completed in the Test Pile for the hollow slug program. The tests were made on the uranium slugs prior to removing axial cylinders of uranium.

Theoretical stresses in a slug as a function of power level were calculated from equations developed by J. J. Cadwell in order to determine the resultant stress on this jacket. These data were submitted to the Pile Furls Sub-Unit in rough draft form to aid in fuel element development problems.

Insulated End-Caps

Samples of ceramic materials were received from vendors for testing as possible insulators for slug end-caps. Wafers of Al-Si Mag 222, a commercial refractory, were formed onto the ends of a hot-pressed canned slug. Porosity of candidate insulating materials appears to be of paramount importance, for these wafers which were degassed prior to canning presumably absorbed air forced from the can during the sizing operation and subsequently released this air during heating in the pressing step. This resulted in expansion of the jacket in the region of the insulator.

Report on Fuel Element Development

The rough draft of the first of a series of reports describing Hanford progress on fuel element development problems was completed. This document will be issued bimonthly to inform off-site personnel, working on fuel element development, of the extent, progress, and aims of related Hanford work.

Pile Tests - Sylvania Uranium Compacts

Two tubes of material, irradiated under Production Test 313-105-4-M, were discharged at about 100 MWD per ton. Each of these tubes contain some alpha-canned slugs prepared from uranium powder, some alpha-canned slugs from alpha-rolled, salt-bath heat-treated rods, and some triple-dip canned slugs for comparison. On visual examination, no differences were observed among the three types of slugs.

INVENTIONS

All persons engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during the period covered by this report. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

Signed: G. E. McCullough
G. E. McCullough
Manager, Pile Technology

GEMcC:mvc

[redacted]

HW-25533

September 5, 1952

SEPARATIONS TECHNOLOGY UNIT

MONTHLY REPORT
AUGUST, 1952

VISITORS AND BUSINESS TRIPS

Sidney Katz, Oak Ridge National Laboratory, visited here August 11 and 12, for technical discussions on combined operations.

Dr. G. W. Watt, Consultant, University of Texas, visited here on August 11 through 15, and again on August 25, for research and development consultations.

D. Reid and E. Edmondson, from the American Cyanamid Company, Arco, Idaho, visited here August 11 through 16, for research and development consultations.

J. Marsden and H. W. Alter, Knolls Atomic Power Laboratory, visited here August 25 through 28, for research and development consultations.

F. L. Steahley and C. E. Larson visited here from Oak Ridge National Laboratory for research and development consultations.

R. J. Anicetti visited the Norton Company and Massachusetts Institute of Technology in Boston, Massachusetts, August 18 and 19, for consultations on crucible manufacturing.

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Separations Technology Unit

R. W. Benoliel visited the Dow Chemical Company, Rocky Flats Plant, Denver, Colorado, July 28 through August 1, for purification and fabrication consultations.

H. C. Carney visited the Radiation Laboratory, California Research Development, Berkeley, California, August 4 and 5, to confer on chemical engineering developments.

R. L. Moore visited Knolls Atomic Power Laboratory, Oak Ridge National Laboratory, Argonne National Laboratory, and attended the Gordon Research Conference, August 24 through 30, for conferences on separations processes.

W. H. Reas visited the Radiation Laboratory, California Research Development, Berkeley, California, for conferences on high temperature techniques August 21 and 22.

F. Clagett visited the Harshaw Chemical Company, Cleveland, Ohio, August 26 through September 6, for process inspection.

J. Dunn and N. G. Wittenbrock visited the Peerless Pump Company, Cleveland, Ohio, August 20 through 23, for technical consultations with vendor.

ORGANIZATION AND PERSONNEL

Personnel totals are as follows:

	July	August
Administrative	6	5
Research	45	43
Chemical Development	88	87
Process	44	43
Total	183	178

Administrative: One Secretary "B" went on Leave of Absence.

Research: One Steno-Typist "B" and one Chemist terminated, and one Technical Graduate - Rotational transferred to Applied Research Unit. One Steno-Typist "C" transferred in from Utilities and General Services. Two Technical Graduates were converted to Engineer Assistants.

Chemical Development: One Steno-Typist "B" went on Leave of Absence. Three Technical Graduates were converted to Engineer Assistants.

Process: One Supervisor in Training transferred to Process Unit - Manufacturing. One Technical Graduate was converted to Engineer Assistant.

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$BiPO_4$ PLANT ASSISTANCE

Canyon and Concentration Buildings

Equipment Flushes - "B" Plant - In preparation for placing "B" Plant in a "standby" status, a series of acid and water flushes were effected. All of the acid washes originated in the dissolvers and at month's end were continuing to pick up two per cent of a batch. The water flushes of Sections 16 and 17 were employed as dilution in the second cycle by-product precipitation step of the acid wash runs. The total recovery of nine water flushes was 1.95 per cent of a batch; the last three flushes recovered 0.07, 0.0004, and 0.002 per cent respectively. A one per cent trisodium citrate - five per cent sodium hydroxide flush was in progress at month end.

A citrate flush of the composition previously noted was effective in removing agglomerated solids (believed to be the nitric acid insoluble form of bismuth phosphate) from the 224 Building A-1 (precipitator) Tank.

Waste Evaporators - "T" and "B" Plant - The waste evaporator at "T" Plant operated routinely for the month except for a ten day delay repairing the feed pump in 118 TX. The heel in the evaporator vessel remains between 1700 and 2000 gallons. The average concentration ratio was 75.3 per cent with a LBDF of 4.0.

The present first pass of first cycle waste through the evaporator should be completed by September 1, 1952, with 2,250,000 gallons of concentrate stored in the 113, 116, and 117 TX Tanks. A further reduction of volume of this concentrate is contemplated with additional passes through the evaporator.

Isolation Building

Improvements made in the filter boat station for the month include the installation and use of the channel gaskets which were molded by the Technical Shop, installation of a backwash line for the Alcrite filter in Cell 2, an improved procedure for backwashing the boats in the cell and the use of molded No. 40 Whatman paper for a liner in the boat.

A flush procedure for cleansing the boats in the operating cell has been devised which employs 50 per cent hydrogen peroxide and 60 per cent nitric acid. Extreme caution has to be taken for the platinum discs in the filter boats rapidly decompose the hydrogen peroxide. The procedure has proved effective in restoring normal filtration rates.

No. 40 Whatman paper has been placed in filter boats suspected to leak around the discs. The filtering times were not increased by the use of the papers, and a slight decrease in the per cent of recycle was found.

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With the installation of the new channel gaskets, the adoption of the boat cleaning procedure, and extending the oxalic strike period from thirty minutes to one hour has enabled the oxalate process to operate on a 4 1/2 hour time cycle.

Discrepancies continue to occur in the amount of product shipped and received between the 231 Building and the 234-5 Building. More exact balances between individual transfers are dependent upon elimination of solids leakage through the filter boats. The use of filter papers and/or in line series filter will relieve this problem.

PURIFICATION AND FABRICATION BUILDING PROCESS ASSISTANCE

RG Line

Task II (Dry Chemistry) - Six batches of plutonium oxalate which had been collected on filter paper in filter boats in the 231 Building were processed in the RG Line Task II equipment during August. The filter papers were placed in boats and processed through a normal dry chemistry cycle. During the cycle the paper was destroyed and the oxalate which had adhered to the paper was converted to a normal appearing tetrafluoride. Reduction yields from 96.4 per cent to 99.9 per cent were obtained and the buttons contained from 230 to 840 parts per million carbon.

RM Line

Task II (Dry Chemistry) - During the period from July 28 to August 25, 77 runs were processed through Task II of the RM Line. Rehydrofluorinations were required on 27 runs or 35 per cent of the total runs processed. The preliminary (uncorrected) deviation between the quantity of material charged to the 234-5 Building by the 231 Building was (-) 1161.7 units based upon the calculated amount of product in the tetrafluoride for the 77 runs processed during the month.

Sixteen of the 77 runs reported above contained filter paper which had been used as an auxiliary filter in the filter boats in the 231 Building. These batches were processed in accordance with Production Test 234-5-1-MS. The carbon content of the buttons produced varied from 150 to 720 parts per million which is considered to be within an acceptable range.

Task III (Reduction) - 59 runs were processed through Task III during the month of August. Reduction yields for 29 of these runs were below 95 per cent and the average yield for the month based on the production of metal from powder was 93.7 per cent.

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Furnace bases of mild steel, 446 stainless and high-speed steel have been tried as substitutes for the Allegheny V-36 bases supplied with the equipment. After relatively few runs the mild steel and high-speed steel bases warped to a degree that makes their continued use questionable and the knife edges on the stainless steel base were scarred during removal of a nickel gasket which stuck to the base after a reduction operation.

The special sampling tools have been placed in the RMA Line for taking the MC-P sample for the plutonium assay. The operating procedure for H-200 operations in Zone III have been rewritten and given to the Manufacturing Department for obtaining the MC-P sample.

Separations Technology Unit

Production Tests

During the month of August Production Test 235-8, "Revision of Procedures for Argon Purging of the Task III Reduction Bomb" was written and approved. This Production Test permits the evaluation, in plant equipment, of procedures for admitting argon to Task III Reduction Bombs to 100 lbs/sq. inch and venting to replace the atmosphere in the bomb. At month's end some minor piping changes required to perform this Production Test had been approved and fabrication had started.

A report entitled "Final Report Production Test 234-1, Treatment of the Oxalate Supernatant to Permit Recycling" (HW-25472), which summarizes the Task I supernatant recovery program has been prepared and will be distributed during the coming month.

Separations Technology Unit

234-5 PROCESS DEVELOPMENT

Purification

Filter Aid Evaluation - Laboratory work has shown that "Hy-Flo Super Cel" (Johns Manville), which has been used as a filter aid in the filtration of F-10-P solution in the 231 Building N-1 filters but is now unavailable, can be satisfactorily replaced by "Dicalite 4200" (Great Lakes Carbon Company). Comparison of three filter aids, "Hy-Flo Super Cel", "Dicalite 4200", and "Dicalite Speedflow", has shown the "Dicalite 4200" to be superior in containing the fewest fines to be elutriated and in retaining the least plutonium in the filter cake. "Dicalite Speedflow" appears to be the least desirable because it gives slower filtration than the other two filter aids, agglomerates during elutriation, and adds silica to the solution being filtered.

The use of elutriated filter aid required about 50 per cent less filtration time than the use of non-elutriated filter aid, but non-elutriated filter aid removed significantly greater amounts of barium, calcium, and lanthanum than did elutriated filter aid. In every case, elutriated filter aid introduced significant amounts of silica into the solution being filtered; while of the non-elutriated filter aids, only "Dicalite Speedflow" contributed silica.

Laboratory evaluations were made by filtering F-10-P solution from plant run B-02-07-F-7 through the various filter aids and making peroxide strikes from the resulting filtrates. The peroxides were filtered, washed with 5 per cent hydrogen peroxide, and dissolved in 70 per cent nitric acid to give the product solutions which were analyzed spectrochemically.

Filter Media for the Plutonium(IV) Oxalate Process - The necessity of frequent repair work on the RM filter boats, caused by development of cracks between the filter discs and the platinum liners, has made it desirable to investigate substitute filter media for use with plutonium(IV) oxalate. Laboratory studies indicate that satisfactory filtration can be made through Whatman #40 filter paper, through Corning medium fritted glass filters (average pore opening, 14 micron), or through Micrometallic "F" or "G" fritted stainless steel filters (average pore openings: "F", 20 microns; "G", 10 microns). Microscopic examination of plutonium(IV) oxalate, precipitated under optimum strike conditions, shows that the precipitate particles are uniform in size, less than 5 per cent of them being outside the 5-7 micron range.

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Effect of Impurities upon Plutonium(IV) Oxalate Waste Losses - Solubility measurements have shown that such oxalate-complexing cations as aluminum, chromium, and iron, may increase plutonium losses in the plutonium(IV) oxalate precipitation unless the oxalate associated with the impurity is compensated for by addition of extra oxalic acid. Addition of 0.04 M Al^{+3} (100,000 ppm, compared with the 50,000 ppm Al found in the III BP from Redox Run No. S-12-06-6-18) was accompanied by an increase in solubility from 0.053 to 2.35 g Pu/l, an effect which was completely overcome by an increase in excess oxalic acid concentration in the mother liquor from 0.05 to 0.106 M. 0.04 M Cr^{+3} and Fe^{+3} increased the plutonium(IV) oxalate solubility by 40 and 100 per cent, respectively.

Control of oxalic acid concentration within narrow limits (0.04 - 0.08 M) has been found necessary to keep to a minimum the plutonium losses in plutonium(IV) oxalate precipitations. Procedures now in use require the addition of two moles of oxalic acid per mole of plutonium, plus enough oxalic acid to give the mother liquor a concentration of 0.05 - 0.065 M $H_2C_2O_4$, thus neglecting the possible effect of any oxalate-complexing impurities. In the event that it becomes necessary to precipitate plutonium(IV) oxalate from solutions which have been concentrated both with respect to plutonium and to impurities such as aluminum, it may be advisable to increase the oxalic acid concentration enough to replace that held by the impurity.

Dry Chemistry and Reduction

Hydrofluorination - Laboratory use of the RM Line, Task II drying cycle, converted a sample of plutonium(IV) oxalate to a green compound (bulk density = 2 g powder/cc) which, on the basis of weight changes, appears to be PuO_2. Preliminary attempts to establish hydrofluorination cycles as a function of bed depths have proven inconclusive because of equipment difficulties.

Argon Purge of Reduction Bomb - Plutonium tetrafluoride reductions in which high yields (98 per cent or more) would not be obtained under standard conditions, apparently are not grossly affected by omitting the argon purge and leaving air in the reaction bomb. Eight reductions of fluoride from RG Run No. X-12-5-269 were made: four, not purged, gave metal yields of 85.3 to 96.5 per cent (average, 90.5); and four, purged, gave slightly better yields of 89.6 to 97.6 per cent (average 92.7).

Recuplex

Slag and Crucible Dissolution - To date, nine plant reduction residues have been dissolved with an average recovery of 101 per cent of the accountability account value. Further data have shown that oxalic acid, added in the SN-1 solution at the beginning of the dissolution, will be completely destroyed during the dissolution. Revised analytical procedures indicate that previous

iodate analyses were in error and that no iodate is present in the slag and crucible filtrate. The necessity of increasing the length of the silica coagulation step from four to eight or ten hours was shown when a slag and crucible solution (30 liters), filtered after six hours digestion and yielding 73.3 grams (dry weight) of solid, produced an additional 6.3 grams (dry weight) of solid upon digestion for four more hours.

Reports from Oak Ridge have stressed the importance of removing iodate from slag and crucible solution, suggesting that sodium nitrite be used for this purpose. Laboratory analyses for iodate in solutions prepared here have reported from 1 to 5 g IO_3^-/l. The use of $NaNO_2$, H_2O_2, and Fe^{+2} as a means of reducing the iodate for removal as iodine and also of reducing Pu (VI) has been studied. The inconsistency of the iodate analyses, made by reduction of iodate with added iodide and determination of resulting iodine concentration, led to experiments which proved that Fe^{+3} interferes with the analysis. The use of hydroxylamine or some other reducing agent besides iodide was suggested to the control laboratory. Preliminary results obtained in the development laboratory indicate that no iodate is present in slag and crucible filtrate prepared by the Hanford procedure.

Plutonium Distribution in the Recuplex System - Equilibration with 15 per cent TBP - CCl_4 of a series of CAF solutions which contained up to 1.8 grams of iodine per liter as iodate gave constant distribution coefficients indicating no harm should result from the presence of iodate even if all of the iodine present in slag should remain in solution. Addition of sulate ion to CAF to give concentrations from 0.08 to 0.4 molar resulted in linearly decreasing values of E_a° from 65 to 26 for single contactings with equal portions of 15 per cent TBP - CCl_4. Hydrogen peroxide reduced CAF solutions have shown marked reduction in the E_a° value upon successive equilibration with fresh solvent indicating the presence of plutonium(III) and/or plutonium(VI).

Mini Unit Operations - Emulsification in the stripping (CC) unit, operating on Recuplex Flowsheet HW #5, has been attributed to the formation of an insoluble plutonium compound, probably plutonium hydroxide. The following series of experiments with a synthetic feed (CAP) containing plutonium, aluminum nitrate, and nitric acid, demonstrated that emulsification resulted when the organic phase (CCF) was stripped with 0.06 M HNO_3, but not when it was stripped with 0.2 M H_2SO_4; no emulsion was produced when the 0.06 M HNO_3 strip was used in the absence of plutonium.

Solvent Treatment - Preliminary studies of the washing of batches of used solvent with 5 per cent Na_2CO_3 or NaOH followed by water washes indicate that troublesome emulsions invariably form, which necessitates a filtration step to clarify the solvent and to recover the plutonium. A more desirable

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treatment, however, appears to be successive washings with 0.1 M hydroxylamine, 5 per cent sodium carbonate and then dilute acid, in which case it appears that the plutonium may be recovered in the hydroxylamine solution prior to removal of dibutylphosphate by the carbonate wash.

Recuplex Design Criteria - The final editing and preparations of the "Recuplex Design Criteria (HDC-2552)" has been completed and the document has been issued.

Further Evaporations of Residual Solutions from the First Cycle Waste Evaporators

The proposal has been made that the residual solution from the first cycle waste evaporators be cooled to allow further deposition of solids, and that the supernatants then be further evaporated, to permit additional reduction in waste storage volumes. Laboratory investigation of samples from waste storage tanks TX-116 and 117 has shown the following: (1) The solution in these tanks has a crystallizing temperature of 23°C.; (2) It may be reduced in volume, by evaporation, by 27 per cent before crystallization occurs at the boiling point. When the resulting solution is cooled to 25°C., enough solids crystallize out to occupy 47 per cent of the volume of the mixture; (3) The evaporation cooling cycle may be repeated until the final residual volume (50 - 60 per cent of the volume of the original evaporator residue) would be occupied by solids and entrained liquid.

Crucible Shop

Ninety CD1101 crucibles were pressed and fired to 1800°C. Twelve were rejected for cracks at top edge and iron pits on the inside bottom. Cracks were probably caused during handling of the green ware, and the iron pits from iron contaminated lampblack falling into the induction furnace during firing.

Two steel dies for forming CD130 crucibles were about 80 per cent completed.

The three XCDRS-1102 reduction-casting crucibles cast last month were fired at 1700°C. for 15 minutes. Only one crucible per firing can be loaded into the present induction furnaces. Slight warpage occurred at the top edge but does not appear detrimental. Shrinkage ranged from 5 to 6 per cent.

URANIUM RECOVERY

Batch countercurrent tests of Uranium Recovery Flowsheet HW #4 used a 1.5 year old slug as a source of feed. Specifications were not met with one extraction cycle and two scrubs but were met in two cycles with one scrub each. The chief offender was ruthenium (>90 per cent β). The second scrub under conditions of HW #4 adds only a factor of two decontaminations.

Countercurrent runs with five month old CMW gave similar results with Flowsheet HW #4; specifications were met with two cycles and one scrub each but not with one cycle and two scrubs.

URANIUM RECOVERY PLANT ASSISTANCE

A series of runs in a laboratory scale glass pulse column has been made in a search for a method to reduce the high waste losses ob-

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A countercurrent run with six month old dissolver solution and employing four scrub stages (two at high acid concentration with phosphate) decontaminated uranium to within a factor of two of specifications. Niobium still accounted for half the gamma activity while the beta activity was unidentified. This scheme necessitates extraction of the plutonium in the +6 oxidation state since plutonium(IV) is strongly complexed by phosphate.

PEROXIDE HEAD-END STEP

Qualitative experiments show that hydrogen peroxide changes solutions of ruthenium(III) chloride, ruthenium nitroso nitrate and $8KNO_2 \cdot Ru_2O(NO_2)_4 \cdot 2H_2O$ to ruthenium(IV). On the basis of these observations plus the observation that solutions of ruthenium nitroso nitrate are extracted by organic solvents whereas solutions of ruthenium(IV) are not, the effects of digesting CMW feed solutions with peroxide before extraction were tested. Beta, gamma and ruthenium decontamination were improved by factors of 3-9, 3-10 and 2-12, respectively. Further testing of this effect will be made on Redox and Purex feeds.

Tail-End Treatment of Aqueous Streams

Recent results indicate that ruthenium activity may be removed from aqueous uranium solutions by digestion with BAL and passage through a bed of silica gel. Redox IIIDF treated in this manner met both beta and gamma specifications through 170 bed volumes.

Silica gel column rush with Redox IIDF solutions indicate poor removal of zirconium and niobium from acid deficient feeds (-0.1 M HNO_3); conversely, at a HNO_3 concentration of +0.3 M, approximately 300 bed volumes of Redox IIDF were adequately decontaminated.

LIQUID-LIQUID DISPERSIONS

A modification of the screen stirrer for producing dispersions in the "vibrational" disengaging test has been tested. The apparatus consists of 4 or 5 miniature pulse column plates spaced at 1/2 inch intervals and is moved with a long stroke across the interface. Used as an adjunct to the wire screen stirrers, it offers considerable indication as to whether a given two phase system tends towards an aqueous in organic or organic in aqueous dispersion.

Studies of the metal recovery extraction system have indicated that an induction period exists for dispersion. This induction is characterized by nearly complete lack of dispersion of the organic-in-aqueous type until an appreciable energy of agitation is imported to the system, after which a dispersion can be formed very easily. In this system the induction period appears to be related to the bulk transfer of uranium to the organic phase, i.e., once

chemical equilibrium is reached a minimum amount of agitation will cause dispersion which tends to be organic in aqueous. A pre-equilibration by loading the organic phase with uranium or nitric acid eliminates the induction period. A search for surface active agents to aid in forming the initial dispersion has indicated that organic soluble detergents of the non-ionic and perhaps cationic types are effective. Fifty ppm of sulfonated castor oil (Turkey Red Oil) or 10 ppm of "Alkaterge" is very effective in promoting dispersion.

SOLVENT RESEARCH

Attempts have been made to isolate and identify the alcohols resulting from the hydrolysis of (1) a phosphate ester, (2) a phosphonate, (3) a phosphinate in 1 M and 2 M HCl, 2 M HNO_3 and pure water. The xanthate chromatographic method was used. Although blank runs made using all of the above solutions spiked with small amounts of ethyl and butyl alcohols have given clear indication that the analytical method is applicable, no alcohols have been found in the phosphorous ester hydrolysates. The unexpected inference that alcohols are not produced is being examined further.

HEXONE STABILITY TO RADIATION

Four samples of hexone given a six day irradiation in the pile basin have been given a preliminary examination and indicate: (1) no change in composition of the pure dry hexone and pure water-saturated hexone and (2) considerable reaction in samples containing either 0.3 M HNO_3 or 0.2 M UNH. A strong ultraviolet absorption at 225-230 mu is shown, reminiscent of the Redox hexone samples.

STUDIES ON THE TBP-URANYL NITRATE COMPLEX

Saturated solutions of uranyl nitrate in TBP have proven incompletely miscible with either a n-heptane or an AMSCO 125-90W diluent. Repeated contactings with the diluent extract less $UO_2(NO_3)_2 \cdot (TBP)_2$ at each stage until a relatively insoluble (less than 10 g/l UNH in the diluent) uranyl nitrate-TBP residue is obtained. Tentative analysis places the TBP to uranyl nitrate ratio in this residue at 1.5:1. The extractable species analyze at a TBP to uranyl nitrate ratio of 2:1.

RESIN COLUMN COUPLING

When 6 M HNO_3, 0.4 M H_2NSO_3H was used to elute the plutonium from a three inch diameter Dowex-50W column containing plutonium in a band of 21 inches length, violent gassing and extensive plutonium oxidation was encountered

at normal elution flow rates (0.25 ml/min/cm^2). Subsequent runs showed an elutriant flow about three times this rate (0.7 ml/min/cm^2) could be operated satisfactorily, though even then considerable gas was formed slowly but not enough to interfere seriously with the column operation. A further run employing a Dowex-50W column six inches in diameter was successful even when employing the low flow rates, gassing was at a minimum and caused no operational difficulties.

A three-inch resin column has been operated successfully through five cycles of adsorption and elution without undue operating difficulties. About 150 grams of plutonium were used in each cycle and the plutonium bed was ca. 8 1/2 inches long. The elutriant flow rate was 0.26 ml/min/cm^2.

These data suggest that the time of contact of the high concentration of plutonium in contact with the resin is an important variable in column operation and long contact times are to be avoided with the resin employed.

Earlier data have indicated that whereas 6 M HNO_3, 0.4 M H_2NSO_3H solutions containing high concentrations of plutonium(III) are stable for several hours (even at 75°C.) the same solution is quite unstable in the presence of Dowex-50W, undergoing almost immediate oxidation to plutonium(IV). Some studies have been begun to find means to pretreat the Dowex-50W such that the material causing this catalytic activity might be removed. Treatment with hot KOH solution did not produce any noticeable change in the performance of the resin. On the otherhand, when the resin had been thoroughly washed with ethanol at ca. 50°C., only about one-third of the usual gassing was observed. Further testing of this effect is underway.

The use of sulfuric acid as an elutriant for plutonium(III) does not appear promising. The equilibrium solubility of plutonium(III) sulfate in 3 M H_2SO_4 is only 1.64 g/l. Plutonium concentrations of ca. 100 g/l are often encountered during elution and represent, therefore, a highly supersaturated system. Precipitation of Pu(III) sulfate from these solutions has been encoutered and is troublesome from an operational standpoint.

SOLVENT EXTRACTION OF FISSION PRODUCTS

An analogue of Versene, ethylene-bis-(α-iminophenylacetic acid), has been synthesized in the laboratory. This compound contains only two carboxyl groups instead of four present in Versene. It was thought that the compound might form uncharged, organic-soluble complexes with divalent ions such as strontium. Similar complexes formed by Versene were found to be organic insoluble.

The ability of the compound to form organic soluble complexes with strontium was investigated by contacting various solvents with an aqueous isotope. Only four solvents, benzylcellosolve, cyclohexanone, n-octyl alcohol and iso-amyl alcohol,

among 19 tested, showed any extraction of strontium and, even in these four cases, the extraction was very poor. Evidence obtained as to the formation of non-extracted complexes in the aqueous phase was not conclusive.

DECONTAMINATION OF DISTILLATES BY ION EXCHANGE

Simulated condensate from the Purex HCU concentrator (19 mg UNH per liter and 700 d/m Pu per ml, pH 2) can be readily decontaminated from plutonium by passage through a Dowex-50W resin column. To date, about 10,000 column volumes of such distillate have been passed through a hydrogen-form Dowex-50W (20-50 mesh) resin column at a flow rate of 12 ml/min/cm^2 and plutonium in the effluent is still at background (ca. 6 d/m/ml). To maintain this flow rate, the pressure head required on the column is about 0.5 feet of water per foot depth of column.

In the decontamination of distillates containing mixed fission products, Dowex-50W resin was found to have considerably lower capacity when initially in the sodium form than when in the hydrogen form. Batch contact studies to find adsorbents for ruthenium, zirconium and niobium (elements poorly removed from distillates by cation exchangers) have shown activated alumina to be as effective as ferrous sulfide mentioned previously. Column capacity data for the activated alumina will be obtained. Beta decontamination of cation exchanger-scavenged distillates by the anion exchanger XE-75 is markedly improved by making the distillate one per cent in H_2O_2 and boiling for a few minutes prior to contacting with the resin.

SELF-EVAPORATION OF STORED PUREX WASTES

The boiling point of a synthetic stored Purex waste (HW #1 Flowsheet, HW-24763) rose steadily from an initial 108°C. to 125°C. at a volume reduction factor of three. Boiling point of the waste rises rapidly at volume reduction factors above three. At a volume reduction factor of 2.5, no crystalline solids were observed at the boiling point, but the resulting slurry, when cooled to room temperature, contained about 35 per cent by volume of solids (partly crystalline). Although the crystalline solids adherred to and corroded glass containers, no such attack was observed when the slurry was cooled in a mild steel container. A volume reduction factor of 4.5 was observed when the synthetic waste was evaporated to essential dryness.

Investigations are being made of ion exchange methods for further decontamination of distillates which would be produced by in-tank evaporation of stored Purex wastes.

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RUTHENIUM CHEMISTRY

Equilibration rate experiments with ruthenium(IV) tracer and TTA indicate that the equilibration time is much too long to use this system as a practical tool for the study of aqueous ruthenium(IV) phenomena.

THE SYSTEM: CaF_2-CaI_2-Ca

Experiments have been initiated which are expected to provide information concerning the phase equilibria in the calcium-calcium fluoride-calcium-iodide system as observed in plutonium reduction slags. Information gained in several experiments carried out at atmospheric pressure is of value only to indicate the need for study at constant volume due to the considerable instability of calcium iodide. Modified bombs for such study have been completed and are now ready for use.

REDOX PLANT ASSISTANCE

Plant Performance

The Redox Plant operated at a 97.[illegible]% time efficiency (IAF basis) and averaged 3.55 tons of uranium per operating day during the month. During the first week of the period, decontamination performance of the Redox process on 90-day "cooled" metal was observed. The second week of the period was devoted to processing of off-standard solutions accumulated in rework vessels during July. The remainder of the month was utilized in redetermination of column capacities and evaluation of flowsheet changes. The following is an over-all summary of plant production performances:

	Approximate
Tons of Uranium Processed (Shipped)	106.8
Plutonium Processed (Batch Equivalents)	157.2
Per Cent Uranium to Waste	1.1
Per Cent Plutonium to Waste	0.82

Operating Performance

Processing of 90-day "cooled" metal started on July 21 with four permanganate-oxidized IAF batches, S-2-7-HE-15 through 18. After processing these batches at 3.0 tons/day, the production rate was increased on July 25 to 3.5 tons/day and eight dichromate-oxidized IAF batches, S-2-7-HE-19 through 26, (90-day "cooled" metal) were processed without incident. The following conclusions have been drawn from the above operation employing 90-day "cooled" metal:

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1. The Redox 2EU stream (second uranium cycle product) meets tentative specifications for shipping recovered uranium (tentative specification equals 4 times natural uranium gamma or less) when processing 90-day "cooled" uranium which has been treated by the $KMnO_4$ head-end procedure. Without this head-end treatment, the 2EU does not meet shipping specifications (approximately 7 times natural uranium gamma with no head-end treatment).

2. The Redox 2BP (second plutonium cycle product) just meets tentative shipping specifications of 500 gamma microcuries per gallon when 90-day "cooled" uranium is processed with the $KMnO_4$ head-end treatment, but does not meet shipping specifications without the head-end treatment (in this case the 2BP contains approximately 2000 gamma microcuries per gallon).

3. The third uranium and third plutonium cycle products meet specifications with or without head-end treatment employed, when processing either 90-day "cooled" or 60-day "cooled" uranium feed material.

On August 6 the 2D Column, operating on the 1.8 M ANN 2DS flowsheet and with automatic interface control, was flooded at 4.25 tons/day (volume velocity of 2000 gal/(hr)(sq ft) of superficial cross-section) and was unstable at 4.0 tons/day. Since the interface control of the 2DW valve may have aggravated the flooding condition, the test was repeated on August 13 under the same conditions except with manual control of the 2DW valve. This time the 2D Column exhibited unstable operation at 4.5 tons/day and flooded at 4.75 tons/day (volume velocity of 2230 gal/(hr)(sq ft)).

On August 8 a capacity test of the Second Plutonium Cycle was started and satisfactory operation at 4.5 tons/day was achieved.

After three days of steady operation and the 2D Column flooding test mentioned above, the capacity test of the Second Plutonium Cycle was resumed on August 14. Following a 2A Column water flush, satisfactory operation (0.1% Pu loss in 2AW and normal dF) of the cycle at 4.75 tons/day was maintained for 13.5 hours.

During the period from August 18 to 22, two flowsheet tests were in progress: (1) a test to determine the minimum IBX flow ratio; and (2) a test to evaluate 2.0 M ANN vice 1.8 M ANN in 2DS. Both tests were concluded prematurely by a "crash" shut-down on August 22 which was decided upon because of high plutonium content in waste solutions. The cause of high plutonium losses via 3AW was traced to "acid-deficient" ANN shipped from the vendor and used in 2AS, 3AS, and 2BP Butt solutions (which were not routinely analyzed for HNO_3).

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Activity released to the atmosphere through the ventilation stack averaged approximately 1 curie of I^{131} per day until August 13 when the activity reached 8 curies/day and on August 21 a maximum of 16 curies/day. The source of the I^{131} was found to be B-3 silver reactor. This reactor was replaced on August 23 with the unused C-3 reactor. B-3 is currently being rejuvenated in C cell. The stack flushes performed weekly during July have been discontinued because of the radioactive "rain" which resulted.

Process Performance

The following tables summarize decontamination and waste loss values by solvent-extraction cycle for month of August. These average waste losses for selected steady-state operation are not as high as the overall losses given above under Plant Performance (which include start-up, shut-downs, and process upsets).

Period covering 7-21-52 through 7-25-52; nominal production rate of 3.0 tons/day, processing "head-end" treated, 90-day "cooled" metal (IAF Batches S-2-7-HE-15 through 18):

	Decontamination Factors (dF)						% to Waste	
	U			Pu				
Cycle	Gamma	Beta	Ru	Gamma	Beta	Ru	U	Pu
Feed	0.7	0.1	0.6	0.7	0.1	0.6	0.18	0.28
1st	3.3	4.6	3.3	3.2	4.5	3.6	0.35	0.04
2nd U	2.3	2.0	2.4	---	---	---	0.02	---
3rd U	---	---	---	---	---	---	0.01	---
2nd Pu	---	---	---	2.9	2.3	1.7	---	0.04
3rd Pu	---	---	---	1.1	0.4	0.5	---	0.02
Overall	6.3	6.7	6.3	7.9	7.3	6.4	0.56	0.38

Period covering 7-25-52 to 8-1-52; nominal production rate of 3.5 tons/day, processing dichromate-oxidized, 90-day "cooled" metal (IAF Batches S-2-7-HE-19 through 26):

	Decontamination Factors						% to Waste	
	U			Pu				
Cycle	Gamma	Beta	Ru	Gamma	Beta	Ru	U	Pu
1st	3.6	3.8	---	3.6	4.2	3.9	1.2	0.15
2nd U	2.3	2.3	---	---	---	---	0.03	---
3rd U	0.7	0.7	---	---	---	---	0.05	---
2nd Pu	---	---	---	2.3	1.9	1.0	---	0.11
3rd Pu	---	---	---	0.8	0.7	0.9	---	0.03
Overall	6.6	6.8	5.7	6.7	6.8	5.8	1.3	0.36

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Period covering 8-15-52 through 8-22-52; nominal production rate of 3.5 tons/day, processing dichromate-oxidized, 75-day "cooled" metal:

	Decontamination Factors					% to Waste	
	U			Pu			
Cycle	Gamma	Beta	Ru	Gamma	Beta	U	Pu
1st	3.7	3.9	---	3.8	4.2	0.23	0.43
2nd U	2.1	2.0	---	---	---	0.006	---
3rd U	0.6	0.5	---	---	---	0.32	---
2nd Pu	---	---	---	2.0	1.8	---	0.06
3rd Pu	---	---	---	0.9	0.8	---	0.24
Overall	6.4	6.4	5.3	6.7	6.8	0.56	0.73

Feed Preparation

The dissolvers were charged during the month with twenty-three 4.4-ton charges of uranium with an average pile exposure of 604 MWD/T. The average age of the 32 feed batches prepared as IAF was 100 days for S-2-7-HE-22 through 26 and decreased to 71 for S-2-8-HE-24.

Uranium Extraction and Decontamination

In general, nominal conditions of the O.R.N.L. June, 1949 (acid-deficient) Flowsheet (Document HW-22834) were employed throughout the uranium solvent-extraction cycles.

A test to determine the minimum IBX flow ratio was performed from August 18 to August 22 at a production rate of 3.5 tons/day. The IBX flow was maintained at a IBX:IAF flow ratio of 0.28 (70% of flowsheet) for 12 hours without any significant change in the IBU plutonium content, 0.03% of the Pu in IAF. After 4 hours at a IBX:IAF flow ratio of 0.26 (65% of flowsheet), the IBU plutonium content was doubled; however, the column was not at steady-state conditions, and the test had to be concluded because of the shut-down on August 22. Reproducibility tests of the 0.28 (or 0.26) IBX:IAF flow ratio are currently in process.

The substitution of KOH for NaOH in acid-deficiency adjustment of 2DS, 2DF, and 3DF was continued for 25 days' operation. Uranium product sodium analyses are summarized as follows:

Average E-12 (3EU solution) sodium before the use of KOH: 350 p.p.m.* (Neutral 3DS)

Average E-12 sodium during the use of KOH: 350 p.p.m.*

Average E-12 potassium during the use of KOH: 240 p.p.m.*

* Parts per million parts of uranium

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The presence of sodium in uranium product (E-12) solutions during the use of KOH is attributed primarily to the transfer of significant quantities of sodium from the ANN solution. One sample of neutral 3DS analyzed for sodium indicated 2.2×10^{-3} lb. Na/gal. 3DS. The use of KOH in place of NaOH was discontinued on August 15.

Plutonium Extraction and Decontamination

Nominal conditions of the HW #4 Flowsheet (except for higher 2AS and 3AS flow ratios) were maintained for Plutonium Cycle Operation during the month.

On August 22, "acid-deficient" ANN was introduced into the 2AS, 3AS, and 2BP Butt solutions without any acid analysis on these solutions. As a result, depletion of acid in the Plutonium Cycles resulted, and 3AW losses up to 6% of the Pu in the IAF occurred. Flowsheet modification (120% 3AX flow) reduced plutonium loss to the 3AW to 0.06% of the IAF Pu content. However, approximately 70 units of Pu were lost via the 3AW, causing a shut-down on August 22 for segregation of the rework material.

During the start-up of the IS Column on August 22, water (inadvertently used from the ISS Feed Tank) was fed to the IS Column and overflowed to the IB Column. The resulting IB Column upset caused a relatively large amount of uranium in the IBP. The 70 gallons of IBP collected at the time were transferred to E-4 Rework Tank for future processing. However, three IBP batches still had high uranium, and with as much segregation as possible through the Plutonium Cycles, six Pr cans were out of specification:

S-2-8-L-109	0.13 g.U/g.Pu
110	0.20
111	0.31
112	0.28
113	0.15
114	0.14

These six PR batches were shipped to 224-T Building for further processing. In addition, two other PR Batches S-2-7-L-73 and 74, comprised of dilute solutions subsequent to flushes, were shipped to 224-T for processing.

Solvent Treatment

The plant solvent-recovery system, IO Column and the Hexone Distillation Column (G-3), operated satisfactorily with water as a scrub solution in both units.

ANN Clean-up

Clarification by Settling. ANN currently being introduced into the plant comes directly from Tank SS-111 (floating suction) into which General Chemical Company

tank trucks are being emptied without benefit of settling in Tank SS-113. In spite of the shorter settling period, per cent solids in ANN is running 0.005 to 0.008 on two samples tested.

Clean-up of Tygon-Contaminated ANN by Filtration. The 250 sq. ft., 36-inch diameter, vertical leaf Enzinger Union Corporation filter has been installed and operated successfully on three batches of 72% ANN. Although additional operation will be necessary in order to find the optimum conditions, the following conditions are known to be satisfactory:

Batch size: approximately 2000 gallons 72% ANN

Temperature: 45 to 50°C.

Filter aid: 0.08 lb. Dicalite 4200/gallon ANN solution

Adsorbent: 0.1 lb. Darco G-60/gallon ANN solution

Filtering rate: 20 to 35 gal./min.

Approximate time cycle: 4 hours/batch

Laboratory tests of the treated and filtered ANN indicate no emulsification tendency.

Process Chemistry

Solvent Extraction. Studies have been continued using the 3/8-inch 12-stage Mini (miniature mixer-settler) as a 2D (or 3D) Column, testing modifications to the Redox flowsheet intended to reduce the Na, Al, and Fe contents of recovered uranium. Five additional 2D Column runs have now been completed with the 3/8-inch, 12-stage Mini to simulate the 2D Column. The run conditions were identical with those of the previous four runs (see report for July, 1952), viz., (a) stirrer speed of 2000 rev./min., (b) throughput rate of 1.5 ml./min. (sum of both phases) and (c) introduction of the feed into stirring chamber number 5 (i.e., 8 extraction and 4 scrub stages). The main purpose of the nine runs was to find a means of decreasing the sodium concentration in the 2DU stream without adverse effect upon waste losses and decontamination.

It is apparent that unless it is possible to obtain ANN with a much lower Na impurity content than that used in these runs, it will be difficult to reduce the Na concentration in 2DU to much below 100 p.p.m. It also appears that introducing Na at the feed point has little effect upon the Na content of the 2DU stream. The amount of Na entering at the top of the column is apparently much more significant.

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URANIUM RECOVERY PLANT ASSISTANCE

241-U Tank Farm Operations

Blending was continued from July 24 through August 2, 1952, at which time operation was discontinued due to filling of the 241-WR Vault tanks and the two blend tanks to capacity. A total of 8.5 tons of uranium was blended during the above-mentioned period at an average rate of over one ton per day. All of the six blended batches produced were at approximately TBP-HW No. 4 composition.

Mist in Underground Storage Tanks. Mist and fog caused by operation of the high velocity jets during slurry removal operations in the tank farm have hindered observation of the operation with the periscope. Based on a study of various fog-dispersal methods, the most feasible methods of providing visibility with the periscope are to 1) improve the lighting inside the tank, 2) heat the vapor space to the dew point, 3) supersaturate the vapor with additional water vapor from fog nozzles and thereby cause self-nucleation.

221-U Plant - TBP Extraction

Operations in the TBP Plant during the past month were continued with the aim of eliminating the cause of the higher-than-flowsheet uranium waste losses in the RAW stream, and establishing optimum RA Column and auxiliary design to permit plant start-up on underground waste uranium feeds. Twenty-seven studies were completed to evaluate various RA Column and auxiliary piping modifications at uranium processing rates from 2.5 to 5 tons per day, and at RA Column pulse frequencies from 40 to 92 cycles per minute. All corresponding RC operation was carried out at 75 cycles per minute pulse frequency with the RCW being stripped of residual uranium in an RO Column employing 5 wt. % Na_2SO_4 as ROS at 1:20 = Aqueous: Organic flow ratio.

As an outcome of the above tests, since approximately 1 to 2% losses of feed uranium to RAW appear to be reasonably certain without special extraction section or bottom disengagement section modification, it was decided to incorporate the most attractive features in the final RA Column design for start-up in the near future after a short "cold" uranium check-out. An experimental program to develop an extraction section cartridge geometry which will minimize channeling is being undertaken in 321 Building, but for early plant operation the use of available head-room to lengthen the scrub (decontamination) section of the RA Columns offers the better probability for attaining required flowsheet performance. Salient features of the recommended design for RA Columns for start-up are as follows:

1. Extend the scrub sections an additional 3 feet.

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2. Modify the RAF distributors from the present design (six 3/4-inch-diameter holes discharging up) to thirty-six 1/4-inch-diameter holes discharging as follows:

   (a) 14 equally spaced pointing up,

   (b) 16 equally spaced discharging horizontally outward with six holes drilled all the way through to give,

   (c) 6 holes discharging horizontally inward.

3. Locate RAW and RAX Hammel-Dahl control valves as near to the column as possible.

4. Provide pump pressure directly to the RAX control valves.

5. Introduce RAX via single-hole, 2-inch I.P.S. distributors discharging up approximately 6 inches below the bottom plate of the extraction section. A bleed line should be included from a point between the control valve and the column to a point below the pulser piston to provide an organic-filled pulse leg below the pulser piston. Maintenance of an organic-filled pulse leg prevents RAW from filling the leg with consequent upsetting of the design hydraulics and the requirement for rerouting pulser piston overflow, and reduces the probability of "hot" maintenance.

6. Displace air in the steam line to the RAW jet out valve with aqueous phase when column is filled with RAS at start-up.

7. Stiffen bottom disengagement section plate with a six-inch channel.

At month-end the B line RA Column is being prepared for final checking, with the above-listed features incorporated in remote-operation jumpers.

224-U Plant - UO_3 Conversion

Ninety-three thousand pounds of UO_3 (equivalent to 38.7 tons of U) was produced from 315 batchwise calcinations during the period. The average charge per calcination was 295 lb. of UO_3. Pot charges varied from 180 lb. to 600 lb. of uranium or 45 gallons of 60% UNH to 60 gallons of 100% UNH solution.

Nine thousand, eight hundred and forty lb. of UO_3 was produced from 53 calcinations of RCU produced from test runs in the TBP Plant. Of this total 4 calcinations were made on straight RCU; and 34 calcinations were made with

the addition of 60% nitric acid directly to the calcination pot prior to calcination. The ratio of nitric acid to 60% UNH solution charged to the pots varied from 5 gallons of acid to 14 gallons of acid per 42 gallons of UNH charged. The remaining 5 calcinations were carried out using TBP Plant RCU digested with nitric acid for periods up to 72 hours at 100°C. The nitric acid concentration was 2 molar in the approximately 55% UNH solution.

Considerable foaming in the pots, when the charge temperature reached 135°C. to 140°C., was encountered when calcining concentrated RCU from the TBP test runs. The addition of nitric acid to the pots prior to calcination and acid digestion of the UNH pot feed solution reduced pot foaming tendencies only slightly. Attempts to control the foaming by operating at lower furnace temperature settings during the critical period (charge temperature 135° to 140°C.), generally proved successful in preventing pot boil-overs. The addition of anti-foam agents (heptodecanol and GE Silicone No. 61088) directly to the foam temporarily controlled foaming, but the addition of the anti-foam agent was required over a period up to twenty minutes at intervals of 40 to 70 seconds to keep the foam below the pot lid. A test with Nonisol 300 was inconclusive since anti-foam agent additions were terminated before the test pot had stopped foaming.

Operation of both RCU Intermediate Product Concentrators (E-B-1 and E-D-1) to produce 80% UNH solution was attempted. However, operation at this concentration resulted in plugged concentrate valves. Operation of the Final Product Concentrator (E-D-2) at rates up to 7 tons of U per day proved satisfactory.

Although foaming of Redox material contaminated with RCU was encountered early in the month, equipment flushes with strong nitric acid and careful segregation of Redox material allowed successful operation during the latter part of the report period.

PROCESS CHEMISTRY

The decontamination characteristics of RAX from various sources were determined by RA-RC Column contacts using 1 extraction, 1 scrub, and 1 strip stage. The results, given below, show good comparative decontamination for the solvents tested.

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DECONTAMINATION CHARACTERISTICS OF RAX
RA-RC COLUMN CONTACTS

Feed/Scrub/Extractant = 2/1/5; 1 extraction, 1 scrub, and 1 strip stage.
RAF: Plant RAF spiked to 1.66×10^{10} beta counts/(min.)(gal.) and 1.26×10^{5} gamma micro-curies/gal., with Redox Plant dissolver solution.

RAX	RCU U, Lb./Gal.	RCU B c/m/Gal.	RCU G uc./Gal.
1) Laboratory	0.127	1.9×10^{7}	110
2) Plant RAX (8/1/52)	0.137	1.5×10^{7}	86
3) Lab. RAX irradiated for 7 days at ca. 2×10^{5} R/hr.	0.092	3.7×10^{6}	55
4) Plant RAX (7/1/52)	0.123	5.0×10^{6}	20

To determine the relative effectiveness of $CO_3^=$ and $SO_4^=$ washing on the removal of TBP hydrolysis products, an RAX sample was spiked with a commercial butyl phosphate mixture to about 1 g./l. DBP and 0.5 g./l. MBP and then aliquots were given one half-volume washes with 0.5 M aqueous Na_2SO_4 and Na_2CO_3. Results were also obtained on the relative removal after uranium complexing of the hydrolysis products. Results of "C" contacts indicate $SO_4^=$ does not remove UDBP (uranyl dibutyl phosphate), and that it removes only a small amount of uncomplexed DBP. Carbonate washing effectively removes both UDBP and DBP.

UO_3 Reactivity. During the month, 20 reactivity runs were made, comprising 80 samples for analysis. This series was largely composed of (a) plant production lots, and (b) laboratory and plant hydration test samples. It was found that the addition (singly) of 1 g. of TBP, DBP, and MBP, per liter of 100% c.p. UNH solution gave equal or better reactivity than the unspiked sample with conversion ratios ($= \frac{\%UF_4 \text{ in test sample}}{\%UF_4 \text{ in control}}$) ranging from 1.00 to 1.06. The hydration tests were carried out in both the laboratory and the 224-U (Calcination) Building pots, to determine the optimum drying cycle, drying temperature, and amount of water to be added. It was found that if 20% of the dry UO_3 powder weight was added as water, the mixture produced a slurry on agitation, 15% produced a heavy slurry, and 10% only dampened the powder and did not produce a slurry. However, by drying at not over 150°C., it was possible to produce just as much improvement in reactivity with 10% added water as with larger amounts. The hydration studies in the laboratory were made with UO_3 from plant lot 82 which had a conversion ratio (relative to a laboratory standard) of about 1.05 before hydration. After

hydration, with amounts of water ranging from 10 to 50 per cent of the weight of UO_3, the conversion ratios averaged about 1.2 (about 98 to 99% UF_4), showing a marked increase in reactivity. The material calcined in the 224-U Building pots was TBP-Plant material (Lot No. 009T) and showed, before hydration, an average conversion ratio (5 grab samples from random pots) of 1.18. Following hydration, the conversion ratio averaged 1.23. Plant lots 85 and 86 also showed an abrupt increase in reactivity, following the change from Redox to TBP-Plant uranium feed to the pots. No satisfactory explanation for this sudden increase in the reactivity of TBP-Plant material has been advanced.

REDOX AND URANIUM RECOVERY DEVELOPMENT

Process Studies

Dissolver Studies. The study of uranium dissolution was continued during the month with the aim of establishing the design bases for the Purex dissolvers. The 321 Building dissolver is being modified to approximate a 1/64-scale prototype of the proposed Purex plant dissolver. A down-draft condenser packed with 1/2-inch stainless-steel Raschig rings has been installed, together with sampling ports and gas and liquid flow measuring instruments required to define the operation of the unit. Experimental work is scheduled to start early in September. A dissolver test program was also outlined for a bismuth Phosphate Plant dissolver and proposed in Document HW-25252. This work is scheduled to be done in the next two months, and will be completed as rapidly as consistent with the assured attainment of production commitments.

Purex Waste Storage. A report on the problems involved in storing Purex wastes is in rough draft stage and will be issued shortly as HW-25273. It is predicted that up to eight times as much heat will be generated in these stored wastes as would be required to evaporate them to dryness. A 750,000-gallon tank would be filled in about 250 days with the aqueous wastes from a plant processing 200 tons of uranium per month by the HW #1 Purex Chemical Flowsheet. During the period of filling, heat would be liberated at increasing rates, reaching a predicted peak of about six million B.t.u. per hour at the time the tank is full. After the tank is filled, the heat evolution would gradually subside until heat losses to the ground would absorb the heat generated - perhaps two to three years after the tank is filled.

If the heat evolved were utilized to effect self-concentration, cribbing the condensate would permit the storage of two to three times as much Purex waste in a given tank. In this case, a predicted peak heat evolution of about ten million B.t.u. per hour might be reached, and the mass would probably continue to boil as much as six to eight years. Self concentration by a factor of about 2.4 appears possible before the solubility of the sodium salts at the boiling point is exceeded on cooling to 25°C. at such concentrations, the bulk of precipitated salts is about two-thirds of the total bulk.

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Preliminary specifications for the design of the Purex waste storage tanks are in rough draft stage and will be issued shortly as Document HW-25274.

Chemical Engineering Development

Solvent-Extraction Studies

During the month sixty uranium recovery process solvent-extraction studies with "cold" (unirradiated) uranium were carried out in a 3-inch-diameter glass pulse column in 321 Building, to investigate the causes and possible remedies of the high uranium losses from the plant RA Columns. These studies included twenty-nine RA Column extraction section and thirty-one RC Column runs. Detailed evaluation and correlation of the results was in progress at the month's end. The following is a preliminary summary of the findings.

Evaluation of Plant Materials. The 3-inch RA and RC Column studies indicated that the cause of the high Uranium Recovery Plant RA Column losses does not reside in the solvent or other materials used in the plant. These studies substantially confirmed the earlier favorable pilot-plant findings on the performance of both the RA and RC Columns. Optimum extraction performance, as well as flooding, occurred at pulse amplitude-frequency products about 20% lower than those reported earlier (Document HW-19170). This apparent discrepancy is believed attributable to a slight (up to about 20%) previously undetected loss of amplitude in transmission of the pulse from the pulse generator to the column, mainly as a result of air pockets in the pulse-transmission line. (The pulse loss was eliminated before the conduct of the presently reported work.) The favorable earlier experimental results were confirmed not only with all fresh plant materials, including solvent (RAX) made from fresh TBP and Shell Deodorized Spray Base from the plant supply, but also with RAX which had been reused several times in the Uranium Recovery Plant (taken from Processing Line "B" during Run U-8B-11, during the night between August 7th and 8th). This was true except for small amounts of impurities in the reused plant RAX, which increased losses in both the RA and RC columns by formation of "inextractable" uranium species. As confirmed by distribution-ratio spot checks, approximately 0.1% of the uranium in the reused-RAX runs was in a form "inextractable" in the RA Column, and about 0.3 to 0.6% in a form "inextractable" in RC. The approximately 0.1% RA-"inextractable" uranium is not nearly enough to account for plant RA Column uranium losses in the neighborhood of 1% and more. The RC-"inextractable" uranium, however, is sufficient to account for the increase in plant RC Column losses from the initial values of less than 0.2% to the neighborhood of 0.5 to 0.6% during July. Throughout these experiments a simple 3-inch-diameter glass pulse

column was employed. The plate-section height was 9.1 ft. A "standard" perforated-plate cartridge (stainless-steel plates with 0.125-inch-diameter holes, 23% free area, spaced 2 inches apart) was used. The aqueous phase was continuous. The stream compositions and flow ratios were those of the TBP-HW #4 Flowsheet (ref. HW-19140). The volume velocities investigated were those corresponding to 5 and 2.5 tons U/day in plant-scale columns.

Effect of Reduced Amplitude. No significant adverse effect on losses resulted from operation of the 3-inch RA Column at 0.8-inch and 0.6-inch amplitudes (cf. 1.28-inch nominal plant amplitude), or from operation of the 3-inch RC Column at 0.2-inch to 0.5-inch amplitudes (cf. 0.57-inch nominal amplitude for the plant RC Columns), provided that a compensating frequency adjustment was made.

Effect of Increased RAX Rate on RC Loss. In one pair of comparable 3-inch-column runs a 20% increase in the RAX flow rate with no compensating increase in the RCX flow rate exerted no significant effect on the RC Column uranium loss.

Performance with 20% TBP. Three-inch RA and RC Column uranium losses with 20 volume % TBP in Shell Deodorized Spray Base as the solvent approximately equalled those obtained with 12.5% TBP. Thus the few scouting runs here reported furnish no assurance that increasing the TBP concentration in the plant solvent would reduce RA Column losses. Insofar, however, as the high plant RA Column losses are an effect of channeling in the 20-inch-diameter plant column, an increased TBP concentration may provide some relief, since the average concentration driving forces would be increased, tending to reduce the adverse effects of the local phase flow disproportionation which accompanies any channeling.

Pilot-Plant RCU Clean-up Studies

Countercurrent Washing with Shell Spray Base. During the month sixteen countercurrent RCU washing (RT Column) studies were carried out in a 3-inch-diameter glass packed column in 321 Building, to test the effectiveness of this procedure for removing the agent(s) causing foaming in the Uranium Recovery Plant calcination steps (believed to be TBP and its decomposition products). Shell Deodorized Spray Base was employed as the washing agent. Stainless-steel and polythene 1/2-inch Raschig rings were tried as packing the the 9-foot-high column packed section. Up to about 85% of the TBP originally present in the RCU was removed in the countercurrent washing. However, the unremoved portion of the foaming agent was sufficient to cause unalleviated foaming in laboratory bench-scale concentration and calcination tests.

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Steam Stripping. Thirteen RCU steam-stripping (RS Column) studies were conducted in 321 Building during the month. A three-inch-diameter column packed with 20 feet of 1/4-inch stainless-steel Raschig rings was used. The RCU was introduced at ambient temperature and stripped countercurrently with direct steam. The initial findings were favorable. In all thirteen runs, employing RCU flow rates up to 150 ml./min. and steam-to-RCU flow ratios ranging to as low as 0.23 lb./lb., the stripped RCU obtained showed little or no foaming in laboratory bench-scale concentration and calcination tests. The residual TBP concentration was below 0.01 g./l. in all cases (the lower limit of the infrared spectrophotometric analytical method used). This was true even for the last three runs in which the initial TBP concentration was made as high as 2 g./l. by deliberately entraining some solvent phase.

Foaming Studies in Connection with the Concentration of RCU

The 321-Building single-tube long-tube evaporator has been utilized for concentration of RCU and TRU (RCU washed with hydrocarbon in the RT Column) in order to study the foaming characteristics of the concentrated solution and to supply the Process Chemistry laboratory with concentrated UNH solutions for calcination foaming tests. The results indicate essentially no foaming in the long-tube evaporator.

Mechanical Development

Equipment and Materials Testing Report No. 2 was issued during the month as Document HW-19184.

Seal Development. Purge gas consumption of labyrinth vapor seals for 3/4-inch diameter shafts has been determined. The labyrinth bushing length, groove width and depth, land width, and diametral clearance were varied. The tests indicate that the purge gas consumption of a double seal with 0.010 inch diametral clearance between the labyrinth bushing and the shaft would be 1.5 to 2.0 std.cu.ft./min. A 1.0-inch-diameter shaft seal and a 1.25-inch-diameter shaft seal are ready for testing.

Bearing Development. A glass bearing has been tested in the bearing test machine, operating against a Stellite journal and a fiber glass filled Teflon journal. The minimum friction factors, with RAX as lubricant, determined for both journals were about one-half the minimum friction factor for other good bearing materials. When the load was increased beyond the critical point (minimum friction factor) the glass bearing showed a tendancy to seize on both journals, due probably to rapid overheating.

Separations Technology Unit

Pump Development. Final comments and specifications for a 5-horse-power submerged or in-line motor-pump unit built by the Peerless Pump Company and U.S. Motors have been reviewed and an order has been placed for one unit at an initial cost of $5400 for the first model. This cost includes a regenerative turbine pump and a deepwell turbine pump, designed to be interchangeable on the motor.

Pulse Generator Development. A nominal 3-inch-diameter Teflon bellows (U.S. Gasket Company) with a 4-inch face to face dimension has operated for a total of 8.2×10^6 cycles pulsing water at a frequency of 100 cycles/min., with a bellows travel of 1.5-inch. A second 3-inch diameter bellows has been in continuous operation for 2.6×10^6 cycles pulsing water at 100 cycles/min., with a bellows travel of 1/2-inch. There has been no evidence of failure or fatigue in either bellows.

A nominal 10-inch-diameter Teflon bellows has been installed on one of the push rods of the pulse generator for the 16-inch-diameter pulse column in 321 Building. This 5-inch face to face bellows will be operated at a bellows travel of 2.5-inch to give a 1-inch displacement in the 16-inch column.

A Denison Engineering Company hydraulic 2-ton ceramic-type press complete with motor and pump unit has been ordered for evaluation as a substitute drive mechanism for the electrical-mechanical scotch yoke mechanism now in use in the Metal Recovery Plant.

Materials Testing

Dual Face Plates for Pulse Columns. Forty 3-inch-diameter stainless-steel plates with 1/8-inch-diameter holes and 23% free area have been coated on one side with Kel-F NW-25 (2 to 4 coats) and cured from 5 to 18 hours at 245°C. Twenty of the plates were sandblasted before coating and 20 were not. The plates will be evaluated for coating life under Purex 2A Column pulse conditions. Coated plates are also being exposed to radiation intensity on the order of 10^5 roentgens/hour to determine the effect of radiation on the Kel-F and on the plastic-to-metal bond. Contact angle measurements (as an indication of wetting characteristics) with organic and aqueous phases are planned before and after chemical and radiation exposure.

Corrosion Studies. One of the Type 304 stainless steel expander rings used in the Metal Recovery Plant pulse generator to spring load the Graphitar piston rings has been exposed to 60% HNO_3 and RCU both at room temperature and at boiling temperature. After 240 to 300 hours' exposure corrosion rates were negligible in both stressed and unstressed samples.

Separations Technology Unit

SAE 1010 mild steel has been exposed for 1000 hours to the liquid and vapors of Redox underground waste solutions under several conditions of solution pH and temperature. Maximum corrosion rates occurred on the samples exposed to vapors. Within the limit of experimental error, little difference was detected between the corrosion rates of samples exposed at 180°F. and those at 220°F. Generally, corrosion rates were somewhat less in solutions at a pH of 13 than the rates obtained in solutions at a pH at 11 and 12. In all cases, however, the maximum corrosion rates were less than 0.0005 in./mo.

Process Chemistry

Dissolving of Uranium Metal. Consideration is being given to the use of 45% HNO_3 in place of 60%, for slug dissolving in the Purex process. Two uranium dissolving runs were made in the laboratory with these acid concentrations, during which off-gas samples were taken (a) at the start of dissolution, and (b) at peak gas evolution. These samples were analyzed for hydrogen, and in every case showed less than 0.1 volume per cent. The only noticeable difference between runs was the more dense evolution of oxides of nitrogen in the case of the more concentrated acid.

Physical Characteristics of Simulated Purex Waste Streams. Synthetic solutions representing Purex HW #1 Flowsheet acid wastes were prepared, and their physical properties were studied as a function of neutralization and concentration. It was found that the acidic waste could be concentrated to approximately 20% of the original volume with no difficulty, giving a solution with a saturation temperature of 80°C. No essential differences were found between the waste solution neutralized without prior concentration and that neutralized after concentration to 50% of its original volume. The volume of solids in each ranged from 12 to 14 per cent, with an apparent cake density of 1.3 g./ml. The viscosity (about the same for both wastes) decreased from 30 cps. at 35°C. to 20 cps. at 20°C.

321 Building Operations

On August 9 three-shift-per-day, 21-shift-per-week operation was resumed in the 321 Building in order to investigate methods for reducing the high losses occurring in the Uranium Recovery Plant RA Column, and to investigate and study the foaming problem in the RCU concentrators and the calcination pots. The results of these studies are reported elsewhere in this report.

Separations Technology Unit

Hot Semiworks

The lump-sum-contract portion of the Hot Semiworks construction was completed on August 5, with the exception of nineteen minor items, which were deleted from the contract. These items and the remaining construction work (approximately 0.5 per cent of the total) will be done by plant forces under direction of Project Engineering personnel.

The Hot Process Building was accepted for beneficial occupancy on August 1. Full shift coverage by Technical and Service personnel was started on August 4. However, the Hot Semiworks program was curtailed on August 9, by the transfer of Technical personnel to 300 Area for the 321-Building "cold" pilot-plant studies described earlier in this report.

Tank calibration was completed for all tanks in the Solvent Handling Building and the Aqueous Make-Up Building and is 50 per cent complete for the Hot Process Building.

INVENTIONS

All persons engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during the period covered by this report. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

INVENTOR	INVENTION
W. S. Figg, O. H. Koski, D. C. Kaulitz	A remotely driven, smooth flow, adjustable rate, positive displacement pump.
A. S. Wilson	The use of hydrogen peroxide to improve the decontamination of ruthenium in solvent extraction processes.

R. B. Richards

R. B. Richards, Manager
Separations Technology Unit

RBR:bp

September 12, 1952

[redacted]

APPLIED RESEARCH UNIT

AUGUST, 1952

September 10, 1952

VISITORS AND BUSINESS TRIPS

W. E. Kirby, Consolidated Engineering Corporation, Pasadena, California was at the Hanford Works August 1-31 installing a mass spectrometer.

Geo. Kuta, Consolidated Engineering Corporation, Pasadena, California was here August 20-22 inspecting the mass spectrometer installed by Mr. Kirby.

C. E. Lundin, Dow Chemical Company, Rocky Flats (Colorado) Plant visited here July 29 thru August 22 to study plutonium metallurgy processes, equipment and techniques.

M. C. Leverett, ANP Project, Lockland, Ohio was here August 28 reviewing Hanford physics work.

[redacted]

Applied Research Unit

R. Ward spent August 1 at the Sylvania Electric Company, New York City, and August 4 at the Battelle Memorial Institute, Columbus, Ohio discussing metallurgical problems.

H. R. Schmidt spent August 21-22 at UCRL, Berkeley, California discussing recent advances in nuclear chemistry.

U. L. Upson spent August 19-20 at the California Research & Development Laboratory, Livermore and August 21 at UCRL, Berkeley, California discussing recent developments in counting techniques.

ORGANIZATION AND PERSONNEL

Personnel totals as of August 31 were as follows:

		Technical Graduates				
	Exempt	Permanent	Summer	Rotational	Non-Exempt	Total
Physics	25	1	2	6	8	42
Metallurgy	25	2	1	7	18	53
Analytical Research	30	1	-	4	6	41
Analytical Service	89	5	-	3	101	198
Administration	5	-	-	-	3	8
Total	174	9	3	20	136	342

PHYSICS

Lattice Studies

The natural neutron background in the wet 7 1/2 inch lattice has been measured and the values applied to correct the measurements of the buckling. The final values for this lattice are

Dry 7 1/2 inch lattice: 101 ± 1/2 microbucks
Wet 7 1/2 inch lattice: 85 1/4 ± 1/4 microbucks.

The uncertainty of these figures represents only the spread of the measured values.

It is well known that the diffusion length of a lattice may be determined from the equation:

$$\frac{\nabla^2 n}{n} - \frac{1}{L^2} + \frac{3q}{\lambda nv} = 0$$

if one knows the values of $\nabla^2 n/n$ and $3q/\lambda nv$. The term $\nabla^2 n/n$ is the buckling. The term $3q/\lambda nv$ may be determined from the average cadmium ratio in the lattice cell. Further, the diffusion length of a lattice is related to the diffusion length of a pure moderator by the equation:

$$L_1^2 = L_m^2 (1-f),$$

where f is the thermal utilization of the process tube assembly. Measurements made on the 7 1/2 inch lattice have yielded the data given in the table below:

Quantity	7 1/2" Dry Lattice	7 1/2" Wet Lattice
Av. Cd. Ratio	4.54	5.26
L_1	13.8 cm.	15.1 cm.
f	0.9308	0.9175

Attempts have been made to check the values of the diffusion length and the thermal utilization by an experiment in which the uranium slugs were replaced with P-10 slugs. There is some difficulty in interpreting the results of this latter experiment, largely on account of the fact that no accurate description of the thermal neutron flux distribution in a P-10 or uranium slug has been found.

Graphite is being machined for the 6 3/16 inch lattice. This lattice will be measured with standard slugs on account of the present interest in a lattice with no water reactivity effect.

The radial variation of the thermal neutron flux has been measured in both P-10 and uranium slugs. Gold foils of 1/4 inch diameter were used as detectors and the exposures were made in the Test Pile. The ratio of thermal neutron flux at the surface divided by the thermal neutron flux at the center was found to be 1.57 ± 0.05 for uranium and 1.86 ± 0.05 for P-10. Previous measurements on uranium with the use of aluminum foils have given a value for this ratio of 1.52 ± 0.08. The value obtained for P-10 leads to a reciprocal diffusion length of 0.99; this is to be compared with a value of 0.60 predicted on the basis of diffusion theory. Values obtained for uranium were also in disagreement with theory.

In explanation of the above discrepancies, the diffusion theory of neutrons is valid in a medium in which the scattering cross section is large compared to the absorption cross section. Stated differently, neutrons may be said to diffuse in a medium if they make many scattering collisions before being absorbed. This condition for the validity of the diffusion theory does not apply in a medium such as uranium where the scattering is of the same order of magnitude as the absorption. Accordingly, a first order correction to the diffusion theory has been calculated. This indicates a stronger curvature upward than $I_o(\mu r)$ which is the diffusion theory result. These calculations will be extended to higher order corrections in order to have a quantitative comparison with the experimental results.

Work on the calculation of the diffusion length of the lattice with P-10 material is continuing.

Applied Research Unit

In considering the feasibility of a lattice test reactor the question arises as to whether or not a specimen lattice can be tested in the correct energy spectrum of neutrons. To throw some light on this question the following problem has been solved. The neutron distribution has been found in an infinite slab consisting of a driver, graphite reflector of variable thickness, and multiplying core. The result indicates that the ratio of fast to slow flux in the core can be made essentially constant by adjusting the reflector thickness. A more realistic model in which the space between the reflector and the core is filled with bismuth is being calculated by Mayer of the IBM group.

The small source theory has been used to compute the reactivity effect to be expected from the insertion of a column of four per cent J slugs into the center of an unflattened cylindrical pile with standard Hanford lattice. The result is approximately forty inhours. The second approximation computations are in progress.

Experimental Physics

Preliminary cost estimates for installation and removal of the xenon production and separation facilities in the 105 DR Building are being made by Physics personnel with the assistance of the Special Irradiation group. Both the process tube installation and the X Hole facility are being considered in these estimates.

An experiment was conducted to determine the reproducibility of the dilution system described in the last monthly report. A sample of argon was irradiated in the Test Pile, diluted, and the dilution ratio was then measured by counting methods. Unfortunately the results were rendered inconclusive by the presence of argon background. Plans are being made to eliminate this background.

Several experiments were done this month to determine the degree of iodine elimination which could be accomplished by charcoal traps.

The design of a new xenon generator slug has been completed. The new design incorporates changes which will make fabrication less difficult and will reduce the chance for leaks to develop during fabrication. The main source of trouble in making a leak-tight slug has been in making aluminum welds. With the improved design only three welds are required. It is planned to have three dummies fabricated according to the new design, these dummies will be tested for leaks and mechanical soundness. If they prove satisfactory, fabrication of the xenon generator slugs to be used in the production pile will follow.

The use of a single crystal neutron spectrometer at energies lower than the most probable energy of the neutron distribution depends on measurements of sufficient precision of the amount of higher order component in the beam or on the elimination of this component. This can sometimes be accomplished by the use of selective absorbers at a large sacrifice of intensity. The possibility of using a mechanical velocity selector in conjunction with the crystal spectrometer has been studied. Such velocity selector would be required to

eliminate from the neutron beam all neutrons of velocity 2 v_1 and 3 v_1, where v_1 is the velocity of the neutrons to be diffracted. This would eliminate the second and third order of diffracted components which are the only ones of importance. The contributing factors which complicate the apparatus are the small distance between collimator and crystal (about 20 inches) and the divergence of the collimated beam (about 20 minutes full width at half maximum). The optimum apparatus considered would consist of two discs with radial slots transparent to thermal neutrons rotating on a common axis. This apparatus would absorb about 85 per cent of the neutrons of velocity v_1. This allows about ten times the intensity of selective absorbers or a double crystal instrument. However, it requires the rather large linear velocity of the rim of the discs, 5000 cm/sec. for neutrons of 0.025 e.v. energy. The feasibility of this instrument will be considered further.

A collimator for the cross section measurements of Pu-239 has been partly assembled. This collimator consists of twelve 5/16 inch O.D. steel tubes arranged so that 8×10^7 neutrons per second will pass through a circle 1 1/2 inches in diameter 100 inches from the end of the collimator.

Remote control equipment for operating the neutron crystal spectrometer has been installed.

Operational Pile Problems

The power of a flattened slab pile has been calculated as a function of graphite quality in the pile fringes of the reflector. As expected, this calculation indicates that the greatest increase in pile power results from putting the highest quality graphite adjacent to the flat zone. A document describing these calculations will be issued.

An investigation was made to determine whether Al-Si penetration into can walls during the canning process could be detected by radioactive tracer techniques. The postulated method was addition of a beta emitter of proper energy to the canning bath, and a subsequent measurement of the intensity of radiation escaping from the can. It was determined that to overcome the natural background from the uranium, the amount of radioactivity necessary in the canning bath would produce a serious radiation hazard around the Al-Si pots. A document is being prepared which covers this problem more fully.

A report on the estimated minimum critical masses for each of the process vessels in the 231 Building has been issued as HW-25374.

METALLURGY

Fabrication of Uranium

Independent metallurgical evaluations of the mechanical and structural characteristics of thirteen "as-rolled" uranium rods by the different laboratories represented at a joint United States-Canadian Committee meeting on dimensional

instability showed these sites in very good agreement. Measurements of dimensional changes that occurred in these rods after a relatively short exposure in the Chalk River Reactor indicate that the smallest dimensional changes occur in those rods which had been rolled at the highest alpha temperatures. A brief discussion of the metallurgical data and the results of this pile test is given in document HW-25347. The results will be reported more fully in the minutes of the meeting yet to be issued.

An experimental rolling program was initiated to determine the properties of uranium rolled in the beta phase. The grain size at the center of the rods obtained by this process is comparable to normal beta transformed uranium whereas the grain diameter on the outer periphery is approximately half this value. Orientation measurements show these samples to be comparable to the beta transformed uranium now being used in the piles, although the mechanical properties of the specimens are superior to previous values obtained for beta transformed uranium. The rolled surfaces of this limited number of slug-sized uranium samples was rated good; some longitudinal cracks and folds were present. Results obtained on rolling uranium in the beta phase has thus far shown excellent possibilities of producing a finer grained, randomly oriented as-rolled uranium with improved mechanical properties when compared to alpha rolled, beta transformed uranium.

The experimental rolling program designed to study the effects of fabrication variables upon the orientation and other metallurgical properties of uranium rods was continued. Orientation studies on samples which were flat rolled at 500° C show that an increase in the total reduction results in an increase in the degree of preferred orientation existing in the rolled specimens.

Uranium Bonding and Alloy Studies

Electroplating equipment was assembled and used to plate uranium with copper and chromium. Smooth adherent electroplates of copper were obtained but some difficulty was encountered in plating chromium directly onto the uranium; however, it was found that smooth adherent chromium electroplates could be obtained on uranium which previously had received a flash coat of copper. Two chromium plated uranium wafers, in contact with both uranium and aluminum, were warm pressed at 525° C. Evaluation of these attempted bonds is underway.

A study which has as its goal the determination of the effects of mechanical properties on the dimensional stability of uranium during irradiation has been started. Four uranium-chromium alloys having nominal compositions of 0.25, 0.50, 0.75, and 1.00 atomic per cent chromium were prepared and rolled under controlled conditions in an effort to obtain similar preferred orientation and grain sizes in all of the alloys.

Several attempts to prepare homogeneous alloys of uranium and zirconium were unsuccessful.

In support of a Pile Fuels Sub-Unit program, a technique is being sought for obtaining electron diffraction patterns of the Al-Si bonding layers with the

aim of identifying the phases which are produced by the triple dip canning process. These studies are being conducted in the Radiological Sciences laboratories in 100-F Area.

Mechanical and Physical Properties of Uranium

Preliminary studies of the mechanical properties of uranium at elevated temperatures were extended into the gamma range. Results obtained on specimens tested at 800° C showed that the tensile strength is approximately 400 psi and that the reduction in area increases to approximately 100 per cent.

An X-ray technique for measuring Poisson's ratio of uranium was investigated. The intent of the investigation was to determine the feasibility of adapting this method to the study of irradiated uranium in order to simplify testing procedures. X-ray diffraction patterns obtained revealed that the line shift which occurred was less than the error involved in the measurement. These experimental conclusions were then substantiated by theoretical calculations using accepted values for Young's modulus and Poisson's ratio for normal alpha uranium.

Minor modifications have been made on the unit to be used for studying the rate of growth of uranium during thermal cycling as a function of the degree of preferred orientation existing within the uranium. Studies currently are being made to develop a sample shape which will provide for a uniform temperature distribution within the sample under operating conditions.

Corrosion Studies

Corrosion tests of type 304 ELC stainless steel for the Purex Process were continued. Previous tests in boiling 3M HNO_3 containing 1000, 3000, and 10,000 ppm chloride ion has revealed no trend. Additional tests in 5M HNO_3 and 8M HNO_3 appear to reveal a correlation between nitric acid concentrations, chloride ion concentration, and temperature.

An evaluation of corrosive effects at local hot spots within the proposed Purex waste storage tanks has been started. Mild steel coupons are being prepared to be exposed to simulated Purex wastes in bombs provided by Separations Technology Unit.

Corrosion tests were continued on SAE 1010 mild steel in boiling synthetic Redox waste solutions neutralized to pH values of 11, 12, and 13. The previously reported trend toward increased corrosion rates at higher temperatures and at higher hydrogen ion concentrations for vapor specimens was continued, except for specimens exposed to the pH 11 environment. In this pH range the corrosion rates for the vapor specimens above 200° F decreased while the rates for the interface and vapor-phase specimens at a given temperature were in general lower.

A piston-ring expander-spring of type 304 stainless steel is being tested for corrosion resistance in 60 per cent nitric acid and a simulated RCU

stream from the UR process. Tests of the unstressed specimen in boiling nitric acid and the RCU stream at room temperature show that the treatment used in the manufacture of the spring did not impair the corrosion resistant properties of the steel in the unstressed condition.

Metallurgy of Plutonium

Work on minor construction project MWI-38(1) was resumed after an eight week stoppage. The X-ray diffraction equipment was reinstalled; the dark-room alterations were completed; and the light fixtures were installed in the office space.

Installation of additional laboratory service lines under a minor construction work order was completed. Laboratory benches were cemented in place which allowed this portion of the laboratory to be used.

The thermal analysis apparatus was installed in its hood and the necessary electrical, cooling water, and inert gas connections were made. Tests of the component parts of the inverse rate recorder were started using a laboratory furnace and the X-Y recorder.

A new bridge assembly was installed in the instrument panel to permit the recording directly on the X-Y recorder of strains measured with an SR-4 resistance strain gage.

Work was started to determine the feasibility of bonding preformed nickel shells with gallium. According to the literature, a 20-30 per cent nickel-gallium alloy has a solidus temperature of 252° C, consequently, bonding of nickel with this alloy through the use of heat and/or pressure was attempted.

X-ray diffraction work to determine the reason for variations in reactivity of uranium oxide prepared by different processes was undertaken at the request of the Separations Technology Unit.

Low voltage radiography of a special ionization chamber was done for the Radiation Measurements Unit of Radiological Sciences. The nature of the measurements required that the work be done in the 234-5 Building.

Radiometallurgy Facilities

The multicurie cell facilities at 222-S were set-up for radiometallurgy investigations and subsequent shielding tests were made. Radiation of less than 10 mr/hr was observed at the viewing window when a three month cooled, normally discharged, uranium slug was placed in the cell. Handling operations in this cell are to be done with a Hanford Slave Manipulator which has proven very satisfactory. Photography through the lead glass viewing window was shown to be superior to any other facility for photography of high level radioactive samples.

Applied Research Unit

A punch mechanism that will provide selective samples from irradiated wafers of uranium was constructed.

The fabrication of the component parts for the double crystal X-ray spectrometer was continued. An aluminum crystal was cut and polished parallel to the /111/ family of planes and subsequently curved to a cylindrical radius of twelve inches. The present schedule calls for the initial assembly of the unit to begin around the middle of September.

The thermal conductivity unit which is designed to test small irradiated samples is being drawn up by Instruments. The design of the differential transformer type dilatometer is complete.

Radiometallurgy Development

Twelve failures were given a cursory visual examination and typed according to the radiometallurgy classification.

Investigation of ruptured slug No. 182, classified as a type three failure, indicated that Al-Si penetration was the major cause of the rupture since similar types and causes of failures had been observed in autoclave tests of material canned during the same period. A piece of can wall has been removed from the ruptured area to validate this assumption.

Wedge-shaped samples were cut from an Al-Si bonded and an unbonded J slug to evaluate the nature of the bonding existing between the can and the enriched material after irradiation for approximately 400 MWD/T. The can wall at first adhered to the slug section of the unbonded slug but after a week of storage in air the can and slug section separated. A metallographic section of the bonded J slug was examined and at 1000X magnification it appeared to have the same microstructure as unirradiated material of similar composition.

Four normally discharged uranium slugs, which had been subjected to a temperature of approximately 170° C, were received. Two of the slugs were taken to the 222-S multicurie cells for examination. Several gross surface defects were observed but have not as yet been related to the thermal history of the slugs.

Plant Services

The 2S aluminum weld which were removed from an inpile heater were defective due to incomplete penetration and gas holes. Both types of defects were caused by insufficient cleaning of the inside of the tube before welding. Recommendations were made that all the weld deposits be removed and the joints rewelded by the Heliarc method.

Examination of leaks in the product recovery cans from the Redox Plant indicated that the leaks were caused by defective welds which had been produced by the Metallic-arc method. Since it was impractical to remove the defective weld deposits, a method of stopping the leaks was worked out. A recommendation

was made that new cans should be welded by the Heliarc method since the Metallic-arc method is unsatisfactory for welding light gauge stainless steel.

Examination of four thorium slugs which were representative of the rolling and extrusion methods of fabrication was completed. Both the rolled and the extruded slugs had uniform grain structure throughout, but many inclusions were observed in all the specimens. No indications of casting or fabrication defects were observed. Both the rolled and the extruded metal showed densities greater than density values recorded in the literature.

Compression tests were completed on one receptacle slug and two 2S aluminum capsule slugs to determine the maximum allowable load which may be applied to a slug during its removal from a process tube.

Axial load strength tests were made on six "tube to sheet" joints to determine the feasibility of using this type of joint in the biological shield tube-crate for "K" unit.

Compression tests were made on non-irradiated ceramic cylinders to determine if accurate and reproducible results could be obtained when using plastic containers for the specimens. The plastic containers were designed to prevent the spread of contamination when irradiated specimens are tested. The containers proved to be satisfactory for this purpose.

ANALYTICAL RESEARCH

Radiochemical Instrumentation

A breadboard model was constructed to test one of several proposals for continuous monitoring of plutonium in Separations Process waste streams. The unit operates by continuously passing a strip chart across a "stamp wetting" wheel that carries sample solution from a reservoir. The moving chart is then directed past a drying station and thence to the screen of an alpha scintillation counter. Employing synthetic, diluted Redox 3BW samples, this device was found to deposit a uniform quantity of sample on the paper and to yield counting results that followed fairly closely variations in the concentration of the test solution.

The gamma scintillation counter constructed for in-line use was examined in the laboratory and gives every promise of being adequate for continuous measurement. Its installation in the Redox D-2 waste condensate line awaits only the addition of suitable jumpers to the line.

Experience and further tests with the gamma ray scintillation spectrometer have shown the instrument to be especially valuable as an analytical tool and a prospective improved technique for the identification and determination of fission product contaminants in UO_3 product. Accordingly, a unit is being constructed for installation in the Redox control laboratory.

Applied Research Unit

Preliminary tests were carried out to evaluate the possibility of employing a beta scintillation counter as a means for identifying individual beta energies. It was observed that a graphical interpretation of the beta energy scan provided an exact method of identifying the maximum energy from a given decay. As a consequence, it may be possible to extend scintillation techniques to include the qualitative and quantitative identification of beta emitters.

Radiochemical Techniques

The technique for determining Pu-240 with the spontaneous fission counter includes both measurement of the spontaneous fission rate of this isotope and measurement of the induced fission rate of Pu-239 in a neutron flux; the latter is determined in order to find the total quantity of sample. Critical examination of the raw data indicates a greater induced counting rate than should be expected. Pu-241 is known to have an exceptionally high induced fission cross section, and it is believed that this may explain the high rate observed. An attempt will be made to determine this fission cross section, which at present is known with very poor precision.

It was previously reported that the procedure for determining Pu-241 by counting the soft beta radiation in a windowless flow chamber yielded accurate results but had poor precision. It was postulated that the use of electroplated plutonium sample discs, consisting of thin uniform films, would materially improve the precision. Laboratory tests proved that this was not the case. The extremely low beta energies involved may prevent the precise application of this sensitive and rapid analytical technique.

Electrochemical Techniques

Two difficulties in the development of a coulometric procedure for the titration of plutonium appear to have been overcome. Employing dichromate as a stand-in for plutonium, perchloric acid appears to be a satisfactory oxidizing agent and interference of trace impurities in the carrier electrolyte (ferric salt) may be eliminated by pretitrating the latter to the selected endpoint potential.

Further research was carried out in an attempt to develop a continuous in-line method for determining the acidity of Separations Process streams. A laboratory mock-up was constructed to allow repetitive sampling with an 80 ug. sampling stopcock, automatic 100:1 dilution with calibrated metering pumps, pH detection with a Beckman RX pH meter with an expanded scale, and recording with a Brown recorder. Repetitive measurements of a sample of 0.5 N nitric acid, according to this technique, yielded pH values that varied less than 0.01 unit. This precision of measurement is adequate for application of the presently employed laboratory method for determining acidity from pH measurements by reference to a previously prepared calibration. An improvement in the technique may follow from the use of a newly marketed Leeds and Northrup pH meter that was tested during the month. The unit operates on a grounded

system and employs a vibrating reed electrometer. A ten-day stability test in a buffer of pH 10 showed variation of less than 0.02 pH unit.

Preliminary results on the first laboratory tests of the stability of several glass electrodes in radioactive solutions were obtained. Employing the glass calomel couple in a buffer of pH 8.5, containing P-32 in the concentration of 10 curies per gallon, stable responses were noted over the first seven days of the test.

The Consolidated mass spectrometric gas analyzer was installed in the 300 Area laboratory and has successfully passed an acceptance test, consisting of triplicate analyses of a seven component gas mixture. All 21 individual determinations were within tolerance. The instrument and components purchased were such that it is possible to employ the unit as a gas analyzer and as an isotope ratio recorder. In the latter form it will serve as a stand-by unit for the Redox laboratory instrument employed for uranium isotope determinations. Substitute components have been installed, and the instrument is being evaluated for uranium isotope determinations.

Spectrochemical Techniques

Successful operation of the Redox or Purex head-end treatment requires the rapid determination of permanganate in order to assure that sufficient permanganate has been added and to monitor decomposition of permanganate by heat, radiation or chemical reaction. In an attempt to meet this requirement on an in-line basis, a test unit was constructed and tested. It operates on a colorimetric principle by measuring the light absorption caused by the permanganate. Discoloration of glass by the highly radioactive solutions is minimized by holding sample in the measurement cell only during periods of actual measurement. Thereafter, the cell may be emptied, flushed, or filled with standard solution from a separate entrance port. Preliminary tests show that the unit operates satisfactorily with cold solutions containing permanganate in the range 0.006 to 0.06 M; in the lower part of this range the precision of measurement is about ± 0.001.

The TTA extraction procedure for the determination of impurities in plutonium metal was introduced to the 234-5 control laboratory and is being run in parallel with the conventional cupferron method. The new method shows accuracy and precision equal to the best previously obtained. It offers no saving in time but employs a simpler technique and fewer and more stable reagents. The method as reported last month has been extended by introducing an initial extraction with hexone to quantitatively remove iron and Chemical 70-58. This extract is subsequently combined with the water solution after the separation of plutonium, thereby adding iron to the list of elements which may be determined by the overall technique. Chemical 70-58 can probably not be evaluated spectrographically with sufficient precision.

It was stated in a previous report that an extremely sensitive, chromatographic method had been found for the determination of iron in process water. Subsequent and more detailed examination shows that this statement was in error

and that the limiting sensitivity of the method is of the order of 5 ppb iron. Effort is being expended to extend the limit and precision of the technique.

Other investigations recently undertaken in an attempt to improve analytical methods for evaluating pile water led to the observations that the chromatographic technique, cited above, will readily recover 10 ppb of mercury and that the Aminco light-scattering photometer has a limiting sensitivity of 0.1 ppm in the measurement of turbidity.

In assistance to Purex development studies, the 300 Area infrared spectrophotometer was calibrated for the determination of TBP in aqueous solutions, and control personnel were trained in conduct of the previously established method.

Miscellaneous

The sampling stopcocks, referred to previously in connection with the continuous determination of acid, have been found to give high reproducibility for a limited number of measurements. Since they are constructed of glass and require lubrication, they are subject to volumetric error because of inclusion of grease into the capillary bore. From repeated tests it was learned that in general the units will operate satisfactorily for 30 measurements before difficulty from this source arises. Attempts to prepare Teflon plugs, which would require no lubrication, were unsuccessful because the softness of the material would not allow precision grinding in the joint. Attempts are being made to obtain precision grinding by first freezing the Teflon to a solid.

It was previously reported that the two available mini-pumps did not yield reproducible dilutions, when employed, one for the introduction of acid, and one for the introduction of diluent. Examination of the pumps individually revealed that the poor precision resulted from only one of the pumps. The other can precisely deliver volumes in the range 0 to 200 ul. As an example, a 7 ul. sample can be obtained with a precision of ± 0.25 ul.

Several minor problems were carried out in assistance to control laboratory personnel. The procedure for evaluation of the distribution of uranium into recovered TBP solvent was scaled down from a 10 to a 2 ml. sample, and an improved method for measurement is being sought; difficulty with the Am-Cm procedure in the 222-T Building laboratory was traced to an interfering component of the dichromate employed in the procedure; a procedure for determining acid in ferrous sulfamate solution was tested and made available for control purposes; cooperation was lent on the problem of determining acid in aluminum nitrate solution to help resolve discrepancies between Hanford and the supplier of the reagent; and discrepancies in the determination of tetravalent uranium, as employed in the UO_3 reactivity test, have been investigated.

Applied Research Unit

The analytical standards program continued at an accelerating pace. Analyses of a seven component synthetic flue gas standard revealed discrepancies in both the Orsat and mass spectrometric techniques. In addition, standard samples representing eleven separate determinations were submitted to the control laboratories.

ANALYTICAL SERVICE

Work Volume Statistics

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

	July		August	
	Samples	Det'mns	Samples	Det'mns
Process Control - 234-5	498	2,864	406	2,883
Process Control - Metal Preparation	523	2,692	730	4,007
Research & Development Programs	2,934	6,849	3,749	7,737
Water Quality	214	1,321	101	906
Redox	1,219	3,904	1,500	5,015
TBP	705	2,185	804	2,235
UO_3	225	585	316	621
Essential Materials	114	497	111	647
Special Samples	324	1,934	236	1,262
Process Reagents	522	1,071	601	1,248
Total	7,278	23,902	8,554	26,561

100-300 Area Laboratories

The development of a spectrochemical method for the quantitative determination of Fe and Si in uranium billets is complete and final testing is now being made. The precision of Fe determinations by the wet chemical and the carrier concentration spectrochemical methods are comparable, and the latter method gives improved precision for Si determinations. Fe concentration in the range of 50 to 100 ppm, as determined by the spectrochemical method, averaged 10 to 15 ppm lower than wet chemical results. This places the average spectrochemical results essentially in agreement with Mallinckrodt analyses (HW-20640, "Metal Quality Meeting at Mallinckrodt," February, 1952), which had averaged 14 ppm lower than Hanford wet chemical analyses.

The semi-quantitative spectrochemical analysis in use at the present time for impurity elements in uranium billets usually results in only 21 elements being detected with satisfaction. Preliminary investigation indicates that the excitation conditions used for the above mentioned quantitative Fe and Si determination also produces satisfactory results for 30 other elements. A timed arcing and exposure period results in the spectrum showing almost no uranium interference, thus permitting a more rapid and accurate reading of the plate. A new set of standards is being prepared to include 32 elements, and a study is being made to select suitable spectra regions so that only 2 exposures need be made (3 are made at the present time) for the determination of all 32 elements.

Preliminary investigations are being made for determining sodium (range of ca. 10 ppm) in the aluminum slug cans. It appears that a spiking and diluting technique utilizing the Beckman flame photometer may prove satisfactory.

Applied Research Unit

A study was begun on August 8, 1952, by Chemical Development personnel, of the effectiveness of removing TBP from the RCU stream by column extraction employing Deo-Base or stream as a stripping agent. Emergency measures were taken to provide the seven-day, two-shift analytical support required.

The G.E. Mass Spectrometer was out of service almost half of the month due to source magnet and emission regulator panel difficulties. Correction of these troubles resulted in improved instrument stability and reliability of analytical results.

234-5 Building Laboratory

Installation of the lathe tool necessary to take massive (45 mil) metal casting samples from the RM line was completed on August 20. Plutonium assays are now being determined routinely by both X-ray photometry and by chemical assay in order to obtain a comparison of the two methods.

The TTA extraction method for recovering impurities from plutonium metal, prior to the spectrographic determination, was initiated on August 5, 1952 and is currently being tested for routine use. Standards representative of sample conditions have not yet been successfully prepared and evaluation of the method will be delayed until this problem has been resolved.

Following completion of development work, a revised procedure manual for the recovery of plutonium from laboratory wastes was prepared specifying recovery methods for all routine wastes currently accumulating except for the solid portion of the cupferron spectrographic residues.

222-S Building Laboratory

A revised method for the determination of U_3O_8 in UO_3 was placed in service on July 30. On the basis of control laboratory experience to date the method appears to yield results that are sufficiently precise and accurate for the determination of U_3O_8 even in relatively impure UO_3 samples.

The coulometric method for the determination of uranium in Metal Recovery Process RAF type samples has given excellent results but excessive delays have followed occasional instrumental breakdowns because of the inability of most Instrument personnel to perform repairs. A less complex back-up method, consisting of a TBP extraction of the uranium with subsequent determination of uranium concentration by the X-ray photometer, has accordingly, been under investigation.

Results obtained to date indicate that this method has a precision comparable with the coulometric method.

Erratic results have been obtained in analyzing Metal Recovery RAW type samples for low-level uranium by method UF-1a (internal standard fluorimetric method). Intensive efforts are being made to determine the source of and correct the difficulty.

The equipment used for the determination of specific gravity by the falling drop method was modified to permit the accurate timing of faster dropping rates. This modification, made only on the equipment having electronic detection of the drops, increased the range covered per tube from 0.04 to 0.13 sp.g. units, enabling the coverage of the range from 1.0 to 1.7 with only six tubes.

A statistical study of the results obtained on the "Bluenose" standard solution showed a precision of 1.4% and an overall recovery of 100.0% in the coulometric analysis for uranium. The plutonium assay results were invalidated by an operational error.

Consistent high recoveries on synthetic Redox H-7 samples has indicated the need for revision of the laboratory calibration factor. The Statistics Unit agreed to recalculate the isotope correction factor using Process Unit data uncorrected for the laboratory calibration factor. After the ICF recalculations have been completed, the laboratory calibration factors will be revised.

Eighteen standard samples of 3-EU (Redox uranium product solution) were submitted for analysis through production channels during the period June 25, 1952 to August 20, 1952. The specific gravity values were in a good state of control throughout the test period. One uranium value was out of control limits and not included in the tabulation of data. The precision of the uranium analysis (X-ray photometric) was ± 1.6% with the mean uranium value of 0.75% low.

Safety and Special Hazards Control

A Laboratory Assistant accidentally dropped 32 stainless steel discs in cardboard carriers, containing a total of ca. 2 mg. of Pu, onto the floor of Room 19 and the adjacent hall in 3706 Building causing floor contamination as high as 300,000 d/m. Two resulting cases of skin contamination were reduced to below tolerance level, and the floor and other contaminated items were cleaned to below tolerance level, without loss of material or equipment. Disc carriers are now placed in a 9 cm. filter paper box before transporting from the laboratory, and this procedure should control the spread of contamination in event of a similar occurrence in the future.

Two high air samples were recorded in the 234-5 Building Laboratory during the month, but no personnel contamination resulted. One of these occurred in Room 156 and was made possible by non-standard operation of a water condenser in leaving the water on when the condenser was unattended. The water inlet tube became disconnected, flooded a gloved hood, and spread gross plutonium contamination throughout the hood and onto the immediate floor area. The second high air sample occurred in Room 150 and the cause is unknown since no off-standard or unusual incidents were reported.

A fire occurred in Room 157 of the 234-5 Building Laboratory during the period covered by this report. No equipment damage or special hazards conditions was caused as a result of the incident.

Applied Research Unit

INVENTIONS

All Applied Research Unit personnel engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during August, 1952 except as listed below. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

Inventor(s)	Title
	"Two Crystal Photoelectric Gamma Ray Spectrometer" - Since reporting this in the July Monthly Report (HW-25227-R), it was found that an identical unit has been described in the open literature. The literature article pre-dates the independent conception of the device at Hanford. For this reason no invention report will be submitted on the item.

Signed: F. W. Albaugh
F. W. Albaugh, Manager
APPLIED RESEARCH UNIT

FWA:ltc

[redacted]

TECHNICAL SERVICES UNIT

AUGUST 1952

9-9-52

VISITORS & BUSINESS TRIPS

Off-site visitors to this Unit were as follows:

Mr. Frank Ring, Jr., from the Oak Ridge National Laboratory visited this site on August 11 and 12. The purpose of his visit was to inspect remote handling equipment at Buildings 222-S, 111-B, 1707-D, and 3706; and to discuss the ORNL Information Meeting to be held during October.

Business trips made by personnel of this Unit during the month were as follows:

L.E. Kattner spent August 5 at the Denison Industrial Corp., Bellingham, Washington, inspecting materials being fabricated under purchase requisition.

ORGANIZATION AND PERSONNEL

Personnel totals for the Technical Services Unit are summarized as follows:

	July	August
Laboratory Engineering	81	79
Technical Information	82	83
Administrative	3	3
Unit Totals	166	165

[redacted]

LABORATORY ENGINEERING SERVICES

Mechanical Shops (Bldgs. 1717-D, 3706 and 222-S)

Work volume statistics for the Mechanical Shops are as follows:

	Customer Unit or Program	July No. of Jobs	July Man-Hours	August No. of Jobs	August Man-Hours
Work Done on Jobs Completed	Applied Research	19	573	17	172
	Pile Technology	30	568	44	449
	Separations Tech.	15	338	17	379
	Technical Services	4	77	2	14
	Others	9	48	8	129
	Sub-Totals	77	1604	88	1143
Work Done on Jobs Not Completed	Applied Research	6	141	9	398
	Pile Technology	14	769	22	1247
	Separations Tech.	5	85	7	156
	Technical Services	5	215	7	393
	Others	1	2	1	13
	Sub-Totals	31	1212	46	2207
Total Work Done			2816		3350
Work Backlog:					Man-Hours To Complete
Jobs Started	Applied Research	6	278	9	241
	Pile Technology	20	1166	22	689
	Separations Tech.	4	139	7	537
	Technical Services	6	997	7	891
	Others	1	8	1	2
	Sub-Totals	37	2588	46	2360
Jobs Not Yet Started	Applied Research	13	452	9	233
	Pile Technology	27	1209	22	1594
	Separations Tech.	27	1656	17	1427
	Technical Services	6	109	4	150
	Others	3	17	0	0
	Sub-Totals	76	3443	52	3404
Total Backlog			6031		5764*

*This 5764 man-hour backlog does not include the following work:

Cross Orders	9 Jobs	426 Man-Hours
Cancelled	2 Jobs	66 Man-Hours
Off-Site	6 Jobs	959 Man-Hours

The 6031 man-hour backlog shown for July included the above listed categories. They will henceforth be reported separately in order that the net shop backlog figure may be indicated in the tabulation.

The following work was completed for the Technical Units:

Applied Research

A platinum-rhodium resistor furnace for high temperature work was fabricated. The hot integrating sample holder was completed and fabrication of the X-ray target tube adjustment mechanism was started. Both of these units will be used in the new X-ray defraction unit being fabricated for the study of metallurgical characteristics of slugs immediately after their removal from the pile.

Work for the Metallurgy Research multicurie cell installation continued with the alteration of service plugs and panels, and fabrication of a special pair of tongs in which all parts operate in a straight line with the action line of the parallel tong jaws.

Work on the 222-S Building revised sampling station, specific gravity determination and disposal unit was completed. The unit is being painted and will be installed in the near future.

Pile Technology

In connection with the 300 Area mechanization program, the shop completed fabrication of a canned assembly transfer mechanism, a new can wiping arm, an alignment cross-arm, the slug transfer mechanism, a feeder mechanism for the slug pre-heater and the experimental quench mechanism.

Work continued on the slug air weigher which will be installed in the 100-B basin.

Approximately 800 hours of punch and die work for the new canning program was prepared for fabrication by an off-site vendor.

The television camera and wire carriage was completed and is awaiting receipt of special motors before installation. Fabrication of the control console for this unit was started.

Separations Technology

All parts for the miniature mixer settler gloved box bank and the multicurie cell pulse column were completed and installed.

A dry chemical chute for the Hot Semi-Works was fabricated and delivered; bayonet sampling equipment was procured from an off-site machine shop.

The shop successfully welded a .005" platinum sheet with the heliarc welding technique. As soon as additional platinum filler material can be obtained, an attempt will be made to weld the sintered platinum discs in one of the 234-5 Process filter boats. The shop also succeeded in molding special rubber gaskets for the filter boat.

A large lucite funnel equipped with a stopcock was fabricated for the 234-5 RM line work. Construction of additional parts for alteration of the RM line was started.

Technical Services

A sandblast cabinet for use in decontamination studies in the 222-S Building was completed. The polyethelene flame spray equipment was set up in Building 222-S and the training of personnel in the application of this coating was started.

Work was started on the construction of a 1/4" - 1' scale model of the Mechanical Development Building. Requisitions for scale models of machinery to duplicate the equipment in the building were processed. Requisitions and Requests for Appropriation covering machine tools for the Mechanical Development Building which were included in the FY 1953 and FY 1954 budgets were prepared. It is anticipated that many of these tools will be available on an exchange basis from the U.S. Navy.

Glass Shops

Work volume statistics for the Glass Shop are as follows:

	July	August
Jobs Completed		
New	74	85
Revisions	8	11
Repairs	16	23
Totals	98	119

Of this total, 14 jobs were fabricated of quartz or vycor. The shop has a backlog of 16 jobs, two of which require quartz work. This represents an approximate eight day backlog.

One job of special interest was completed. This required the drawing of a 20" section from a length of 6" ID pyrex pipe and of fixing a smaller diameter tube to one end. The pipe had a wall thickness of approximately 5/16", and required a tremendous amount of heat over a large area in order to make an even and uniform draw while diminishing the diameter from 6½" to 1/2". It would not have been possible to complete this job before the receipt of the Model K Litton Glass Lathe.

Equipment Development

Work volume statistics for Equipment Development, expressed as man-hours, are summarized as follows:

	July		August	
	Engineering	Drafting* & Misc.	Engineering	Drafting** & Misc.
Pile Technology				
Engineering	-	215	-	271
Pile Materials	-	113	-	166
Pile Fuels	-	191	159	43

	July		August	
	Engineering	Drafting* & Misc.	Engineering	Drafting** & Misc.
Separations Technology				
Chemical Development	-	-	-	-
Chemical Research	242	481	513	343
234-5 Process	54	109	126	333
Applied Research				
Analytical Services	118	753	34	373
Analytical Research	-	88	8	60
Metallurgy Research	186	76	50	98
Physics Research	-	44	-	59
Technical Services				
Laboratory Engineering	488	1124	440	1008
Laboratory Equipment Development (RDA #TC-1)	144	396	350	364
Totals	1232	3590	1680	3122

*Includes 1205 hours of drafting time.
**Includes 1488 hours of drafting time.

The following work was done for the various customer groups as indicated:

Pile Engineering

Assistance was given on drafting of the horizontal control rod washer seal assembly, tube puller clamp, process tube arrangement, and various charts and graphs.

Pile Fuels

Further assistance was given on the design and development of the bicrystal furnace, tube reduction unit, thermal shock unit, slug brusher, split furnace, split die program, helium hi-pressure system, pneumatic vibrator basket, transformer and coil, bench drill, slow thermal cycling unit, and an automatic radiographic mechanism for continuous X-ray of canning welds.

Pile Materials

Engineering drawings were made of the graphite sample holder, process tube manipulator, and various graphs and charts.

Chemical Research

Assistance continued on outfitting the multicurie cell pulse column with development of the sampler, transfer tube pipet, pump reversing switches, and a service panel. Design and development progressed on the 9' gloved box, hydraulic resin column, reciprocating mechanism, storage hood, distillation train lift, automatic pulser, modular gloved boxes, special manipulators, and the hot mini-mixer-settler.

Drawings were made of the special gloved box, transfer pipetter, 500 ml. sampling cask and sample carrying dolly.

234-5 Process

Additional design and development were done on the dry mixer. Drawings were made of the crucible lift assembly, and associated 234-5 building equipment.

Analytical Services

A working model of a section of the analytical line of Building 222-S was set up for testing purposes. The stations included sampling, falling drop density measurement, and pH.

Analytical Research

Drawings were made of a platinum-rhodium resistor furnace.

Metallurgy Research

Continuing assistance was given in outfitting the multicurie cell for hot work. Drawings were made of the double crystal X-ray spectrometer, and the hot press split die.

Physics Research

Drawings were made of a drill press wafer holder.

Laboratory Equipment Development (RDA #TC-1)

Experimental equipment decontamination operations continued. The fabrication of a sealed sandblast chamber was completed, and the unit was being installed adjacent to the decontamination chamber at the Redox Laboratory. Decontamination was started on a junior cave originally used for high level ruthenium work. The radiation level in this cave is about 5 rep.

Development of the air alpha detector-recorder continued, with test operation in the decontamination room of Building 222-S. These tests have been somewhat sporadic so far due to fatigue of operating parts of the register and detector chamber breakdown, requiring repair or revision of the parts. However, several successful tests show that detectable bursts of airborne contamination occur as a function of specific decontamination room operations. These short-term high level contamination bursts were not detectable by the routine filter-collection air monitoring methods, due to the "averaging-out" effect of a long sampling time.

New Laboratory Planning

Redox Analytical and Plant Assistance Laboratory, Proj. C-187-E, Phase II

This project is complete except for the air conditioning balancing and some final repairs to furniture. A preliminary to the final inspection was held August 29, 1952. Completion is now anticipated by the end of September.

Mechanical Development Building, Proj. C-406

On August 15, the Dix Steel Building Company, Architect-Engineers for the design of the Interior (Phase II) of the Mechanical Development Building, submitted for final approval all design work and services required under subcontract G-416. Final checking is in progress and G.E. approval and subsequent transmittal to to the Commission is anticipated early in September.

Radiochemistry Building, Proj. C-381

Metal siding installation is nearing completion. The roofing has begun and the heating system is being installed on the second floor. Most of the supply air ducts are in place on the first floor and the hanger-wires are ready for the grid of the suspended ceiling. Electrical switchboards and sanitary plumbing lines are in place on the first floor. In the basement the non-stainless piping is progressing. Shipping dates for the stainless piping are now firm, with the last shipments scheduled in October. The stainless steel duct work is being fabricated offsite. The Martin-Parry Co., partition sub-contractor, reported some difficulty in steel procurement for the partitions.

Outside Facilities & Utilities, Proj. C-394

This project has fallen approximately 10% behind schedule, since some of the completed work had to be repaired and some replaced. The piping mains are now in place and the steam and water lines have been tested. The utilities lines are ready for tests. The neutralization building is now enclosed. Its steel platforms and miscellaneous ironwork are being installed. The neutralization tanks are on site.

Radiometallurgy Building, Proj. C-385

The general contractor has reported difficulty in obtaining the interior partitions for this building. A directive has been issued for shipment of the steel for these partitions from the mill on or before October 15. The manufacturer, Martin-Parry, states six weeks fabrication time will be required after receipt of steel.

The Dry Storage Cell, the first of the G.E. procured special equipment items for use within this building, has arrived on plant site and has been turned over to the contractor for installation within the building. This equipment was fabricated by the Farrel-Birmingham Co.

Building 326, Proj. C-414

Construction on this building is now progressing satisfactorily. However, a 58 day contract extention has been approved by the Commission to allow for the previous lost time. This officially extends the contract completion date for this building to January 9, 1953.

Library & Files Building, Proj. C-421

The building is better than 80% complete. The second floor, exclusive of the equipment room is essentially complete except for touch up work and painting

of filler panels. The first floor is complete except for final wiring, some ventilating duct work, and partitioning. The outside final painting remains to be done. Delivery of the air washer, filters and transformers is scheduled for early September.

Solvent Storage Building, Proj. C-441

A review of the continuing need for solvent storage facilities was completed and the present project is undergoing revision to reduce the overall size and to eliminate the solvents study laboratory.

Building Services

Building 3706

Material control, work order control and miscellaneous services activity is summarized as follows:

	July	August
Purchase Requisitions		
Total number processed	133	164
Number requiring special expediting	119	131
Number requiring emergency handling	0	0
Work Orders Processed	79	90
Miscellaneous Services		
Number store orders processed	941	1166
Stores stock requests	0	0
Office furniture requests	12	8
Office machines sent in for repair	5	16
Precious metal transactions	29	27
Trips to 200-W for disposal of contaminated waste	6	7
Photographic work requests	30	32
Special messenger trips	36	35
Standards Laboratory		
Number of standard solutions prepared		10
Stock solutions dispensed		29
Calibrations Laboratory		
Number of calibrations performed		13
Number of calibrated glassware dispensed		13
Number of checked glassware dispensed		135

A complete stock of routine standard solutions and routine calibrated and checked glassware was obtained from the Manufacturing Department Process Unit Laboratory. The newly created standards laboratory is now preparing non-routine standards and calibrating unusual glass apparatus for Technical Section personnel.

The volume of radioactive aqueous waste from the columns in Room #4-A doubled during the month. Seven 55 gallon drums of low level aqueous waste were removed from this laboratory to 222-S Building for disposal. A swivel type heavy duty dolly was fabricated to facilitate transfer of the drums. The volume of high level and medium level aqueous waste also increased during the month. High level aqueous waste is now being taken to 222-S for disposal rather than 222-T laboratory.

Contamination of 25 square yards of asphalt floor tile in the main corridor of Building 3706 resulted when a laboratory worker dropped a dozen dried counting discs of plutonium in the corridor by Laboratory #19. Overtime work was required to isolate the contamination and to prevent the spread of powdered plutonium dust throughout the building. The entire area was successfully decontaminated without replacement of the tiles.

Building 222-S

Laboratory Services - 222-S activity may be summarized as follows:

	July	August
Material dispensed, 222-S stockroom	$3,479	$4,812
Withdrawals (customer orders)	1,571	1,990
Emergency trips (pick-up and delivery)	4	10
Work orders processed	17	42
"Hot" waste transferred to storage (219 to 202-S), gals.	4,733	4,900

On August 24th air samples from the millicurie wing decontamination room exceeded permissible limits for Pu concentration. Concentration of both alpha and beta-gamma activity approached the maximum permissible limit several times during the period from August 10 to date. During this same period steam jets have caused extensive fuming in the sink hoods. Investigation indicates that these fumes may have been drawn from the hoods by employees moving past the hood faces resulting in the air contamination detected. As a corrective measure the steam jets are being repiped to the spare waste lines, isolating them from the sink drains as was previously done successfully in the multicurie wing.

To insure proper and easier use of the 222-S dry waste crusher, larger drum shafts and sleeve bearings are scheduled to be installed. The original shafts have broken or bent several times and have become extremely difficult to turn. For this reason they have been frequently blocked open and the waste dropped into the vault without crushing. When not crushed the material often hangs up in the disposal chute requiring extensive rodding to clear the passage. It is also realized that proper crushing will extend the service life of the vault.

In two instances reversal of pressure in the slurping lines of the decontamination hoods occurred with sufficient force to contaminate a large area of floor immediately in front of the hood. No reason for the condition has been determined. Small stainless steel ball check valves have been installed in the lines in an attempt to prevent a recurrence. Additional valves will be procured for installation in remaining lines if the test valves prove satisfactory.

TECHNICAL INFORMATION SERVICES

Plant Library

Work in the Plant Library proceeded routinely during the period. Work volume and book statistics were as follows:

	July	August
Number of books-on order received	358	303
Number of books fully cataloged	339	442
Number of bound periodicals processed but not fully cataloged	0	217
Pamphlets added to the pamphlet file	57	20
Miscellaneous material received, processed and routed (including reprints)	20	36
Books and periodicals circulated	4,108	4,723
Reference services rendered	1,459	1,463
Inter-library loans	26	63
Photostats from off-site	29	9
New periodical titles added to Kardex	9	9

	Main Library	W-10 Library	108-F Library	Total
Number of books	9,609	4,419	550	14,578
Number of bound periodicals	5,930	1	734	6,665
Totals	15,539	4,420	1,284	21,243

The figures indicate a notable increase in book and periodical circulation (approaching the record high of May, 1952) and in the number of titles borrowed from other libraries on inter-library loan. A special effort, also, was made during the month to clear up a backlog of book cataloging. Some overtime was worked on this assignment.

A sampling of typical reference questions handled by the library reference staff is as follows:

Heat of evaporation of tritium and deuterium oxides.
Test for hardness of small particles of alumina in solution.
Information on infra-red reflection spectroscopy of solids.
Information on a paper ionization chamber for a "cutie pie."
Ionic radium of ammonia ion.
Beta ray attenuation in gold.
Practicability of using liquid nitrogen in an open system.
Constituents and properties of "Gunk."
Percussion welding of dissimilar metals.
Comparison of the available mechanical energy of the U.S. in 1850 and 1950.
Common method of production, solubility product, and resistivity of boron carbide.
Colt's revolving drum washer for metal parts.
Design of a hydraulic pulse generator.
Critical temperature of Al at its triple point.
Effect of environment on metals at high temperature.
Melting points of Ca halides.
Description of a Geneva mechanism.
Cost of absenteeism in industry.
Optimum conditions of maximum yield of carbonates and bicarbonates in solution.
Bierbaum hardness tester.
Numerical or alphabetical system for classifying 75,000 stores items.

As in the past, the Library continued to obtain from numerous agencies reports of value to Hanford programs. A sampling of these is as follows:

Electrochemical Society, New York
A theory of Cathodic Protection

Princeton University, Halsted Observatory
A Multiplet table of astrophysical interest, Pt. 1. Table of Multiplets, Pt. II. Finding list of all lines in the table of Multiplets.

National Research Council, Washington, D.C.
Bibliography on Dolomite.
Research and training facilities for Radiobiology and for use of Isotopes in Biology and Medicine in the U.S. and Canada.
Operations research with special reference to non-military applications.

Mellon Institute, Pittsburg, Pennsylvania
Industrial Hygiene: New information on . . . trichyloroethylene . . .

Princeton University, Industrial Relations Section
The office library of an industrial relations executive, 1951. 6th edition.

Pennsylvania State College
Mineral forecast, 2000 A.D.

Graver Tank & Manufacturing Company, Chicago
Petroleum tankage and transmission.

National Board of Fire Underwriters, New York
Standards for the storage, handling and processing of magnesium as recommended by the National Fire Protection Association.

Reynolds Metals Company, Richmond
Aluminum Structural Design, 1952.

American Management Association, New York
Organizing for defense production.
Relieving the engineer shortage.

U.S. Bureau of Mines, Pittsburg
Electrical Conductivity and Density of Fused Binary Mixtures of Magnesium Chloride and other Chlorides.
Size of smallest particles determined in impinger dust-counting methods.

National Advisory Committee for Aeronautics, Washington, D.C.
Velocity of action of oxygen, hydrogen sulfide, and halogens on metals (Technical Memorandum 1336)
Oxidation of metals and alloys. (Technical Memorandum 1338)
Electrical techniques for compensation of thermal time lag of thermocouples and resistance thermometer elements. (Tech. Note 2703)
Analogue-computer simulation of autopilot servo system having non-linear response characteristics. (Tech. Note 2707)
Diffusion of heat from a line source in isotropic turbulence. (Tech. Note 2710).

Three substantial periodical runs were added to the Library's collection. One was the "Zeitschrift fur technische Physik," Volumes 1-20, 1920-1939. This valuable run supplements later volumes in the Library collection. Another was the "Journal of the American Waterworks Association, 1920-1929," which also will extend present holdings. Also received was a fine run of a basic German scientific journal, the "Zeitschrift fur physikalische Chemie," Volumes 1-127.

Classified Files

Work volume statistics for the Classified Files were as follows:

	July	August
Documents routed and discharged	22,635	20,070
Documents issued	9,241	7,918
Registered packages prepared for off-site	363	393
Inter-area mail sent via transmittal	45,385	35,339
Holders of classified documents whose files were inventoried:		
(a) Because of normal perpetual inventory procedure	149	147
(b) Because of transfer of work assignment	3	3
(c) Because of termination	1	6
Inventory reductions:		
Copies of documents destroyed	695	2,519
Copies of documents downgraded to:		
RESTRICTED	0	0
CONFIDENTIAL	0	0
Copies of documents declassified	0	73
Classified documents located which were unaccounted for in previous inventory	26	32
Standard storage cartons of material retired to the Records Center:		
Unclassified and Official Use Only	2	44
Classified	5	10
Off-site originated reports requested by Hanford personnel	140	158
Hanford originated reports requested by off-site personnel	58	152

There was approximately a 200 percent increase in the off-site requests for Hanford reports. These requests are for so-called "internal" or "preliminary" reports prepared primarily for use at Hanford, since requests for formal reports distributed on the Standard Distribution List are routinely referred to the AEC, Oak Ridge. This figure has been increasing steadily for some months, with a large fraction of the requests being made by du Pont in connection with their Savannah River activities.

A sampling of reference questions worked on by Classified Files personnel is as follows:

Properties of the uranium-chromium system
Redox Pilot Plant report from Oak Ridge National Laboratory
Effect of Program "X" on expansion of 300 Area facilities

Thermal utilization of neutrons
Electroplating of zirconium
The Hydrogen Test (for slug elements)
Reaction between uranium and carbon
General survey on radiology
Chalk River report on dimensional stability of fuel elements
Heat transfer properties of concrete
Pile effluent water activity
Report on the radiation burst in the Hanford homogeneous reactor
Metallurgical properties of zirconium
Aqueous waste storage at Arco
In-pile temperatures

On August 25, a summary inventory of the 300 Area and the 700 Area Classified Files was submitted to the AEC. This inventory did not include Research and Development reports which are separately reported. Since this report represents the completion of a rather extensive program, it is appropriate to review the present status of the Audit and Inventory program.

First, in accordance with the provisions of GM-176, the Classified Files submitted to the AEC on June 5, 1951, and March 12, 1952, inventories of classified Research and Development reports on the site. In addition to these annual inventories, the Audit and Inventory group has been engaged for an extended period in inventorying all classified Non-Research and Development documents carried on the site accountability records. In December, 1950, they finished the first complete field inventory; i.e., an inventory of the personal holdings of Plant personnel. Following this, they began in January, 1951, a complete inventory of the three site classified files. The inventory of the 760 Classified Files was completed on May 23, 1951, and a report made to the AEC on August 24, 1951. This was a summary report including both documents charged to the File and to D & C personnel. The inventory of the 300 Area and the 700 Area Classified Files was completed on May 19, 1952, and a similar summary inventory submitted August 25, 1952. The interval between the completion of the inventory and the submission of the report was occupied with a check of records, locations, etc., which might offer a clue to the missing documents. The thoroughness of this check was conclusively demonstrated when it became necessary to make an emergency document-by-document search of all three Files at the request of Security. This additional search failed to turn up a single missing document.

Completion of the final report on August 25 has released personnel for the field inventory, which will be completed again by December, 1952. The field inventory remains the greatest source for the location of missing documents, some 32 having been found during the current month. In addition, the entire receipts and certificate of destruction file is being checked for documents which may have been transmitted off-site or destroyed without being posted to the basic inventory records. This check is 75 percent complete and to date has located seven missing documents. Finally, a copy of the summary report has been submitted to the Technical Information Service at Oak Ridge for circulation to other sites for checking. This is in accordance with AEC procedures. Similar circulation of previous inventory reports located nine missing documents.

Issuance of documents through the 760 Files was discontinued to enable the staff to devote full time to the retirement of records. Only documents not already available in either the 300 Area or 700 Area Classified Files will be retained. The records on Vitro's Job 15 (Contract G-148) will be assembled and retired as a unit. A listing from Vitro of all documents created under this contract has been supplied to Hanford and will be used as a basis for accumulating the records.

Work is going forward on the establishment of a 200 Areas Branch File. Preliminary floor plans have been completed and approved. The Manufacturing Department will have a conference room and offices in the building. Plant Utilities and General Services Department will have space for reproduction facilities, and the remaining third will be occupied by the Classified Files. Preliminary plans are now in the hands of the estimaters. Rough draft justifications have been submitted by the Departments involved, and the Project Engineering Unit is proceeding with the project proposal. It is hoped to have the project ready for submission to the A & B Committee at their October meeting.

On August 5, O.P.G. 15.22 was issued. The Guide sets up an approval procedure for off-site transmittal of internal classified documents. It is hoped that plant-wide acceptance of the new procedure will relieve the Classified Files of the burden of monitoring the off-site transmittal of these reports.

Two inter-related problems continue to beset the Classified Files program. One is the excessively high turnover of female personnel, and the other is the constant staff shortages that result from the necessity of replacing terminees with "Q" cleared personnel. This causes backlogging of work with resultant inefficiencies; excessive shifting of personnel to handle high priority assignments; and a difficult training problem due to the complexity of the procedures involved. The problem of Q cleared replacements is being solved by assigning clerks temporarily to the W-10 Branch Library and the Richland Public Library, where they will get valuable training while awaiting their Q clearances. To handle the problem of high turnover, a training program which will include the entire Classified Files staff has been developed and is scheduled to commence September 8. This program will acquaint all staff members with the overall activities of the Classified Files, the specific jobs and how they fit together, and the necessity for accurate work and a thorough knowledge of procedures.

Reports and Abstracting

The work statistics for the group were as follows:

	July	August
Formal Research and Development Reports	12	12
Formal reports in process	11	13
Reports abstracted	581	367

A technical Reports Editor was added to the staff during the month. The successful applicant has a Ph.D. in English with undergraduate training in science and mathematics. It is anticipated that after a period of training he will be able to take over full responsibility for the technical publications program.

A request has been received from the Pile Technology Unit that high priority be given to the bibliography on "Coating, Canning and Testing Methods for Natural Uranium Fuel Elements." This is a bibliography on which the group has been at work for almost a year, as indicated in previous reports. It will be definitive in this area and will include all known work within the Commission's activities. Pile Technology wishes to have the bibliography ready for distribution prior to a meeting planned for late fall which will bring together persons in the Commission's activities who are active in the fuel element development program. It is desirable that participants have an opportunity to review the bibliography for at least a month before the meeting. The bibliography is being given priority handling to meet the request deadline.

The reports group is now using a new IBM electromatic typewriter especially designed for typing cards for the reports index. The machine has a small but very readable Gothic type. The special keyboard is equipped with Greek symbols commonly used in technical writing. The platen has a ratchet notched to simplify the typing of superscripts and subscripts. The use of the machine should reduce eyestrain and make the filing of the index cards less tedious.

INVENTIONS

All persons engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during the period covered by this report. Such persons further advise that, for the period therein covered by this report, notebook records if any kept in the course of their work have been examined for possible inventions or discoveries.

Signed J.W. Underwood

J.W. Underwood, Unit Manager

DESIGN SECTION

August, 1952

VISITORS AND BUSINESS TRIPS

R. A. Anderson, Panascan, Inc., Chicago, visited Hanford August 5-8 to supervise repair of equipment for 105-C manufactured by Panascan and damaged in shipment.

E. J. Baughman, General Precision Laboratory, Pleasantville, New York, visited Hanford August 8 to discuss application of industrial television.

D. R. Reed, American Cyanimid Co., New York City, visited Hanford August 11-15 to exchange general information on chemical plant design.

Dr. R. W. Moulton, University of Washington, Seattle, visited Hanford August 26 to discuss graphite drying tests being conducted at the University.

J. H. Snyder and C. F. Quackenbush visited Chas. T. Main, Inc., Boston, Mass., August 18-22 for water plant consultation, and General Electric, Lynn, Mass., to discuss turbo-generator power units.

H. S. Davis and Curtis Warren visited U. S. Corps of Engineers, Troutdale, Oregon, August 4 to discuss the proposed concrete test program.

E. P. Peabody visited Bonneville Power Administration August 21-23 to discuss coordination of 230KV relaying system.

D. A. Hoover visited Whiting Corporation, Harvey, Illinois, Harnischfeger Corp., Milwaukee, Wisconsin, and Manning, Maxwell, and Moore, Muskegon, Michigan, August 18-26 for consultation regarding design and procurement of cranes.

ORGANIZATION AND PERSONNEL

Personnel Statistics:

	July 31			August 31		
	Exempt	Non-Exempt	Total	Exempt	Non-Exempt	Total
Design Management	5	2	7	5	2	7
Process Engineering Unit	51	18	69	55	17	72
Design Planning Unit	12	10	22	11	13	24
Design Engineering Unit	69	17	86	70	19	89
Total Section Personnel	137	47	184	141	51	192
Technical Graduates (Rotational)	___	31	31	___	28	28
TOTAL	137	78	215	141	79	220
Personnel on loan to Design Section			6			10

Accessions = 12
Separations = 7

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GENERAL

Design Section engineering effort for August was distributed approximately as follows:

	Man Months Expended	% of Total
Expansion Program	76.7	47.4
Research & Development	29.4	18.1
Other Projects & Design Orders	55.9	34.5
	162.0	100.0

Distribution of total effort was affected by the scheduling of draftsmen for Design Section work. The number of draftsmen available to the Section is well below present requirements for scheduled design work.

DESIGN DEVELOPMENT

Statistics:

The total number of engineering man months expended on research and development during August was distributed as follows:

		Man Months Expended	% of Total
RDS-10	Reactor Design Development	7.7	26.3
RDS-11	Water Plant Design Development	2.4	8.2
RDS-12	Separations Design Development	6.9	23.5
RDS-13	Mechanical Design Development	7.3	24.8
RDS-14	Utilities & Services Design Development	.4	1.2
RDS-15	Engineering Standards and Materials Development	4.7	16.0
	TOTAL	29.4	100.0

Accomplishments:

RDS-10 - Reactor Design Development

The rough draft of the reactor hazards study for the new "K" Area reactors was completed with the exception of some calculations for the cases considered on "Reactor Runaway". A comment issue was published (HW-25422).

A program for high density concrete experimental work was discussed with the Corps of Engineers Laboratory at Troutdale, Oregon. The concretes tentatively outlined to be tested consist of the following:

1. Iron-limonite concrete placed by the Prepakt method.
2. Magnetite-limonite concrete placed by the Prepakt method, utilizing limonite sand in the grout.
3. Magnetite-limonite concrete placed by the conventional method.
4. Magnetite-limonite concrete placed by the Prepakt method, utilizing magnetite sand in the grout.

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[redacted]

RDS-11 - Water Plant Design Development

Work on the study investigating all feasible areas for possible future 100 Area sites was continued, but on a limited basis because of higher priority work.

RDS-12 - Separations Design Development

A study was started to determine the UO_3 capacity available and required after completion of the Hanford Expansion Program. Preliminary calculations indicate that present UO_3 capacity will be insufficient to meet requirements of the expansion program; however, further study is required before definite recommendations can be made for additional UO_3 capacity.

The capacity of the 234-5 facility was also investigated from the standpoint of the expansion program. The investigations indicate justification for including expansion of 234-5 facilities (rehabilitation of the RG Line) in the project proposal for 200 Area expansion.

Preliminary work was started on the design requirements for the Phase II expansion of Redox facilities. Design of the concentrators and development of heat and material balances were started.

RDS-13 - Mechanical Design Development

The majority of the parts ordered for the reactor vertical safety rod Model X-1 have been received, and machining on the rod has been completed. Tests are scheduled to start approximately September 15.

Special emphasis was placed on the development of design criteria for the 313 Building slug canning mechanization. Preliminary drafts of these criteria and specifications are currently being reviewed and revised to conform to the requirements of the canning mechanization program.

A study of the RG Line modernization for the 234-5 facility was started with the possibility in mind that the modernization of the RG Line may be included in the expansion program in order to provide the necessary capacity. Preliminary estimates of alternative methods of modernizing or reconditioning the RG Line indicate that it would cost only about 33% more to install new equipment than it would to repair the present equipment.

A document in which recommendations are made for an approach to the problem of utilizing remote control operation as compared to rubber glove operation in the 234-5 facility was prepared and will be submitted to the Development Committee in September.

RDS-14 - Utilities and Services Design Development

Assistance was given the Manufacturing Department in the preparation of the Coulee Dam disaster study. Drawings and factual information were supplied by the Section and will be incorporated in the final report to be published by the Manufacturing Department in September.

RDS-15 - Engineering Standards and Materials Development

The following standards and revisions to standards were approved by the HW Standards Committee during August:

New Standards

B-0-1, 1a, 1b, 1c, 1d, 1e, 1f - Graphical Symbols for Pipe Fittings & Valves

B-0-2, 2a, 2b - Graphical Symbols for Piping

B-0-3, 3a, 3b, 3c, 3d, 3e - Graphical Symbols for Plumbing

B-0-4, 4a, 4b, 4c, 4d, 4e, 4f, 4g, 4h - Graphical Symbols for Heating, Ventilation and Air Conditioning

E-1-1, 1a, 1b - Graphical Symbols for Maps, Civil

E-5-6a - Storm Drain Inlet with Curb Opening - Catch Type - 6" Curb

E-5-6b - Storm Drain Inlet with Curb Opening - Catch Type - 4" Curb

Revised Standards

C-5-32 - Plastic Name Plates, Revision 1

D-1-6 - Receptacle for Instrumentation - Plant, Revision 1

The progress on standards and materials development for August is as follows:

a. Revision of the Electrical Drawing Symbols advanced 20% and is approximately 50% complete. The symbols for mechanical, architectural, and civil drawings are complete.

b. The study to develop a standard equipment piece numbering system remained at 65% complete.

c. The specifications for welders qualifications are approximately 70% complete, an advance of 5% during the month.

d. A preliminary test was started to determine the feasibility of conducting tests on the use of nitrogen in place of argon for purging purposes when welding stainless steel.

DESIGN ENGINEERING

Statistics:

Design Engineering effort for the month of August was expended in the following categories:

	Man Months Expended	% of Total
C-512-R 100-K Reactor	47.9	36.1
C-512-W 100-K Water Plant	12.0	9.1
C-513 Purex Separations Facility	14.7	11.1
C-514 300 Area Expansion	2.1	1.5
Major Projects - Other than Expansion Program	38.5	29.1
Minor Projects and Design Orders	17.4	13.1
	132.6	100.0

The effect of the month's accomplishment on the design work load of the Design Engineering Unit in the several categories is given below.

	DESIGN ENGINEERING UNIT ENGINEERING MAN MONTHS			
	Backlog Start of Month	Orders Received During Month	Time Spent During Month	Backlog End of Month
Expansion Program	448.6	0.0	21.3	427.3
Major Projects - Other than Expansion Program	78.1	6.4	26.1	58.4
Research & Development	85.4	11.4	10.0	86.8
Minor Projects and Design Orders	105.7	6.5	14.1	98.1
TOTAL	717.8	24.3	71.5	670.6

The backlog for the Design Engineering Unit as noted above is scheduled according to the following table:

	AVERAGE MAN MONTHS						
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Balance
Expansion Program	30	33	33	32	30	30	239.3
Major Projects - Other than Expansion Program	21	17	13	5	2	0.4	0.0
Research & Development	7	8	8	8	9	9	37.8
Minor Projects and Design Orders	13	11	11	11	11	11	30.1
Available for Future Orders	0	4	9	19	23	24	

Present Total Backlog is distributed over the five engineering branches in terms of man months as follows:

	Authorized Projects	Anticipated Future Work	Total
Civil and Architectural	134.0	54.0	188.0
Mechanical	203.0	84.0	287.0
Electrical	161.0	67.0	228.0
Instrument	127.6	54.0	181.6
Standards	45.0	19.0	64.0
TOTAL	670.6	278.0	948.6

Accomplishments:

The preparation of the preliminary project proposal for the 100-K Area facilities, CA-512, was in the final stages at the month's end. The draft issue is scheduled for completion early in September with the final issue scheduled to be transmitted to the A.E.C. by September 30.

CA-512-R - 100-K Reactor

Design progress for the 100-K Reactor Facilities was 4.5% during the month with design completion 33.5% at the end of August.

Funds allocated to the Design Section for its portion of CA-512-R were increased to $1,455,000 during August. Expenditures to date are approximately $467,000.

The following design criteria and scope drawings were approved by the Reactor Project Committee and the Design Committee for the 105-K facilities:

Criteria: Moderator, Operating Controls, Nuclear Safety Controls, Vertical Safety Rods, Ball Safety System and Process Piping.

Scope Drawings: Architectural Key Plan, Structural Concrete - Floor Loads, Heating and Ventilation - Master Flow Diagram, Process Unit - General - Unit Dimensions.

The estimated total number of drawings required for the design of Project CA-512-R is 1508. Of this number, 759 have been started, 574 issued for preliminary comment, 425 issued for final comment and 144 approved to date. Ninety-seven drawings were approved during August.

Seventy-three requisitions have been issued to date by the Design Section for procurement of equipment for the 105-KW and 105-KE facilities. The estimated value of this equipment is $3,800,000.

CA-512-W - 100-K Water Plant

The Title I and Title II Water Plant design being performed by C. T. Main was advanced 4.5% during August to 19.5% completion.

Major Design Section effort for the month was directed toward the study and comment on design drawings, requisitions and specifications received from the Architect-Engineer. In general, fairly extensive comments were transmitted to C. T. Main for the revisions of the drawings and documents. In certain instances, such as the primary and secondary pump specifications, General Electric has combined and rewritten the specifications.

A total of 102 construction drawings have been received from the Architect-Engineer out of an estimated total of 694 drawings. Of these, 3 drawings were approved during the month by the Working Committee. Also, 27 requisitions having an estimated value of $11,800,000 and 15 specifications have been received.

Design Section funds for water plant design were increased to $160,000. Expenditures to the end of August were approximately $33,200.

CA-513 - 200 Area Expansion

Design scope activity on the Purex separations facility which was started during the month was accelerated throughout August with the assistance of Vitro Corporation engineers assigned to this work. A schedule for completion of design scope by late December, 1952, was developed and issued. Progress on preliminary design was 17% for the month.

Major progress during the month included the development of Process Flow Diagrams and Engineering Flow Diagrams. Plot plan and general building arrangement study drawings were prepared and issued. Studies are underway to determine the capacity of utilities required for the new plant and the type of expansion required for existing steam generation, water pumping and filtration, and electrical power facilities.

Rough drafts of remote maintenance crane specifications were prepared. Firm specifications and requisitions are now being prepared and are expected to be completed during September.

Funds in the amount of $715,000 were authorized during August for CA-513. Of this amount, approximately $21,800 has been expended to date.

CA-514 - 300 Area Expansion

Design Section funds in the amount of $100,000 were authorized during the month for 300 Area expansion.

Work was started with the preparation of preliminary equipment layouts. Design work on 300 Area expansion previously being done on Manufacturing Department work orders was incorporated into the project.

CA-431-A - 100-C Water Works

Design for conversion of the 100-C Filter Plant for utilization of the activated silica-alum process was advanced approximately 25% to 75% completion at the month's end. The mechanical design work on pH control is 90% complete with five drawings complete and issued for construction.

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CG-431-B - 100-C Area Production Facilities

"As-Built" drawings for the 105-C reactor are being prepared. This work was started at the beginning of the month and is approximately 15% complete. The acceptance test procedure for the 105 Gas System was approved and issued during the month. Basic design work on the Gas Dehumidification System is complete, and seven drawings have been issued for comment.

CG-482 - Pile and Pile Water Plant Improvement

Acceptance test procedures have been issued for comment. Comment revisions are in progress, and final approved issues of test procedures will be made during the first part of September. Instrument design is estimated at 90% complete, an advance of 5% during the month.

CG-496 - Recuplex Installation - 234-5 Building

Design was advanced 13% during the month and is approximately 25% complete. Drafting has started on 77 vessels of an estimated 102 vessels required. Design of the slag and crucible hood has progressed to a point where the major design features have been determined. Work has started on the reception and blending hood. A revised layout for the chemical make-up room was started. Changes in the size and number of tanks have made this revision necessary.

CG-502 - Additional Indication of Moderator Temperature, 105-B, D, F & DR

Requisitions for thermocouple wire, temperature recorders and indicators, and recorder conversion kits have been initiated. Instrument design is estimated to be 20% complete. Mechanical design work has been started.

E.O. 010667, 010671, 010681 - Outside Development - 700 Area

The above work is inter-related and is being developed concurrently. Design is approximately 85% complete, an advance of 5% during the month.

D.O. 100231 - Waste Gas Disposal 234-5 Building

Design work is approximately 90% complete. Thirteen drawings issued last month for comment have been revised and are ready for formal approval. Three additional drawings remain to be completed. Scope changes on this design order have resulted in the additional drawings and design time required to complete the job.

D.O. 100264 - Gable Butte Railroad - Preliminary Design

A tentative alignment and grade of the proposed second track for the Gable-Butte section of the plant railroad has been determined and is ready for the drafting room. Work on this project has been temporarily stopped pending completion of more urgent work.

D.O. 100289 - Fire Protection, Filter Rooms - 234-5 Building

Preliminary design work has been stopped at the request of the Project Engineering Unit, pending a field investigation of tests on filters.

D.O. 100302 - Adaptation of 200-W Laundry Building for Branch Files Use

The preliminary drawings for remodeling this building are approximately 80% complete.

D.O. 100314 - Installation of Lubrication Pits in 1716-D&F Garages

Final design of these additional facilities which was started during the month is approximately 20% complete.

D.O. 100325 - Activated Silica-Alum Test Facilities - 100-D

Preparation of design scope and the project proposal for the 100-D test facility was initiated and is proceeding. Preliminary design work was done on the activated silica-alum test installation at the 100-H Area but was discontinued when it was determined that the existing water plant was adequate to supply the flows necessary for pile enrichment tests.

DESIGN SECTION WORK IN THE CLOSING STAGES OR COMPLETED DURING AUGUST

CG-362 - Waste Metal Removal and Recovery
CG-413 - Expansion of 234-5 Capacity
*CG-442 - Additional Shielding for Building 3745-A
CG-447 - Portable Meteorological Mast
*CG-473 - New 100-B Area Automatic Dial Telephone Exchange
CG-475 - Cross Header Monitoring System, 105-B, D, F, DR and H
CG-481 - Semi-Trailer Unloading Winch
CG-492 - Experimental "Ink" Facility, 105-DR
CG-495 - Outlet Tube Temperature Monitoring Spare Thermocouple, 105-B, D & F
CG-498 - Hanford Seismoscope System
E.O. 010663 - Pile Technology Test and Storage Building
D.O. 100094 - 700 Area "As-Builts"
*D.O. 100220 - New Motor Pool
*D.O. 100221 - Knight Street Parking Lot
*D.O. 100253 - Operations Change House
*D.O. 100255 - Movable Partitions, Accoustical Tile Ceilings - New Wing, 703 Building
D.O. 100258 - Restroom Alterations - 700 Area Buildings
*D.O. 100262 - Heating Building 224-U Outside Process Lines
*D.O. 100269 - Aquatic Biology Laboratory
*D.O. 100272 - Personnel Meter Gate House, 200-W
*D.O. 100273 - Water Pressure Decay Curve
*D.O. 100287 - Soundproof Operator's Booth - 234-5 Building
*D.O. 100297 - Tile Field WI
*D.O. 100298 - 300 Area Parking Lot Improvements
*D.O. 100313 - Design of Steel Tank
*D.O. 100317 - 100-H Activated Silica-Alum Test Facility Project Proposal
*D.O. 100327 - Renumbering and Relettering Streets in 200 Areas

*Design Section work completed during August

INACTIVE PROJECTS

No active design work was performed during the month on the following assignments:

CA-192 - Biology Laboratory, 108-F Building
D.O. 100239 - Sample Gallery Ventilation - 202-S Building
D.O. 100326 - Standard Specifications for Architectural and Civil Work
Job 015 - Civil Defense Control Center
Job 017 - Fireproof Graphite Storage Warehouse

INVENTIONS OR DISCOVERIES

All persons in the Design Section engaged in work that might reasonable be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during the period covered by this report except as listed below. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

NONE

R H Beaton

MANAGER, DESIGN

MONTHLY NARRATIVE REPORT - AUGUST 1952

PROJECT SECTION

I. SUMMARY

A. ORGANIZATION

Following is a summary of personnel data for the Project Section covering August, 1952:

	August 1, 1952	September 1, 1952*	Net Change
Employees on Payroll	438	437	-1
Technical Graduates-Rotational	7	4	-3

The end-of-month status involved these changes:

	Project Section Personnel	Tech-Grad-Rotational
Payroll Additions	4	1
Payroll Removal	9	1
Transfers into Section	5(includes 3 Tech.Grads.)	
Transfers from Section	1	
Transfers within Section	3	

*Figures in this column include August 31, but exclude any changes which became effective September 1, 1952.

B. SCOPE OF ACTIVITIES

Major projects advanced during the month and attained construction completion status as follows: CG-349, Hot Semiworks, 99% (no gain); CA-362, Waste Metal Recovery (TBP) 94%; CA-431-A, 100-C Production Facility (Waterworks), 95.7%; CA-431-B, 100-C Production Facility (Reactor), 97%; CG-438, Ball Third Safety System, 11%; CG-483, Downcomer Repairs in 100-B, D, DR, H and Replacement in 100-F, 5% (no gain). (Reason for no gain shown under project write-up.)

C. MATERIAL PROCUREMENT

The type AISI 502 steel plate for downcomer repairs arrived on the plant August 28. Since the AEC can give no priority assistance, steel deliveries for the Fifth Boiler in 200-W have not been scheduled. The promised delivery of boron balls for the Ball Third Safety System for CG-438 has made possible a shutdown schedule of reactors beginning November 17, 1952. A design change in the Ball Third Safety System for CA-431-B has been made to introduce greater reliability. All necessary materials have been ordered and delivery promised in time to install before start-up.

D. CRAFT LABOR

The work stoppage begun by 100 millwrights on July 28 in protest against layoff of 10 millwright-inspectors was concluded August 4. Later meetings during the month resulted in a decision favorable to General Electric. A threatened strike by carpenters against the assignment of ironworker signalmen during rigging of concrete form panels failed to materialize. Negotiators on the "Master Agreement" for Hanford Works made progress, but the questions of isolation pay and overtime were referred to the unions at international level. Wage and extra benefit demands were filed by CPFF contractors' office employees, machinists, sheet metal workers, operating engineers, teamsters and laborers. Boilermakers made similar demands at negotiations for the Seven Western States 1952 Agreement. The Teamsters' Union has demanded isolation pay for truck drivers who drive buses to and from the areas on an overtime basis. A Hanford Works Addendum similar to the one now expiring has been agreed upon.

To avoid jurisdictional disputes it has been decided that all unloading in the fenced warehouse area in North Richland will be done by G.E. personnel.

E. SAFETY AND SECURITY

Approximately 300 Project Section personnel attended 11 Safety and Security meetings. Personnel working in the areas visited meetings of operating groups. Minor Construction supervisors held Special Hazards meetings in each of the 200 Areas covering "Establishment and Control of Radiation Zones" and "Daily Permissible Time Limits and Their Control". Discussions of hazards were held with 22 new CPFF contractor personnel before they were assigned to Special Hazards work. A "Regulated Area" is being established at Minor Construction White Bluffs Shops Yard for the repair of contaminated equipment and the storage of "regulated tools".

F. HIGHLIGHTS OF UNIT ACTIVITIES

Minor Construction Management Unit completed 11 work orders and IR-004. The Unit accepted 11 work orders valued at $44,000. A revised project proposal for completion of the Minor Construction Shops was approved by the A & B Committee. Total value of work now assigned to the Unit is $8,523,000, of which $1,200,000 remains to be accomplished. The final draft of work procedures for the Ball Third Safety System has been started. The Minor Construction Stores Stock Catalog is being revised for early publication. Unit supervisors devoted considerable time to instruction in Special Hazards work for newly-assigned personnel, and to preparations for work in contaminated locations.

Project Engineering Unit worked on 72 project items and 16 informal requests, totaling $20,554,400. Nine project proposals were transmitted to sponsoring organizations. Three project proposals and one informal request were approved by the A & B Committee. Four authorizations were granted by the A.E.C. The Unit accepted and began work on one informal request, eight engineering requests, and two miscellaneous jobs. Completed work consisted of two projects, two informal requests, and four engineering requests. Important projects now in progress include the Ball 3X Program, Pile and Pile Water Plant Improvements, Hot Semiworks, Downcomer Repairs, and Experimental One Tube Ink Facility.

Project Services Unit continued its normal functions in lantwide drafting and reproduction services. Drafting production was 209 new drawings, 11 charts and graphs, and 180 revisions. The drafting room average was 6.6 man-days per drawing. Reproduction output increased slightly over the July total, the August total being 200,638 square feet. The Estimating group completed 27 estimates. Field Services personnel worked in the field with personnel of Kaiser Engineers to acquaint them with 100-K site. The History group issued five histories. Project Control personnel continued their study of liquidation of Project Section costs, and began a study of charges from Utilities and General Services Department.

Reactor Projects Unit: Construction was completed on major buildings and facilities of 100-C Waterworks except for incidental work on clean-up, painting, instrumentation, balancing ventilation switch-gear tie-ins, and calibrations. The 105-C Building has likewise progressed to the stage of clean-up and installation of inside partitions. For the 105-C Process Unit, the hydrodynamic test was completed satisfactorily on August 28. Work was essentially complete on installation of rear face thermocouples and the equipment and piping for gas supply to the unit. The three control systems are being installed and tested. Projects of lesser magnitude progressed satisfactorily. Material and equipment deliveries are improving.

Separations Projects Unit: Work on CG-362 (TBP) was slow because of unbalanced craft crews and resultant delays. Work assigned to Minor Construction is about on schedule on the BX, BY, T, and TX Tank Farms. Revision No. V to the project proposal for CG-362 was issued by the AEC on August 11, with a total estimated cost of $53,000,000. Continued study was made of the causes of breakdown of slurry pumps in July. The apparent cause was misalignment of the pump bowl. The latest pump installed in the 101-U Tank has functioned without mishap for 450 operating hours. Tests were made on the Reelite which had been re-designed and built on site. Under a start-up overload of about 150%, its performance was satisfactory. Instructions were issued to the architect-engineer to alter Reelites for all pumps to be installed or procured.

G. MONTHLY REPORT OF INVENTIONS AND DISCOVERIES

All persons in the Project Section engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge, no inventions or discoveries were made in the course of their work during the period covered by this report, except as listed below. Such persons further advise that notebooks and records, if any, kept in the course of their work, have been examined for possible inventions and discoveries.

None

J. S. McMahon, Manager-PROJECTS

Date: August 31, 1952

II. STATISTICAL AND GENERAL

A. Significant Assignments

1. Initial Reporting

IR-122, Facilities for Contamination Control - Shipping Casks

Design was complete, and construction was 99% complete. The initial acceptance inspection was held August 20, 1952. The exceptions remaining include insulation of steam pipes, securing a proper ground in the electrical room, covering the electrical ducts, and checking the type of motor installed on the exhaust fan.

2. Final Reporting

CA-204, Extension to Existing Kadlec Hospital and Medical Arts Building

All G. E. work has been completed. Since the project is now managed by AEC, their personnel will handle the closing out of the total project.

CA-430, Improved Lighting - 703 Building

The contractor's work was accepted August 18, 1952. The Physical Completion Notice is being prepared.

IR-115, Radiation Monitoring Addition to 105-D

All work has been completed, and the formal close-out papers are being prepared.

IR-121, Exhaust System Alteration, 716-1131 Building

Since approval has been indicated for the new Consolidated Transportation Facility, this work has been discontinued.

ER-A-669, Parking Lot on 720 Building Site

All preliminary engineering design data has been forwarded to the sponsor. This completes the work as requested.

ER-A-715, Fireproof Graphite Storage Warehouse

Preliminary design work and project preparation has been completed as requested. Further work is being discontinued because scoping is in progress for an entirely new 101 facility.

ER-A-717, Drafting Room Expansion, 760 Building

All work, as requested by the sponsor, has been completed, and the work order is being closed out.

2. Final Reporting (Cont'd.)

ER-2725, Modification of Exhaust System 202 S

With design completed, this work has been cancelled at the request of the sponsor.

3. Current Projects

CG-349, Hot Semiworks

Completion status remained at design 100%, construction 99%. The contractor left the site during early August, and the facility was turned over to the sponsor.

The project completion date is October 6, 1952. In order to meet this date, it will be necessary to close out the project with some funds reserved to cover start-up. These funds are to be expended as the need arises. During August the AEC directive authorizing project funds of $3,418,000 was received. Certain items which have been delayed by lack of funds are now being completed.

CA-362, Waste Removal and Recovery Facilities (TBP)

Design had been completed previously; construction progressed 1.2% to a total of 94%. Because of unbalanced craft crews and resultant delays, there was little progress. However, the contractors have given assurance that the project will be fully manned in the week of September 2, 1952. Work assigned to Minor Construction on the BX, BY, T, and TX Tank Farms is about on schedule.

Revision No. V to Project Proposal CA-362 was issued by the AEC on August 11 for an estimated total cost of $53,000,000. The physical completion date for construction was given as January 31, 1953. To date the architect-engineer has delivered 964 as-built drawings; the Design Section has delivered 179.

The cause of the failure of slurry pumps in underground tanks has apparently been established as misalignment of the pump bowl. The latest pump installed in the 101-U Tank has functioned without mishap for 450 operating hours.

Tests were made on the Reelite which had been re-designed and built on site. Under a start-up overload of about 150%, its performance was satisfactory. Instructions were issued to the architect-engineer to alter Reelites for all pumps to be installed or procured.

CA-406, Mechanical Development Building (Phase II)

Design progressed 10% to a total of 95%; construction has not begun. Final drawings and specifications which were submitted by the architect-engineer on August 14 are being reviewed by General Electric personnel. A construction cost estimate is being prepared at the request of AEC.

3. Current Projects (Cont'd.)

CA-431-A, New Reactor - 100-C Plant (Waterworks)

Design had been completed previously; construction progressed 4.7% to a total of 95.7%. All construction drawings for the alum-silica water treatment process and for the lime addition have been issued. Fourteen "as-built" drawings were issued during August.

The 183-C Head House was complete except for instrumentation and installation of revised water treatment equipment. All filters for the 183-C Basins and Filter Building are operating on manual control. Instrumentation progressed satisfactorily. The 183-C Pump House and Clear Well were complete except for minor adjustments and touch-up painting.

Equipment in the 190-C Pump House was tested at design flow and pressure on August 28 and 29. Operation was satisfactory. Principal work remaining is on ventilation controls, calibration of instruments, and control balancing.

The 151-B Substation was complete except for a few final switchgear tie-ins and fencing.

The 187-C High Tanks were complete except for finish painting on the south tank and electrical work.

CA-431-B, New Reactor - 100-C Plant (Reactor)

Design completion status remained at 99%; construction progressed 9% to a total of 97%. In the 105-C Building, there was substantial progress on many clean-up items. The installation of Hauserman and toilet partitions was about 85% complete.

The hydrodynamic test through the 105-C Process Unit was completed satisfactorily on August 28. Rear face thermocouples have been installed and connected to the control room. Equipment and piping for gas supply to the unit was substantially complete. Work proceeded on installation and testing of various elements of the three control system.

CG-433, 384 Steam Plant Addition

Design had been completed previously; construction progressed 22% to a total of 83%. The four main parts of the work attained construction completion status as follows: architectural-structural, 98%; boilers and equipment, 85%; electrical, 69%; piping, 74%. All work proceeded on schedule with particular emphasis being given to installation of boilers and turbo-generators. The contractor used an average daily work force of 43 on a six-day schedule.

CG-438, Ball Third Safety System

Design had been completed previously; construction progressed 1.5% to a total of

3. Current Projects (Cont'd.)

CG-438 (Cont'd.)

11%. After consideration of promised boron ball deliveries, a firm schedule for the shutdown of the reactors has been established. The present schedule is: 100-B Area, November 17; 100-F Area, January 5; 100-D and 100-H Areas will proceed on a six-week cycle. The 100-F Reactor may be scheduled first because of urgency for replacement of process tubes.

Installation of battery chargers in 100-DR and 100-F was completed. Fabrication of top of unit duct work began August 25. Electrical panels are being fabricated. Shop work is progressing as design is released.

CG-482, Pile and Pile Water Plant Improvements

Design progressed 10% to a total of 95%; construction has not begun. Revision II to the project proposal was submitted to the AEC. Quotations from vendors indicate that steel products required for this project will be delivered within the schedule requirements.

CG-483, Downcomer Repairs in 100-B, D, DR, and H and Replacement in 100-F

Completion status remained at design 99%, construction 5%. A revised Ball Third Safety System schedule sequence to move the replacement of 100-F downcomer up to November 7, 1952, is being studied. The type AISI 502 steel plate arrived August 28. Thirty-day corrosion tests completed on the steel indicate desirability of a protective coating. Alternate coatings are being investigated.

B. OTHER ASSIGNMENTS

CG-187E, Conversion of Unassigned Space for Radiochemistry Laboratory

Design had been completed previously; construction progressed 57% to a total of 97%. A revised project proposal was submitted to request change of completion date from August 29, 1952, to October 31, 1952. Remaining work consists of balancing the ventilation system and testing of piping. Refrigeration equipment is scheduled for September delivery.

CA-192, Biology Laboratory 108-F

Completion status remains at design 98%, construction 88%. This revised project proposal, which was sent to AEC on February 12, 1952, is still awaiting authorization. Authorization has been delayed pending decision on source of money (either Production Branch or the Biology Medicine Branch of the AEC.)

CG-404, Primary Power Lines for Hanford Works Laboratory

Completion status remains at design 100%, construction 83%. The contractor for this and for Project CG-451 is scheduled to begin work about September 2, 1952. A revised project proposal requesting extension of the completion date has been submitted to the A & B Committee.

B. Other Assignments (Cont'd.)

CG-419, Induction Heating Unit - Building 3732

Completion status remains at design 100%, construction 0%. A revised project proposal for installation in the new Metallurgical Laboratory Building and extension of completion date is being prepared. The induction heating unit was received during August, and all material is now on site. Installation can begin after metallurgical laboratory is completed.

CG-420, CO_2 Bulk Storage Facilities

Completion status remains at design 100%, construction 42%. The project work release was issued on August 15, 1952. Minor Construction forces began work in 100-B Area August 27, 1952, in an effort to complete this area before the start-up of the "C" Reactor.

CG-424, Water Quality Experimental Facilities

Design had been completed previously; construction progressed 2% to a total of 99%. The final tie-ins were made during the shutdown of August 8 to 10, 1952. An initial acceptance inspection was performed during the last week in August. The minor items remaining are scheduled for completion during the September shutdown.

CA-434, New Bio-Assay Laboratory

Completion status remains at design 50%, construction 0%. The revised project proposal is awaiting AEC approval. Further approval is awaiting decision on the time to initiate final design work.

CA-441, Solvent Building

Design completion status was revised downward to 30%; construction has not begun. The Technical Services Unit has requested a revised project proposal for the construction of 1000 square feet of solvent storage space only. The sponsoring unit is preparing necessary scoping information.

CG-442, X-Ray Machine - 3745-A

Completion status is now design 95%, construction 85%. The additional funds for shielding have been authorized by the AEC; so the total project construction completion has been reduced accordingly. Specifications and design are complete for lump sum construction of the shielding. A new diffusion pump for the X-Ray machine is being installed by the field engineer from the High Voltage Engineering Corporation.

CG-445, B-Y Telephone Exchange Additions and Changes

Completion status remains at design 100%, construction 73%. Telephone equipment on order is being expedited.

B. Other Assignments (Cont'd.)

CG-447, Portable Meteorological Mast

Design progressed 3% to a total of 90%; construction progressed 5% to a total of 60%. Arrangements have been made for a mock-up field erection of all component parts. The experiment is scheduled for the 300 Area.

CG-451, Extension of 300 Area Underground Electrical Power Distribution System

Design had been completed previously; construction began and progressed to 1%. A revised project proposal, requesting extension of completion date, has been transmitted to the AEC. The contractor is scheduled to begin work about September 2, with a completion date of October 30, 1952. Preliminary survey and layout of the route has been done by General Electric personnel.

CA-452, Meteorology Tower Elevator

Completion status remains at design 100%, construction 0%. The contractor has advised the AEC that he plans to begin construction approximately October 1, 1952. No elevator designs have been submitted for approval.

CG-454, Spectrometer Shielding

Completion status remains at design 98%, construction 65%. A work release to proceed with the revised scope of work was issued August 21, 1952. Construction is being resumed the first week of September, 1952.

CA-455, Replace Two Elevated Water Tanks in 200-E Area

Completion status remains at design 70%, construction 0%. The bidding specifications are being revised for issuance. Present schedules being drafted by the AEC indicate that the tanks probably will not be replaced before winter.

CA-473, 100-B Automatic Dial Telephone Exchange

Completion status remains at design 100%, construction 0%. Complete and approved drawings and specifications were transmitted to the AEC on August 12, 1952.

CG-477, Building 284-W - Fifth Boiler Addition

Design progressed 2% to a total of 80%; construction progressed 2% to a total 4%. Design work is continuing slowly, and the contractor has been asked to expedite this project. He is endeavoring to schedule steel deliveries for the boiler. The AEC has advised that they can give no priority assistance on boiler procurement.

CA-478, Area Fence and Minor Repairs Excess Material Warehouse - North Richland

Completion status remains at design 100%, construction 99%. The lump sum portion of this project has been completed. Construction of the storage slab and loading

B. Other Assignments (Cont'd.)

CA-478 (Cont'd.)

dock has been deleted. A work order has been issued to Minor Construction for relocation and installation of the truck scale.

CA-479, Replacement of Docks and Outside Stairs - 700 Area Permanent Buildings
CA-480, Remodeling 722-C Building for Office Equipment Repair

Completion status remains at design 100%, construction 0%. Additional funds have been authorized, and the lump sum contract has been awarded.

CG-489, Positive Ion Accelerator

Completion status remains at design 100%, construction 0%. The project proposal, which was sent to the AEC on March 10, 1952, is still awaiting authorization.

CA-491, Metallurgy Laboratory, 300 Area

Design had been completed previously; construction progressed 45% to a total of 50%. Construction work is proceeding satisfactorily, and the induction furnace is being temporarily installed in Building 314 in order to expedite development work in mechanized canning. The furnace will later be relocated in Building 304. Delivery of one induction furnace is scheduled for early September, 1952.

CG-492, Experimental One-Tube Ink Facility

Design status remains at 99%; construction progressed 5% to a total of 15%. Field progress indicates that there will be insufficient working time during normal pile shutdowns to complete the installation of a re-cycle drain line by November 1, 1952. A revision to the project proposal requesting a later completion date is being prepared.

CG-493, Duct Level Safety Showers, Building 234-5

Completion status remains at design 100%, construction 0%. Since the status of this project regarding the Construction Rider has been clarified, the work has been released by the A & B Committee.

CG-496, Recuplex Installation, 234-5 Building

Design progressed 5% to a total of 20%; construction has not begun. A shortage of draftsmen has slowed down design so that completion cannot be expected until about March, 1953. Current emphasis in design is on hood layouts and the structural aspects of the hoods. Expenditure of funds for procurement and construction is being delayed by the unclear status of the project regarding the Construction Rider.

B. Other Assignments (Cont'd.)

CA-497, New Substation Fences and Grounding of Existing Fences

Design progressed 10% to a total of 50%; construction has not begun. Project authorization was released August 19, 1952.

CA-500, Lubrication Pits, 1716-D and 1716-F Garages

Preparation of final design and specification is proceeding. Construction is expected to begin about November 1, 1952.

CG-501, Repair of 105-DR Effluent Line Junction with 107-DR

Design progressed 1% to a total of 99%; construction began on August 18 and advanced to a total of 25%. A shorter existing road encasement block than was shown on drawings and higher activity levels than were first expected have necessitated some revisions to work. A thorough investigation is being made to insure against overrun of allocated construction funds.

CG-503, Waste Storage Hutment - 234-5 Building

Design has been completed previously; construction progressed 5% to a total of 90%. The Gamewell Alarm System is the only item remaining. Project completion date is November 15, 1952.

CG-506, Repairs to the 107 B, D, F, & DR Retention Basins

Design progressed 6% to a total of 10%; construction progressed 3% to a total of 5%. Emergency stop-gap repairs to the inlet section of the 107-H West Basin were completed August 12, 1952. The West Basin outlet section was completed August 13, 1952. This completes the temporary repair work.

The engineer (R.A. Moncreiff, of the C.T. Main Company) visited the plant on August 6. Since his personal inspection and review of the problem, he is being provided material for further study and recommendations.

CA-511, Completion of Minor Construction Fabricating Shops

The project proposal requesting authorization of $97,000 has been approved by the A & B Committee and forwarded to the AEC.

CA-517, Fire Protection Buildings, 272 E and W

This project proposal is awaiting authorization by the AEC.

IR-96, Replacement of Air Lock Doors, 234-5 Building

Completion status remains at design 100%, construction 38%. A request for additional funds has been submitted to the A & B Committee.

B. Other Assignments (Cont'd.)

IR-112, Building 224 Waste Diversion 224 E & W

Both design and construction have been completed. A revised informal request has been submitted to the AEC. This revision requests approval of a change in scope and consequent reduction in allocated funds.

IR-113, Pile Technology Metallurgical Laboratory Alterations - 234-5 Building

Design had been completed previously; construction progressed 10% to a total of 90%. Remaining work consists of clean-up items and the installation of two metal doors which have not been received.

IR-116, Combined Civil Defense and Plant Disaster Control Center

Completion status remains at design 5%, construction 0%. At the request of Civil Defense authorities, a notification of the information request was written August 25 to change the scope to provide a mobile control center instead of a permanent building and to request extension of completion date. Funds are for architect-engineer work only.

IR-128, Remote Supervisory Control 100 Area Water Plants

Completion status is design 4%, construction 0%. The project authorization was issued August 7 for scoping, preliminary design, and preparation of a project proposal for construction.

IR-129, Duct Level Elevator Stop - 234-5 Building

Completion status was revised to design 95%, construction 75%. The informal request has been approved, and work is progressing. Completion of the work is expected during September.

IR-134, Additional Facilities in 189-D Building

Authorization was received on August 18. An Authority to Proceed is being issued in early September, 1952.

* * * * * * *

The following studies and engineering requests, involving preparatory work and scoping of future projects, were active during the month:

ER-E-478, Inter-plant Telephone System - Hanford Expansion Program

Design was 70% complete; construction has not begun. By a letter of August 13, 1952, the AEC requested that this work be included in the 100-K Reactor Area and the 200 and 300 Area expansion project proposal.

ER-E-479, Hanford Works Official Telephone Exchange

Design was about 5% complete; construction has not begun. A project proposal is being prepared for submittal about October 1, 1952.

ER-E-480, Storage Building Addition to 3730 Building

Design was about 90% complete; construction has not begun. This request is to provide storage space for uranium. The actual construction is being planned as an inclusion to Project CG-404 (Primary Power Line for Hanford Works Laboratory).

ER-A-661, Central Distribution Headquarters

The project proposal is being routed for signatures. It is now planned to obtain construction funds from Program X.

ER-A-663, Pile Technology Test and Storage Building

A project proposal is being prepared for the construction of approximately 6800 square feet of storage and testing area for special pile experimental work.

ER-A-667, Water Drainage Around 700 Area Buildings

Preliminary designs and study have been completed, and a report was submitted to the sponsoring unit.

ER-A-671, Crushed Rock and Oil Covering, 700 Area

Preliminary studies and cost estimates have been completed and forwarded to the sponsor for his review and action.

ER-A-681, Roads and Walks - 700 Area

Final preparation work is being withheld pending decision on surface treatment for the 700 Area.

ER-A-686, Painting High Tanks - 105-B and 105-F

The submittal of the project proposal is awaiting decision on the method of performing work. Because of possibility of radiological hazards, the work may have to be done by Minor Construction forces.

ER-A-703, Sanitary Facilities - Surplus Sales Yard

This informal request has been re-submitted to the A & B Committee.

ER-A-723, Personnel Meter Gatehouse Facility Improvements

Preliminary design and scoping are complete, and a project proposal is being prepared.

ER-A-724, Soil Science Laboratory Facilities

Preliminary design and scoping are progressing.

ER-A-725, Particle Problem Animal Exposure Equipment

Work is being delayed by high priority jobs.

ER-A-726, 300 Area Parking Lot

Preliminary design and estimates have been prepared, and a cost estimate has been submitted to the sponsor.

ER-A-727, 313 Building Roof Repair or Replacement

Design is about 10% complete; construction has not begun. The postponement of this work until erection of the addition to the 313 Building is being discussed.

ER-A-728, Graphite Production and Storage Facility

This work is in the planning stage. Work is progressing towards bidding specifications and plans for an architect-engineer design contract. Funds of $33,000 have been alloted for the required work and for liaison contracts with the architect-engineer contractor.

ER-A-1179, High Pressure Water Supply to Front Face, 100-B, D, F, DR and H Areas

The project proposal is being routed for signatures.

ER-A-1182, P-13 Pressure Assembly Removal

The status of this work regarding the Construction Rider is still undetermined.

ER-A-1184, Replacement of 100-D Reactor Effluent Line

Completion status remains at design 20%, construction 0%. The project proposal was approved by the A & B Committee. The repair line is to be welded mild steel pipe.

ER-A-1185, Car Puller and Car Shake-out

Design progressed 70% to a total of 80%; construction has not begun. The project proposal in final form has been routed to the Manufacturing Department for approvals.

ER-A-704, Addition to Kadlec Hospital

The project proposal has been prepared for submittal to the A & B Committee during September. Total estimated project cost is $327,000.

ER-A-706, Area First Aid Buildings

The AEC is planning the inclusion of this work in the 100-C Area project. Discussions are continuing.

ER-A-709, Replacement of Fire and Sanitary Water Tank, 100-D

Additional scoping information has been requested from the sponsor. The use of redwood high tanks is being considered.

ER-A-712, Richland Air Raid Shelter Study

The informal request for $18,000 is still awaiting authorization.

ER-A-713, Substation Service Building 1100-300 Area

Completion status remains at design 100%, construction 0%. This work has been contracted with Projects CG-404 and CG-451.

ER-A-718, Extraordinary Maintenance, 101 Building

Since a new 101 facility is being considered, this project proposal has not been approved by AEC.

ER-A-719, Administration Building, 300 Area

Preliminary designs are progressing. Present plans are to incorporate this work as a portion of the 300 Area Program X project proposal.

ER-A-720, Operations Change House - 300 Area

Preliminary designs have been completed, and an estimate is being prepared. This work is being included in the 300 Area Program X project proposal.

ER-A-721, Additions to 202-S (PR Operating Area)

An informal request for $17,000 is being prepared, with work to be performed by Minor Construction forces.

ER-A-722, Gable-Butte Railroad

Preliminary field survey has been completed; however, design and drafting work has been delayed. The project proposal is scheduled for completion about October 15, 1958.

ER-A-1186, Revisions to Charge Machines in the 100 Areas and Installation of a Third Charging Machine - B, D, F, DR, and H Areas

The rough draft of the project proposal is being studied by the Reactor Section. The elimination of portions of the work in order to reduce the total project cost is being considered.

ER-A-1187, Metal Examination Facility 105-C

Design progressed 45% to a total of 65%; construction has not begun. A project proposal, for approximately $390,000, has been prepared in rough draft form. Consideration is being given to revising the scope. This project was not included in the budget for fiscal year 1953.

ER-A-1188, Xenon Generator

The proposed location of this experimental equipment is being studied by the Technical Section and the Reactor Section. Consideration is being given to locating the equipment in a process tube rather than a test hole.

ER-A-1190, Replacement of Heating Coils 105 B, D, F, DR and H Buildings

The Manufacturing Department is considering the advisability of doing this work by work orders. The proposal is being held pending decision on method.

ER-A-1191, Storage Basin Roof Reinforcement

The project proposal covers reinforcement to the storage basin roof structure so that the present loads can be continued without exceeding allowable stress limitations. This work is being expedited for completion before winter snows.

ER-A-1192, Vertical Rod Test Tower

The project proposal is for a new steel-support vertical rod test tower, probably to be constructed adjacent to the 189-D Building.

ER-A-3096, 314 Building Revision for Canning Development

A rough draft copy of the project proposal is being prepared. The initial cost estimate has been received. The permanent location for the autoclaves is being studied in order to issue a uniform flow of material when Program "X" is installed.

ER-2718, Fire Protection - 200 East and West Spare Parts Warehouse

Completion status remains at design 50%, construction 0%. An informal request for $17,500 has been prepared. Signatures are being obtained prior to submittal to the A & E Committee.

ER-2720, Fire Protection Equipment - Building 234-5 Filter Rooms

Completion status remains at design 20%, construction 0%. The sponsor has requested that no further engineering work be done until C.W.S. filter burning test can be made.

ER-2721, Water Quality Laboratory, 108-B

Design had been completed previously, construction has not begun. The informal request has been approved by the AEC. The work was released to the field during late August.

ER-2723, Steel Handling System - 272 W

Completion status remains at design 20%, construction 0%. The sponsor requested delay in work because of possible extension of scope.

ER-2724, Insulation of Powder Handling Facilities - 224 U

Design progressed 15% to a total of 35%; construction has not begun. Proposals and estimates for alternate designs have been prepared.

ER-2726, Adaption of 200-W Laundry Building to Branch File Use

Design is about 15% complete; construction has not begun. Design scope has been approved and project drawings are being prepared for estimating purposes.

ER-2727, 235 Building Laboratory Revisions

Design is about 10% complete, construction has not begun. Two alternate scopes have been prepared and routed for comment.

ER-6012, Hanford Works Standards Evaluation

Design is about 90% complete; the report was revised to concur with the suggestion of the Standards Committee, whose chairman now has responsibility for disposition.

ER-6016, Equipment Piece Numbering System

Design is about 90% complete. The report has been approved.

DO-100288, Miscellaneous Items - Program X

Design was completed. A letter, as an addendum to the letter written July 29, 1952, was written on August 11, 1952, to give a calendar schedule of requirements for the miscellaneous items.

300 Area "X" Program

The first meeting of the 300 Area Projects Committee was held on August 1, 1952. This meeting was called to evaluate the design basis for expansion of the 300 Area.

Job. No. 022, Painting West High Tank - 300 Area

Specifications are being prepared for the painting of this high tank on a lump sum contract basis.

C. RELATED SERVICES

The drafting work load remained heavy, with projects for Program X, Separations, and Activated Silicate Addition to 100 Areas being the largest jobs. Total production was 209 new drawings, 11 charts and graphs and 180 revisions. The drafting room average was 6.6 man-days per drawing.

Reproduction output increased slightly from the July figure. The total square feet of prints produced in August was 200,638. The volume of prints increased about 15,000. The largest orders processed were 2,126 prints for Projects C-198 and C-413, and 1,325 prints for Project CG-494. Work was continued on editing and production of an operations manual for blueprint production.

Of the 50 estimates scheduled, the Estimating Services group completed 27. Estimating personnel attended several meetings relative to formulating of construction cost codes for accumulation of costs in 100-K Area. The Field Services group met with Kaiser Engineers personnel to acquaint them with the 100-K site and to assist in plans for temporary construction and material storage area.

In addition to performing its routine functions, the Project Control group continued studies on liquidation of costs within the Project Section. A study was made of charges received from Utilities and General Services Department.

The History Group issued 5 histories during the month.

D. CRAFT LABOR

Except for pipefitters and electricians, there were enough craftsmen available to maintain construction schedules. It was necessary to work a six-day schedule for mechanical crafts in 100-C Area throughout August. A full load of acceptance testing contributed to the shortage of electricians. Progress on C-362 (TBP) was hindered by unbalanced crews, i.e., short on pipefitters. There has been little gain in efficiency since the return of construction forces from 100-C Area.

Voluntary terminations of CPFF construction contractors' personnel increased slightly. Percentage of terminations in August was 4.7% compared with 3.7% for July.

Discussions between the contractors' Negotiating Committee and the Union Negotiating Committee on a uniform agreement (Master Agreement) for Hanford Works continued throughout the month. Substantial agreement was reached on all issues except isolation pay and overtime. The controversial matters are being referred upward to representatives of the Internationals involved.

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D. Craft Labor (Cont'd.)

Both machinists and sheet metals workers are demanding increases of wages and other benefits. The Federal Mediation and Conciliation Service participated in negotiations with these unions on August 20 and 21. The Davis Panel has not accepted jurisdiction in these cases; the discussions were entirely informal.

The operating engineers, teamsters, and laborers have informed the main CPFF contractor (A-J) that they wish to reopen their contracts for negotiating wage increases. Before wage stabilization became effective, these crafts, in an effort to beat a wage freeze, negotiated wages for two years. The AEC is opposing a reopening of contracts because of the effect on lump sum subcontractors and the Master Agreement negotiations now in progress.

Agreement has been reached on a new Hanford Works Addendum which closely parallels the expiring document.

D. Craft Labor (Cont'd.)

unanimously adopted by 19 General Presidents of the international unions affiliated with the Building and Construction Trades Department, A.F.L.

A possible conflict between building-trades unions and metal-trades unions was avoided by a determination that all unloading of materials within the fenced warehouse area in North Richland will be accomplished with G. E. personnel. The question was decided after construction plumbers insisted upon entering the area to perform rigging incidental to unloading of scrap pipe by a G. E. crane.

The North Richland Employment and Labor Relations Offices of Atkinson-Jones have been moved from Building # 10 to Building # 89. Kaiser Engineers have occupied Building # 10.

[redacted]

MEDICAL DEPARTMENT

AUGUST 1952

General

Personnel Changes -
The roll decreased from 283 to 280. It was 282 a year ago.

Visits
Mrs. Margaret Harrison, Chief Pharmacist, attended the meeting of the National Pharmaceutical Honorary Sorority of which she is President.
A visit was made by Mr. Roger James, Staff Engineer, Eastern Branch State of Washington Department of Health, regarding public water supply for Hanford Works. Meetings were held with Public Works representatives. This was a routine visit by representatives of the State Health Department.

Industrial Medicine

Medical examinations increased from 1561 in July to 1823 in August. This was chiefly due to an increase in periodic and termination examinations of General Electric employees. Dispensary treatments decreased from 8231 in July to 7787. General Electric employees sustained 3 major injuries and 2 sub-majors. Contractor employees sustained 9 major injuries and 10 sub-majors. The decrease in dispensary visits was about equally divided between operations and contractor employees.
Word was received from R. C. Page, M.D., Secretary of the American Foundation of Occupational Health, that our industrial medical service standards are such that we are eligible for certification by the American Foundation of Occupational Health and the Industrial Medical Association.
The Health Activities Committee met on August 21st and the health topic for the coming month on "Overweight" was presented and material prepared on this subject for distribution throughout the plant.

Kadlec Hospital

The average daily adult census decreased from 73.8 to 73.3, as compared to 75.9 a year ago. This represents an occupancy percentage of 67.2, broken down as follows: Mixed Service (Medical, Surgical, Pediatrics) 68.3; Obstetrical Service 63.3. The ratio of in-patient hospital employees to patients (excluding newborn) for the month of July was 2.34. When newborn infants are included, the ratio is 1.95.

Public Health

The communicable disease level remained about the same. Mumps led the list again as to the number of cases reported.
Miss Grace Watson, Director of Nursing, State of Washington Department of Health, and Miss E. Leahy, University of Washington School of Nursing, visited the department in regard to field training facilities for students for the University of Oregon and University of Washington Schools of Nursing. Our facilities were found acceptable to any program of field training. It was their feeling that they would welcome the opportunity to place field students in our unit for experience. This can be accomplished when the necessary agreements can be made between our section and representatives of the universities.

General (Continued)

Costs-July

Medical Department costs before assessments to other departments, were as follows:

	June	July	July Budget
Industrial Medicine (Oper.)	$37,578	$35,644	$38,083
Public Health (Oper.)	12,445	11,267	12,822
Kadlec Hospital (Net)	32,972	21,640	30,905
Hospital Expense Credits	3,244	2,276	2,584
Sub-total-Medical Dept. (Oper.)	86,239	70,827	84,394
Construction Medical (Industrial and Public Health	12,034	11,953	15,357
Total-Operations and Construction	$98,273	$82,780	$99,751

The net cost of operating the Medical Department before assessments to other departments was $82,780, a decrease of $15,493 from the previous month. July, however, cannot be considered a normal month since all possible costs such as food and other materials purchased that are applicable to FY 1952 are accrued and booked in June. Normally many of these costs would be booked the following month.

MEDICAL DEPARTMENT

AUGUST 1952

Industrial Medical Section

Medical examinations increased from 1561 in July to 1823 in August. This was chiefly due to an increase in periodic and termination examinations of General Electric employees. Dispensary treatments decreased from 8231 in July to 7787. General Electric employees sustained 3 major injuries and 2 sub-majors. Contractor employees sustained 9 major injuries and 10 sub-majors. The decrease in dispensary visits was about equally divided between operations and contractor employees.

Micro-filming of industrial medical records was begun during the month subsequent to AEC approval. This will permit duplicate record storage at another location.

Preliminary planning was completed during the month for the tabulation of reasons for employee absences due to personal illness. Causes of absences will be tabulated by medical diagnosis as a step in attempting to reduce preventable absenteeism.

Word was received from R. C. Page, M.D., Secretary of the American Foundation of Occupational Health, that our industrial medical service standards are such that we are eligible for certification by the American Foundation of Occupational Health and the Industrial Medical Association. Certification, it was stated, "denotes the fact that our industrial medical services are among the relatively few in the United States which have arrived at a particular goal in the establishment of a constructive health maintenance program for employees."

The Health Activities Committee met on August 21st and the health topic for the coming month on "Overweight" was presented and material prepared on this subject for distribution throughout the plant. Obesity or overweight is considered at the present time the nation's number one public health problem. Preliminary absentee studies of Medical Department personnel were reported on and showed that 10% of the employees contribute 30% of the absences and that 95% of the employees have absences from 1-19 days, 2½% have no absences and 2½% have 20 days or more. Similar studies are being made for other departments. The plant combined sickness absenteeism was 1.36% for the month of August as compared to 1.38% for July.

Gross costs for this section have shown a decrease of $2,102 which are detailed as follows:

	July	June	Increase (Decrease)
Salaries	$27,095	$26,914	$ 181
Continuity of Service	2,709	2,700	9
Laundry	250	286	(36)
Utilities, Transportation, Maintenance	3,357	4,301	(944)
Supply & Other Costs	3,261	4,573	(1,312)
Total Gross Costs	$36,672	$38,774	$(2,102)
Less: Revenue	1,028	1,196	168
Expense Credits	4,752	7,266	2,514
Net Cost of Operations	$30,892	$30,312	$ 580

The reduced costs as shown in the above schedule are due primarily to the fact that all costs which were applicable to FY 1952 were recorded during the month of June, whereas, normally many of the charges would be recorded the following month.

Industrial Medical Section (Continued)	July	August	Year to Date
Physical Examinations			
Operations			
Pre-employment	141	119	1009
Rehire	23	25	146
Annual	265	399	2326
Interim	77	105	714
A. E. C.	66	41	412
Re-examination and rechecks	103	113	699
Termination	139	206	1340
Sub-total	814	1008	6646
Contractors			
Pre-employment	64	103	1186
Rehire	101	114	1368
Recheck	24	32	396
Termination & Transfer	542	531	5570
Interim	16	35	74
Sub-total.	747	815	8594
Total Physical Examinations	1561	1823	15240
Laboratory Examinations			
Clinical Laboratory			
Government	308	179	1882
Pre-employment, Termination, Transfer	2306	2873	25085
Annual	1419	2201	13241
Recheck (Area)	472	693	4716
First Aid	15	26	306
Clinic	283	282	4043
Hospital	4629	4008	35729
Public Health	8	3	140
Total	9440	10265	85142
X-Ray			
Government	59	36	335
Pre-employment, Termination, Transfer	317	346	3662
Annual	289	412	2464
First Aid	188	215	1843
Clinic	233	235	2233
Hospital	297	287	2605
Public Health	1	0	40
Total	1384	1531	13182
Electrocardiographs			
Industrial	35	70	275
Clinic	2	49	88
Hospital	44	5	313
Total	81	124	676

Industrial Medical Section (Continued) First Aid Treatments -	July	August	Year to Date
Operations			
New Occupational Cases	395	400	3301
Occupational Case Retreatments	1387	1478	11413
Non-occupational Treatments	2764	2456	23498
Sub-total	4546	4334	38212
Construction			
New Occupational Cases	670	539	6096
Occupational Case Retreatments	2359	2331	24051
Non-occupational Treatments	626	537	6894
Sub-total	3655	3407	37041
Facility Operators	30	46	312
Total First Aid Treatments	8231	7787	75565
Major Injuries			
General Electric	1	3	11
Contractors	14	9	122
Total	15	12	133
Sub-major Injuries			
General Electric	1	2	17
Contractors	15	10	97
Total	16	12	114
Absenteeism Investigation			
Total No. calls requested	5	5	87
Total No. calls made	5	5	87
No. absent due to illness in family	0	0	1
No. not at home when call was made	2	1	17

MEDICAL DEPARTMENT

AUGUST 1952

Hospital Section

General

The Medical Department's roll decreased from 283 to 280.

The average daily adult census decreased from 73.8 to 73.3, as compared to 75.9 a year ago. This represents an occupancy percentage of 67.2, broken down as follows: Mixed Service (Medical, Surgical, Pediatrics) 68.3%; Obstetrical Service 63.3%. The minimum and maximum daily census during the month ranged as follows:

	Minimum	Maximum
Mixed Service	43	70
Obstetrical Service	6	21
Total Adult	52	89

The average daily newborn census decreased from 15.1 to 13.6, as compared to 13.0 a year ago.

Nursing hours per patient per day:

Medical, Surgical, Pediatrics	4.00
Obstetrical	3.79
Newborn	2.64

The ratio of in-patient hospital employees to patients (excluding newborn) for the month of July was 2.34. When newborn infants are included, the ratio is 1.95.

The net expense for the operation of Kadlec Hospital for July was $21,640 as compared to $32,972 for June. Summary is as follows:

Kadlec Hospital net expense $21,640
This is a decrease of $11,332 from June due primarily to a higher patient census which resulted in $8,547 increased revenue; a decrease in gross costs by $3,753 due to longer work month and an accrual of costs in June for supplies and services received, but not yet billed, so they could be reflected in FY 1952 costs; and a decrease of $968 in expense credits.

Mrs. Margaret Harrison, Chief Pharmacist, attended the meeting of the National Pharmaceutical Honorary Sorority of which she is President.

A review was made of the various ways in which Kadlec Hospital can assist in implementing the goals set for the 1953 General Electric Diamond Anniversary. A list of items, consolidated with other Medical Department suggestions, was submitted to the appropriate Committee.

MEDICAL DEPARTMENT

AUGUST 1952

Hospital Section (Continued)	July	August	Year to Date
Kadlec Hospital			
Average Daily Adult Census	73.8	73.3	82.8
Medical	22.0	23.7	26.3
Surgical	29.9	28.8	31.3
Pediatrics	8.9	7.6	12.3
Mixed	60.8	60.1	69.9
Obstetrical	13.0	13.3	12.9
Average Daily Newborn Census	15.1	13.6	12.2
Maximum Daily Census:			
Mixed Services	84	70	95
Obstetrical Service	18	21	23
Total Adult Census	101	89	110
Minimum Daily Census:			
Mixed Services	42	43	42
Obstetrical Service	7	6	6
Total Adult Census	55	56	52
Admissions: Adults	533	464	4326
Discharges: Adults	514	493	4353
Newborn	83	98	662
Patient Days: Adult	2290	2273	20200
Newborn	468	422	2984
Total	2758	2695	23184
Average Length of Stay: Adults	4.4	4.6	4.6
Medical	4.0	4.2	4.9
Surgical	5.2	6.0	4.6
Pediatrics	3.7	3.6	4.6
Mixed	4.5	4.7	4.7
Obstetrical	4.5	4.1	4.2
Newborn	5.6	4.3	4.5
Occupancy Percentage: Adults	67.7	67.2	76.0
Medical	59.5	64.1	71.1
Surgical	93.4	90.0	97.8
Pediatrics	46.8	40.0	64.7
Mixed	69.1	68.3	79.4
Obstetrical	61.9	63.3	61.4
Newborn	58.1	52.3	46.9
(Occupancy Percentage based on 109 adult beds and 26 bassinets.)			
Avg. Nursing Hours per Patient Day:			
Medical, Surgical, Pediatrics	4.00		
Obstetrics	3.79		
Newborn	2.64		
Avg. No. Employees per Patient (excluding newborn)	2.34		
Operations: Major	96	76	659
Minor	101	64	696
E.E.N.T.	33	18	493
Dental	2	1	10
Births: Live	91	86	658
Still	2	0	14

MEDICAL DEPARTMENT

AUGUST 1952

Kadlec Hospital (Continued)	July	August	Year to Date
Deaths	3	6	43
Hospital Net Death Rate	.33	.34	.39
Net Autopsy Rate	33.3	50.0	55.8
Discharged against advice	0	0	7
One Day Cases	114	90	951
Admission Sources:			
Richland	78.4	79.3	76.7
North Richland	11.3	9.5	11.2
Other	10.3	11.2	12.1
Admissions by Employment:			
General Electric	73.2	73.7	71.8
Government	1.5	3.4	2.4
Facility	5.6	6.5	6.4
Contractors	11.8	8.4	13.0
Schools	1.7	.2	1.6
Military	.9	.4	.8
Others	5.3	7.4	4.0
Hospital Outpatients Treated	433	449	3599
Physical Therapy Treatments			
Clinic	214	171	1880
Hospital	115	144	1053
Industrial: Plant	181	212	1757
Personal	2	1	46
Total	512	528	4736
Pharmacy			
No. of Prescriptions Filled	2832	2869	24668
No. of Store Orders Filled	617	579	5561
Patient Meals			
Regulars	3743	3901	31697
Children under 8	340	373	4476
Specials	943	953	10668
Lights	18	0	29
Softs	1015	929	7200
Tonsils	41	15	906
Liquids	220	167	1452
Surgical Liquids	124	115	739
Total	6444	6453	57167
Cafeteria Meals			
Noon	1957	2010	14959
Night	253	264	2066
Total	2210	2274	17025

MEDICAL DEPARTMENT

AUGUST 1952

Public Health Section

General

The communicable disease level remains about the same. Mumps again led the list as to the number of cases reported.

The number of home visits by public health nurses decreased by approximately 20% due to a shortage of staff personnel. This is manifested by vacations of two nurses, one resignation and one nurse off duty because of plant injury.

A visit was made by Mr. Roger James, Staff Engineer, Eastern Branch State of Washington Department of Health, regarding public water supply for Hanford Works. Meetings were held with Public Works representatives. This was a routine visit by representatives of the State Health Department.

Miss Grace Watson, Director of Nursing, State of Washington Department of Health, and Miss E. Leahy, University of Washington School of Nursing, visited the department in regard to field training facilities for students for the University of Oregon and University of Washington School of Nursing. Our facilities were found acceptable to any program of field training. It was their feeling that they would welcome the opportunity to place field students in our unit for experience. This can be accomplished when the necessary agreements can be made between our section and representatives of the universities.

Plans were inspected and approved for a new soft ice cream establishment which is now under construction. Another ice cream establishment was inspected and approved for operation. The results of restaurant inspections were satisfactory with the exception of one. It will be degraded next month unless improvement is shown. One establishment was regraded back to an "A" after making the required improvements.

One food handlers training course was held in North Richland Cafeteria with twenty-two people attending. The results of the bakery inspection this month were satisfactory.

Dairy farms inspected were satisfactory. Three additional milk producers met the requirements and were approved for the shipping of Grade "A" milk. Bacteriological results of milk samples all were satisfactory with the exception of products from one plant. Samples have been taken weekly from their distributor and have shown steady improvement.

Four citations were issued for the illegal disposal of garbage and trash.

Bacteriological results of water and sewage samples were satisfactory. Our record of coliform counts from the wading pool samples showed an improvement over last summer. All swimming pool samples showed a negative count this season with the exception of one which showed a 2.2 m.p.n. of B. Coli.

A total of 1400 gallons of 5% DDT in diesel oil was sprayed by the mosquito control crew. Pasture lands, agriculture farm, and riding academy areas proved to be the most troublesome during the month. The airplane was not used since the trucks were able to get into the breeding areas.

Public Health Section (Continued)

General

It is planned to use the mosquito control crew on a call basis the last three weeks of September; however, if the prevalence of larvae or adults increases, the crew will be used full time.

In addition to the usual problems of family and personal relationships coming to the attention of the Social Service Counselors, there were four in which the situation was so serious that the employees continuance on his job was jeopardized. In each case a solution was found which enabled the employee to handle his work without interruption.

MEDICAL DEPARTMENT

AUGUST 1952

Public Health Section (Continued)	July	August	Year to Date
Education			
Pamphlets distributed	10,989	10,989	131,149
News Releases	1	5	30*
Staff Meetings	2	2	11
Classes	6	18	60
Attendance	41	92	1,201
Lectures & Talks	4	2	65
Attendance	63	111	2,151
Films Shown	3	4	118
Attendance	62	158	6,304
Community Conferences & Meetings	16	23	238*
Radio Broadcasts	0	0	14*
Immunizations			
Diphtheria	5	34	159*
Diphtheria Booster	7	6	647*
Tetanus	10	34	356*
Tetanus Booster	7	7	626*
Pertussis	5	34	61*
Pertussis Booster	5	6	238
Smallpox	24	2	177
Smallpox Revaccination	229	3	1,488*
Tuberculin Test	0	0	5
Typhoid	12	0	12
Typhoid Booster	4	0	4
Rocky Mountain Spotted Fever	0	0	2
Immune Globulin	7	3	95*
Other	0	0	7
Social Service			
Cases carried over	89	103	621
Cases admitted	22	14	153
Cases closed	8	13	119
Remaining case load	103	104	655
Activities:			
Home Visits	13	21	72
Office Interviews	274	210	1,984
Conferences	55	43	487
Meetings	4	4	49
Sanitation			
Inspections made	194	223	1,258*
Conferences held	35	44	279*

*On Year to Date several slight changes made due to misinterpretation by substitute secretary during March, April and May.

MEDICAL DEPARTMENT

AUGUST 1952

Public Health Section (Continued)	July	August	Year to Date
Bacteriological Laboratory			
Treated Water Samples	233	206	1,574
Milk Samples (Inc. cream & ice cream)	37	47	152
Other bacteriological tests	214	245	1,942
Total	484	498	3,668
Communicable Diseases			
Amoebic Dysentary	0	0	4
Chickenpox	6	2	102
Erysipelas	0	0	1
German Measles	5	12	580
Gonorrhea	1	3	16
Impetigo	0	1	4
Influenza (U.R.I.)	0	0	1
Infectious Mononucleosis	0	0	3
Measles	1	2	13
Mumps	34	38	366
Pediculosis	0	0	1
Pinkeye	0	0	24
Poliomyelitis	1	0	1
Rheumatic Fever	0	0	2
Ringworm	1	0	12
Roseola	0	0	2
Scabies	0	0	1
Scarlet Fever	0	0	31
Thrush	0	0	1
Tuberculosis	3	1	6
Whooping Cough	0	0	2
Total	52	59	1,173
Total No. Nursing Field Visits	911	692	7,128
Total No. Nursing Office Visits	41	48	1,113

MEDICAL DEPARTMENT PERSONNEL SUMMARY

August 1952

		Physicians	Nurses	Anesthetists	Nurse Aides	Orderly & Am.Dr.	Tech.-Clin.Lab.	Tech. X-Ray	Tech. Bact.Lab.	Tech.Phy.Ther.	Secretary	Steno-Typist	Office Mach. Opr.	Telephone Opr.	General Clerk	Pharmacist	Dietitian	Cook	Kitchen Worker	Soc.Serv.Couns.	Sanitarian	Health Educator	Janitors	Records Supv.	Adm. & Assistant	Others	TOTAL
1100 Area	Department Admin.	2	2								2	1		3	4.									1	2	1	18.0
	Industrial	4	9		1					1		1	1		11.4								4.4				32.8
	Hospital	2	*58	3	26	6	9.6	4	2	1		4			11.5	4	2	5	11				7			8	164.1
	Public Health	1	7		1							2			2.1					3	2	1	.6				19.7
	Industrial	2.7	1				1	1							8.								.7				14.4
	Public Health		2																				.3				2.3
Outlying Areas	W.J. 4																										
	100-B	.1	1												.2												1.3
	100-D	.1	4												.3												4.4
	100-F	.1	4				.2								.2												4.5
	100-H	.1	1				.2								.3												1.6
	100-C	.2	3																								3.2
	200-E	.2	1				.2								.3												1.7
	200-H	.3	6				.8								.4												7.5
	300	.2	2												.3												2.5
	White Bluffs		2																								2.0
	TOTAL	13	103	3	28	6	12	5	2	2	2	8	1	3	39	4	2	5	11	3	2	1	13	1	2	9	280.0

*Includes three part-time nurses

Number of employees on roll:

Beginning of month	283
End of month	280
Net decrease	3

Radiological Sciences Department

RADIOLOGICAL SCIENCES DEPARTMENT

AUGUST 1952

Summary

Nine Class I radiation incidents and one Class II incident were recorded. In none of these was there actual exposure of a degree to cause concern. An increase in emission of radioiodine from the Redox stack was fairly promptly traced to malfunctioning of a silver reactor, and correction was effected by the responsible departments.

In biological research, a firm result was obtained for the uptake of plutonium from drinking water of ultra low level contamination. The range of uncertainty in damage effect of I^{131} was significantly reduced. Disturbing results indicating unexpectedly high incorporation of tritium in a large animal were tentatively reported.

Biophysics showed good progress toward neutron measurement by improved dispersions of phosphors in plastics.

Other research and control activities progressed satisfactorily.

Radiological Sciences Department

RADIOLOGICAL SCIENCES DEPARTMENT

AUGUST 1952

Organization

The month end force of 373 included 28 supervisors, 95 engineers and scientists, 16 clerical, and 234 other personnel. This represented a net increase of 10.

D. W. Pearce was appointed Manager of the Biophysics Section, when C. C. Gamertsfelder transferred to a position with the A.N.P. project. The account of the work of that section will, of course, be based on reports from D. W. Pearce.

General

The aquatic biology laboratory was accepted, with minor exceptions.

During the period covered by this report, all persons in the Radiological Sciences Department engaged in work which might reasonably be expected to result in inventions, or discoveries, advised that to the best of their knowledge and belief no inventions or discoveries were made in the course of their work except as listed below. Such persons further advised that for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

Inventor	Title
W. H. Braymen	"A Scintillation Counter for Low Energy Beta Emitters"

Radiological Sciences Department

RADIOLOGICAL RECORDS AND STANDARDS SECTION

1. Radiation Monitoring Services

General Statistics

	July	August	1952 To Date
Special Work Permits	714	800	6137
Routine & Special Surveys	1140	1238	10650
Air Samples	2061	2324	15098
Skin Contamination Cases	46	51	603

A laboratory assistant received an overexposure to beta radiation during polishing, etching, and examination of a J-slug wafer at the Metallurgical Laboratory (111-B). The overexposure was discovered during routine processing of the film badge.

A spill of about 10 μg of plutonium occurred in the Biology Laboratory (108-F) and resulted in high level contamination of a biochemist's arm. Decontamination was effected in about 25 minutes.

An electrician of a sub-contractor was permitted to enter the Aquatic Biology Laboratory (146-F) without personnel meters. Subsequent surveys indicated his exposure was less than 1 mrep.

A flood in the fluoride hood of the analytical control laboratory caused gross plutonium contamination spread throughout the room. Spots up to 40 μg/6 in.^{2} were found on the floor and in the hood. No contamination of personnel resulted.

A laboratorian in the 3706 building dropped eight sample carriers containing 32 discs which held about 2 mg of plutonium. The dry plutonium contaminated the laboratory equipment and floor and about 25 feet of the main hallway. No personnel contamination resulted.

2. Standards

(a) Exposure Investigations

One Class II radiation incident occurred at the Metallurgical Laboratory (see above). Nine Class I incidents were investigated. Three involved glove ruptures which resulted in plutonium skin contamination and probable inhalation of plutonium dust. Two other incidents (both reported

above) involved gross spread of plutonium following spills in laboratories. Another incident pertained to facial contamination of a mechanic in the discharge area at the 105-F reactor. The remaining three incidents included spread of contaminated water to an unrestricted area adjacent to the Redox tank farm; and uncontrolled entry into the Aquatic Biology Laboratory (see above) and the Waste Evaporator at 200 West.

(b) Standards Establishment

A Manual of Radiation Protection Standards was published and distributed to about 500 members of supervision. This manual will replace and augment the Special Hazards Bulletins.

3. Exposure Records

(a) Personnel Meters, and Records and Photometry

General Statistics	July	August	1952 To Date
Gamma pencils read	215,058	223,454	1,686,860
Potential overexposures	8	6	49
Confirmed overexposures	0	0	0
Slow neutron pencils read	908	754	7,274
Potential overexposures	0	0	1
Confirmed overexposures	0	0	0
Beta-gamma film badges processed	42,934	41,073	385,201
Potential overexposures	9	8	82
Confirmed overexposures	0	1	7
Fast neutron badges processed	453	338	3,249
Potential overexposures	0	0	0
Confirmed overexposures	0	0	0
Lost readings (all causes)	43	38	316

(b) Bioassay

1) Plutonium analyses:	July	August	1952 To Date
Samples assayed	446	640	4,343
Results over detection limit	1	1	18
Maximum d/m/sample	0.45	0.34	1.70
Resamples of previous months	4	1	13
Maximum d/m/sample	BDL*	BDL*	BDL*

*Below detection limit

[redacted]

2) Fission product analyses:	July	August	1952 To Date
Samples assayed	537	628	4,378
Results above 10 c/m/sample	0	0	0

3) Uranium analyses:

Results of 409 samples were as follows:

METAL PREPARATION - 300 AREA

Job Description	End of 4th Day Exposure ug/liter Maximum	Average	Number Samples	End of 1 Day-No Exposure ug/liter Maximum	Average	Number Samples
Canning	21	5	22	10	2	11
Machining	23	8	30	14	6	18
Melt Plant	33	13	42	38	9	41
Material Handling	24	9	29	20	9	27
Testing	26	8	36	6	3	22
Clerical	1	1	1	2	2	1
Coverage	17	9	7	12	7	6
Technical	3	2	2	2	2	1

	Before Job Maximum	Average	Number Samples	After Job Maximum	Average	Number Samples
Car Unloading	3	1	6	91	25	4

	Miscellaneous Samples (ug liter) Maximum	Average	No. Samples
Random Samples	0	0	0
224-U	14	2	103

4) Tritium analyses:	Activity Density (uc/cc x 10^3) < 2	2-20	> 20	Total
Number of samples	40	0	0	40

(c) Thyroid Checks

All thyroid checks were below the warning level.

(d) Hand Score Summary

There were 43,050 alpha and 63,138 beta scores reported. About 0.05% of the alpha scores and 0.03% of the beta scores were above the warning levels. Decontamination was attempted and successful in all cases.

4. Calibrations

Number of Routine Calibrations

	July	August	1952 To Date
Fixed Instruments	130	92	1,674
Portable Instruments	2,372	2,407	17,071
Personnel Meters	17,150	11,215	119,332
Total	19,652	13,714	138,077

Radiological Sciences Department

BIOPHYSICS SECTION

CONTROL UNIT

Regional Survey

The general findings are summarized in the following table:

SAMPLE TYPE AND LOCATIONS	Activity Type	Average Activity Density /uc/cc
Drinking Water		
Benton City Water Co. Well	alpha	9×10^{-9}
Richland, N.Richland, Benton City Wells	alpha	<5 to 9×10^{-9}
100 Areas	beta	<5 to 9×10^{-8}
Pasco, Kennewick, McNary Dam	beta	<0.5 to 4.4×10^{-7}
Backwash Solids-Pasco Filter Plant	beta	6.9×10^{-3} /uc/gm
Backwash Liquids-Pasco Filter Plant	beta	5.5×10^{-7}
Sand Filter-Pasco Filter Plant	beta	9.7×10^{-5} uc/gm
Anthracite Filter-Pasco Filter Plant	beta	7.7×10^{-5} /uc/gm
Other Waters		
300 Area Wells #1,2,3	alpha	0.6 to 1.4×10^{-7}
300 Area Well #4	alpha	1.0×10^{-7}
Well #4 Measured as Uranium	U	1.5×10^{-1} /ug U/cc
Miscellaneous wells on the reservation	beta	$<5 \times 10^{-8}$
Columbia River - Hanford Ferry	beta	3.8×10^{-6}
Columbia River - Patterson to McNary	beta	4.0×10^{-7}
Columbia River - Shore Mud	beta	7.1×10^{-5} uc/gm
Raw Water - Operating Areas	beta	<0.5 to 2.9×10^{-7}
Pile Effluent Retention Basins	beta	1.7×10^{-3}
Pile Effluent Retention Basins	alpha	5×10^{-9}
I^{131} in Farm Wastes	I^{131}	3.2×10^{-6}
I^{131} in Columbia River - Hanford	I^{131}	7.6×10^{-8}
Atmospheric Pollution		
Gross Alpha Emitters	alpha	<0.4 to 4.9×10^{-14}
Gross Dose Rate - Separations Areas	beta-gamma	0.4 to 2.8 mrep/day
Gross Dose Rate - Residential Areas	beta-gamma	0.3 to 0.6 mrep/day
Filterable Beta - Separations Areas	beta	0.2 to 2.7×10^{-12}
I^{131} - Separations Areas	I^{131}	0.03 to 1.1 x 10-11
I^{131} - Separations Stacks	I^{131}	1.9 curies/day
Active Particles-Wash.,Idaho,Ore.,Mont.	-	0.001 to 0.03 ptle/m^3
Active Particles - Hanford Works	-	0.007 to 0.4 ptle/m^3
Tritium (as Oxides) - Reactor Stacks	T	1.4×10^{-8}

Radiological Sciences Department

Regional Survey - Continued

SAMPLE TYPE AND LOCATIONS	Activity Type	Average Activity Density μc/gm
Vegetation		
Environs of Separations Areas	I^{131}	<3 to 6×10^{-6}
Residential Areas	I^{131}	$<3 \times 10^{-6}$
Eastern Wash. and Oregon	I^{131}	$<3 \times 10^{-6}$
Non-volatile beta emitters-Wash. & Ore.	beta	2.1×10^{-5}
Alpha Emitters - Separations Areas	alpha	<0.5 to 4.6×10^{-7}
Alpha Emitters - 300 Area	alpha	1.1×10^{-7}

The increased average emission of I^{131} from the Separations Area stacks was the result of high emission from the Redox facility during the period August 12 to August 20. The daily emission rate rose to as much as 10 curies. The cause was traced to malfunctioning of a silver reactor, and the condition was corrected.

Fifteen portable scrubbers were employed for collection of gaseous samples at ground level from the stack effluent cloud during dissolving operations in the Redox and T Plants when dilution ratios were less than 500:1. Four of these samples indicated concentrations of I^{131} above the permissible maximum with the maximum concentration being 1.4×10^{-8} μc/cc.

Continuous monitoring at the U Plant stack showed that activity from total beta particle emitters discharged from this facility averaged 0.12 μc per day including a maximum of 7.7 μc per day. Gross alpha particle emission averaged 7.2×10^{-2} μc per day with a maximum of 0.48 μc per day.

Smear surveys at the high tanks in the 100-B, 100-D, and 100-F Areas showed no detectable alpha or beta contamination. However, analysis of samples of soot-like material obtained from the balcony of the tanks in 100-B and 100-D Areas for the activity from uranium showed values on the order of 1 to 2×10^{-4} μc/gram. Dosage rates measured at the balcony in 100-D Area ranged from 2 to 5 mrep/day. These observations were in preparation for repainting of the tanks.

ANALYTICAL CONTROL LABORATORY

Routine analyses were carried out as follows:

Laboratory	Analyses Completed	
		1952
Type Sample	August	To Date
Vegetation	1330	12117
Water	1820	15663
Solids	360	3006
Air Samples	1522	3817
Fluorophotometer	625	4542
Special survey samples (RMU)	57	342
Special survey samples (RS)	110	514
Dow Background survey samples	-	177
Total	5824	40178
Counting Room		
Beta measurements (recounts included)	6079	51786
Alpha measurements (recounts included)	4303	31234
Control points (alpha and beta)	3048	23369
Decay curve points (alpha and beta)	3693	29396
Absorption curve points	210	1386
Total	17333	137171

The silicon^{31} concentration in reactor effluent water remained approximately twice as high as that present during late 1951.

Tests conducted on the ether-extraction plutonium analysis of three-gallon water samples showed that the variable yields from this procedure were definitely related to the calcium concentration in the water analyzed.

Control Services

Analytical and statistical service was rendered to the Biology Section in the determination of the extent of deposition of plutonium in various parts of the rat.

Calculations were continued for the more exact definition of correction factors applying to the measurement of beta emitters in reactor effluent

water; a statistical correlation analysis was begun to determine the relationships between effluent water activity measurements employing the HM chamber, Ryerson electroscope, and BGO counter.

Synoptic Meteorology

Forecasts	Number Made	August Percent Reliability
Production	93	85.9
24-hour	62	83.5
Special	80	87.5

ENVIRONMENTAL HAZARDS AND GENERAL STUDIES UNIT

Experimental Meteorology

Construction of trajectories of hypothetical emission clouds for the past winter quarter was resumed.

Studies of the distribution of ground dosage of oil-fog generated at the 183-foot level of the meteorology tower during moderate winds and super-adiabatic conditions were continued.

Approximately 150 oil-fog samples were collected in an attempt to determine average concentrations in puffs of oil-fog reaching the ground within 600 feet of the tower. Analysis of these results is in progress.

The early oil-fog experiments conducted at the Hanford Engineer Works by Church, Gosline, and others have been reviewed with emphasis on the application of the early data to current waste disposal problems and the use to which the data have been put by Synotpic Meteorology.

Since field tests have indicated that under certain meteorological conditions maximum ground concentrations may be found at distances in excess of 1600 feet from the source, field markers have been placed at 5° intervals at a distance of 2000 feet from the source. With the present system of field markers, the placement and the preparation of 30 samplers in the field requires less than one hour.

Analysis of the records of the meteorological field stations continued. Summaries of the wind data from August 1951 through June 1952 are now available.

Several pilot balloons were released and tracked with two theodolites in the early states of the development of a technique for checking the streamlines determined from the wind data of field stations. The preparation of "no-lift" balloons requires further study.

Geology-Hydrology

Increases in the concentration of radioactive materials on one well southeast of the 241-T-B61 reverse well indicated a continued southeastward movement of the ground water and accordingly little or no effect by the Redox ground water mound. An incomplete series of nitrate analyses of water from 361-T wells suggested the same conclusion. There was no other significant change in the contaminated ground water zones beneath the 200 Areas.

The beta emitter contamination in most wells from the 100 Areas decreased with decreased river level, probably indicating a freer flow of the water toward the river.

The uranium contamination in the 300 Area water table continued to increase in wells between the ponds and the river and to decrease in wells west of the ponds as the river continued its fall. The pattern of movement appeared to be identical with that of previous years.

Soil Science

Thirty-nine nitrate analyses of water samples from the Geology monitoring wells were completed.

The studies of cesium adsorption in soil were continued. The data obtained to date indicate that:

(1) while percentage of cesium adsorbed decreases as the concentration of cesium in solution increases, the total amount of cesium adsorbed is greater;

(2) the amount of cesium adsorbed in coarse earth materials from the Gable Mountain area does not vary more than 10% as the flow rate of the solution passing through the material is varied between 50 and 2000 gal/sq.ft./day; and

(3) the presence of NH_4^+, Sr^{++}, or La^{+++} has little or no effect on the adsorption of cesium at concentrations of less than 1% of the total exchange capacity of the soil; the adsorption of cesium is slightly inhibited by these ions in the order $La^{+++} > Sr^{++} > NH_4^+ = Na^+$.

Radiological Sciences Department

Industrial Hygiene

Preliminary specifications for the continuous stack aerosol monitor were prepared and submitted for cost estimate; penetration and pressure-drop tests were continued on the various filter media which could be employed in this and other equipment.

Contamination of the air in the 222-U laboratory by nitrogen oxides, presumably from the 224-U process stacks, and the occasional need to measure concentrations of these gases at ground levels in the 200 Areas plant environs, prompted the design of a portable air sampling apparatus.

Studies were made of the behavior of the recently completed respirator testing apparatus.

A survey was undertaken to compare the skin damage caused by 50% H_2O_2 versus that caused by HNO_3.

Methods

Testing of the cold silver nitrate reactor as a sampling system for I^{131} in the atmosphere was continued using silver nitrate coated both on Berl saddles and on asbestos filter papers. In both cases there was an indication of loss of yield with increased flow rate, although stacking of several filter papers in series gave yields close to 100% at a sampling rate of 3 cfm.

Promising results have been obtained on the use of tributyl phosphate for the extraction of traces of plutonium from three-gallon water samples. Yields in the development laboratory using double extraction have ranged between 70 and 90%.

Several satisfactory calibration curves were obtained with the filter-fluorophotometer technique for oil-fog concentrations in the air by the substitution of ether for acetone as a solvent for the oil.

A promising procedure for the analysis of ruthenium in vegetation was obtained. The technique consists of extraction with 6 to 10N hydrochloric acid under reflux, followed by precipitations with hydrogen sulfide first in a basic and then in an acidic solution. Ninety percent yields have been obtained from five grams of vegetation. Indications were that contamination with other fission products was generally less than 1%, although iodine and zirconium-columbium mixture gave about 4 to 8% carry-through.

Radiological Sciences Department

A sampling program was carried out on the 112-T tank over a period of 16 hours, with samples taken every one-half hour to determine short-term fluctuations in the concentration of radioisotopes therein. Duplicate analyses were made of each sample with the two values checking within 3%. There appeared to be no trend in the concentration over the period of 16 hours although fluctuations occurred in individual samples sufficient to give a standard deviation of 9%.

Delineation of the decay curves of the noble gases from reactor effluent water was started, using five samples held for intervals of 2 to 197 hours between sampling and analysis.

Radiochemical Standards

Some of the difficulty and causes of inconsistency in the backscatter measurement using the 2π beta proprotional counter were found to be caused by air diffusing or leaking through the very thin source mount. The causes of certain of the inconsistencies mentioned last month were discovered: these included variation in the behavior of certain counter components i.e. insulator breakdown, in the various chambers, and alteration of plateaus and spurious pulsing. A combination was achieved to give three chambers with good plateaus and consistent geometries following which several Fe^{59} sources were prepared and the backscatter measured. This latter factor, when used to correct the counting rate of Fe^{59} mounted on stainless steel, gave disintegration rates in good agreement with those determined by counting with a mica window GM tube.

A 4π chamber similar to those used by ORNL and USBS was designed. This chamber should assist in eliminating inconsistencies due to center wires.

An apparatus was tested for depositing salts containing radioactive tracer uniformly on a well defined circular area. The apparatus is an aerosol generator with provisions for removing moisture from the droplets and depositing the residual salt on a sintered stainless steel filter-disc. Results of a trial run using NaCl carrying Ru^{106}-Rh^{106} indicated negligible self-scatter and considerably greater self-absorption than was anticipated.

Instruments required for coincidence measurements became available and progress was made toward absolute disintegration-rate determination.

Radiological Sciences Department

RADIATION MEASUREMENTS

Physics

In the gamma ray dosimetry program some progress was made in the 234-5 building shops on construction of the special ionization chamber designed for the measurement of the surface dose obtained by personnel handling metal pieces in that building. Construction of the equipment for obtaining K series X-rays by the fluorescence method was completed; the monochromatic emission to be so obtained, together with the roughly monochromatic rays obtained by heavy filtration of X-rays from the 2 Mev Van de Graff generator now will provide a wide range of well-defined wave lengths for the various energy sensitivity studies to be undertaken. Work was started on the development of a method for measuring pulse height distributions; the previously necessary circuitry has been greatly simplified.

Improvements in the external extrapolation chamber for absolute non-surface beta ray measurements have been conceived and the changes to present equipment initiated. In a cooperative program with Radiochemical Standards, independent measurements of the tritium content of certain water samples of known content have been undertaken using modified methods.

The irradiation of a sample of manganese sulfate to be tested for use in the water-tank method of fast neutron source calibration neared completion. Further work on the moderated BF_3 fast neutron counter showed that a long counter exhibited no change in sensitivity with distance, and that an increase in the moderator thickness tended to eliminate the variation in sensitivity. The lucite-zinc sulfide neutron-sensitive scintillators showed little difference in sensitivity to polonium-boron and polonium-beryllium sources, together with negligible dependence on angle of incidence. Neutron sensitivity of these materials is retained up to about 2 to 5 r/hr. of radium gamma but gamma paralysis begins at about this range.

As a part of the investigation of geiger counter behavior, two new 1B 85 tubes, one with heavy and the other with minimum capacitive load, were started on aging test with particular attention being paid to the earlier, more useful part of the life of the unit.

Radiological Sciences Department

Instrument Development

Air monitoring results obtained with the alpha pulse-height analyzer indicated that the initial count may be used to estimate plutonium with an accuracy of about ± 25% when the concentration is in the neighborhood of the maximum permissible limit. In this and other investigations, a multiple channel analyzer would obtain more valuable data in less time; plans were initiated for the construction of such equipment employing cathode ray beam deflection principles.

The laboratory alpha scintillation counter was completed by the shop and assembled for test.

Studies of the feasibility of using a coincidence system to reduce the background of certain scintillation counters in portable and other systems where simplicity is necessary, have shown that the pulse heights to be expected are insufficient to operate any of the simple coicindence circuits which have been tried. The mechanical design drawings of a ruggedized C.P. meter were completed.

A convenient system for the recording of wind velocity was devised, utilizing a light beam focussed onto a phototube and interrupted by the rotating cups. Construction of a recording scintillation counter for the monitoring of test wells was started and a thermopile system for measuring river temperature differentials was designed.

Radiological Sciences Department

BIOLOGY SECTION

AQUATIC BIOLOGY UNIT

Biological Chains

Inactive, pending occupancy of new laboratory.

Ecology

Survey of the Columbia River

Receding river levels facilitated sampling from the littoral zone which was accomplished as scheduled, and satisfactory boat operation permitted cross-sectional collecting of plankton and dredging of specimens from mid-stream. Maximum activity densities occurred in the vicinity of Hanford as usual and, with the exception of the plankton, were the highest for the year. Observed average values were 9.6×10^{-3} μc/g of plankton, 7.1×10^{-3} μc/g of algae, 7.0×10^{-3} μc/g of caddis fly larvae, and 3.0×10^{-3} μc/g of small fish. Maximum radioactivity found in large fish was 3.4×10^{-3} μc/g of bone in a chiselmouth associated with 3.0×10^{-4} μc/g of flesh.

Effluent Monitoring

Routine monitoring of the area effluent with fingerling silver salmon approached conclusion. No significant change in mortality occurred since last month.

BIOLOGICAL SERVICES UNIT

Biological Monitoring

Routine collections showed no marked increase among thyroids sampled. Maxima occurred in the 200 East Area and at the Meteorology Tower where jack rabbits averaged about 10^{-3} μc I^{131}/g of thyroid.

Clinical Laboratory

One thousand and forty-seven determinations.

Microscopy

Routine histological preparations, photomicroscopy, and electron microscopy.

Radiological Sciences Department

Radiochemistry Laboratory

Services included 526 TTA and ether extraction determinations in biological samples, the preparations of 32 isotope solutions, and the analyses of special and routine samples involving approximately 3400 alpha and beta counts.

Since plutonium recovery from biological samples in the presence of zirconium was found to be low, efforts were directed at determining the cause and cure of the discrepancy. Zirconium oxide is apparently transported through the animal body as an insoluble colloid that tenaciously retains varying quantities of adsorbed plutonium, preventing extraction of the plutonium in the usual analytical procedure. Efforts at dissolving the oxide in several aqueous and fused solutions failed.

METABOLISM UNIT

Animal Metabolism

With the exception of a few rats in the highest level group, all analyses for the experiment on uptake of plutonium from drinking water were completed. Uptake was about 0.003%, compared with about 0.01% in tests at higher concentrations. This relation is the reverse of that anticipated from theory. Due to the major economies that may be effected in waste disposal if this figure is generally valid, tests with other elements and possibly other animals will have to be run.

Exploratory findings on the decontaminating ability of liquid soap, acetic acid, EDTA, and Tide, used as swabbing agents indicate that a 10% solution of Tide leaves the smallest proportion of the applied plutonium on the skin after both 15 minute and 30 minute exposures.

Analyses were completed on lipid fractions from rats sacrificed four months and eight months after receiving 0.1 curie tritium oxide. The apparent biological half-life during the interval from four to eight months after tritium oxide administration was consistently longer for the unsaturated fatty acids than for the saturated fatty acids from the same source. A marked difference was also evident in the biological half-life of the same type of compounds obtained from different sources.

Radiological Sciences Department

Incomplete analyses for tissue bound tritium in samples obtained from the sheep sacrificed 235 days following administration of three curies of tritium oxide indicated that retention in the sheep was greater at 225 days than in the rat after a similar period, by factors of from 1.5 to 12. This renders questionable the prediction of the effect in man; experimentation with the chimpanzee or monkey would be desirable.

Microbiology

No result.

Plant Nutrition

The presence of 0.1 ppm iodine (as iodide) in nutrient solution significantly inhibited growth of red kidney bean plants after 32 days growth. The final concentration of iodine in the leaves was found to be proportional to their age. There appeared to be little re-translocation of iodine once deposited.

Red kidney bean plants were grown from dormant seeds to mature plants in an environment in which their only source of water contained tritium as oxide. Analyses made at intervals during growth, on the plant water and on various dried plant parts seemed to indicate significant preferential metabolism of protium as compared with tritium.

Plant Metabolism

Studies in which algae were grown in 25% D_2O showed no apparent inhibitory effect at this level, and an observable isotope preference effect. After 5 weight doublings the incorporation of deuterium is about 50% of the theoretically expected value assuming no isotopic effect.

TOXICOLOGY UNIT

Experimental Animal Farm (Toxicology of I^{131})

Radioiodine administration was discontinued in the 45 uc/day group when histologic evidence of thyroid tissue damage was observed. Three out of four lamb thyroids examined showed pathologic changes compatible with radiation damage.

The fourth 45 μc tracer dose of I^{131} was fed to the 13 remaining animals in the study designed to determine efficiency of thyroid protective agents. The animal previously fed thyroid-ablative doses of I^{131}, augmented with desiccated thyroid was essentially athyrotic. With inert iodine supplementation, however, considerable thyroid protection was realized, although a significant depression in iodine uptake occurred.

Four ram lambs were given 45 μc of I^{131} to determine the relative efficiency of various routes of administration. The maximal thyroid uptakes determined by external monitoring were as follows:

Route of Administration	Hours after Administration	μc in Thyroid Gland
Intravenous	44	27
Intrapulmonary	44	19
Per os	48	19
Topical	44	14

The semen from a ram, rendered hypothyroid with 135 μc of I^{131}/day for an extended period, exhibited normal libido and normal motile sperm. This same animal, however, has shown depression, lethargy and bloating for many weeks.

Physiology

Two hundred thirty-five samples were prepared for analysis of plutonium content. These samples were from animals that received no zirconium in a study designed to compare deposition and excretion of Pu (44) with Pu (46). Their material balance approached 100% while in another lot of animals receiving zirconium, values of 6 - 30% were obtained. This gives some indication of the masking effect of the zirconium.

FINANCIAL DEPARTMENT MONTHLY REPORT
AUGUST, 1952

Summary

A 60-page manual entitled "Accounts Payable Procedures" was issued in August. Additional procedures manuals will be issued in subsequent months.

Billings to residential leaseholders for metered electricity for the month of July were issued August 21. These charges are payable in cash. Charges for electricity for former months, at fixed amounts for each type of residence, were collected primarily by payroll deductions.

The accounts payable and general ledger work performed by Engineering Accounting Section was transferred to General Accounting Section as of September 1, 1952. During August the Engineering Cost Section (formerly Engineering Accounting Section) moved from North Richland to Richland, and the accounts payable personnel of General Accounting Section moved from Richland to North Richland. Other intra-departmental office space rearrangements were made in the 703 Building.

As a result of the consolidation of general ledger work (formerly performed by both General Accounting and Engineering Accounting Sections) the former inter-sectional billing will be discontinued and future cost transfers will be accomplished by journal entries only.

P. D. Lee has been appointed to an informal committee on cost estimates and economic evaluations in connection with new pile design. The other committee members are W. M. Harty, Chairman and E. B. Montgomery of the Engineering Department.

J. P. Holmes visited the New York City office of Allied Chemical and Dye Corporation on August 25 and 26 to verify the cost of that company's nitric acid plant at Hedges, Washington. The cost of the plant affects the cost of nitric acid to the Nucleonics Division.

Statistics

A summary of cash disbursements and receipts (excluding advances from AEC) for the months of August and July, 1952 is shown below:

Disbursements	August	July
Payrolls (net)	$2 931 483	$2 503 822
Materials and Freight	1 910 430	1 797 878
Payroll Taxes	618 430	830 486
U. S. Savings Bonds	164 079	190 370
Pension Plan - Employees' Portion	69 287	59 822
Payments to Subcontractors	10 434	17 870
Other	254 062	308 816
Total	5 958 205	5 709 064

Receipts	August	July
Rents	93 710	96 147
Sales to AEC Cost-Type Contractors	88 912	21 427
Hospital	57 967	62 588
Refund of Group Insurance	27 223	-0-
Utilities	22 722	952
Telephone	18 344	19 497
Miscellaneous Accounts Receivable	12 327	34 260
Bus Fares	9 144	9 596
Refunds from Vendors	6 966	58 679
Scrap Sales	5 687	3 712
Other	13 442	4 763
Total	356 444	311 621
Net Disbursements	$5 601 761	$5 397 443

Advances as of August 31 and July 31, 1952 may be summarized as follows:

	August 31	July 31
Cash in bank - contract account	$4 723 239	$6 157 175
Cash in bank - salary account	50 000	50 000
Travel advance funds	125 000	125 000
	4 898 239	6 332 175
Disbursements not reimbursed	5 601 761	
Total	$10 500 000	$6 332 175

The inclusion in advance of disbursements not reimbursed as of August 31 reflects a change in accounting treatment by the Hanford Operations Office of A.E.C. Prior to August AEC-HOO treated disbursements as reimbursed in the month of disbursement; effective in August the disbursements of one month will be treated as reimbursed in the following month.

Personnel and Organization

	Current Month	Prior Month
Personnel Changes During Month		
Employees at beginning	358	367
Additions and transfers in	11	5
Removals and transfers out	(13)	(14)
Employees at close	356	358
Personnel by Sections at Month-End		
General	10	10
General Accounting Section		
General Accounts	23	22
Plant Accounts	25	24
Accounts Payable	25	25
Accounts Receivable	20	20
General	2	2
	95	93

Personnel and Organization (Continued)

	Current Month	Prior Month
Payroll Section		
Payroll Preparation	35	38
Benefit Plans	14	12
Confidential & Salary Administration	14	14
Payroll Records	8	8
Statistical & Reports	3	2
General	7	7
	81	81
General Cost Section		
Consolidated Costs and Budgets	5	5
Utilities & General Services	16	16
Community Real Estate & Services	14	14
Radiological Sciences and Other	6	7
Medical	3	3
General	2	2
	46	47
Manufacturing Cost Section		
Costs and Budgets	35	33
General	6	6
	41	39
Engineering Accounting Section		
Project Section Costs	20	18
Design Section Costs (includes General Ledger Work)	9	9
Technical Section Costs	8	7
Accounts Payable	20	20
Budgets	0	8
General	5	3
	62	65
Internal Audit Section	12	11
Rotational Trainees	9	12
Total	356	358

Sections' Reports

The monthly reports of the six sections of the Financial Department, as listed below, are shown on the following pages.

GENERAL ACCOUNTING SECTION
MONTHLY REPORT - AUGUST, 1952

ACCOUNTS PAYABLE

In addition to routine work performed in the Accounts Payable Unit during August, considerable time was spent on two major tasks; namely, arranging for the transfer of the Accounts Payable Unit of the Engineering Accounting Section to the General Accounting Section and the issuance of an Accounts Payable Procedures Manual.

The official date of the transfer of accounts payable functions from the Engineering to the General Accounting Section was September 1, 1952. However, all space and other related arrangements were completed early in August, and the transfer was physically made on August 23, 1952. The audit of Engineering accounts payable items will continue to be separately handled by Engineering Accounts Payable Unit, but general functions, such as filing, check typing and auditing, voucher numbering, discount control, etc., have been consolidated in the General Accounts Payable Unit. Both units are now located in the 101 Building, 3000 Area.

Arrangements were made with the Payroll Section whereby they will issue contract checks for pension and insurance plan refunds to terminating employees. Instructions were furnished Payroll personnel relative to preparation of checks, and the tabulating and reporting of disbursements each month to the Accounts Payable Unit.

Other changes in procedure resulting from the move to the 3000 Area included the establishment of regular messenger service between the 700 Area and the 3000 Area, and the transfer of the following functions from the General Accounts Unit:

1. Determination of amount of accounts payable expenditure subject to Washington State Business and Occupation Tax.
2. Preparation of the accounts payable register.
3. Maintenance of completed voucher register.

The manual of accounts payable procedures, complete with exhibits and flow chart, was transmitted to Printing in August and is to be completed and distributed early next month.

ACCOUNTS RECEIVABLE

The accounts receivable balance at August 31, 1952, amounted to $517,020. Of this amount, approximately 75% represents current month accounts. Exclusive of accounts considered to be uncollectible which have been transmitted to collection agencies,

General Accounting Section

ACCOUNTS RECEIVABLE (CONTINUED)

approximately 10% of the August 31, 1952, balance is ninety days or older. This represents, for the most part, hospital accounts on which small payments at regular intervals are being received.

Electricity consumed in July for which billings were mailed on August 21, 1952, totaled $44,464. This amount represented $2,235 billed to facility operators and $42,229 billed to residence leaseholders. In addition to the $2,235 billed to facility operators, $8,173, representing energy consumed, was not billed due to operators' leases not providing for payment of electricity on a metered basis. Total electricity bills issued approximated 6,200.

Kadlec Hospital out-patient invoices numbered 1,983, amounting to $9,167, as compared to 1,951, amounting to $9,861, in July. In-patient revenue decreased $5,764 in August as compared to July, primarily as a result of decreased adult patient day census. Sales of $61,257 were booked in August, and cash receipts amounted to $63,300.

Permanent payroll deduction files relative to rent and dormitory accounts of monthly paid employees were established in August. These files are similar to those established in July for weekly paid employees. With the establishment of these files, which will be maintained on a current basis in the Payroll Section from change lists submitted by Accounts Receivable, the former practice of submitting complete lists of accounts each month for payroll deduction has been eliminated.

No uncollectible accounts were referred to collection agencies in August. One account in the amount of $25 was deemed uncollectible by the agency and was returned. Two accounts were partially collected in August, totaling $106, half of which was remitted to General Electric. At August 31, 1952, 210 accounts, in the total amount of $16,965, were in the hands of collection agencies.

GENERAL ACCOUNTS

Advances from the Atomic Energy Commission at August 31, 1952, totaled $10,500,000. This amount is higher than that of previous months, and will continue at approximately this level, due to the fact that credit from the Atomic Energy Commission for current month's disbursement will not be received in the future until the following month. Prior to this month, advances at month-end have reflected a decrease representing the amount of cash disbursed in the current month.

Responsibility of maintaining caption controls on general ledger account Spare Equipment Held In Storage was transferred from the Stores Unit to the General Accounts Unit this month.

The annual report on Completed Projects, showing projects completed during the fiscal year 1952 and activity on projects completed prior to fiscal year 1952, was issued this month.

GENERAL ACCOUNTS (CONTINUED)

The balance of the Travel Advance account increased from $27,294 as of July 31, 1952, to $32,168 as of August 31, 1952. A total of 177 expense reports, in the total amount of $19,636, were processed in August as compared to 143 expense reports, totaling $14,730, processed during July.

A report showing travel and living expenses incurred by employees attending meetings of technical and professional societies and seminars was prepared for the month of July. This report will be issued each month in the future.

In accordance with recommendations of the Internal Audit Section, Washington State Excise Tax returns for the months of July and August and for future tax periods will be based on cash disbursed rather than on vouchers approved by the Commission, as was the basis used for reporting taxes in the past.

Payments for metered electricity were received this month at the Cashier's office for the first time. As a result of this additional work, the work load in the Cashier's office more than doubled for a ten-day period. Employees on other work were assigned to the Cashier's office temporarily. All work of the unit was behind schedule as a result, and some overtime was required to process current work.

PLANT ACCOUNTS

Budget estimates for fiscal year 1953 of depreciation expense applicable to the various elements of cost were completed during the month, and may be summarized as follows:

Product	$37 924 000
Standby and Startup	1 967 000
Research and Development	1 030 000
Community	3 486 000
Kadlec Hospital	78 000
Other	4 963 000
Total Budget	$49 448 000

"Other" includes depreciation expense applicable to facilities used by the Atomic Energy Commission, Minor Construction buildings, and expense resulting from extraordinary obsolescence.

The revision of the Plant Record Unit Catalog was completed during the month. The revised catalog sets forth the two broad groups of fixed assets, catalogued and uncatalogued Plant, and describes the Plant Record Units included in each major group. Typing and final printing is expected to require an additional month before this catalog will be issued.

General Accounting Section

PLANT ACCOUNTS (CONTINUED)

Numerous requests were received from other sections for special information during August. These included:

1. First cost of all community buildings and structures, improvements to land, service systems, and equipment.
2. Recorded costs of 100-F and 300 Area buildings.
3. Cost of special hospital equipment used in the X-Ray Unit.

Field checking of Project Unitization Reports continued during the month. Substantial discrepancies between information contained in Unitization Reports and field inventories have necessitated the return of a number of Project Completion Reports to the originators for revision or correction.

General Accounting Section

	August	July
Accounts Payable		
Balance at Beginning of Month	$ 429 656	$ 742 477
Vouchers Entered	2 121 769	1 797 042
Cash Disbursements	2 207 386 DR	2 015 203 DR
Cash Receipts	4 348	724
Other	-0-	95 384 DR
Balance at End of Month	$ 348 387	$ 429 656
Number of Vouchers Entered	2 342	2 246
Number of Checks Issued	1 445	1 609
Number of Freight Bills Paid	1 503	562
Amount of Freight Bills Paid	$ 408 368	$ 74 960
Number of Purchase Orders Received	1 045	1 183
Value of Purchase Orders Received	$ 513 668	$ 887 539

Accounts payable statistics for the month of August include Engineering accounts payable amounts beginning on August 25, at which time consolidation of General and Engineering functions was effected.

Cash Disbursements		
Material and Freight	$1 910 430	$1 797 878
Payrolls (Net)	2 931 483	2 503 822
Payroll Taxes	618 430	830 486
Lump Sum and Unit Price Subcontracts	10 434	17 870
United States Savings Bonds	164 079	190 370
Pension Plan - Employees' Portion	69 287	59 822
All Other	254 062	308 816
Total	$5 958 205	$5 709 064
Number of Checks Written	1 971	2 226

General Accounting Section

	August	July
Cash Receipts		
Advances from AEC	$4 167 825	$ -0-
Rents	93 710	96 147
Sales to AEC Cost-type Contractors	88 912	21 427
Hospital	57 967	62 588
Refund of Group Insurance Premium	27 223	-0-
Electricity	22 722	952
Telephone	18 344	19 497
Miscellaneous Accounts Receivable	12 327	34 260
Bus Fares	c 144	9 596
Refunds from Vendors	6 966	3 712
Scrap Sales	5 687	58 679
Other	13 452	4 763
Total	$4 524 279	$ 311 621
Bank Balances at End of Month		
Chemical Bank & Trust Company - New York		
Contract Account	$1 558 237	$2 390 788
Seattle - First National Bank - Richland		
Contract Account	2 435 474	2 943 295
United States Savings Bond Account	159 343	174 015
Salary Account No. 1	20 000	20 000
Salary Account No. 2	30 000	30 000
Travel Advance Account	91 415	96 384
Seattle - First National Bank - Seattle		
Escrow Account	5 875	5 875
National Bank of Commerce - Richland		
Contract Account	729 528	823 092
Total	$5 029 872	$6 483 449

General Accounting Section

	August	July
Accounts Receivable		
AEC Cost-type Contractors	$ 232 283	$ 207 858
Hospital	128 552	129 578
Rents	51 908	63 188
Electricity	23 674	51 933
Equipment Sales to Facilities	41 874	42 426
Miscellaneous Services	25 467	27 023
Telephone	13 008	12 331
Safety Shoes	254	493
Sub-total	517 020	534 830
Reserve for Bad Debts	45 584 CR	44 342 CR
General Ledger Balance	$ 471 436	$ 490 488
AEC Cost-type Contractors		
Number Invoices Issued	54	85
Amount of Invoices Issued	$ 115 620	$ 129 506
Cash Received	88 912	21 427
Hospital		
Number Out-Patient Invoices Issued	1 983	1 951
Charges During the Month	$ 61 257	$ 67 715
Collections - Cash	57 967	62 588
- Payroll Deductions	5 333	5 013
Rents		
Houses		
Number Houses Occupied	6 043	6 049
New Leases and Lease Modifications	86	83
Lease Cancellations	73	44
Charges During the Month	$ 222 643	$ 223 859
Collections - Cash	39 729	37 588
- Payroll Deductions	190 602	181 121
Dormitories		
Number Rooms Occupied	1 078	1 075
New Assignments	82	121
Removals	79	115
Charges During the Month	$ 14 993	$ 14 959
Collections - Cash	2 164	2 423
- Payroll Deductions	12 754	12 749
Facilities		
Number Facility Leases	135	135
Revenue	$ 51 817	$ 56 135

General Accounting Section

	August	July
Accounts Receivable		
Miscellaneous Services		
Number Invoices Issued	338	345
Amount of Invoices Issued	$ 9 006	$ 8 499
Cash Received	12 173	34 230
Telephones		
Working Telephones (Excludes Official Telephones)	5 570	5 518
Telephone Work Orders Processed	441	323
Charges During the Month	$ 44 347	$ 45 790
Collections - Cash	18 344	19 497
- Payroll Deductions	25 481	24 392

	Number	Amount
Uncollectible Accounts (Total to Date)		
Accounts Forwarded to Collection Agencies	431	$ 39 629
Accounts Returned as Uncollectible	93	15 998
Collections	160 -1)	6 666 -2)
Balance at Collection Agencies August 31, 1952	210	$ 16 965

(1- Includes 128 accounts collected in full and 32 accounts partially collected.

(2- Represents total collections, half of which is remitted to General Electric.

	August	Total To Date
Scrap Sales		
Number of Sales	6	525
Revenue (Excluding Sales Tax)		
Scrap Sales	$ 5 687	$ 538 748
Tract House Sales		
Revenue to AEC	-0-	34 148
Revenue to GE	-0-	14 673
Total	$ 5 687	$ 587 569

General Accounting Section

	August	July
Travel Advances and Expense Accounts		
Cash Advances - Beginning of Month	$ 27 924	$ 23 303
Advances During the Month	31 824	29 004
Expense Accounts Submitted	19 535 CR	15 426 CR
Cash Refunded	8 045 CR	8 957 CR
Cash Advances - End of Month	$ 32 168	$ 27 924
Outstanding Cash Advances		
Current	$ 25 398	$ 23 951
Over 30 Days	6 770	3 973
Total	$ 32 168	$ 27 924
Traveling and Living Expenses		
Paid Employees	$ 20 361	$ 15 422
Billed to Government	19 636	14 730
Balance in Variation Account at End of Month	725 DR	692 DR

PAYROLL SECTION MONTHLY REPORT
AUGUST 1952

In a rearrangement of the organizational components of the Payroll Section on August 16, all of the personnel of the Section was brought together in offices on the first floor of the fourth wing of the 703 Building. As a result of the consolidation, 992 square feet of floor space was made available to other sections of the Financial Department.

A representative of the Payroll Section and representatives of the Manufacturing Department visited the badge house in the new Hanford Works laboratory in the 300 Area to ascertain suitable locations for time clocks and time card racks.

An analysis of benefit claims paid under the G. E. Insurance Plan was made during August so that the claim experience of the Nucleonics Division might be compared with other divisions of the Company. Approximately 70 man-hours were required to tabulate the data which included the number of claims, days of hospitalization, types of operations performed, and the amount of benefits paid, segregated as to employee and dependent coverage.

Because the Accounts Payable Unit of the General Accounting Section was moved to North Richland in August, the task of issuing checks for insurance and pension refunds was transferred to the Payroll Section.

Preparatory work in connection with the payment of the retroactive portion of the isolation pay increase recently approved by the Wage Stabilization Board was begun in August. A start on the job of totaling the hours on approximately 4,000 individual earnings ledger cards for employees eligible for the adjustment, and verifying the figures, consumed 240 man-hours. The records for the period from March 17, 1952, through June 15, 1952, which were made under the old payroll system, must be summarized manually, while cumulative data for earnings since June 16, 1952, will be available under the IBM system. Computation of figures for the payment of the retroactive portion of the area differential increase recently approved by the Salary Stabilization Board, will get under way in September.

Several conferences were held by Payroll supervisors during August with a representative of the Statistical and Computing Services Section to discuss revision of methods of obtaining data for the Payroll Section's statistical reports to provide accurate reports and at the same time to reduce computing services charged to the Financial Department.

A new IBM form entitled "Salary Check and Time Card Location Notice" (No. P-89-ES) was designed to replace the present "Employee Location Card" (form No. P-65-B) and the "Weekly Salary Check Location Card" (form No. P-89-DS). The new form has been ordered and should be available for use by October 1.

A detailed analysis of the present status of employees transferred from the du Pont Company to G. E. on September 1, 1946, was prepared in August for the information of the management.

A total of 94 annuity certificates had been issued to former du Pont employees as of August 31, 1952, in accordance with the provisions of the Prime Contract.

In August, the A. E. C. issued Reimbursement Authorizations No. 188, approving an increase in the mileage allowance from seven to seven and a half cents a mile for privately-owned automobiles operating on Company business; and No. 190, providing a fund for the professional salary plan for the fiscal year 1953.

Work was begun during August on a manual of payroll procedure which will serve as a training guide for new employees, including business graduates, and as a source of information on payroll routine for supervisors and auditors.

Payroll Section (continued)

There were 8 856 employees on the payroll as of August 31, as compared with 8 894 on July 31, a net decrease of 38. This was the result of 206 removals from the payroll during the month, including 6 leaves of absence, 42 illness removals, and 2 for lack of work; and 168 additions to the payroll, including 32 employees reengaged with continuous service, and 3 transfers from other Divisions of the Company.

Due to transfer or reclassification of employees, preferential rates were eliminated in 2 cases of weekly-paid employees during the month. This left approximately 840 weekly-paid employees having preferential rates as of August 31, 1952.

A total of 1 490 weekly-paid employees were scheduled to begin their 1952 vacations in August. To date, 5 808 vacation notices have been received for weekly-paid employees.

A total of 1 186 checks for $77 513, covering 898 benefit claims, were received from Metropolitan Life Insurance Company during August and forwarded to employees, hospitals, and surgeons. Since December 1, 1950, the effective date of the new insurance plan, employees of the Nucleonics Division have received $1 203 642 in benefits under the health insurance provisions of the plan.

Applications for 6 normal retirement pensions were prepared and forwarded to the Pension Department during the month.

Garnishments against three employees were received during August; two were released without payment to the court, and one is pending. Three garnishments were still pending from ly, making a total of four garnishments pending as of August 31.

In the month of August, 40 suggestion award checks aggregating $1 430 were prepared and forwarded to the secretary of the Suggestion Committee for delivery to Nucleonics Division employees.

Military duty allowances were paid to six employees during the month of August. As of August 31, 1952, 262 employees of the Nucleonics Division had entered military service.

During August, 16 employees were added to the list of those authorized to pick up salary checks, U.S. savings bonds and custody receipts. As of August 31, 1952, 833 employees were authorized to receive these items for their respective departments.

Two patent award payments in the aggregate amount of $50.00 were made during August.

United States Savings Bonds purchased under the Stock Bonus Plan during the years of 1948, 1949, and/or 1950 were withdrawn by 15 participants and checks covering the income earned at December 31, 1951 on the forfeited stock which had been contingently credited to their accounts were delivered to them.

During August, three salary checks were reported lost. One lost salary check was replaced in August. As of August 31, 1952, six lost check cases were pending.

Bank reconciliations completed in August were:

Weekly Salary through #305, week ended June 29, 1952.
Weekly Salary Vacation through #305, week ended June 29, 1952.
Bond Account - July, 1952.
Monthly Payroll #71, July, 1952.

Payrolls reimbursed were as follows:

Weekly Salary through August 22, 1952.
Monthly Salary through August, 1952.

Payroll Section (continued)

STATISTICS Employees and Payroll	Total	Monthly Payroll	Weekly Payroll
Employees on Payroll at beginning of month	8 894	2 153	6 741
Additions and transfers in	167	12	155
Removals and transfers out	(205)	(15)	(190)
Transfers from weekly to monthly payroll		76	(76)
Transfers from monthly to weekly payroll		(1)	1
Employees on payroll at end of month	8 856	2 225	6 631

Number of Employees	August	July
Bargaining group - HAMTC	3 501	3 503
Bargaining group - Building Services	68	71
- Two Platoon Firemen	52	51
- Hanford Guards	566	577
Other weekly - non-bargaining	2 496	2 590
Executive, administrative and operating	1 670	1 598
Professional	491	490
Other Monthly	12	14
Total	8 856	8 894

Number of Employees		
Engineering	1 537	1 546
Manufacturing	3 145	3 114
Utilities & General Services	2 288	2 315
Community	218	228
Real Estate & Services	306	310
Financial	356	358
Employee & Public Relations	107	108
Radiological Sciences	370	363
Medical	277	283
General	26	30
Law	6	7
Accountability	18	19
Technical Personnel	202	213
Total	8 856	8 894

Overtime Payments		
Weekly Paid employees	$82 242	$65 348
Monthly Paid employees	16 329 (a)	17 193 (b)
Total	$98 571	$82 541

Number of Changes in Salary Rates And Job Classifications	1 170	1 597

(a) Payments cover period August 1 through August 31, 1952 except in the case of Patrolmen in the Plant Security & Services Section of the Utilities & General Services Department who were paid for the period July 1 through July 31, 1952. Includes overtime for the month at the rate of time and one-half on the first $7 500 of annual base compensation.

(b) Payments cover period July 1 through July 31, 1952, except in the case of Patrolmen in the Plant Security & Services Section of the Utilities & General Services Department who were paid for period June 1 through June 30, 1952. Includes overtime for the month at the rate of time and one-half on the first $7 500 of annual base compensation.

Payroll Section (continued)

s Amount of Payroll	August	July
Engineering	$ 739 068	$ 692 535
Manufacturing	1 545 042	1 311 787
Utilities & General Services	987 847	847 147
Community Real Estate & Services	234 381	207 324
Other	583 714	485 467
Total	$4 090 052 (a)	$3 544 260 (b)

Annual Going Rate of Payroll		
Base	$41 129 107	$41 222 492
Overtime	1 181 013	1 192 163
Isolation Pay and Area Differential	1 516 639	1 528 289
Shift Differential	470 102	490 551
Other	24 400	19 708
Total	$44 321 261	$44 453 203

Average Hourly Base Rates		
Bargaining group - HAMTC	$2.122	$2.120
- Building Services	1.642	1.635
- Two Platoon Firemen	2.089	2.089
- Hanford Guards	1.859	1.858
Other weekly - non-bargaining	1.800	1.805
Executive, Administrative and operating	2.964	2.999
Professional	3.131	3.130
Other Monthly	2.225	2.298
Total	$2.226	$2.221

	August			July		
Average Earnings Rate Per Hour (c)	Weekly	Monthly	Total	Weekly	Monthly	Total
Engineering	$1.927	$3.067	$2.525	$1.950	$3.120	$2.518
Manufacturing	2.306	3.119	2.456	2.334	3.126	2.482
Utilities & General Services	1.997	2.880	2.122	2.000	2.881	2.123
Community Real Estate & Services	2.065	2.632	2.252	2.051	2.633	2.238
Other	1.858	3.242	2.158	1.865	3.276	2.156
Total	$2.091	$3.042	$2.323	$2.100	$3.066	$2.328

(a) Includes payments for five week period ended August 24, 1952 in the case of weekly paid employees. Includes $405 retroactive general salary increase of 1.03% for the period March 15, 1952 through May 31, 1952 in the case of monthly paid employees, and $3 593 for the period March 17, 1952 through June 15, 1952 for weekly paid employees.

(b) Includes payments for four-week period ended July 20, 1952 in the case of weekly paid employees. Includes $1 486 retroactive general salary increase of 1.03% for the period March 15, 1952 through May 31, 1952 in the case of monthly paid employees and $65 916 for the period March 17, 1952 through June 15, 1952 for weekly paid employees.

(c) Includes shift differential and isolation pay in the case of weekly paid employees and area differential in the case of monthly paid employees. Excludes overtime premiums, commissions, suggestion awards, etc.

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Payroll Section (continued)

Employee Benefit Plans	August	July
Pension Plan		
Number participating at beginning of month	7,116	7 045
New participants and transfers in	134	144
Removals and transfers out	(70)	(73)
Number participating at end of month	7 180	7 116
% of eligible employees participating	92.9%	92.7%

Employees Retired	August	Total to Date
Number	8	220 (a)
Aggregate Annual Pensions Including Supplemental Payments	$1 817	$51 974 (b)
Amount contributed by employees retired	4 542	52 791

(a) Includes 9 employees who died after reaching optional retirement age but before actual retirement. Lump sum settlements of death benefits were paid to beneficiaries in these cases.

(b) Amount before commutation of pensions in those cases of employees who received lump sum settlement.

	August	July
Number who became eligible for participation	179	233
Number who applied for participation	127	153
Number who elected not to participate	22	48
Replies not received	30	32

Insurance Plan (c)		
Personal Coverage		
Number participating at beginning of month	9 024	9 022
New participants and transfers in	133	132
Cancellations	(39)	(42)
Removals and transfers out	(129)	(88)
Number participating at end of month	8 989	9 024
% of eligible employees participating	98.4%	98.5%
Dependent Coverage		
Number participating at beginning of month	5 685	5 638
Additions and transfers in	59	99
Cancellations	(6)	(16)
Removals and transfers out	(49)	(36)
Number participating at end of month	5 689	5 685

Claims - Disability Benefits (d)		
Number of claims paid by insurance company:		
Employee Benefits		
Weekly Sickness and Accident	159	88
Daily Hospital Expense Benefits	180	122
Special Hospital Services	210	139
Surgical Operations Benefits	152	114

(c) The new insurance Plan was made effective on December 1, 1950.

(d) Statistics cover only claims paid and not all claims incurred during the month.

Payroll Section (continued)

oyee Benefit Plans (continued)

Claims - Disability Benefits (continued)	August	July
Dependent Benefits		
Daily Hospital Expense Benefits	230	253
Special Hospital Services	310	325
Surgical Operations Benefits	295	295
Amount of claims paid by insurance company:		
Employee Benefits	$37 828	$28 066
Dependent Benefits	39 685	44 303
Total	$77 513	$72 369

Number of Disability Claims Forwarded to Insurance Company		
Hospital Benefits		
Kadlec Hospital	569	457
Other Hospitals	110	146
	679	603
Weekly Sickness and Accident Benefits	170	135
Total	849	738

Claims - Death Benefits (a)	August	Total to Date
Number	2	97
Amount	$11 500	$565 513

o Life Insurance

e Group Life Insurance Plan was discontinued November 30, 1950. As of August 31, 1952, 4 employees who are absent due to total disability are still participating in the Group Life Insurance Plan. They were not actively at work December 1, 1950, and therefore were not eligible to participate in the new Insurance Plan. However, they will become eligible upon their return to work.

Vacation Plan

Number of employees granted permission to defer one week of their 1952 vacation to 1953

	August			Total to Date		
	Weekly	Monthly	Total	Weekly	Monthly	Total
Engineering	3	12	15	45	53	98
Manufacturing	3	6	9	161	56	217
Utilities and General Services	8	1	9	159	31	190
Community Real Estate and Services	2	0	2	34	18	52
Financial	2	0	2	17	2	19
Employee and Public Relations	0	1	1	1	3	4
Radiological Sciences	0	1	1	4	7	11
Medical	0	0	0	6	1	7
General	0	0	0	0	1	1
Total	18	21	39	427	172	599

Total to date includes all claims under the old and new Insurance Plans and 6 deaths on which accidental death benefits were paid.

Payroll Section (continued)

Employee Benefit Plans (continued)

U. S. Savings Bonds	August	July
Number participating at beginning of month	4 305	4 289
New authorizations	87	85
Voluntary cancellations	(53)	(49)
Removals and transfers out	(31)	(20)
Transfers in	-	-
Number participating at end of month	4 308	4 305
Percentage of Participation		
G. E. Employees Savings and Stock Bonus Plan	43.0%	42.7%
G. E. Savings Plan	10.3%	10.4%
Both Plans	48.4%	48.4%
Bonds Issued		
Maturity value	$208 450	$233 500
Number	4 107	4 276
Refunds Issued	116	75
Revisions in authorizations	95	70
Annual Going Rate of deductions		
G. E. Employees Savings and Stock Bonus Plan	$1 655 914	$1 612 984
G. E. Savings Plan	450 014	443 278
Total	$2 105 928	$2 056 262

Withdrawal of U. S. Savings Bonds from G. E. Employees Savings and Stock Bonus Plan	August	Year to Date
Number of participants withdrawing Bonds	142	1 008
Maturity value of U. S. Savings Bonds withdrawn	$47 925	$345 255

Check-off of Union Dues

Number of Payroll Deduction Authorizations in Effect	8-31-52	Cancellations And Terminations	Additions	7-31-52
Hanford Atomic Metal Trades Council	1 323	15	52	1 286
Building Service Employees International Union, Local 201 (Medical Department Employees)	26	2		28
Hanford Guards Union, Local 21, of the International Guards Union of America	238		4	234
Total	1 587	17	56	1 548

Payroll Section (Continued)

Employees Who Have Entered Military Service

	Total to Date		
	Called to Duty	Volunteered for Duty	Total
Reserve Officers	30	3	33
Enlisted Reserve	52	6	58
National Guard	6	-0-	6
Selective Service	62	-0-	62
Voluntary Enlistments	-0-	103	103
Total	150	112	262

Number of Rent, Telephone and Hospital Deductions from Salaries

	August	July
House Rent	5 130	4 904
Dormitory Rent	894	1 006
Barracks Rent	195	180
Trailer Space Rent	148	137
Telephone	3 696	3 711
Hospital	577	546
Total	10 640	10 484

Annuity Certificates (for DuPont Service)

	August	Total to Date
Number Issued	2	94

Suggestion Awards

Number of awards	40	1 622
Total amount of awards	$1 430	$31 695

Employee Sales Plan

	August		
	Major Appliances	Traffic Appliances	Total
Certificates Issued	31	248	279
Certificates Voided	0	7	7

Salary Checks Deposited

	August		July	
	Weekly	Monthly	Weekly	Monthly
Richland Branch - Seattle-First National Bank	737	879	830	869
North Richland Area Office - Seattle-First National Bank	13	6	15	6
Richland Branch - National Bank of Commerce	509	337	549	335
Out of state banks (Schenectady Staff)	-0-	1	-0-	1
Total	1 259*	1 223	1 394**	1 211

* Week ended 8-24-52
** Week ended 7-27-52

Special Absence Allowance Requests

	August	July
Number submitted to Pension Board	7	3

% Absenteeism

Weekly - Men	2.21%	2.09%
Weekly - Women	3.42%	3.16
Total Weekly	2.52%	2.36%
Monthly	.87%	1.08%
Grand Total	2.09%	2.02%

GENERAL COST SECTION
MONTHLY REPORT

August, 1952

Operating cost reports for the month of July were issued August 12, 1952 which was approximately four days earlier than had been achieved in prior months. Earlier closing was due to better scheduling of work both in Cost Sections and in the Computing Unit, and was dependent in a large measure on the fact that payroll information was made available for cost use at a much earlier date. Continued emphasis is being placed on the problem of earlier closing dates in order to provide accurate information to management at an earlier date than was formerly possible. It is anticipated that monthly closing dates and the dates that management information is made available will be reduced approximately one full week.

The Summary of Operating Costs which included detailed schedules of Production and Research & Development costs as well as the General Overhead expenses was issued on August 12. On August 15, letters were issued to the General Manager which summarized Production Costs and costs of the Community Program incurred during July. Both letters included brief narratives of changes in costs from the prior month. Bogey estimates of Production costs through December, 1952 were made available to Plant Management on August 22.

Consolidated Cost and Budget

Work was continued in connection with formulating a unified coding system. A consolidated cost code book will be issued early in September. It is planned to inaugurate use of the revised system as of October 1, 1952.

During August sample summaries of budget information were prepared for proposed use in presentation of budget material to the Appropriation and Budget Committee for review. If approved, this presentation will be used in connection with the Mid-Year Budget Review.

Utilities and General Services Cost

Unit cost reports and financial statements were reviewed with the intent to make them more readable and to provide more information so as to supply better controls for management use. As a result, no unit cost statements were issued for month of July, but will be included in statements issued for August.

A new report was designed to detail area stores and spare parts warehousing expense. Report will be issued on a quarterly basis.

As a result of the inception of the microfilming program at the Records Center, an agreement was reached with Remington Rand whereby they will send film for processing via plant mail and the resultant postage will be billed to them on a monthly basis.

Community Real Estate and Services Cost

One employee was transferred to Utilities and General Services Cost to fill a vacancy in that unit and the work load and responsibilities in Community Cost were reassigned so as to avoid the need for replacement in that unit.

Portions of the Landlord Report were completed. Certain procedures were revised to reduce time of preparation of this report in the future and at the same time to afford better presentation.

Staff Departments Cost

A "Kardex" type file was established to record assignments of Technical Graduates on Rotational Training assignments in order to facilitate liquidation of their salary costs to the departments to which they are assigned.

During the latter part of the month duties of various personnel were reallocated in order to absorb the work previously assigned to an employee who terminated. It will be necessary to experience a major budget period before it is definitely known whether this reduction of personnel can be considered permanent.

MANUFACTURING COST SECTION
AUGUST, 1952

MAINTENANCE AND PLANT IMPROVEMENT

Indirect expense account codes have been opened for equipment maintenance in the Metal Preparation Section. These codes, approximately 150 in number, will replace all routine and normal work orders currently being used for equipment maintenance.

New work order forms are scheduled for delivery on the 15th of September. They will be available for use at the same time the new code structure is put into effect.

We now have only two active projects which are not covered by work orders. The work order system for reporting project cost is working satisfactorily.

The reporting of work order overruns has been continued with very good results. The report issued in August consisted of only 19 overruns out of an active listing of 5,385 work orders.

BUDGETS AND SPECIAL REQUESTS

Several inquiries involving billings made to A.E.C. Cost-Type Contractors since July, 1950 were received and information provided to Accounts Receivable Unit.

A budget meeting was held on August 26, to discuss presentation of Mid-Year Budget Review to the Appropriations & Budget Committee. This discussion centered around the necessity of keeping the total presentation within a maximum of sixty (60) pages which caused considerable difficulty in determining what information should be presented.

Personnel forecast sheets will be sent to the Financial Representatives for each section to provide necessary information for the Mid-Year budget review.

REPORTS AND RECORDS

A new method was employed by Utilities and General Services Department in charging Manufacturing Department for Janitor Services. This method charges Janitor Services to the section based on the number of janitors assigned to each building or facility. The former method was based on square foot service.

Unit Code #361, 234-5 Additional Facilities, was cancelled and process codes established for 234-5 and UO-3 units.

To give Metal Preparation Section better power cost information, new process codes were opened for Unit 378, Power 300 Area, for the following:

Well Water
Sanitary Water
Steam
Compressed Air
Process Sewage
Sanitary Sewage

PRODUCT COST ACCOUNTING

Statements were issued during August for the month of July. Difficulties arising on lack of uniformity of billing between AEC contractors and incomplete shipping and receiving data are being worked out. Forms of supplementary statements, with a lower classification than "Top Secret", are being worked out to give Managers cost and inventory information.

REACTOR SECTION ACCOUNTING

An analysis of the difference in Actual July costs and July budgeted amounts as reflected in the Operating Reports, was made for the section manager.

A suggestion was made to the section manager that a cost reduction committee be established for the section similar to those in operation in other General Electric Plants.

A cost meeting was conducted for the supervisors of the Radiation Monitoring Unit. The Operating and cost reports were reviewed.

An investigation regarding the possible reduction in sampling frequencies for Reactor Section process materials is to be made.

Draft of a proposed revised operating report form will be circulated to members of the Manufacturing Cost Section for comments.

During the month the taking of physical inventories of process materials in Reactor Section was witnessed and a brief report issued.

METAL PREPARATION SECTION ACCOUNTING

Meetings have been conducted for all Section Supervision to review the "Productive Maintenance" program which is now underway in the section. It is felt that by scheduling the frequency of minor and major over-hauls on all manufacturing equipment, use of complete and up-to-date parts lists and by following accurate job methods writeups, production may be improved.

An invitation was received from the Process Unit to conduct a meeting for their supervision to review the Operating Reports. This was done during the month with additional information provided regarding bases for allocation of costs and method of handling billings.

ENGINEERING COST SECTION
FINANCIAL DEPARTMENT MONTHLY REPORT

General

Effective August 1, 1952, the Budget function of Engineering Cost Section was decentralized. Budget personnel were assigned to the three cost units of this Section. Responsibility for budget preparation and cost reporting now rests within each cost unit. It is believed that this will allow closer coordination between these functions.

On August 23, the Engineering Cost Section was assigned new quarters in the 703 Building. The close proximity of contacts in the Financial and Engineering Departments has proved to be a substantial aid to the effectiveness of the Section.

Project Section Cost

An analysis and study of Project Section Unit Expenses was performed in an effort to obtain more effective rates for liquidation of expenses. These studies resulted in the establishment of accounts for Engineering and for Service in each of the line units in place of accounts for design and construction. An account was also established for 101 Shop Administration. This change was placed in effect on August 25, 1952. In establishing the new accounts it is believed that we will be able to show true costs for Engineering without supporting services such as material control, cost control and reports.

During the month unitizations were prepared and sent to Plant Accounting covering the following projects:

CA-456 Additional 13-Quad Telephone Cable from BY Exchange to Point "I"
CA-461 Maintenance Hot Machine Shop, 108-D
CA-468 Horizontal Rod Mock-Up Test Facilities - 189-D Bldg.
CA-474 Relocation of Facilities for Exponential Experiments
M-805 Transformer and Circuit Breaker Oil Reprocessing Facilities

AEM portions of the following AEC managed projects were completed and costs transferred to the AEC during August:

CA-457 Pile Technology Office Building - 100-D
CA-470 200-W Area Badge House Remodeling
IR-120 Underbuild of Bonneville Power Administration 13.8 KV Riverland - Midway Power Line

Design Section Cost

During the month, Work Authority No. AEC-121 (3) relating to Expansion Program at Hanford Works was received. Effective August 25, 1952, cost codes applicable to the program were closed and accumulated costs transferred to newly established codes as shown.

Old Codes		Accumulated Costs at Aug. 24, 1952	Authorized Funds
Code	Description		
200	100 Area Facilities (Water Plant Design)	$ 30 291	$ 55 000
201	100 Area Facilities (Reactor Design)	428 529	415 000
202	200 Area Facilities	15 264	10 000
203	300 Area Facilities	1 728	11 000

ENGINEERING COST SECTION

esign Section Cost

New Codes

Code	Description	Authorized Funds
304	CA-512-R 1952 Hanford Expansion 100-K Reactor Facilities	$1 455 000
305	CA-512-W 1952 Hanford Expansion 100-K Water Plant Facilities	160 000
513	CA-513 1952 Hanford Expansion 200 Area Facilities	715 000
514	CA-514 1952 Hanford Expansion 300 Area Production Facilities	100 000

Technical Section Cost

During August, in addition to the normal monthly reporting activities, a considerable amount of time was spent developing standard liquidation rates for Technical Section. Employees of the section were grouped into ten categories and a rate was arrived at for each group within each Unit of the Section. It is intended that weekly reports from the field which tell the number of hours worked on various cost codes will be converted to dollar amounts by use of the standard rates.

To prove the standards, a complete recasting of July costs was made resulting in a smaller amount of undistributed costs than was actually the case under the existing cost system.

Monthly cost reports were issued to the Manager - Technical on August 11, 1952. Other reports, summarizing and analyzing costs were issued on the same day or soon thereafter.

Accounts Payable

Early in the month the decision was announced that Accounts Payable Units of General Accounting Section and Engineering Accounting Section would be physically located in the 101 Building 3000 Area on August 23 and they would be consolidated at that time. Transfer of the personnel in the Engineering Accounts Payable Unit to General Accounting Section was effective September 1.

Several meetings were held to discuss problems in connection with the move, the assignment of space and the re-allocation of job functions were the major items of consideration. At month's end most of the problems of the operation of the unit on a consolidated basis had been solved.

Since the inception of construction in July, 1947 extending through August 22, 1952 there had been audited and approved for payment by this unit and subcontractors payroll audit unit expenditures totalling $309,352,000 for the expansion of Hanford Works. This figure does not include any amount for General Electric labor in connection with construction or subcontracts paid by Manufacturing or Community, but it does include reimbursements to Atkinson-Jones through September 30, 1951 at which time that responsibility was assumed by the Commission.

ENGINEERING COST SECTION

Accounts Payable (Con't)

At the close of business August 22 the accounts payable balance of $20,725.31 on Engineering ledgers was transferred to General Accounting ledgers.

There were 593 invoices totalling $510,197 processed from the period August 1 through 22 and total cash disbursed for the similar period amounted to $655,256.

INTERNAL AUDIT SECTION
MONTHLY REPORT

AUGUST, 1952

A report was issued covering a review of shipping orders originated by General Electric and by the Atomic Energy Commission covering the shipment of material under General Electric control. The report made recommendations for strengthening control procedures and increasing accountability for materials and equipment shipped.

The Inventory and Audit organization of Purchasing and Stores Section was disbanded on August 8, 1952 in line with our proposal that annual physical inventories of operations and excess materials be taken at one time. A decision has been made to take the annual inventories toward the end of the fiscal year 1953. Audit reviews and field inspections were made of nine physical inventories of general maintenance material taken by Inventory and Audit prior to the discontinuance of inventorying by caption.

Four internal auditors have been loaned to Payroll Section to assist in working out payroll preparation routines under the newly inaugurated IBM procedures.

An audit was begun of Contract No. W-7412-Eng-25 with the Department of Labor and Industries of the State of Washington. Purpose of the audit was to determine whether (1) the provisions of the contract are being complied with, (2) adequate controls are maintained for funds on deposit, (3) records are maintained to support disbursement of General Electric funds, (4) administrative expenses are in proportion to the amount of service rendered and (5) procedures for the settlement of claims against the General Electric Company are adequate. An internal auditor went to Olympia to make the necessary examination of the records maintained by the State.

One auditor attended the Pacific Coast Regional Conference of the Institute of Internal Auditors at Vancouver, B. C.

PLANT SECURITY AND SERVICES SECTION

MONTHLY REPORT - AUGUST 1952

SUMMARY

There were three major injuries during the month making a total of eleven for the year to date with a frequency of 0.93. The frequency rate for the same period in 1951 was 0.44.

There were fifteen industrial fire alarms with total losses of approximately $17.

Operation of the 200-West Laundry was changed from two shifts to one shift and resulted in reducing the force by fourteen employees. All employees were satisfactorily placed.

Microfilming of vital records was begun on August 25, 1952 by Remington Rand Company.

Total savings resulting from forms control and procedures analysis activities was $3,664. Accumulated savings from January 1, 1952 now exceeds $90,000.

A recapitulation of all unaccounted for classified documents was made and distributed to each principal file custodian throughout the Works with a request for thorough search of files and desks for missing material.

ORGANIZATION AND PERSONNEL

Number of employees on payroll:

	Beginning of Month	End of Month	Increase	Decrease
Staff	6	7	1 (a)	
Patrol and Security	630	618		12 (b)
Safety and Fire Protection	146	147	1 (c)	
Office Services (Laundry and Building Services, Clerical Services, Records Control and Procedures Analysis)	348	330		18 (d)
TOTALS	1,130	1,102	2	30

NET DECREASE: 28

(a) - Staff

1 - Transferred in

(b) - Patrol and Security

1 - Reactivated
1 - Deactivated
9 - Transferred out
3 - Terminations

(c) - Safety and Fire Protection

2 - New Hires
1 - Transferred from another Department
1 - Transferred to another Department
1 - Termination

(d) - Laundry and Building Services

1 - Reactivated
11 - Transferred to other Departments
2 - Deactivated
3 - Terminations

Clerical Services

11 - New Hires
3 - Transferred in
3 - Deactivated
8 - Transferred to other Departments
6 - Terminations

Procedures Analysis

1 - Transferred in
1 - Termination

SAFETY AND FIRE PROTECTION

Injury Statistics

	JULY	AUGUST	YEAR TO DATE	COMPARATIVE PERIOD 1951
Major Injuries	1	3	11	5
Sub-Major Injuries	1	2	17	12
Minor Injuries	361	377	3,038	2,510
Exposure Hours	1,416,340	1,474,276	11,767,736	11,328,237
Major Injury F/R	0.71	2.03	0.93	0.44
Major Injury S/R	0.005	0.038	0.058	0.042
Penalty Days	0	0	375	450
Actual Days Lost	7	56	302	23
Minor Injury F/R	2.55	2.56	2.58	2.22
Estimated Medical Treatment Time Required	1,452 hours	1,524 hours	12,288 hours	10,136 hours

Industrial Fires

Department	Area	No. of Fires	Cause	Loss
Manufacturing Department	100-D	1	Combustibles too near heat or flame	None
Engineering Department	200-E	1	Smoking or matches	None
Engineering Department	200-E	1	Burning and welding	None
Radiological Sciences	200-W	1	Combustibles too near heat or flame	None
Engineering Department	200-W	2	Flammable liquid & gases	None
Radiological Sciences	200-W	1	Flammable liquid & gases	2.50
Manufacturing Department	200-W	1	Flying embers	None
Manufacturing Department	300	2	Combustibles too near heat or flame	15.00
Utilities & Gen. Services	Outer	1	Combustibles too near heat or flame	None
Not chargeable to department	Outer	2	Lightning	None
" " " "	Outer	1	Flying embers	None
Utilities & Gen. Services	Outer	1	Electric	None

Safety Activities

The survey covering the safety meetings was completed during August and the composite report showed that 502 safety meetings were scheduled to be held. The Safety Engineers received minutes of 76% of these scheduled meetings, 8,901 persons should have attended meetings, the minutes showed 68% attended; Safety was the main topic of 95% of the meetings and the Safety Topic of the Month was discussed at 65% of the meetings.

A safety record board has been placed in the 101 Area. Improvement was noted in general housekeeping during August.

Arrangements were made to give safety coverage to the Hot Semi Works in the 200-E as it was taken over by operations during August.

The board showing the Safety Award plaques was moved to 100-D and 100-DR Areas this month.

Emphasis is being placed on the necessity of reviewing many of the new processes and changes in the old, so that hazards may be recognized and reduced to a minimum, such as slurry tanks in 200-W, general activity in Hot Semi, supplemental elevators in 100 Areas and additions of certain flux in 300 Area.

Activity of the subcontractors working on Power Houses in 300 and 200-West areas is being followed by the Safety Engineers. Unsafe practices are being held to a minimum.

The reports of the Area Accident Prevention Committees from the industrial areas continue to show an excessive number of unsafe conditions and items to be corrected.

A complete description of the Separations Safety Stampede in the 200 Areas and to be conducted September 2, was published in the August 29 issue of the Works NEWS. This safety contest is for the specific purpose of preventing major and sub-major injuries and improving housekeeping and the safe use of tools and equipment, also personal safety protective equipment and general safe practice; also credit is given for individual safety performance.

A requisition for a renewal of the Safety Book Matches was drawn up and the changes in design noted. These changes are to be considered by the various vendors before a new contract is let for 1953.

Fire Protection Activities

Twenty new employees were given fire protection orientation.

A demonstration of the operation of the fire alarm system was given to the Power and Maintenance Unit, 100-H Area and the Biology Section, 100-F Area.

The operation of the Chemox gas mask was demonstrated to the Power and Maintenance Unit at the 100-H Area.

A combustible gas demonstration was given to the Biology Section, 100-F Area.

Recommendations were made to the Pile Technology Unit for improving the fire safety of the 1709-D Building.

In the new Hot Semi Works the fire alarm system was placed in operation. The alarm system is interconnected with the fire fog system in the 276-C, fire detection and auxiliary boxes in the 201-C.

A fire detector system was recommended for the 303-J Building due to the critical material stored there.

Yearly change of canisters on all gas masks was made.

A total of 246 drills were conducted by the Fire Department.

A representative attended a fire school in Yakima during the month.

A talk on trouble shooting on the fire alarm system was given to the electricians in the 200-East Area.

The first prints of the Purex Plant were received for review.

A representative of Fire Protection attended a special meeting on a proposed scrubber for the TBP Plant. The process is to use an inflammable solvent.

The study of flameproof paper for covering contamination is progressing satisfactorily.

OFFICE SERVICES

Laundry and Building Services

Plant Laundry (200-W Area)	July	August
Pounds Delivered	178,303	187,138
Pounds Rewash	7,409	9,127
Total Dry Weight	185,712	196,265

700 Laundry		
Flatwork - Pounds	32,790	44,698
Rough Dry - "	17,288	18,536
Finished - "	2,256	2,538
Estimated Pieces	68,558	86,161
Total Dry Weight - Pounds	52,334	65,772

Monitoring Section (200-W Laundry)		
Poppy Check - Pieces	136,879	139,502
Scaler Check - "	196,228	185,733
Total Pieces	333,107	325,235

In the 200-W Laundry during the past month, one shift was eliminated and fourteen employees were given an R.O.F. This reduction was brought about due to our improved pretesting program, thus eliminating considerable rewash, the delay in starting the construction maintenance work on the 100 Area piles, and the curtailment of Tank Farm work in the 200 Areas.

The increased volume in the 700 Laundry was brought about by an increased amount of work coming from the Kadlec Hospital and dormitories.

Clerical Services

A concerted effort to reduce absenteeism is beginning to show positive results. Further improvement is hoped for during the coming months.

Central Mail

Volume of mail handled for August showed a small increase over the previous month, while postal funds used were slightly lower. Teletypes and store orders remained about the same.

Extensive moves and changes in the 703 Building required a complete revision of mail routes and stops in order to provide for all of these changes. The bringing up to date of addressograph plates has resulted in a minimum of mail being returned because of improper addresses.

Types and Pieces of Mail Handled	August	July
Internal	1,152,632	1,211,231
Postal	68,811	77,498
Special	1,709	1,602
Total Mail Handled	1,223,152	1,290,331
Total Postage Used	$ 2,175.22	$ 2,431.82
Total Teletypes Handled	3,039	3,107
Total Store Orders Handled	318	278

Addressograph

Addressograph facilities used primarily for payroll functions by the Financial Department and located in Rooms 234 and 236 were moved to Room 308 during the month. One Model 1900 Addressograph being used for this work was transferred to the Kaiser Company at the request of the AEC. The volume of work processed by addressograph showed an increase over the previous month. The permanent arrangement of addressograph facilities will not be possible until the Model 2000 machine, now on order, is delivered and placed in use.

	August			July		
	Number of Runs	Total Copies	Plates Changed & Added	Number of Runs	Total Copies	Plates Changed & Added
Plant Name List	89	102,906		85	94,486	
Housing List	12	71,593		11	64,682	
Payroll List	6	24,967	4,867	6	24,582	3,542

Office Equipment

A Service School was held during the week ending August 10 for four Journeyman Mechanics to receive instruction on Monroe calculators.

A meeting was held with representatives of the AEC concerning procedures for furnished Kaiser Engineering Company with office furniture and machines. The utilization survey is progressing rapidly and should be completed about the middle of September.

Emergency action was taken to obtain an additional Model 1250 Multigraph for producing purchase orders. The Friden Square Root calculators were delivered during the month and a demonstration was conducted to instruct employees of the Statistical and Computing Section in the proper use of the machines.

Two carloads of straight and swivel chairs for replacement purposes were received on August 19. These chairs are being stored in the basement of the fifth wing, 703 Building, due to an overload in our warehouse in North Richland.

	August	July
Office Machines repaired in Shop	148	195
Office Machine Service Calls	457	434
Machines picked up by Survey	118	23
Total Machines Serviced	723	652

Furniture Moving & Repair

Maintenance Calls Completed	56	88
Office Moves	9	10
Pickups for Records Center	43	35
Store Orders Filled	272	271
Pieces of Furniture delivered	517	519
Property Transfers Completed	32	51
Exchanges Made	131	40
Furniture Sent to McNeil Island	52	108
Furniture Returned from McNeil Island	32	51
Pieces furniture delivered on Project	4	

Central Printing

The volume of printing again showed a good increase for the month of August. Requests for photographic half tones have been especially heavy this month necessitating some overtime to meet the demands.

Work Completed:	August	July
Orders Received	365	385
Offset Orders completed	332	325
Offset Copies	1,138,162	932,612
Letter Press Completed	62	53
Letter Press Copies	81,714	53,535
Orders on Hand	56	78
Negatives Masked	342	347
Negatives Processed	594	646
Zinc Plates Made	288	554
Photo Copy Prepared	351	160

Stenographic Services

Many large typing jobs were prepared during the month including radio scripts for Public Relations Section, a procedures manual for Technical Section, procedures manual for AEC subcontractors, and Project Proposal for Transportation facilities.

The need for stenographers is becoming critical. Employment is having difficulty obtaining new hires and at the present rate, the stenographic pool will be reduced to ten employees by the end of September with no relief in sight. This situation makes it impossible to effect any further transfers until our forces are again brought up to normal strength.

Breakdown of Hours	August	July
Dictation and Transcription	0.0	26.5
Machine Transcription	30.0	110.0
Letters	71.0	39.5
Rough Drafts	18.0	18.5
Stencils, Dittos, Duplimats	590.5	474.0
Miscellaneous	347.0	479.0
Meeting Time	5.0	2.0
Training Time	386.0	611.5
Absentee Time	12.0	8.0
Holiday and Vacation Time	80.0	136.0
Unassigned Time	48.0	48.0
Total	1,587.5	1,953.0
Employees Loaned to Other Departments	1,228.0	1,075.5
Total Hours Available	2,815.5	3,028.5

Area Mail & Duplicating Services

The production in duplicating again showed an upward trend over the previous month. This is attributed primarily to the large amount of duplicating now being performed for Purchasing Section. After a series of meetings with Purchasing and Stores Section, it was agreed that Office Services would assume the responsibility of duplicating all purchase orders and would absorb their existing equipment as well as obtain an additional Model 1250 Multigraph to enable us to handle the increased volume of business caused by the expansion program at Hanford Works. One ditto and one mimeograph machine were excessed from the 300 Area during the month, making a total to date of seven mimeograph and four ditto machines excessed by Area Mail and Duplicating.

Area Mail Statistics	August	July
Total Internal Mail Handled	204,477	205,527
Area Duplicating Statistics		
Orders Received	2,511	2,499
Orders Completed	2,441	2,379
Orders on Hand	153	148
Offset Plates	11,968	10,984

	August	July
Offset Copies	685,506	570,305
Stencils	746	1,098
Stencils-Copies	45,096	55,791
Ditto Masters	1,292	1,539
Ditto Copies	32,807	43,658
Xerox Plates	1,342	2,792

Records Control

Quantity of records received, processed and stored:

Employee & Public Relations Department	16	Standard	Storage	Cartons
Engineering Department	507	"	"	"
Financial Department	244	"	"	"
General Administrative Department	5	"	"	"
Law Department	82	"	"	"
Manufacturing Department	89	"	"	"
Radiological Sciences Department	16	"	"	"
Utilities & General Services Department	57	"	"	"
TOTAL	1,016	Standard	Storage	Cartons

Persons provided records service: 941

Records cartons issued: 1,108

Records destroyed: 26

Percentage of the Records Service Center Vault occupied by records is 97% excluding Civilian Defense portion.

Uniform filing was established in 23 offices during the month. A total of 340 offices have installed the uniform filing system to date.

Thirty-four requests for file cabinets were received. Twenty-eight requests were filled. Four combination locked cabinets were exchanged by substituting key locked cabinets resulting in a savings of $500.00 ($200.00 cost of combination cabinet minus $75.00 cost of key locked cabinet equals $125.00 saving per cabinet exchanged). Six orders for cabinets were cancelled resulting in a savings of $450.00. Four key locked cabinets were picked up with no exchange resulting in a savings of $300.00.

Thirteen Evaluations of Records for disposal were completed with General Electric internal approval. Seventeen Evaluations of Records for disposal were approved by the Records Committee. Ten additional Evaluation of Records for approval were developed and submitted for internal departmental approval.

Special Agreement G-11 with Remington Rand was approved by the AEC covering the microfilming of vital records. Microfilming work was started August 25.

Procedures Analysis

	July	August
Printing Orders Received	501	515
Printing Orders Rejected	20	27
New Form Numbers assigned	134	117
Forms Designed	71	65
Suggestions Processed	5	9

There were 91 new permanent forms and 26 new temporary forms established during the month of August.

The following suggestions have been received and replies have been prepared and returned for use by the Suggestion Committee:

9062	Paper Envelopes
9069	Personnel Folders
9019	Stores Catalog
9271	Consolidation of Forms C-653-DS and S-87-DS
7166	Kardex Cards
7576	Police Department Address Cards
8131	Security Classification
9291	Laundry Disposal Notice - Revision and Rejection
9374	Steno Manual - Classified Files (Chicago Style Manual)

A short survey was made concerning the Form H-3100-D "Chemical Analysis Date - 234-5". As a result of this survey, the form has been redesigned. This new design will eliminate all hand composition and expedite the process. The savings on the amount of clerical effort is somewhat undetermined at this point. However, there will be a $670 annual savings realized in forms cost only. This savings is to be included in the statistics of this monthly report.

A new Procedures Study has been started this month at the request of the Union Relations Section of the procedures presently being used by the Suggestion System. It has been emphasized that particular problems are of a critical nature in that a high turnover of clerical personnel is creating a large backlog of unprocessed suggestions. Upon preliminary survey, it is felt that their system for receiving, processing, and returning replies to the suggestor are antiquated. A cost analysis is in the process of being made at the present time. The Procedures Study is now about 75% complete and a possible three alternative methods are going to be presented to the Suggestion System supervision.

At the present time, there are several analyses that are in a near state of completion in that a final draft of the report is either being typed or prepared for distribution. These analyses are as follows:

Process Flow Charts - Security and Patrol Area Badge Houses Report has been completed and distributed to the Security supervision. The Procedures Analysis Group is available to discuss and assist in installing the recommendations upon request. The final rough drafts were submitted to Security and Patrol during the week ending August 24.

Analysis of Classified Files - Technical Services Unit. The report is in the final rough draft state and being prepared for typing.

Housing and Dormitory Analysis is in a near state of completion. The writing of the final rough draft is pending the receipt of this equipment. The Wassel Corporation has on order one file-type desk which should be sent in the very near future. Accessory equipment such as plates, frames, and cabinets for the Addressograph equipment for Housing has been placed on order. The installation of the system's application will be performed upon receipt of this equipment.

Handling and Accounting for Personal Type Supplies and Portable Type Tools is being typed on paper masters for duplication and distribution. This analysis has been broken into two individual reports, the first one being "Tools and Supplies Control" and the Second one being "Protective Clothing Control". The estimated annual savings, while being rather large, will be included in the monthly report for September.

A regularly scheduled indoctrination meeting for the Procedures Analysis Group was held August 26. During the meeting, a film was shown to the Group entitled "It's Our Job". The film dealt primarily with the proper and improper methods of supervision of employees. A short meeting was held after the showing of the film for discussion purposes. This discussion was also a review for current problems that the Analysts have encountered in their presently assigned procedure studies.

The request for assistance by the Project Section in setting up a new file and tickler system on all current projects has been assigned after additional scoping of the problem involved. It was found that the problems involved were not of the nature of a procedures study. The Analyst advised Project personnel involved on the different possibilities of setting up a new file and tickler system and will be on hand to give any assistance that is requested. The assignment will be handled on a fill-in basis along with the regularly assigned procedures studies.

Photographic Services, Public Relations Section, requested a cost comparison analysis on the installation of an intercom system for the Photographic Services in Building 69-X. Two possible systems were considered. One was the use of the Voca-tron Units and the other was a master and sub-station type system. The type of unit required would be of a master and five sub-unit type stations. It was found that the Voca-tron Units were satisfactory from the functional viewpoint. However, the cost of each unit is approximately $50. This would bring the total cost to around $300 for a Voca-tron Intercom System. The equivalent amount of service could be obtained from having the Electrical Maintenance Group here on the project install the standard master and sub-station units for considerably less money. The total cost for a master station and five sub-unit stations would come to $200. On the basis of this cost comparison, the Photographic Services Group are going to have installed the master and sub-station unit system. Since there was no actual money expended, there will be no savings derived from this analysis.

Savings Realized for August	One Time	Annual Recurring
Forms Control	$ 2,242	$ 752
Analysis	---	670
Total Savings for the Previous Month	$ 5,909	
Total Savings for August	3,664	
Accumulated Savings from January 1, 1952	$91,433	

SECURITY AND PATROL

Document Report

Number of technical and scientific documents classified "confidential or higher reported unaccounted for August 1: 329

Documents (technical and scientific) reported unaccounted for during August 1952: (This does not include the results of the recent Classified Files inventory which has not been completed at this time.) 0

Documents (technical and scientific) reported found during August: 15

Number of technical and scientific documents unaccounted for August 31: 314

Number of non-technical documents unaccounted for August 1: 8

Documents (non-technical) reported unaccounted for during August: 9

uments (non-technical) reported found during August: 7

Number of non-technical documents unaccounted for August 31: 10

Total number of non-technical and technical and scientific documents unaccounted for August 31: 324

The Non-Technical Document Review Board held three meetings during the month of August and reviewed 116 documents. Of this number

43 were declassified
44 were downgraded to "Restricted"
3 were not within the scope of the Board
23 had classification retained and
3 were referred to the Coordinating Organization Director.

There were six security violations during August committed by General Electric personnel involving improper storage of classified material.

Security Education

There were 319 security meetings held during the month and attended by 4,651 employees.

A representative of Security showed the following security films during the month:

"Fitting 'U' Into Security" was shown at three meetings with an average attendance of twenty-six employees per meeting.

"Sabotage" was shown at three meetings with an average attendance of thirty-five employees at each meeting.

"The Case of The Smokeless Chimney" was shown at three meetings with an average attendance of twenty-three people per meeting.

"The Man on the Left" was shown at ten meetings with an average attendance of thirty-six people per meeting.

"Only the River" was shown at seventeen meetings with an average attendance of thirty-three employees per meeting.

GE Security Bulletin No. 66 entitled "Pipe Lines to Freedom" was distributed August 28.

Five hundred large posters and 250 bus posters were distributed in the plant areas and the busses on August 7, with the slogan "Guard It - Security Is In Your Hands" appearing across the face of the poster.

The following "A-B-C" security pamphlets were distributed during August:

2,000 copies bearing the slogan "Going Places" were distributed to all the plant areas.

8,000 copies bearing the slogan "Security Is a Family Responsibility" were mailed to the residences of all employees.

A small card bearing the message regarding the handling and care of the photo identification pass were made and inserted along with the photo pass in the folder and given to all new employees.

The following Organization and Policy Guides concerning Security were issued during the month:

15.5 "Procedure for Top Secret Clearance Works Personnel"
15.10 "Authorization and Control of Visitors"
15.22 "Approval for Offsite Transmittal of Internal Classified Documents"

One hundred twenty five employees of the General Electric Company received a "Q" security orientation talk from either a representative of the Security Unit or an Area Patrol Captain during the month.

The names of eleven people were submitted to the Atomic Energy Commission for emergency clearance processing this period.

Statistical Report of Security Patrol Activities

	100-B	100-D	100-F	100-H	200-E	200-W	300
Cat Searches	93	94	93	93	93	138	9
Escorts	21	24	15	64	86	168	67
Ambulance Runs	2	1	3	4	0	7	3
Passes issued:							
One day temporary	9	19	6	6	5	76	36
Travel	0	0	0	0	0	0	52
Red Tag	173	160	148	28	135	827	287
Telephonic	0	6	0	1	0	0	15
Supervisors' Post contacts	539	403	541	331	399	1,466	851

Buildings and Doors Opened	168
Railroad gates opened	210
Master System Keys Issued	87
Operations Gas Pumps	115

Arrest Report

Violation	Number of Violations	Cont. Cases from July-1952	Cases Cleared	Pending	Fined	Dismissed
Speeding	7	0	5	2	5	0
Illegal Passing	1	0	1	0	0	1
	8	0	6	2	5	1

Citation Tickets issued:	8
Warning Tickets issued:	0
Verbal Warnings:	2

The following training courses were received by 268 Security Patrolmen at the Training School during the month:

Safety	1/2 hour
Health	1/4 hour
Security	1 hour
Operations Class No. 1	1/2 hour
Operations Class No. 2	1 hour
Security Film	1 hour
Handgun	1 3/4 hours
Sub Machine Gun	1 hour
Rifle	1 hour

Security Patrol Post Changes

On August 4, the 201-C controlled area, 200-E Area, was established as a security "exclusion" area, with entrance controlled by one Patrolman around the clock. A Kardex identification system was placed in operation.

Effective August 2 construction work at the Hot Semiworks, 200-E Area, was completed. construction corridor was closed, thus making the 201-C Area a part of the 200-E erations Area proper.

Security Field Inspection Activities

Contacts made to locate unaccounted for documents:	8
Searches conducted to locate unaccounted for documents:	3
Classified documents located:	22
File combinations overdue, custodians advised to change them:	21
File combinations changed:	14

General

The annual blueprint inventory was completed during the first part of August with the exception of a few offices and individuals. A total of 202 unaccounted for prints was located and 96 were listed as still outstanding.

On August 1, an additional traffic control group was established in order to pace the incoming traffic for the day shift. Each area has a cruiser car report to the Richland Barricade at 7:00 A.M. From there, a car is dispatched at three to five minute intervals to pace traffic on the plant highways. This procedure provides us with six additional traffic cars at this peak period.

The Patrol and Security staff was reorganized on August 1 in order to more efficiently balance the work load of the various sub-units.

Operations Order I-266 entitled "Area Badge-Deactivated Employees" was issued August 4. This provides a procedure which will increase the control of area clearance of employees who are deactivated and removed from the payroll because of personal illness or other reasons. Area badge and building clearances for deactivated employees will be withdrawn from the active file until the date these people return to active status.

Beginning 12:00 midnight August 15 and ending at 4:30 PM August 17, the United States Army conducted a planned military problem within the plant "controlled" area. Groups participating in the problem consisted of an aggressor force (Army), a defensive force (Army) and Security Patrol. Security Patrol's activities in this problem were confined to the protection of "limited" areas. The aggressor and/or defensive forces made no attempt to enter "limited" areas, but moved in the vicinity of these areas. On one occasion, the 100-B Area Patrol captured one aggressor (five simulated) near the 105-C Badge House who was turned over to the Military. This occurred at 4:30 A.M., August 16. During the entire problem, Security Patrolmen were called out several times on Plan "A" to investigate what was thought to be aggressor forces, but were unable to capture them due to darkness.

During the month of August a recapitulation of all unaccounted for classified documents was made and distributed to each principal file custodian throughout the plant. A request was made for each custodian to carefully review his files and desks in an effort to locate this material. The services of representatives of the Security Patrol Unit were made available in making these searches.

There were 1,689 badge transactions completed during the month.

HANFORD WORKS
General Electric Company
Richland, Washington

REPORT OF VISITORS FOR PERIOD ENDING AUGUST 31, 1952

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Restricted Data Areas
MEDICAL DEPARTMENT							
I. Visitors to this Works							
C. P. Miller, Consultant University of Chicago Chicago Illinois	Consultation on biological data	W. D. Norwood, M.D.	8-25-52	8-27-52	X	100-F	XXX
S. T. Cantril Tumor Institute Swedish Hospital Seattle, Washington	Medical consultation	W. D. Norwood, M.D.	8-25-52	8-26-52	X		
DESIGN SECTION-ENGINEERING DEPARTMENT							
I. Visitors to this Works							
R. A. Anderson Panascan, Incorporated Chicago, Illinois	Supervise repair of 105-C instrument equipment manufactured by his firm, damaged in shipment	E. S. Day, Jr. B. E. Woodward	8-6-52	8-8-52	X	105-C	
R. L. Tower Tower Equipment Company Seattle, Washington	Supervise repair of 105-C instrument equipment damaged in shipment	E. S. Day, Jr.	8-6-52	8-8-52	X	105-C	
E. J. Baughman General Precision Laboratory Pleasantville New York	Discuss application of industrial television	G. S. Cochrane	8-8-52	8-8-52		X	700

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass	Areas
D. R. Reed American Cyanamid New York, New York	General information exchange on Chemical Plant design	W. B. Webster	8-11-52	8-15-52	X		700
R. W. Moulton University of Washington Seattle, Washington	Discuss graphite drying tests being conducted at University	C. A.Sege G. M.Roy	8-26-52	8-26-52	X		105-C 100-D 105-D,189 700; 300-XXX
C. R. Gatchen Pacific Branch Induction Company Seattle, Washington	Inspection of instrumentation	J. M. Fox J. W. Lingafelter	8-20-52	8-21-52		X	300-XXX
II. Visits to other Installations							
J. R. Fritz to: Argonne National Lab. Chicago, Illinois	Discuss fluid control systems for reactors	W. R. McDonell A. Amorosi E. J. Hart	9-2-52	9-5-52	X		
C. A. Mansius to: Argonne National Lab. Chicago, Illinois	Discuss fluid control systems for reactors	W. R. McDonell A. Amorosi E. J. Hart	9-2-52	9-5-52	X		
J. H. Snyder to: Charles T. Main, Inc. Boston, Massachusetts	Engineering consultation on water plant design	R. K. Patterson	8-18-52	8-22-52	X		
E. P. Peabody to: Bonneville Power Adm. Portland, Oregon	Discuss coordination of 230KV Relaying System	BPA-O.A. Dumuth	8-21-52	8-23-52		X	
D. A. Hoover to: Whiting Corporation Harvey, Illinois	Consultation on design and procurement of remote cranes	Chief Engineer	8-18-52	8-19-52		X	
D. A. Hoover to: Harnischfeger Corp. Milwaukee, Wisconsin	Consultation on design and procurement of remote cranes	Chief Engineer	8-19-52	8-19-52		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass	Areas
D. A. Hoover to: Manning, Maxwell & Moore Muskegon, Michigan	Consultation on design and procurement of remote cranes	Chief Engineer	8-25-52	8-26-52		X	
C. F. Quackenbush to: General Electric Company Lynn, Massachusetts	Discuss turbo-generator power units	- -	8-22-52	8-22-52		X	
J. H. Snyder to: General Electric Company Lynn, Massachusetts	Discuss turbo-generator power units	- -	8-22-52	8-22-52		X	
H. S. Davis to: U. S. Corps of Engineers Troutdale, Oregon	Discuss proposed concrete test program	L. Brown	8-4-52	8-4-52		X	

PROJECT SECTION-ENGINEERING DEPARTMENT

I. Visitors to this Works

F. P. Robinson, Jr. General Electric Company Pasco, Washington	Inspection of equipment	G. B. McDonald	8-20-52	8-22-52	X	105-C	
G. M. Collins General Electric Company Seattle, Washington	Inspection of equipment	G. B. McDonald	8-20-52	8-22-52	X	105-C	
R. A. Moncrieff Charles T. Main, Inc. Boston, Massachusetts	Consultation on Project CG-506, Retantion Basins	P. J. O'Neil H. P. Shaw J. H. M. Miller	8-6-52	8-7-52	X	100-H	107

II. Visits to other Installations

F. H. Ames, Jr. to: General Engineering Lab. Schenectady, New York	Close out Project C-413	J. E. Brown, Jr.	8-19-52	8-21-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
J. S. McMahon to: National Carbon Company New York, New York	Negotiate contract	C. O. Kleinsmith	7-29-52	8-1-52		X	
R. J. Benckenstein to: Graybar Electric Company Seattle, Washington	C-438 Project, Ball 3-X Safety System	Mr. Michaels	8-27-52	8-28-52		X	
R. J. Benckenstein to: General Electric Seattle, Washington	C-438 Project, Ball 3-X Safety System	W. W. Walker	8-27-52	8-28-52		X	
R. J. Benckenstein to: H. F.Soderling Company Seattle, Washington	C-438 Project, Ball 3-X Safety System	Mr. Soderling	8-27-52	8-28-52		X	
R. O. Anderson to: Stephens-Adamson Company Aurora, Illinois	Check drafting design	G. E. Thiel	8-4-52	8-4-52		X	
EMPLOYEE AND COMMUNITY RELATIONS DEPARTMENT							
I. Visits to other Installations							
W. D. Smyth to: Knolls Atomic Power Lab. Schenectady, New York	Obtain information with respect to Suggestion System policies	L. L. German H. E. Scott	8-6-52	8-7-52		X	
RADIOLOGICAL SCIENCES DEPARTMENT							
I. Visitors to this Works							
C. C. Gamertsfelder Aircraft Nuclear Propulsion Project Lockland, Ohio	Discuss remote site negotiations	H. M. Parker J. M. Smith, Jr.	8-27-52	8-29-52	X		
C.M. Barnes U. S. Army Washington, D. C.	Temporary acess for training in our prcedures	M. L. Mickelson	8-18-52	9-19-52		X	100-C 190-C 100-F 108-F

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass.	Areas
II. Visits to other Installations							
P. L. Eisenacher to: Knolls Atomic Power Lab. Schenectady, New York	Conference on radiation instrumentation	C. A. Hansen, Jr. L. J. Cherubin	8-7-52	8-8-52	X		
R. F. Foster to: Oak Ridge National Lab. Oak Ridge, Tennessee	Ecological-radiological survey meeting of Columbia and Tennessee Rivers Symposium	L. Krumholz	8-25-52	8-30-52	X		
C. C. Gamertsfelder to: Idaho Operations Office U. S.Atomic Energy Commission Idaho Falls, Idaho	Discuss ANP health physics problems on radiation	Dr. B. V. Beard	8-4-52	8-6-52	X		
W. A. McAdams to: Division of Biology & Medicine U. S. Atomic Energy Commission Washington, D. C.	Conference to consider problems of photo-dosimetry and standardization for test activities	W. D. Claus	8-18-52	8-19-52	X		
J. W. Porter to: Brookhaven National Lab. Upton, Long Island, New York	Consultation on similar biology problems	Dr. Singleton	9-11-52	9-12-52	X		
MANAGEMENT STAFF							
I. Visitors to this Works							
J. M. Cleveland, Jr. Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training on analytical methods and analysis of material handling	L. B. Bradley F. W. Albaugh H. W. Murray	7-14-52	8-28-52	X		700 200-W 231, 234, 2
M. Virginia Del Monte Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training in Health Physics Laboratory methods, procedures and study of materials	L. B. Bradley H. M. Parker H. A. Meloeny	7-14-52	8-1-52	X		700 221-U, 222-U 300-XXX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass. Areas
E. L. Childs Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training in analytical methods and analysis of materials	L. B. Bradley R. Roberts H. W. Murray	8-11-52	9-26-52	X	700 200-W 231, 234,235
V. L. Easterly Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training in statistical quality control required on "49"	L. B. Bradley B. F. Butler	7-14-52 8-11-52	10-24-52 8-30-52	X X	700 300-XXX 200-W 234, 235,231 200-W 231
C. E. Lundin Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training for operations related to Buildings 71 and 234-5	L. B. Bradley R. Ward R. S. Bell	7-28-52	8-24-52	X	700; 300-XXX 200-W 231, 234, 235 100-B 105, 111-B
J. J. Guiteras Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training on spectro-chemical procedures	L. B. Bradley J. W. Hall R. E. Roberts	8-11-52	11-30-52	X	700; 300-XXX 200-W 234, 235
J. W. Guthrie Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training on spectro-chemical procedures	L. B. Bradley J. W. Hall R. E. Roberts	8-11-52	11-30-52	X	700; 300-XXX 200-W 234, 235
L.A. Faw Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training on operations related to Building 71	L.B. Bradley R. S. Bell	8-11-52	8-24-52	X	700; 300-XXX 200-W 231, 234, 235
J.E. Norberg Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training on operations related to Building 71	L. B. Bradley R. S. Bell	8-11-52	8-24-52	X	700; 300-XXX 200-W 231, 234, 235
H. W. Vaughan Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training on analytical methods and analysis of material handling	L.B. Bradley F..W.Albaugh H. W. Murray	7-14-52 8-27-52	8-29-52 8-30-52	X X	700 200-W 231, 234, 235 300-XXX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass Areas
L. D. McIsaacs Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training on analytical methods and analysis of materials	L. B. Bradley R. E. Roberts H. W. Murray	8-11-52 9-10-52	9-26-52 8-26-52	X X	700 200-W 231, 234, 2 Redox, 200-W 221- and 300 XXX
J. N. Alberts Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training on spectro-chemical procedures	L. B. Bradley J. W. Hall R. E. Roberts	8-11-52	11-30-52	X	700 200-W 234, 235
J. W. Belanger General Electric Company New York, New York	Consultation on policies and HW	W. E. Johnson	8-12-52	8-14-52	X	All Areas-all Bld except 235
W. J. Fleming X-ray Department General Electric Company Schenectady, New York	Consultation on radio-active isotopes	W. I. Patnode	8-19-52	8-21-52	X	700
E. D. Trout X-ray Department General Electric Company Schenectady, New York	Consultation on radio-active isotopes	W. I. Patnode	8-19-52	8-21-52	X	700
J. E. Jacobs X-ray Department General Electric Company Schenectady, New York	Consultation on radio-active isotopes	W. I. Patnode	8-19-52	8-21-52		X 700
M. C. Leverett Aircraft Nuclear Propulsion Project Lockland, Ohio	Inspection of facilities and discuss operations	W. E. Johnson A. B. Greniniger W. K. Woods	8-27-52	8-29-52	X	All Areas-All Bld except 235
J. S. Parker Aircraft Nuclear Propulsion Project Lockland, Ohio	Inspection of facilities and discuss operations	W. E. Johnson A. B. Greninger W. K. Woods	8-27-52	8-30-52	X	700 Area

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass	Areas
R. C. Mark Aircraft Nuclear Propulsion Project Lockland, Ohio	Coordinate technical recruiting activities	D. W. McLenegan R. E. Curtis	8-27-52	8-29-52		X	100-H 105 Redox
II. Visits to other Installations							
J. W. Conley to: Knolls Atomic Power Lab. Schenectady, New York	Review project activities	K. R. Van Tassel W. W. Kuyper L. L. German	9-3-52	9-5-52	X		
J. H. Julien to: Idaho OPerations Office U. S. Atomic Energy Commission Idaho Falls, Idaho	Gain better perspective for training of their personnel at HW	L. A. Johnston	8-5-52	8-5-52	X		
W. W. Smith to: Knolls Atomic Power Lab. Schenectady, New York	Discussion on Accounting and Contract matters	G. R. Prout B. R. Prentice R. Turner	9-3-52	9-10-52	X		
LAW DEPARTMENT							
I. Visitors to this Works							
L. K. Grean Knolls Atomic Power Laboratory Schenectady, New York	Discussion on contractual matters	G. C. Butler	8-18-52	8-22-52		X	
H. E. Scott Knolls Atomic Power Lab. Schenectady, New York	Discussion on contractual matters	G.C. Butler	8-18-52	8-22-52		X	
R. Turner Knolls Atomic Power Lab. Schenectady, New York	Discussion on contractual matters	G. C. Butler	8-18-52	8-22-52		X	
MANUFACTURING DEPARTMENT							
I. Visitors to this Works							

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
J. W. Dickinson Linde Air Products Company Seattle, Washington	Discuss problems on welding stainless steel	H. C. Money C. E. Geer	8-29-52	8-29-52		X	100-D 1717-D
F. P. Robinson, Jr. General Electric Company Pasco, Washington	Check electrical installations	H. A. Carlberg	8-27-52	8-27-52		X	200-E XXX
D. F. Crumb International Business Machines Richland, Washington	Repair IBM machines	L. T. Hagie	8-11-52	8-11-52		X	100-H 105
M. E. Norby International Business Machines Richland, Washington	Repair IBM machines	L. T. Hagie	8-27-52	8-27-52		X	100-H 105
M. R. Myers International Business Machines Richland, Washington	Repair IBM machines	L. T. Hagie	8-11-52	8-11-52		X	100-H 105
F. P. Robinson, Jr. General Electric Company Pasco, Washington	Check GE Mass Spectrometer in 234 Bldg., Zone 3, Instrument Shop	J. E. Kaveckis	8-15-52	8-15-52		X	200-W 234
W. V. Goeddel North American Aviation Co. Downey, California	Consultation on gas problems	J. J. Cadwell	8-4-52	8-20-52	X		100-D 105 105-C 300- XXX
I. Weeks NorthAmerican Aviation Co. Downey, California	Prepare for shipping and packaging graphite parts	H. L. Sterling	8-4-52	8-6-52	X		100-D 105 105-C 100-H 105 300- XXX
R.D. Keen North American Aviation Co. Downey, California	Prepare for shipping and packaging graphite parts	H. L. Sterling	8-5-52	8-6-52	X		100-D 105 101

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass	Areas
H. Burgess North American Aviation Co. Downey, California	Prepare for shipping graphite material	H. L. Sterling	8-6-52	8-7-52	X	100-D 101	105-DR
C. A. Welch North American Aviation Co. Downey, California	Prepare for shipping graphite material	H. L. Sterling	8-6-52	8-7-52	X	100-D 101	105-DR
J. W. Dickinson Linde Air Products Company Seattle, Washington	Consultation on problems pertaining to power operations in 100-D Area	R. T. Jessen F. Cox, Sr.	8-29-52	8-29-52		X 100-D	XXX
K. A. Jones Travelers Insurance Company Seattle, Washington	Inspect 100 Area 184 Building Boilers	A. Frew E. R. Hill K. W. McKay	8-5-52	8-6-52		X 100-B 100-D 100-F 100-H	184 184 184 184

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II. Visits to other Installations

W. M. Mathis to: National Lead Company Fernald, Ohio	Review heat treating procedures during test runs	G. W. Wunder	8-4-52	8-7-52	X		

PLANT SECURITY AND SERVICES SECTION-UTILITIES AND GENERAL SERVICES DEPARTMENT

I. Visits to other Installations

T. B. Pugh to: National Carbon Company Cleveland, Ohio	Consultation on security for G-5 Contract	G. H. Fancher C. G. Elrick G. Roberts	8-5-52	8-5-52	X		
T. B. Pugh to: National Carbon Company Clarkesburg, West Virginia	Consultation on security matters for G-5 contract	V. H. Wills R. L. Mansfield C. G. Elrick J. S. Whittaker	8-6-52	8-7-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
STATISTICAL AND COMPUTING SERVICES SECTION-UTILITIES AND GENERAL SERVICES DEPARTMENT							
I. Visitors to this Works							
M. R. Meyers International Business Machines Richland, Washington	Service IBm equipment	P. M. Thompson	8-1-52	8-31-52		X	700 722-A
C. G. Kruse International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson	8-1-52	8-31-52		X	700 722-A
D. F. Crumb International Business Machines Richland, Washington	Service IBm equipment	P. M. Thompson	8-1-52	8-31-52		X	700 722-A
F. Corazza International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson	8-1-52	8-31-52		X	700 722-A
R. C. Warren International Business Machines Richland, Washington	Services IBM equipment	P. M. Thompson	8-1-52	8-31-52		X	700 722-A
M. E. Norby International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson	8-1-52	8-31-52		X	700 722-A
V. L. Easterly Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Study application of statistical methods to problems of accountability	C. A. Bennett	7-14-52	10-25-52	X		300 3703 200-W 231, 234, 235
II. Visits to other Installations							
C. A. Bennett to: University of Connecticut Storrs, Connecticut	Discussion at summer seminar on "Statistics in Chemistry"	- -	8-4-52	8-7-52		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass	Areas
PURCHASING AND STORES SECTION-UTILITIES AND GENERAL SERVICES DEPARTMENT							
I. Visitors to this Works							
D. A. Westermeyer Consolidated Freightways Kennewick, Washington	Deliver material on order 10077	H. L. Morgan	8-1-52	8-1-52		X	100-D XXX
						X	100-F XXX
	Deliver material on order 93029	H. L. Morgan	8-5-52	8-5-52		X	100-B 105
						X	100-F 105
	Deliver material on order 10077	H. L. Morgan	8-6-52	8-6-52		X	100-D 105-D
	Deliver material on order 100729	H. L. Morgan	8-8-52	8-8-52		X	100-D 105-D
						X	100-F 105
	Deliver material on order HW 10077	H. L. Morgan	8-11-52	8-11-52		X	100-F XXX
						X	100-D XXX
	Deliver material on order HW 10077	H. L. Morgan	8-13-52	8-13-52		X	100-F XXX
						X	100-B XXX
	Deliver material on order HW 96589	H. L. Morgan	8-15-52	8-15-52		X	200-W XXX
J. Holman West Coast Fast Freight Kennewick, Washington	Deliver material on order 98380	H. L. Morgan	8-6-52	8-16-52		X	300 303-J
	Deliver material on order 98380	H. L. Morgan	8-15-52	8-15-52		X	300 303-J
W. Fruehling United Truck Lines Kennewick, Washington	Deliver material on order HW 100077	H. L. Morgan	8-18-52	8-18-52		X	100-F XXX
						X	100-D XXX
	Deliver material on order HW 100077	H. L. Morgan	8-20-52	8-20-52		X	100-D XXX
						X	100-B XXX
	Deliver material on order HW 100077	H. L. Morgan	8-22-52	8-22-52		X	100-F XXX
						X	100-D XXX
	Deliver material on order HW 100077	H. L. Morgan	8-25-52	8-25-52		X	100-D 105
						X	100-B 105
	Deliver material on order HW 100077	H. L. Morgan	8-27-52	8-27-52		X	100-B 105
						X	100-D 105
G. Martell Consolidated Freightways Kennewick, Washington	Deliver material on order 96589	H. L. Morgan	8-13-52	8-13-52		X	200-W XXX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
F. Colbert United Truck Lines Kennewick, Washington	Deliver material on order HW 100077	H. L. Morgan	8-15-52	8-15-52		X X	100-B XXX 100-D XXX
C. Freauff Lee and Estes Kennewick, Washington	Deliver material on order HW 100077	H. L. Morgan	8-29-52	8-29-52		X X	100-D 105 100-F 105
A. F. L. Anderson American Blower Corporation Detroit, Michigan	Work on units furnished by his firm on order HWC 12941	G. J. Hayward	8-4-52	9-7-52		X	100-C 190-C
W. L. Armstrong Builders Providence Providence, Rhode Island	Supervise installation of equipment in filter plant	G. J. Hayward	8-18-52	9-18-52		X	100-C
R. T. Best Wallace & Tiernan Sales Corp. Seattle, Washington	Supervise installation of equipment in filter plant	G. J. Hayward	8-18-52	9-2-52		X	100-C
C. B. Bason Ingersoll-Rand Seattle, Washington	Inspect 190-C Pump Plant	G. J. Hayward M. H. Russ	8-15-52	8-15-52		X	100-C 190-C
L. E. Bird General Electric Company Seattle, Washington	Supervise installation of power transformers supplied on order HWC 13537	G. J. Hayward	8-1-52	8-15-52		X	100-C
J. W. Burton Roberts Filter Mfg. Company Dabry, Pennsylvania	Inspection of pump plant	G. J. Hayward G. P. White	8-11-52 8-11-52	8-24-52 8-24-52		X	700, 100-C 100-D XXX
W. Christiani Dorr Company Stamford Connecticut	Inspect material	G. J. Hayward G. P. White	8-27-52	8-29-52		X	100-C
C. Ellison High Voltage Engineering Corp. Cambridge, Massachusetts	Inspect electrostatic generator purchased on order HWC 13651	G.J. Hayward K.E. Novinger	8-19-52	9-4-52		X	300 3745-A

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass.	Areas
W. Frazel Builders Providence Providence, Rhode Island	Supervise installation of equipment in filter plant	G. J. Hayward	8-18-52	9-18-52		X	100-C
H. Hornschuck Ingersoll-Rand Seattle, Washington	Inspect 190-C Pump Plant	G. J. Hayward M. H. Russ	8-15-52	8-15-52		X	100-C 190-C
L. E. Hughes Worthington Corporation Harrison, New Jersey	Work on pumps furnished on order HWC 14038	G. J. Hayward	8-5-52	8-11-52		X	100-C 190-C
	Work on pumps furnished on order HWC 14038	G. J. Hayward	8-18-52	8-25-52		X	100-C 190-C
K. A. Jones Travelers Insurance Company Seattle, Washington	Inspect boilers covered on orders HW 94771, HWC 21905 and HW 100897	G. J. Hayward	8-5-52	8-6-52		X	100-B 184 100-D 184 100-F 184 100-H 184 101 200-E 284 200-W 284 300 384 700; 1100
H. Knapp Western Gear Works Lynwood, California	Check speed increasers furnished on order HWC 18816 and DC 61231	G.J. Hayward G.J. Hayward	7-29-52 8-19-52	8-18-52 9-8-52		X X	100-C 190-C 100-C 190-C
E. E. Lindros Byron Jackson Company Los Angeles, California	Consultation on pumps furnished on order HWC 12454	G. J. Hayward	8-7-52	8-7-52		X	100-C 190-C
F. M. Mehle Bailey Meter Company Seattle, Washington	Calibration of pumping plant instrumentation on order HWC 16390	G. J. Hayward	8-12-52	8-24-52		X	100-C 190-C
R. G. Olson American Blower Corporation Detroit, Michigan	Install units furnished on order HWC 12941	G. J. Hayward	8-4-52	8-17-52		X	100-C 190-C

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass	Areas
B. R. Tarrant Ingersoll-Rand Seattle, Washington	Inspect 190-C Pump Plant	G. J. Hayward M. H. Russ	8-15-52	8-15-52		X	100-C 190-C
F. P. Robinson, Jr. General Electric Company Pasco, Washington	Inspect sub-station in 100-B Area	G. J. Hayward	8-21-52	8-27-52		X	100-B 183
	Check merchandise purchased on order HWC 14038	G. J. Hayward	8-28-52	8-28-52		X	100-C 183
E. Vynne, Jr. Cascade Distributors, Inc. Seattle, Washington	Deliver tools and instructions purchased on order HWC 21336	G. J. Hayward C. H. Parsons	8-11-52	8-11-52		X	White Bluffs
F. R. Haddock Roberts Filter Company Darby, Pennsylvania	Inspection of pump plant	G. J. Hayward G. P. White	8-11-52	8-24-52		X	700, 100-C 100-D XXX
R. C. Smith Builders Providence Providence, Rhode Island	Supervise installation of equipment in filter plant	G. J. Hayward	8-18-52	9-18-52		X	100-C
T. V. Megy Union Pacific Railroad Kennewick, Washington	Inspect crated hoods damaged in shipment	D. H. Knapp	8-12-52	8-12-52		X	Redox
P. E. Owens Kemmerer Coal Company Boise, Idaho	Inspect coal shipments to Hanford in imperfect conditions	G. E.Lish	8-7-52	8-7-52		X	100-D XXX
II. Visits to other Installations							
J. F. Spease to: Food Mach. & Chem. Corp. San Jose, California	Procurement of design	P. C. Wilbur	8-25-52	8-25-52		X	
J. F. Spease to: American Can Company San Francisco, California	Procurement of design	C. W. Roberts	8-26-52	8-26-52		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
TECHNICAL SECTION-ENGINEERING DEPARTMENT							
I. Visitors to this Works							
H. W. Alter Knolls Atomic Power Laboratory Schenectady, New York	Discussion on separations technology	R. B. Richards	8-25-52	8-28-52		X	Redox 200-W 234 221-U
E. R. Edmonson American Cyanamid Idaho Falls, Idaho	Study process techniques	G. E. McCullough	8-11-52	8-16-52		X	300 XXX 200-W XXX 100-H 105 100-D 105-D Redox; 221-U
E. E. Hamer Argonne National Laboratory Chicago, Illinois	Consultation on irradiation of samples	M. D. Fitzsimmons	7-28-52	8-1-52		X	100-H 105
S. Katz Oak Ridge National Laboratory Oak Ridge, Tennessee	Technical consultation on combined operations	R. B. Richards	8-11-52	8-12-52		X	300 XXX 100-F 105 Redox; 221-U
G. Kuta Consolidated Engineering Corp. Los Angeles, California	Discuss instrumentation of mass spectrometer	R. J. Brouns	8-20-52	8-22-52		X	300 XXX Redox 221-U
C. E. Larson Oak Ridge National Laboratory Oak Ridge, Tennessee	Inspect Redox Chemical Plant	R. B. Richards	8-26-52	8-27-52		X	300 XXX Redox 221-U
W. K. McCarty, Jr. North American Aviation Downey, California	Discussion on in-pile experiments	H. L. Henry H. F. Zuhr	9-9-52	9-19-52		X	100-B 105 100-D 105 100-F 105 100-H 105 300 303
J. Marsden Knolls Atomic Power Laboratory Schenectady, New York	Discussion on separations technology	R. B. Richards	8-25-52	8-28-52		X	Redox 200-W 234 221-U

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
D. R. Reed American Cyanamid Idaho Falls, Idaho	Study process techniques	G. E. McCullough	8-11-52	8-16-52	X	300 XXX 200-W XXX Redox; 221-U 100-D 105 100-H 105	
F. Ring Oak Ridge National Laboratory Oak Ridge, Tennessee	Review remote manipulator viewing devices	J. R. Gifford L. D.Turner J. K.Figenshau	8-11-52	8-12-52	X	100-B 105 300 XXX 100-D XXX 200-W XXX Redox	
F. L. Steahly Oak Ridge National Laboratory Oak Ridge, Tennessee	Inspect Redox Chemical Plant	R. B. Richards	8-26-52	8-27-52	X	300 XXX Redox 221-U	
G. W..Watt University of Texas Austin, Texas	Research and development consultations	R..B. Richards	8-11-52	8-15-52	X	300 XXX Redox; 221-U 200-W 234, 235	
II. Visits to other Installations							
R. J Anicetti to: Norton Company Worcester, Massachusetts	Crucible manufacturing in Special Products Shop	C. H.Gustafson, Jr. D. E. Webster	8-18-52	8-19-52	X		
H. C. Carney to: Radiation Laboratory Berkeley, California	Confer on chemical engineering development	T. Hicks	8-4-52	8-5-52	X		
A. B. Carson to: Mallinckrodt Chemical Works St. Louis, Missouri	Discuss egg testing program	W. H. Keller	8-4-52	8-5-52	X		
A. B. Carson to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Consultation on nuclear problems	M. C. Leverett	8-5-52	8-6-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
A. B. Carson to: National Lead Company Fernald, Ohio	Discuss egg testing program	J. Ciborski	8-5-52	8-6-52	X		
A. B. Carson to: Mound Laboratory Monsanto Chemical Company Miamisburg, Ohio	Discuss continuing special irradiations and revision of "B" metal program	J. J. Burbage	8-6-52	8-7-52	X		
A.B. Carson to: Brush Beryllium Company Cleveland, Ohio	Consultation on thorium fabrication problems	N. W. Bass	8-7-52	8-8-52	X		
J. F. Clagett to: Harshaw Chemical Company Cleveland, Ohio	Process inspection	G. R. Fernelius	8-26-52	9-6-52	X		
V. R. Cooper to: U. S. Atomic Energy Comm. E. I. du Pont de Nemours & Co. Wilmington, Delaware	Separations process discussions	F. S. Chambers H. A. L. Richie	9-18-52	9-19-52	X		
R. L. Dickeman to: Mallinckrodt Chemical Works St. Louis, Missouri	Discuss egg testing program	W. H. Keller	8-4-52	8-5-52	X		
R. L. Dickeman to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Consultation on muclear problems	M. C. Leverett	8-5-52	8-6-52	X		
R. L. Dickeman to: National Lead Company Fernald, Ohio	Discuss egg testing program	J. Ciborski	8-5-52	8-6-52	X		
R. L. Dickeman to: Mound Laboratory Monsanto Chemical Company Miamisburg, Ohio	Discuss continuing irradiations and revisions of "B" metal program	J. J. Burbage	8-6-52	8-7-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
R. L. Dickeman to: Brush Beryllium Company Cleveland, Ohio	Consultation on thorium fabrication problems	N. W. Base	8-7-52	8-8-52	X		
R. E. Field to: Oak Ridge National Lab. Oak Ridge, Tennessee	Attend second meeting on hot laboratories and facilities	F. Ring	10-7-52	10-9-52	X		
R. M. Fryar to: Argonne National Lab. Chicago, Illinois	Consultation on corrosion problems	J. West	8-28-52	8-28-52	X		
W. T. Kattner to: Simonds Saw & Steel Lockport, New York	Observe metal fabrication	A. D. Potts C. H. Emery	6-18-52	12-31-52	X		
W. T. Kattner to: Feed Materials Production Center Fernald, Ohio	Consultation on metallurgy of uranium	J. Ciborski	8-1-52	1-31-53	X		
R. L. Knecht to: Simonds Saw & Steel Lockport, New York	Observe metal fabrication	A. D. Potts C. H. Emery	6-18-52	12-31-52	X		
R.L. Knecht to: Feed Materials Production Center Fernald, Ohio	Consultation on metallurgy of uranium	J. Ciborski	8-1-52	1-31-53	X		
W. R. Lewis to: Argonne National Laboratory Chicago, Illinois	Consultation on corrosion problems	J. West	8-28-52	8-28-52	X		
J. W. Lingafelter to: Argonne National Lab. Chicago, Illinois	Consultation on various welding processes	L..R. Kelmar	9-5-52	9-5-52	X		
G. E. McCullough to: National Lead Company Fernald, Ohio	Discussion on uraium fabrication	J. Ciborski	8-4-52	8-8-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
G. E. McCullough to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Consultation on nuclear problems	M. C. Leverett	8-5-52	8-6-52	X		
G. E. McCullough to: Mound Laboratory Monsanto Chemical Company Miamisburg, Ohio	Discuss continuing special irradiations and revision of "B" metal program	J. J. Burbage	8-7-52	8-7-52	X		
R. L. Moore to: Knolls Atomic Power Lab. Schenectady, New York	Conference on separations processes	J. Marsden	8-25-52	8-26-52	X		
R. L. Moore to: Oak Ridge National Lab. Oak Ridge, Tennessee	Conference on separations processes	F. L. Steahly	8-27-52	8-28-52	X		
R. L. Moore to: Argonne National Lab. Chicago, Illinois	Conference on separations processes	S. Lawroski	8-29-52	8-29-52	X		
R. L. Moore to: Gordon Research Conference New London Jr. College New London, New Hampshire	Conference on separations processes	W. J. Parks	8-30-52	8-30-52	X		
W. H. Reas to: Radiation Laboratory Berkeley, California	Conference on high tempera - ture techniques	L. Brewer	8-21-52	8-22-52	X		
P. H. Reinker to: Mallinckrodt Chemical Works St. Louis, Missouri	Discuss egg testing program	W. H. Keller	8-4-52	8-5-52	X		
P. H. Reinker to: National Lead Company Fernald, Ohio	Discuss egg testing program	J. Ciborski	8-5-52	8-6-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass	Areas
P. H. Reinker to: Mound Laboratory Monsanto Chemical Company Miamisburg, Ohio	Discuss continuing special irradiations and revision of "B" metal program	J. J. Burbage	8-6-52	8-7-52	X		
P. H. Reinker to: Brush Beryllium Company Cleveland, Ohio	Consultation on thorium fabrication problems	N. W. Bass	8-7-52	8-8-52	X		
J. W. Riches to: Feed Materials Production Center Fernald, Ohio	Consultation on metallurgy of uranium	J. Ciborski	8-1-52	1-31-53	X		
H. R. Schmidt to: Radiation Laboratory Berkeley, California	Discuss recent advances in nuclear chemistry	S. G. Thompson	8-21-52	8-22-52	X		
U. L. Upson to: RadiationLaboratory Berkeley, California	Discuss recent developments in counting techniques	S. G. Thompson A. Ghiorso	8-21-52	8-21-52	X		
U. L. Upson to: Cal. Research & Development Lab. Livermore, California	Discuss counting methods	W. Haussler	8-19-52	8-20-52	X		
R. Ward to: Sylvania Electric New York, New York	Metallurgical consultation	H. H. Hausner	8-1-52	8-1-52	X		
R. Ward to: Battelle Memorial Institute Columbus, Ohio	Metallurgical consultation	H. R. Nelson	8-4-52	8-4-52	X		
D. C. Worlton to: Cal. Research & Development Lab. Livermore, California	Consultation on problems concerning ultrasonic testing	H. Crandall	8-19-52	8-19-52	X		
D. C. Worlton to: Electro Circuits Inc. Pasadena, California	Consultation on problems of ultrasonic testing	D.C. Erdman	8-21-52	8-22-52	X		

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PURCHASING AND STORES SECTION
UTILITIES AND GENERAL SERVICES DEPARTMENT
SUMMARY - AUGUST 1952

Purchasing activity on the new construction program started August 12. However, on August 29 all purchase requisitions on which no action had been started were transferred to Kaiser Engineers, Inc. for procurement action. Of the 81 requisitions received during this period, Invitations to Bid were mailed on 56. The balance of 25 were returned to Engineering for transmittal to Kaiser Engineers, Inc.

Resumption of work by steel mills permitted shipment of stainless steel to the fabricator for the pile downcomers, and a shipment of 11,000 pounds of boron steel wire to one of the ball manufacturers. Both items are required for Project C-438.

Only 11 open requisitions were on hand at month end for Projects C-431-A and C-431-B.

Steel mills have been authorized to increase prices on steel mill products by approximately 4.7% to 9.5% effective July 26, 1952.

As a result of rate reductions obtained from carriers savings in freight charges for August amounted to $4,866.32.

All production problems for the Ball 3X Systems have been satisfactority settled and a satisfactory production rate established.

To expedite movement of excess and surplus equipment and material on project, 10 railroad cars have been leased from the Milwaukee Railroad for an indefinite period.

The processing of physical inventories of Operations Stores stocks on a schedule basis was discontinued in lieu of one annual physical inventory.

The North Richland fencing project for Surplus, Salvage and Scrap was completed.

The Richland Salvage Yard was evacuated and all materials in the Pasco warehouse were moved out.

Organization and Personnel:

	7-31-52	8-31-52	Change
Employees on Roll	398	378	-20

Eleven employees were transferred to the Transportation Section to continue Automotive Parts work for which Transportation is now fully responsible and accountable.

Plans were completed to transfer the Inspection Unit in its entirety to the Engineering Department September 1, 1952.

PURCHASING AND STORES SECTION
GENERAL

Statistical and General

The processing of physical inventories of Operations Stores Stocks on a schedule basis was discontinued in lieu of one annual physical inventory.

Erection Engineers were brought in from 14 companies to supervise inspection and installation of equipment in the areas.

Special procurement arrangements for purchase of materials to be used in new expansion programs necessitated setting up a complete new set of controlled materials allotment records for keeping such allotments separate from other construction and operations.

Procedures for requesting controlled material listings with quotations on "A" product orders were put in use. It is expected that two to three weeks time will be saved on each "A" product order.

The possibility of additional costs arose with our receipt of Direction 1 to NPA Order M-20, which requires segregation of alloy scrap. After consultation with AEC Representatives, Law Dept., and Scrap Sales Unit, operation was patterned with no adverse effect on current methods.

A second application for priority rating authority and controlled material allotments under the E-3 program for additional expansion was received from National Carbon Co. This expansion is to provide additional facilities for production of our added requirements for pile grade graphite. Authorization for use of DO-E-3 priority has been received and allotments of controlled material will be provided after a review of schedules and quantities by the National Carbon Company.

8 requests for NPA Directive or DX action were received.

5 cases were submitted to the Atomic Energy Commission for directive or DX action.

Vendor Contacts	241
Claims Processed	33
Accts. Payable Requests Handled	154
Difference Slips Processed	70
Over & Short Reports Processed	13
Clearance Slips and Letters	202
Material Exception Reports	102
Return Orders Placed	110

PURCHASING AND STORES SECTION
GENERAL

	G	D	Total
Requisitions on hand 8-1-52			
Operations Procurement	587	196	783
Construction Procurement	0	57	57
A.E.C. Procurement	78	19	97
Total	665	272	937
Requisitions Assigned during August			
Operations Procurement	1781	428	2209
Construction Procurement	0	260	260
A.E.C. Procurement	196	33	229
Total	1977	721	2698
Requisitions Placed during August			
Operations Procurement	1619	421	2040
Construction Procurement	0	172	172
A.E.C. Procurement	203	29	232
Total	1822	622	2444
Requisitions on hand 8-31-52			
Operations Procurement	749	203	952
Construction Procurement	0	145	145
A.E.C. Procurement	71	23	94
Total	820	371	1191

Purchase Orders Placed	HW	HWC	By A.E.C.
Operations Procurement	1252	366	
Construction Procurement		134	
A.E.C. Procurement			154
Total	1252	500	154

Value Purchase Orders Placed			
Operations Procurement	$527,973.38	$96,516.98	
Construction Procurement		92,998.39	
A.E.C. Procurement			$330,202.42
Total	$527,973.38	$189,515.37	$330,202.42

Alterations Issued	Increase	Decrease	No Change	Total
HW Operations	32	39	4	75
HWC Operations	17	16	1	34
HWC Construction	20	19	9	48
Total	69	74	14	157

Value Alterations Issued	Increase	Decrease	Total
HW Operations	$39,565.59	$4,916.10	$ 44,481.69
HWC Operations	8,295.51	9,068.85	17,364.36
HWC Construction	83,477.33	21,501.12	104,978.45
	$131,338.43	$35,486.07	$166,824.50

Government Transfers	OR	ORC
	1	1

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PURCHASING AND STORES SECTION
GENERAL

The following schedule reflects total allotments received from the Atomic Energy Commission and allotments used and extended to suppliers and contractors through August. Top figures under each item number indicate allotment received from the Atomic Energy Commission. Lower figures under each item number reflect material allotment used or allotted for the quarter indicated.

CONSTRUCTION

CONTROLLED MATERIAL	UNIT MEASURE	3 Q 52	4 Q 52	1 Q 52	2 Q 53
Carbon Steel Plate	Short Tons	29.00 19.25	200.00 0	10.00 0	10.00 0
Carbon Steel Structural Shapes	Short Tons	18.00 6.35	30.00 0	30.00 0	20.00 0
Carbon Steel Other Forms	Short Tons	35.00 .65	250.00 0	100.00 0	100.00 0
Alloy Steel (excluding stainless steel)	Short Tons	4.00 .05	3.00 0	2.00 0	None
Stainless Steel	Short Tons	12,000 3,064	100,000 38,323	1,000 0	None
Copper & Copper Base Alloy Brass Mill Products	Lbs.	2,150 1,259	23,000 0	10,000 0	9,000 0
Copper Wire Mill Products	Lbs.	2,500 1,216	5,000 40	2,000 0	2,000 0
Copper & Copper Base Alloy Foundry Products & Powder	Lbs.	None	None	None	None
Aluminum	Lbs.	11,750 7,270	10,000 8,889	5,000 0	5,000 0

OPERATIONS

CONTROLLED MATERIAL	UNIT MEASURE	3 Q 52	4 Q 52	1 Q 52	2 Q 53
Carbon Steel (including wrought iron)	Short Tons	30.00 27.62	110.00 0	80.00 0	30.00 0
Alloy Steel (excluding Stainless Steel)	Short Tons	2.00 .01	3.00 0	2.00 0	1.00 0
Stainless Steel	Lbs.	5,000 2,381	20,000 4,751	10,000 0	5,000 0
Copper & Copper Base Alloy Brass Mill Products	Lbs.	3,200 2,817	5,000 0	3,000 0	1,000 0
Copper Wire Mill Products	Lbs.	4,000 871	6,000 219	5,000 475	3,000 0
Copper & Copper Base Alloy Foundry Products & Powder	Lbs.	None	None	None	None
Aluminum	Lbs.	191,342 143,720	290,000 113,188	180,000 9,769	145,000 0

Organization and Personnel

	7-31-52	8-31-52	Change
Employees on Roll	65	56	-9

The reduction in personnel shown is primarily the result of disbanding the Inventory Audit group.

PURCHASING AND STORES SECTION
CONSTRUCTION PROCUREMENT UNIT
AUGUST 1952

Purchasing activity on the new construction program started on August 12; however, on August 29 all purchase requisitions on which no action had been started were transferred to Kaiser Engineers, Inc., for procurement action. From August 12 to August 29 a total of 81 purchase requisitions were received. Of this number, Invitations To Bid were mailed out on 56 by August 29. The balance of 25 were returned to Engineering for transmittal to Kaiser Engineers, Inc.

All steel mills resumed work within two weeks after settlement of the steel strike on July 25. Shipment of the stainless steel for the pile downcomers was made to the fabricator and a shipment of 11,000 pounds of boron steel wire was made to one of the ball manufacturers. Both of these items are required on Project C-438, pile modifications.

Manufacturing difficulties encountered by Food Machinery Corporation and K-Plastic on the Hoppers and Step-Plugs for the Ball 3-X Safety System were partially overcome. To date K-Plastic has not been able to satisfactorily pack the step plugs with plastic shielding. A meeting with General Electric Project Engineers has been requested by K-Plastic. This meeting will take place as soon as arrangements can be made.

At month end only 11 open requisitions were in the Unit for material and equipment for Projects C-431-A and C-431-B.

In a meeting with Apex Steel Corporation representatives regarding our claim for reimbursement for costs resulting from receipt of material not in accordance with our purchase order it was agreed by Apex to consider our claim on the basis of what it would have cost them had the incorrect blocks been returned to their plant for repair. Information as to the exact amount of repair work necessary is being prepared by the Inspection Unit for transmittal to Apex.

135 new orders were entered on the expediting records and 196 orders were completed during the month. The expediting workload is rapidly decreasing with the completion of orders on Project C-431.

The steel mills have been authorized to institute price increases on steel mill products, effective on and after July 26, 1952. These increases (approximately 4.7 to 9.5%) will be reflected in all billings issued on and after this date.

Organization and Personnel

	7-31-52	8-31-52	Net Change
Employees on Payroll	23	23	0

PURCHASING AND STORES SECTION
OPERATIONS PROCUREMENT UNIT
AUGUST - 1952

Statistical and General

The unit workload increased materially during the latter portion of the month. The open requisition load has been holding constant at around a 1,000 and shows indications that it will climb moderately during the coming month.

Orders completed by the Expediting group during the month include 487 HWC Operations orders and 1685 HW Operations orders, or a total of 2172 completed orders. At the end of the month, approximately 700 open orders were being actively expedited, with an additional 1500 in the "automatic class".

Changes in both requirements and specification have made it extremely difficult during the last six months to keep adequate stocks of aluminum dummies and steel sleeves on hand. The difficulties are being solved, and it is anticipated that the inflow of these two items will have reached a satisfactory level by the end of September.

The reclamation of the Aluminum Nitrate Nonahydrate, which was stored in the tanks whose Tygon linings failed, is proceeding by Manufacturing. This drastically reduced our take of ANN from the production plant at Hedges, Washington. It is anticipated that within six weeks this situation will have returned to normal.

A forecast of requirements has been requested from Manufacturing for Ferrous Ammonium Sulfate, Hydrated Lime, and Ferric Sulfate. As soon as this is available, bids will be requested to cover the coming contract period.

Organization and Personnel

	7-31-52	8-31-52	Changes
Employees on roll	31	32	+ 1

PURCHASING AND STORES SECTION
INSPECTION UNIT
AUGUST 1952

Statistical and General

To facilitate handling of new requisitions on expansion program one inspector who has been on loan to Engineering Division was recalled temporarily. An inspector from the field was returned to the project to assist field forces in the erection of winches.

Major components on which inspection activity was centered during the month included:

1. Neutralization tanks for Project C-394. These tanks were shipped without inspector's approval and will require considerable rework on the project or possibly be returned to the vendor.

2. Ball 3X Systems. All production problems have been satisfactorily settled, and a satisfactory production rate established.

3. A mutual agreement has been reached between AEC, General Electric, and the vendor manufacturing control panels for project engineering and it appears this agreement will pave the way for satisfactory completion of this work.

4. The initial shipment of Hoods for Radio-Chem. Building was made and an acceptable production rate has been established.

5. A substantial shipment of perforated dummies was made. This shipment was to a considerable extent effected through Inspection Unit's coordination of project requirements with vendor facilities to enable the vendor to produce a satisfactory product at a substantial savings over previous purchases.

Number of open orders requiring inspection	90
Number of open orders being inspected	84
Number of new orders requiring inspection	15
Number of open requisitions requiring inspection	103
Number of completed orders (cancelled, waived, etc.)	18
Number of open orders being inspected - sub-vendor	4
Number of open orders requiring inspection - sub-vendor	6
Number of completed orders - sub-vendor	4

Organization and Personnel

7-31-52	8-31-52	Change
30	31	1

Employees on roll

Inspector from Seattle Area was transferred to Los Angeles Area to handle the X-Ray of castings for an AEC purchase.

PURCHASING AND STORES SECTION
STORES UNIT
AUGUST, 1952

Statistical and General

Materials and equipment disbursed from Stores Unit Inventories, General Supplies (Account 10.2), Standby (Account 10.1) and Spare Equipment Held in Storage (Account 29) were valued at $194,381.75, $39,498.77 and $105,695.46 respectively for a total valuation of $339,575.98.

General Supplies valued at $20,234.95 were declared excess from the 10.2 Account due to obsolescence and inactivity.

Purchase requisitions processed through screening totaled 2622 with 563 items furnished from Stores Unit Inventories.

Materials and equipment disbursed from Account 10.20, (Construction Materials Held for Future Use) for use on the project were valued at $7,101.24. Materials valued at $663.37 were shipped from the project as directed by the Commission. Materials declared excess from this account totaled $292,973.58. The total value of materials disposed of during the month was $300,738.19.

Materials and equipment valued at $19,986.23 were withdrawn from Account 10.10 (Excess) for use on the project. Excess materials and equipment valued at $437,611.89 were shipped from the project as directed by the Commission. Total value of excess material disposed of this month was $457,598.12.

During the month 21 formal excess lists with a total value of $120,069.21 were submitted to the Commission for disposition.

122 representatives of Government and private businesses were escorted through our warehouses and yards for the purpose of negotiating the sale of scrap and surplus materials and the transfer of excess property. Twelve scrap sales were completed this month for a revenue of $4,098.87.

Three A.E.C. Surplus Salvage Sales conducted by Stores Unit personnel during August resulted in a total revenue of $30,347.91.

Warehouse Number Six at the Pasco Engineering Depot has been released by the Stores Unit. All material and equipment warehoused at this location has been shipped or transferred to other locations.

The Richland Salvage Yard has been evacuated with all residual material being consolidated in the North Richland Area.

Organization and Personnel

	7-31-52	8-31-52	Change
Employees on Roll	237	224	-13

Responsibility for the warehousing and control of automotive parts was transferred to the Transportation Section on August 4, 1952. The necessity of downgrading three employees was averted when supervision of the Transportation section decided to maintain shift work in the parts room at Building 1131.

The Inventory Audit group was dissolved on August 8, 1952. Personnel from this group was assigned to other units.

PURCHASING & STORES SECTION

TRAFFIC UNIT

August 1952

STATISTICAL AND GENERAL:

As a result of rate reductions obtained from the carriers, there was a total savings in freight charges for the month of August amounting to $4,866.32. This makes a total savings from September 1, 1946 to date of $1,724,978.57.

Savings Report

1. Rate reductions obtained from carriers:

Commodity	Origin	Savings for August, 1952	Savings from 9-1-46 thru July 1952	Savings from 9-1-46 to date
Nitric Acid	Hedges, Wash.	$1,151.55		
Coal	Roslyn, Wash.	1,971.27		
Compressed Gases	Yakima, Wash.	631.45		
Rail	Various	433.39		
Carloading	Various	678.66		
		$4,866.32	$1,720,112.25	$1,724,978.57
2. Freight Bill Audit		4,171.95	95,106.70	99,278.65
3. Loss & Damage & Overcharge Claims		1,339.07	116,744.00	118,083.07
4. Ticket Refund Claims		474.65	26,041.62	26,516.27
5. Household Goods Claims		53.84	16,470.32	16,524.16
		$10,905.83	$1,974,474.89	$1,985,380.72

PURCHASING & STORES SECTION
TRAFFIC UNIT
August 1952

Work Volume Report

Reservations Made	Rail		80
	Air		149
	Hotel		204
Expense Accounts checked			126
Households Goods & Automobiles		Movements Arranged Inbound	6
		Movements Arranged Outbound	2
		Insurance Riders Issued	9
		Furniture Repair Orders	1
		Claims collected - Amount	$53.84
Ticket Refund Claims		Filed	14
		Collected - Number	10
		Collected - Amount	$474.65
Freight Claims		Filed	19
		Collected - Number	9
		Collected - Amount	$1,339.07
		Over and Shorts Processed	6
		Damage Reports Processed	17
Freight Bill Audit Savings			$4,171.95
Freight Shipments Traced			97
Quotations		Freight Rates	153
		Routes	208
Bills Approved		Air Freight	5
		Air Express	26
		Boat	1
		Carloading	62
		Express	131
		Rail	1,238
		Truck	316
Carload Shipments		Inbound	1,240
		Outbound	19

PURCHASING & STORES SECTION
TRAFFIC UNIT
August 1952

Report of Carloads Received

General Electric Company	CMSTP&P	NP	UP	TOTAL
Aluminum Sulphate	2	3		5
Asphalt	3			3
Caustic Potash		1		1
Caustic Soda	12	13	11	36
Chlorine	3	2	1	6
Coal	141	93	921	1,155
Furniture			2	2
Lime		1	2	3
Machinery		1	4	5
Methyl Isobutyl Ketone		1	1	2
Nitrate of Soda	2	3	3	8
Nitric Acid		3	7	10
Salt			1	1
Soda Ash		1	1	2
Steel Plates		1		1
Total	163	123	954	1,240

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TRANSPORTATION SECTION
MONTHLY REPORT
August 1952

GENERAL

Transportation Section personnel forces increased from 530 to 541 employees during the month by 11 new hires, 13 transfers in, 3 reactivations - personal illness, 10 terminations, 3 transfers out, and 3 deactivations - personal illness.

Effective August 4, as a transfer of function, the ordering, warehousing, Kardex inventory control, and distribution of automotive parts (Caption 903-11) and miscellaneous transportation and heavy equipment parts (Caption 904-X) were [redacted]

Transportation Section

One hundred twenty ton diesel electric locomotive 39-3729 was returned to duty on August 5. This unit had been removed from service on June 26 to have the wheels turned and the traction motors reconditioned.

Completed the installation of conversion felt wick lubricator kits in the traction motor suspension bearing axle caps on all 120 ton diesel electric locomotives.

Completed safety precautionary work to protect passenger personnel on Milwaukee car 1049 as requested by the Atomic Energy Commission.

Received ten box cars from the Milwaukee Railroad which are being leased by the Stores Unit to be utilized in shuttling and temporarily storing materials from White Bluffs to the Central Stores Warehouse Facilities now under construction. A joint inspection of the cars was made by inspectors of the Milwaukee Railroad and the Transportation Section preparatory to acceptance and installation of leased signs.

Railroad track maintenance and rehabilitation work continued on a routine basis. Lining, surfacing and dressing of track required 5,833 man-hours. Installation of ties, rail and other track materials required 308 man-hours. Distribution and handling of track materials required 228 man-hours. Repair of road crossings required 332 man-hours.

AUTOMOTIVE ACTIVITIES

The Plant Bus System transported 1.58% fewer passengers in August than in July. The following statistics indicate the magnitude of service rendered:

Passenger volume	143,048
Revenue - bus fares	$ 7,152.38
Earnings - transit advertising (July)	169.12
Bus trips	7,192
Bus miles - passenger carrying	186,628
Passenger miles	4,566,503

The following is a comparative breakdown of average daily round trips to the Plant Areas:

Passenger buses - 100-B	11
Passenger buses - 100-D	12
Passenger buses - 100-F	12
Passenger buses - 100-H	9
Passenger buses - Hanford	3
Passenger buses - 200-West	32
Passenger buses - 200-East	4
Passenger buses - 300 Area	6

Transportation Section

Passenger buses - Riverland	2
Passenger buses - Pistol Range	2
Passenger buses - North Richland	7
Passenger buses - White Bluffs	3
700-300 Area Shuttle	21
Inter-Area Passenger Shuttle & Express	2

Effective August 11, the Inter-Area Express route was combined with the 9:30 a.m. Inter-Area Passenger Shuttle route. The volume of express material had declined to the point where it could be adequately handled as a part of the shuttle service which materially improved the unit cost of both services.

The Richland Bus System transported 9.58% more passengers in August than in July. The following statistics indicate the volume of service rendered:

Total passengers including transfers	32,706
Revenue - bus fares	$ 2,422.19
Earnings - transit advertising (July)	27.17
Bus trips	3,610
Bus miles - passenger carrying	19,855
Passenger miles	108,300

A proposal to reduce the number of Richland bus routes from five to three and to provide service only during peak periods was submitted to the Atomic Energy Commission on July 25. This proposal would reduce the net deficit of the Richland Bus System to an estimated $15,000 annually compared to the approximate deficit of $85,000 for Fiscal Year 1952. Approval of the proposal was received from the Atomic Energy Commission on August 19. The effective date is pending negotiation of the new work schedule.

Off Plant chauffeured automobile trips (Company business and/or official visitors) totaled 135 and were rendered as indicated to the following locations:

Benton City, Washington	3
Grandview, Washington	1
Hemminger City, Washington	1
Hinkle, Oregon	7
Kennewick, Washington	13
McNary Dam, Washington	1
Pasco, Washington	75
Pendleton, Oregon	23
Spokane, Washington	3
Sunnyside, Washington	3
Toppenish, Washington	3
Yakima, Washington	2

Transportation Section

The following tabulation indicates the volume of Drivers Test Service rendered:

Applicants:	Male	91	Number tests given		103
	Female	12	Number rejected		1
Permits issued:	Limited to driving with glasses			26	
	Unlimited			76	
Permits reissued:	Routine		26		
	New AEC		100		
	New AEC to date		6200		

The following tabulation indicates the volume of fuel distribution by Equipment Maintenance personnel:

	Gasoline	Diesel Fuel	50 Cetane	Kerosene	White Gas
Stock at start of month	30,349	10,846	15,861	205	206
Received during month	95,200	29,883	24,400	1,600	0
Dispensed during month	100,960	31,523	26,200	1,090	53
Stock at end of month	24,589	9,206	14,061	715	153

The following tabulation indicates the volume of inspection and maintenance service rendered to Hanford Works automotive and heavy equipment by Equipment Maintenance personnel:

Motor Overhauls	27
Class A Inspections and Repairs	110
Class B Inspections and Lubrications	1018
Other routine maintenance repairs and service calls	2211
Tire repairs	606
Wash jobs	516

The following tabulation indicates the Plantwide usage of automotive equipment:

Code	Type	No. of Units	Total Mileage
1A	Sedans	343	574,267
1B	Buses	100	235,107
1C	Pickup trucks	462	290,578
1D	Panel,Carryall,Sta.Wagon	129	136,768
1E	Armored Cars	1	134
1G	Jeeps	2	1,003
68 Series	Trucks	211	77,939
		1,248	1,315,796

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Transportation Section

Parts captions 903-11 and 904-X (assigned to the Transportation Section as a transfer of function from the Stores Unit on August 4) contain 7,105 and 4,404 items respectively. Stocks have been rearranged to permit the warehousing of all material in the 1133 facilities thus making it possible to release Warehouse 64 in North Richland which formerly stored 850 tires and 3,150 gallons of antifreeze. The following is a brief statistical summary indicating the volume of services rendered from August 8 to August 27:

3,200 Store Orders processed
84 Receiving Reports - with 450 items
57 Direct Purchase Requisitions
264 Reorders from Kardex Files
1,105 Items handled on transmittals from 1133 warehouse to garage parts rooms
294 Rebuilt items on credit memos

Furnished one bus, one pickup truck and 12 trucks for the Atomic Frontier Days' Celebration at the request of the Atomic Energy Commission.

At the request of the Financial Department the Transportation Section Equipment Control office furnished a proposed depreciation rate schedule for HO equipment. The proposed schedule is based upon the realistic service life of equipment derived from experience rather than the flat five year life expectancy for all equipment as is now used by Plant Accounts.

LABOR ACTIVITIES

The following tabulation indicates in gallons the volume of road asphalt material handled by Transportation Services personnel:

	MC 1	MC 3	MC 4	MC 5
Stock at start of month	0	13,381	5,161	349
Received during month	0	0	0	37,396
Dispensed during month	0	4,350	5,161	37,745
Stock at end of month	0	9,031	0	0

Transportation Section

The following tabulation indicates the volume of road aggregate materials handled by Transportation Services personnel:

	3/4" to 0 Pre-mix Tons	¼" to 0 Pre-mix Tons	5/8" Chips Cu.Yd.	1/4" Chips Cu.Yd.
Stock at start of month	2	33	3,869	6,838
Made during month	100	0	0	0
Used during month	2	6	2,197	448
Stock at end of month	100	27	1,672	6,390

Maintenance of primary roads required 172 man-hours; secondary roads 35 man-hours; patrol roads 35 man-hours and fire breaks 24 man-hours.

Seal coating of an additional 12.2 miles of Plant roads (based on 20 foot roadway) required 1,769 man-hours, 448 cubic yards of ¼" chips, 2,172 cubic yards of 5/8" chips, 3,350 gallons of MC 3 oil, 5,161 gallons of MC 4 oil and 40,740 gallons of MC 5 oil. Approximately 29.6 miles have been completed which virtually concludes the seal coating program for this year.

Handling of materials and equipment for the Stores Unit at White Bluffs, Hanford, 700, 1100 and 3000 Areas included 69 carloads, 301 truckloads and required 5,696 man-hours.

Area deliveries of operational supplies required 1,599 man-hours; office furniture, equipment and records 1,286 man-hours; vegetation control 104 man-hours; mosquito control 302 man-hours and ice deliveries 40 man-hours.

[redacted]

HW-25533
Copies #1 - #13-Plant Monthly Report
#14-F.E. Baker
#15-F.J. Mollerus
#16-A.E.C. J.I. Thomas
#17-700 File
#18-300File
#19-H.A.Remaly
#20-H.A. Carlberg

September 8, 1952

ELECTRICAL DISTRIBUTION AND TELEPHONE SECTION

AUGUST 1952

GENERAL

The Section work backlog totaled 4,720 man days distributed as follows:

	Days Per Craftsman	Total Man Days	Net Change Man Days
Line Maintenance	42	1,329	12 Increase
Substation Maintenance	26	421	59 Increase
Telephone Unit	63	2,520	331 Increase

Section total work force increased from 182 to 183. Considerable difficulty continues in procuring linemen and substation operators.

Electrical power peak demands for August were:

Date	August KW Demand	Comparative August KW Demand
Process Load 8-28-52 (8:30 a.m. - 9:00 a.m.)	95,100	81,073
Richland Load 8-4-52 (5:30 p.m. - 6:00 p.m.)	13,760	13,120

The new process peak resulting from simultaneously testing nine 3500 HP motors in 100-C Area is expected to be the ultimate peak created by testing. This will be exceeded by actual plant operations. Richland Village demand is slightly lower than in August 1951. However, energy consumption increased six per cent (6%) compared to the same period.

The use of Area Engineer and Assistant Area Engineer titles was discontinued in the Section as of August 31. Titles of Superintendent and Supervisor respectively were substituted as being customary and more descriptive of these positions.

The Section's safety record, of 441 days without a lost time injury, was disrupted on August 4. A lineman fell while trimming a tree, sustaining a dislocated collar bone.

Agreement was reached with the Bonneville Power Administration for a revision of the method for establishing "critical power conditions." BPA will not identify an abnormal system condition by classification when contacting the Hanford electrical system dispatching office. A description of prevailing conditions will be given to the Hanford system dispatcher, who will determine and establish the proper "critical power condition" if necessary.

[redacted]

Section representatives conferred with AEC and BPA representatives at Portland regarding several incorrect operating practices, and problems related to Hanford Works electrical system expansion, including the following:

1. Experience with phase comparison relaying on the BPA system was reviewed. It is considered superior to older relaying methods and readily applicable to the Hanford Works 230 KV loop.

2. The present interrupting capacity of Hanford 230 KV circuit breakers was discussed and considered satisfactory. Computed from forecast reactance values for the BPA system the interrupting capacity will be adequate through 1956. Consequently, Budget Item B-1703, for increasing their capacity is deferred to FY 1955, but will be increased to $150,000.

3. Reduced frequency control of peak load on the BPA system during critical periods this coming winter was considered. This proposal is under further study at Hanford Works.

Delivery of equipment for the Richland Civil Defense radio network has been delayed pending frequency assignment. Assignment of frequency has been received, enabling completion of specifications.

ELECTRICAL DISTRIBUTION UNIT

Maintenance and Operation

A limited amount of "hot tool work" has been authorized with the approval of the Safety Unit. This permits installation of transformers, pole change out, and series street light maintenance by this method. It is expected to reduce substantially the number of required power outages in Richland Village for maintenance purposes.

Relay action on the BPA system, caused by electrical storms during the period August 4-10, resulted in several momentary outages of Bonneville and Coulee lines. Recently installed 17 cycle reclosure devices performed effectively without loss of service, or production, to Hanford Works.

Water from a pipe running to a desert cooler on the roof dripped onto a circuit breaker at Substation 251 on August 14. Outages, ranging from twenty-eight minutes to four hours and two minutes, resulted on various lines to the 200 Areas. A request has been made to eliminate piping over switchgear in future designs.

A sleeve type connector failed in the 115 KV line supplying the 300 Area, August 14 causing an outage of approximately twenty minutes. The connector had been installed improperly by construction forces.

Electrical service to the 300 Area was interrupted for twenty-five minutes on August 28. A BPA circuit breaker relayed in the 115 KV Benton Switching Substation - cause not yet determined.

System Expansion and Planning

A request was made by G. E. for BPA to reconnect the No. 2 Coulee-Midway line to a separate Coulee bus to permit greater reliability in providing service to Hanford Works. This was completed on August 3, Coulee Midway No. 1 and No. 2 lines previous having been connected to a common Coulee bus.

The new Central Stores 7200 volt line was accepted and placed in service.

TELEPHONE UNIT

Maintenance and Operation

A comprehensive study of Richland Village telephone service rates was completed comparing rates with nearby communities. A similar study was made of charges for service in process areas. Recommendations were made for an increase in charges, although the thirty-five per cent increase suggested for process areas may be high and is subject to later review.

A summary of telephone subscriber service is as follows:

	Subscriber Stations in Service	Lines Available for Service	Sides Available for Service	Exchange Lines in Service
Richland	5,025 Residence 1,021 Official 425 Misc.	61	344	3,902
North Richland	522	142	35	458
Process Areas	1,307	658	—	1,294
TOTAL	8,300	861	379	5,654

Richland Exchange four-party service:

	August 31, 1952	July 31, 1952
Number of lines, complete fill	38	24
Partial fill with three subscribers	14	13
Subscribers	293	226

Sixty-two requests for telephone service were received, leaving a backlog of 307 applications for Richland residential service.

System Expansion and Planning

Service was established on twenty-six private telephone lines within the restricted area for the United States Army.

The Uptown business district telephone cable distribution system was extended. Installation of a 303 pair and a 151 pair cable replacing 101 pair and 51 pair cables respectively.

A layout sketch for additions to, and rearrangement of, the North Richland telephone cable system was completed to provide service to the Central Stores Area and the proposed Transportation Center.

System Expansion and Planning (Continued)

Modifications of the one hundred line 100-B Area telephone exchange were completed to provide temporarily for two party service, pending availability of the new exchange (Project CA-473).

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HW-25533

POWER STATISTICS
ELECTRICAL DISTRIBUTION AND TELEPHONE SECTION
FOR MONTH ENDING AUGUST 31, 1952

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)	9,055	10,895	20,700	33,900	58.8	43.2
A-4 Out (100-D)	16,020	14,365	24,300	23,700	88.6	81.5
A-5 Out (100-H)	8,820	9,144	13,500	14,500	87.8	84.8
A-6 Out (100-F)	7,565	7,075	13,100	11,600	77.6	82.0
A-8 Out (200 Area)	4,968	4,932	9,000	8,640	74.2	76.7
TOTAL OUT	46,428	46,411	80,600**	92,340**	77.4	67.6
MIDWAY IN	47,290	47,257	74,400*	88,800*	85.4	71.5
Transm. Loss	862	846				
Per cent Loss	1.8	1.8				
115-KV SYSTEM						
B1-S5 (Army - N.Rich)	0	50	0	--	0	--
B1-S4 Out (N.Rich)	1,790	1,757	3,053	3,053	78.8	77.3
Richland	6,626	6,800	13,120*	13,760*	67.9	66.4
BB3-S4 Out (300 Area)	888	952	2,000	2,000	59.7	64.0
TOTAL OUT	9,304	9,559	18,173**	17,853**	68.8	72.0
Benton In	880	1,260	2,400*	29,600*	49.3	57.2
So. Richland In	8,520	8,260	16,400*	16,800*	69.8	66.1
TOTAL IN	9,400	9,520	18,800**	46,400**	67.2	27.6
Transm. Loss	96	+39				
Per cent Loss	1.0	+.4				
66-KV SYSTEM						
B9-S11 Out (100-C)	419	223	1,150	900	49.0	33.3
B7-S10 Out (W. Bluffs)	321	315	1,013	990	42.6	42.7
Hanford Out	246	277	600**	600**	55.1	62.0
TOTAL OUT	986	815	2,763**	2,490**	50.0	44.0
HANFORD IN	821	771	2,400*	2,150*	46.0	48.2
Transm. Loss	+165	+44				
Per cent Loss	+20.1	+5.7				
Project Total						
230-KV Out	46,428	46,411	80,600**	92,340**	77.4	67.6
115-KV Out	9,304	9,559	18,173**	17,853**	68.8	72.0
66-KV Out	986	815	2,763**	2,490**	50.0	44.0
TOTAL OUT	56,718	56,785	101,536**	112,683**	75.1	67.7
230-KV In	47,290	47,257	74,400*	88,800*	85.4	71.5
115-KV In	9,400	9,520	18,800**	46,400**	67.2	27.6
66-KV In	821	771	2,400**	2,150**	46.0	48.2
TOTAL IN	57,511	57,548				
Transm. Loss	793	763				
Per cent Loss	1.4	1.3				

* Denotes Coincidental Demand
Denotes Non-Coincidental Demand

Average Power Factor - 230-KV System 92.2
Average Power Factor - 115-KV System 85.2
Average Power Factor - 66-KV System 89.1

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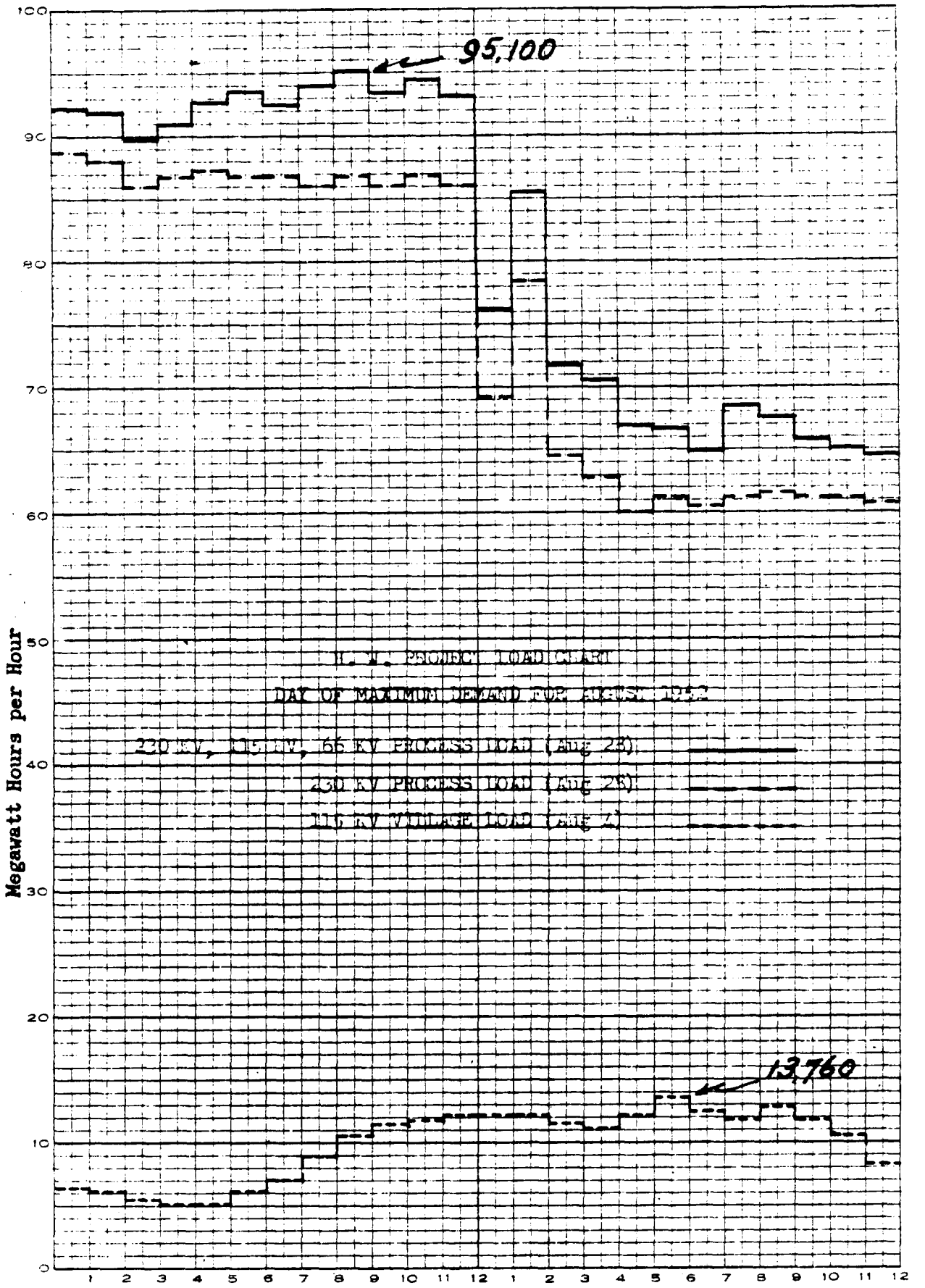

ONE DAY BY HOURS

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UTILITIES AND GENERAL SERVICES DEPARTMENT
STATISTICS UNIT

MONTHLY REPORT - AUGUST, 1952

GENERAL - C. A. Bennett

Organization and personnel are summarized as follows:

	As of 8-31-52			As of 7-31-52			Net Change		
	Ex	Non-Ex	Total	Ex	Non-Ex	Total	Ex	Non-Ex	Total
Business Statistics	3	0	3	2	0	2	+1	0	+1
Precision & Quality Control	2	3	5	2	2	4	0	+1	+1
Research & Development Statistics	2	3	5	2	3	5	0	0	0
Staff	2	1	3	2	1	3	0	0	0
TOTAL	9	7	16	8	6	14	+1	+1	+2

One mathematician was hired and assigned to the Business Statistics sub-unit, where he will be primarily concerned with cost studies. One general clerk "A" returned from leave of absence and was reassigned to the Precision and Quality Control sub-unit. The technical graduate previously assigned to the Unit under the rotational training program was transferred to permanent assignment in the Unit.

Mr. Verald L. Easterly of the Dow Chemical Company, Rocky Flats Plant, is continuing his training with the Unit.

Mr. L. G. Waters was appointed to the Plant Health Activities Committee as a representative of the Utilities and General Services Department.

BUSINESS STATISTICS - L. G. Waters

A study was made for the Salary Administrator of the results of the salary survey conducted on Executive, Administrative, and Operating positions. To allow comparison between survey results and Hanford Works data, curves of best fit are being calculated for the dependence of salary on pay grade. Previous analysis revealed that an exponential curve gave a satisfactory fit, but other possibilities are being investigated to assure a best fit on a least squares basis.

Discussions were held with the Office Services Unit on the gathering of data concerning the distribution of classified documents. The initial statistical problem will be to assist in determining the feasibility of putting a classified file in the outer areas. If deemed feasible, then the problem becomes one of where to place the file for optimum efficiency. Due to the large quantity of data being gathered the tabulation will be made by I.B.M. techniques.

[redacted]

A preliminary report was made on the safety program study. This study was requested by the Safety and Fire Protection Unit to assist in planning the safety program at Hanford Works. Reports were made on two parts of the study that essentially brought earlier studies up to date. Results to date show: (1) a comparison of accident costs at Hanford Works with the average chemical industry of similar size was not fruitful due to a lack of comparable accident cost data, and (2) there was no significant correlation between rates for different kinds of injuries (major, sub-major, and minor) although there was a noticeable upward trend in the rate for minor injuries. To get satisfactory data for the remaining part of the study it is proposed to change the approach and scope of the study by obtaining accident cost data. This data will include costs for each industrial injury since September, 1946, accumulated and tabulated by time of accident, department, area, type of injury, cause of accident, and employee. From this data it will be possible to obtain information useful in directing the safety program, and also to provide a basis for determining an optimum cost for the whole safety program.

Results of the survey to ascertain opinions of Works News readers are currently being tabulated and analyzed. Over sixty percent of the questionnaires were returned, which is a very high proportion in a mail survey of this type, and indicative of the representation achieved by the survey.

Consultory services were afforded the Financial Department in setting up a system whereby absenteeism can be controlled on a Plant-wide basis. The procedure involves the use of time cards and I.B.M. techniques. When sufficient data have been gathered, limits will be determined by statistical analysis which will be used as a criterion for investigating employees with greater than expected absences for fractional parts of a year. In addition, trends and seasonal indices are being studied for the overall absenteeism rate at Hanford Works since September, 1946.

The study of Medical Department weekly employee absenteeism data was completed. The objectives of the study were to provide information as to what might be considered normal and abnormal absenteeism, and to formulate a method which could be used as a guide to control absenteeism. In determining these objectives, both the total number of days absent and the frequency of absences (the total number of continuous absences, regardless of duration) were considered. The data were found to be best reflected by a distribution known as "Polya Eggenberger". Based on computations using this distribution, the objectives were achieved and a report written. Applied Research Unit absenteeism data are presently being gathered by the Medical Department. These data will be statistically analyzed to determine if the same general pattern exists as was found in the Medical Department.

A bibliography on the application of statistics to problems of administrative control has been started. All business problems, as opposed to engineering and scientific problems, are to be included except market research and time and motion studies. The bibliography will also include articles on operations research. At the present time there are about 150 entries. Such a bibliography is a valuable and necessary tool in applying statistical methods to the large number of problems found in business operations.

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PRECISION AND QUALITY CONTROL - R. F. Cell

A statistical study of Hanford Works chemical analyses of special coal samples was made for the Process Unit, Metal Preparation Section. The determinations of moisture volatility, fixed carbon, ash, sulfur, and BTU/# were considered. The results were compared with U. S. Bureau of Mines analyses on the same samples, and statistical tests were made on the basis of paired results. The findings were reported by letter. (R. F. Cell to E. W. O'Rorke, "Comparison of Analyses of Hanford Works and U. S. Bureau of Mines on Special Coal Samples".)

The subject of quality certification from offsite vendors was discussed with representatives of the Metal Preparation Section. Quality certification is a system or method involving cooperation of vendor and receiver in reviewing the quality control procedures in the vendor's plant. When agreement has been reached concerning specifications, methods of inspection, and quality desired, the vendor issues a certificate with each shipment stating that the requirements set forth in the agreement have been met and that the quality of the shipment is at the desired level. This results in greatly reduced inspection costs by the receiver. A report is being prepared covering recommendations from a statistical viewpoint.

The quality control procedures instituted on machining operations by the Metal Preparation Section were analyzed further from a statistical viewpoint, with particular respect to the control limits on average and range charts.

The precision and accuracy of slug warp measuring instruments were determined for the Process Unit. This was done in order to find the dependability of the results obtained from the go no-go warp gauge. First, the precision of a dial warp gauge was found with 99 percent confidence limits. Second, using the value of warp found with the dial gauge, the discriminatory abilities of the go no-go warp gauge were evaluated. A document was issued covering the findings. (Document No. HW-25329, D. O. Richards to J. E. Bergman, "Precision and Accuracy of Warp Measurements".)

Factor weights of 8-inch M and Z slugs were calculated, together with 99 percent confidence limits on the estimated average weight, for the Operations Unit, Metal Preparation Section. These factor weights are to be used for SF accountability purposes. A letter was issued stating the values found. (D. O. Richards to J. S. Shipp, "Factor Weights of 8-Inch M and Z Slugs".)

A check is being made on a previous study reported in Document No. HW-24255. (Statistical Investigation of Receiver-Shipper Weight Differences of Uranium Rods Weighed by Bundles, L. G. Waters to W. K. Wright.) This is being done to see if the average or variability of the differences has changed significantly. A letter stating findings and any recommendations deemed advisable will be issued in the near future.

Work is being continued in conjunction with the Computing Unit in putting Mallinckrodt lot system data on I.B.M. cards. A progress report will be issued the first part of September. Preparations were continued for the receipt and handling of similar data from the Fernald Works.

A review of past statistical studies on graphite testing is being made. The purpose of this is to become familiar with the problems likely to be encountered in the forthcoming graphite testing program.

Work was continued in coordinating I.B.M. reports of the Computing Unit on metal preparation statistics (machining, canning yields, etc.) with those reports prepared by accountability personnel. It is believed that the two reports are now identical.

A meeting concerning the application of statistical methods to SF accountability procedures was held with accountability representatives. The purpose of the discussion was to provide a broad basis for the use of statistical methods in the determination of the reliability of accountability statements. It was agreed that the reliability of determinations at accountability points throughout the entire plant should be studied and recorded as soon as practicable, but that immediate attention should be focused on those points most crucial to accountability procedures. It was agreed that the first studies would be: (1) evaluation of E-3 and E-17 precision by comparison; (2) continued studies of P-1 discrepancies; (3) precision of all accountability measurements in UO_3 and TBP processes; (4) material balances before and after clean-up in the 231 Building. (Letter, R. F. Cell to V. D. Donihee, "Statistical Assistance to the SF Accountability Program".)

The Atomic Energy Commission has requested that all SF accountability figures be shown with "probable limits of recognized uncertainty". These limits are available for many accountability points but extensive work will be necessary to obtain them for all points. During the month, programs were set up which will give these limits for the key points in the TBP and UO_3 processes. For the UO_3 process, comparison of shipper-receiver weights of drums of UO_3 will give estimates of both precision and bias of weighing. In cooperation with TBP plant assistance a program of sampling was set up to determine precisions of uranium measurements in the 002-WR, 004-WR, 15-1 and 15-6 tanks. Precisions of weight factor, specific gravity and uranium determinations will be calculated.

Data were collected to determine laboratory rerun limits for radioassays made by the 234-5 Analytical Control laboratory. The limits will be determined on the basis of laboratory precision and will replace the so-called "99 $\neq$ 1 percent Poisson" limits currently used. Use of the facilities of the Computing Unit makes possible rapid and economic completion of the large number of computations necessary.

For the Analytical Unit, the results of standard samples submitted to the 222-S and 222-T laboratories were statistically analyzed. Laboratory precision, accuracy and sources of variation were determined. (Letter, H. E. Reinhardt to R. J. Brouns and W. W. Mills, "Synthetic Solutions - H-7 and 6-1-MS".)

Analysis of results of key Redox samples was continued. The precision of AT determinations of the H-7 metal solution remains unchanged. Apparent bias in the P-1 measurement in the 231 Building was noted and a representative of the Statistics Unit participated in meetings of Analytical Unit personnel concerning this bias.

Miscellaneous problems considered included the design of an experiment to determine whether agitation of a waste sampling tank was necessary to give adequate precision;

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the sources of shipper-receiver difference in AT assays, and the calculation of precision of non-routine radioassays.

A statistical report was issued on Metal Preparation Section results from machining, pickling, canning, autoclave, test pile, melt plant, and oxides. (Document No. HW-25336, "Statistical Quality Report - 300 Area, July, 1952", R. F. Cell to W. W. Windsheimer.) In addition, a metal quality report representing material produced by Hanford Works and Mallinckrodt Chemical Works was issued which graphically presented the average analytical results up to June, 1952. (Document No. HW-25123, "Statistical Quality Report - Uranium Metal, 1952", R. F. Cell to W. T. Kattner.)

RESEARCH AND DEVELOPMENT STATISTICS - F. H. Tingey

Penetration data on 4-inch and 8-inch slugs canned under MFR No. 257-A were analyzed statistically to determine whether or not the 8-inch cans are superior to the 4-inch cans with respect to minimum residual can wall thickness. A considerable difference existed between the distributions of thickness for the two types of cans. Since the main interest is in the smaller values of this residual thickness, the 95 percent confidence limits were computed for the proportion of cans having thickness less than various selected values for the two types of cans, and a comparison of percentage points was made. (Memorandum, "Statistical Analysis of Penetration Data", F. H. Tingey to A. C. Callen.)

Data giving the effect of various combinations of operating conditions on can wall thickness in the dipping process in 300 Area operations were analyzed. For each operating condition the distribution of can wall thickness was found, as well as 99 percent tolerance limits with confidence coefficients of both .95 and .99 . This study aided in the determination of optimum operating conditions for this process. (Memorandum, "Can Wall Thickness Limits for Various Operating Conditions", F. H. Tingey to W. K. Kratzer.)

On the basis of minimum residual can wall thickness data and slug damage caused by the ribs in the process tubes as a result of charging (Document No. HW-23543), the probability of an area of minimum residual can wall thickness coinciding with a gouge area deep enough to cause a penetration of the can wall was calculated. This analysis was carried out to help ascertain the desirability of relaxing the minimum residual can wall specification in the 300 Area canning process, and also to indicate what one could anticipate in the way of slug ruptures as a result of gouging. (Memorandum, "Probability of Perforation of Can Wall by Gouge", F. H. Tingey to H. L. Mars.)

Consultation was held and preliminary planning done on an in-pile experiment dealing with differences between several types of aluminum and their fabrication. Such quantities as tensile strength and surface hardness will be compared as well as corrosion of the tubes and slugs under operating conditions.

Assistance was given in determining the best method of fitting a curve to empirical data relating the degree of absorptinn of soft x-rays to the thickness of a magnesium foil. Both measurements were known to be in error and hence standard least squares regression methods could not be used.

Work has continued on the problems relating to Plant water quality as outlined in last month's report. Statistical analyses were completed and forwarded regarding pile and header differences over varying periods of time with respect to the chemical properties of the pile coolants.

The analysis of the pressure drop-film buildup of the individual tubes was completed, and the pressure drop-time functional relationship was established.

A computational problem dealing with the determination of diffusion length was handled, and constants occurring in the flux formulae for a uranium lattice were calculated. The latter problem involved computing a series of Bessel functions for four different sizes of cell dimensions, and two sets of graphite constants.

Further study on the slug rupture problem involved the consideration of a method which utilizes all of the available data on the rupture rate of a given group of metal in order to predict the final failure rate. Since this method is quite involved, the feasibility of using the technique is being studied.

Analysis of past failure data showed that four particular canning dates yielded an unexpectedly large number of slug failures. An investigation was made of the relationship between orifice zone and the canning date, with regard to the exposure level at the time of failure for these four canning dates.

A set of curves which shows the magnitude of the fast and slow neutron transients as a function of reflector thickness were calculated and plotted. The purpose of the analysis was to determine the effect of changing reflector thickness on the flattening of the flux.

A problem dealing with the precision of the calibration-fission count method for determining the percent Pu_{240} in a given sample was completed. It was assumed that the percent Pu_{240} in a given sample is related by a completely specified functional relationship, to the number of observed spontaneous counts per hour, the number of observed induced counts per minute, the spontaneous fission rate of Pu_{240}, and the induced fission rate of Pu_{239}. From a number of observed samples containing Pu_{239} and Pu_{240}, an estimate of the ratio of the spontaneous fission rate of Pu_{240} to the induced fission rate of Pu_{239} was determined, as well as the precisions and confidence limits that could be associated with this estimate. The ratio of the spontaneous fission rate of Pu_{240} to the induced rate of Pu_{239} is assumed to be independent of the percent of Pu_{240} and Pu_{239} in any given sample. Thus, knowing this ratio, one can readily calculate the amount of Pu_{240}. The precision associated with this method of calculating percent Pu_{240} was determined as well as the resulting confidence limits on the estimate.

An iterative process to determine the fission cross section of Pu_{239} was examined for convergence and tested for reliability. Due to the unusually bad behavior of the function involved in this problem, it is still under consideration.

An experiment was designed to study the effects of the presence of various amounts of solids on the counting rate of the sample. Based on a preliminary investigation, the magnitude of difference which one expects to detect a given percent of the time between any two of the seven levels of solids considered, was determined for various numbers of replications per level. (Memorandum, "Determination of Number of Replications in Designing an Experiment", F. H. Tingey to G. B. Barton.)

Assistance was given in determining the feasibility of designing an experiment to calculate the precision that could be associated with Poisson's ratio. The reliability of obtaining this precision from available empirical data was investigated.

Work is substantially completed on the statistical analysis of the protein bound iodine (PBI) laboratory results. The conclusions drawn from the original data have been substantiated by examination of additional data. In particular, the functional relationship between colorimetric reading and PBI is firmly established.

The precision study on certain sampling statistics that was described in last month's report is continuing. For various conditions imposed on the distribution being sampled, the sampling distribution of certain statistics is being empirically determined. It is anticipated that the results will shed some light on the validity of certain well known laboratory techniques for increasing the precision of an analysis.

The distribution of the number of pieces in a lot of size N having a quality characteristic between any two ordered values of a pilot sample of size n was determined. The function expressing the probability distribution was submitted to I.B.M. for tabulation. Since this technique is independent of the distribution of the quality characteristic, this tabulation will be extremely useful in determining the quality of a given lot by means of a small random sample.

A survey of the different types of sampling (simple random, systematic, clustered, and stratified) was written for distribution to customers in order to make them more aware of the savings in time and increase in accuracy that could accrue from well planned sampling methods. The paper was designed to be a general discussion of when it was advantageous to use each sampling method, rather than a detailed description of how to use it.

A summary of various methods of determining the size of a sample required when designing experiments was made from available literature. This discussion included step by step demonstrations of how to determine the sample size under various conditions. The basic assumptions made were listed, but the theoretical arguments that would confuse a lay reader were omitted. This work will make it possible for all the people in the Statistical and Computing Services Section to have the most recent methods readily available.

UTILITIES AND GENERAL SERVICES DEPARTMENT
COMPUTING UNIT

MONTHLY REPORT-AUGUST, 1952

Following is the month end summary of personnel:

	As of 7-31-52			As of 8-31-52			Net Change		
	Ex	Non-Ex	Total	Ex	Non-Ex	Total	Ex	Non-Ex	Total
Staff	2	2	4	2	2	4	0	0	0
Planning	8	5	13	8	4	12	0	-1	-1
Operations	5	37	42	8	33	41	+3	-4	-1
Rot.Training	0	4	4	0	5	5	0	+1	+1
TOTAL	15	48	63	18	44	62	+3	-4	-1

Two machine operators terminated for reasons of health and two in consideration of family obligations. Two experienced machine operators and a business graduate were added.

Considerable overtime has customarily been spent to decrease elapsed time on critical monthly reports in the past. In order to eliminate the overtime and also to decrease the elapsed time yet further, the IBM Operations Sub-Unit has been organized on a 24 hour, 7 day operation with rotating shift coverage.

To provide adequate shift supervision, three supervisory positions were filled by promoting two business graduates and one machine operator.

Descriptions, by departments, of the services performed by the Computing Unit during the month of August are as follows:

NUCLEONICS DIVISION STAFF:

Several reports were prepared for Salary Administration in connection with the West Coast Survey of salaries. Totals, averages, and frequency distributions of salaries were tabulated for approximately 30 positions within 15 participating companies; also overall totals by salary groups were tabulated to permit analysis of the salary curve by the Statistics Unit.

Routine monthly reports were prepared for Salary Administration as follows:

I - "Control Book", a complete listing of the Executive, Administrative, and Operative (E A O) rated personnel including all pertinent Salary Administrative data.

II - Report on appraisals giving the frequency distribution of the appraisals given in each Section.

III - Alphabetical list by title of E A O personnel.

IV - Alphabetical list by name of E A O personnel of certain specified grades.

V - List of Engineer Assistants in order of title date.

VI - List of Engineer Assistants by title date within department.

VII - Proof listing of revisions to the master files

VIII - List of the master files after inclusion of the month's alterations.

EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT:

Preliminary discussions pertaining to setting up a personnel file for the Personnel Records and Investigation Unit have been held. This file will contain information now in personnel folders and will make possible ready machine access to all of the information therein.

FINANCIAL DEPARTMENT:

Routine work for the Financial Department during the month included preparation of Weekly Payroll, Weekly Payroll Statistics, Exempt Salary Distribution, Technical Cost Distribution Classification, Manufacturing Work Order Cost, Manufacturing Payroll Distribution, Community Work Order Cost, General Work Order Cost, General Motorized Equipment Cost, and General Payroll Distribution.

The following non-routine work was completed:

1. List of vacation masters.
2. Force report with special listing of Unit codes 520 through 525.
3. Calculation of Premium for DuPont Annuities.
4. List of cancelled and new rent deductions.
5. Proof list of retroactive payments for terminated employees.
6. Listing of employees of Technical Department.
7. List of employees with premium hours.
8. List of assigned vehicles
9. Totals of premium payments, shift payments, and isolation payments.
10. Special tabulation of non-exempt payroll costs for Technical Department.
11. Statistics pertaining to transfers from Weekly to Monthly Payroll July 1 through August 4, 1952.
12. Analysis listing of the rent file.
13. List of DuPont Annuity file by hiring date.
14. Imprinting on blank cards a file of non-exempt employees from the Payroll master file.
15. Analysis of length of service of employees who transferred from the DuPont Company to General Electric Company at Hanford Works on September 1, 1946.

UTILITIES AND GENERAL SERVICES DEPARTMENT:

Billing of residential electrical accounts began this month, the first bill being for July service. The billing procedure and machine control panels have been developed to handle both the residential and commercial accounts. All bills are itemized to the extent that customers can verify the computation of all charges. Provision has been made for calculating and itemizing the following charges: (1) Energy charge. (2) Demand charge. (3) Primary voltage delivery discount. (4) Power factor charge. (5) Minimum charge. (6) Service charge. (7) Adjustments (i.e., rectifying an error). (8) Late payment penalty. (9) Amounts carried forward.

A register is prepared itemizing all charges for each customer and a meter listing is made giving readings, consumption, demand, and other technical information. An IBM card containing net and gross charges for each account is prepared for the Cashier. These cards are withdrawn from the file as payments are made and are listed for daily cash reconciliation. The residue of this file then becomes the "amount forward" file for the next billing cycle. Meters are read directly on IBM cards by mark sensing and the process carried on by machine to completion of the bill printing. Bills are prepared on IBM card forms for post card mailing. A procedure is being worked out whereby change cards will be key punched directly from the change of service notices prepared by the Electrical Distribution Unit. New file cards will be prepared by machine from the change cards. The subsequent alterations to the master files will be made by machine or by hand, depending upon the volume of changes.

Preliminary discussions are under way with procedure analysis personnel of the Office Services Unit pertaining to possible machine assistance on problems encountered in the operation of the Classified Files. Machine methods have two chief attributes to offer on this problem; (1) extremely great accuracy in the transcribing of information, and (2) economical and rapid handling of large volume clerical work. On the other hand, from the nature of this problem it is going to be difficult to develop a satisfactory machine procedure.

Assistance is being given the Statistics Unit on a research program involving sampling techniques. It is hoped to evolve a method of empirically constructing population distributions having specified properties. The construction is made by selecting pairs of random numbers from a random number card file according to a specified sampling procedure. The mean value of the pair of random numbers is found and the population averages and variance of the resulting random variables is found. Assuming restrictions to be placed on the sampling methods, the resulting "contamination" effect on the population variance is found.

ENGINEERING:

A study of graphite conductivity in B-Pile has been initiated. This study is similar to the ones being conducted currently on data received from D-Pile and F-Pile. The data consists of thermocouple readings, outlet and inlet water temperature readings, and panellit and header pressure readings; from these it is possible to calculate the effective thermal conductance of the graphite lattice. This information is useful in defining day-to-day operating limits, and in determining the long term effects of intense radiation on the thermal properties of graphite. These problems are carried on a routine basis.

A table giving the excess reactivity of a pile in inhours as a function of the natural period of the pile, for periods up to ten minutes, was prepared to be used in connection with C-Pile startup.

A table of calibration for converting meter readings to pressure was prepared.

A request has been received for the evaluation of certain constants which are used in the theoretical calculation of the amounts of heavy isotopes present in a pile. Due to neutron capture, fission, and radioactive decay, these amounts are closely related to each other, and continually changing. The amount of a given isotope present will ultimately depend on its cross section for

Neutron capture and fission, and its probability for decay. There is little reliable information available at the present time on these properties of the heavy elements, and it is hoped that by working the calculation "in reverse"; that is, inferring these properties from measurements of the isotopic abundance in a pile sample, more of this important information will be made available. These calculations are being made in the Card Programmed Calculator.

Work is continuing on the problem of temperature and heat flux distribution in the pile slug. Present calculations are to determine the effects on the temperature of a variation in thickness of an insulated end cap.

The effect upon fast and thermal neutron flux of changing dimensions of the graphite zones is being calculated for the Theoretical Physicists.

In order to determine pile operating specifications, calculations have been requested by Heat Transfer personnel for evaluating complex expressions to find the rise in temperature of a slug and a tube under two conditions: (1) when the water is shut off in one tube, and (2) when the water is shut off in a cross-header. The evaluation under condition(1) was to be carried out originally for 192 combinations of the variables involved. However, upon evaluating the results of this work, the calculation of an additional 168 cases was requested. Under condition (2) the slug temperatures were obtained for 210 cases and the tube temperatures for 105 cases.

Routine work for the Engineering Department included the calculation and listing of special request exposures for D, F, H, and DR piles, least squares sine fitting, group 8 fringe tube power breakdown, graphite conductivity, group 9 metal studies which have been enlarged to include nearly half of all tubes in all piles, and lattice conductance studies (included now for B pile as well as F pile), and the solution of dilatometer equations. A new method for calculating the special request exposures is being developed that will result in faster yet cheaper service.

RADIOLOGICAL SCIENCES DEPARTMENT:

Routine work during August for the Radiological Sciences Department covered the following items: wind and weather calculations, sheep thyroid count, sheep radioanalysis, and aquatic biology data. In addition to the routing handling of the wind study data, a request has been received to make correlations between wind direction frequencies at three recording sites. From these correlations it is expected to be able to assess the probability of contaminated air reaching certain areas of the project. The regular weather study is being revised to accommodate additional data to be taken from new equipment at the weather station.

MANUFACTURING DEPARTMENT:

Further assistance is being given the Statistics Unit in developing sampling techniques for separations process control. The extension of this study is based on its usefulness in the 234-5 building operations. A special probability table has been requested by the Statistics Unit in relation to the problem of selecting optimum sample sizes in such processes as slug inspection.

Routine work done includes metal quality, metal preparation data reduction for machining, canning, and inspection and autoclave.

	NEW CARD VOLUME	MACHINE UTILIZATION REPORT	NUMBER OF REPORTS
FOR THE ENGINEERING DEPARTMENT:			
Ruptured Slug Correlation Study	154,000	396	3
Film Buildup Calculation, 100-D Flow Lab	775	19	1
Lattice Conductance Studies	1,903	28	2
Solution of Dilatometer Equations.	1,000	24	3
Size of Cube vs Buckling.	2,000	8	0
Least Square Cosine Curve fitting.	500	137	5
Poison Transient Tables.	23,155	1,346	1
Calculation of Flux in Enriched Patch.	1,500	4	0
Heat Transfer Project.	2,000	225	0
Slug Temperature Distribution.	872	231	2
Graphite Conductivity.	600	19	1
Exposure Time Factors.	50	22	0
Calculation of Pressure Tables.	1,000	27	1
Lattice Design.	1,400	118	1
Reactivity from Inhour Equation.	4,500	38	1
Unsteady State Temperatures.	6,747	458	3
TBP Sampling.	750	2	2
Front Back Traverse Fit.	800	306	0
	203,552	3,411	26
FOR THE MANUFACTURING DEPARTMENT:			
Metal Quality Data Preparation.	200	11	1
Metal Preparation Data Reduction.	310	13	3
	510	24	4
FOR RADIOLOGICAL SCIENCES DEPARTMENT:			
Weather Station Wind Study.	13,446	87	2
Zoology Thyroid Counts.	1,015	27	2
Sheep Radioanalyses.	215	11	2
Isotopic Buildup & Decay.	3,501	564	0
	18,177	689	6
FOR THE SALARY ADMINISTRATION STAFF			
Exempt Salary Statistics.	7,000	101	8
Exempt Salary Curve Fitting.	1,000	173	10
	8,000	274	18
FOR THE MEDICAL DEPARTMENT:			
Public Health Activities.	1,300	20	3

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	NEW CARD VOLUME	MACHINE UTILIZATION REPORT	NUMBER OF REPORTS
FOR THE FINANCIAL DEPARTMENT:			
Exempt Salary Distribution.	4,064	110	1
Technical Cost Distribution Report.	6,805	158	7
Manufacturing Payroll Distribution.	44,554	721	9
General Payroll Distribution.	17,334	318	6
Manufacturing Work Order Cost.	21,374	863	50
Community Work Order Cost.	6,483	313	31
General Work Order Cost.	30,343	670	45
General Motorized Equipment.	25,757	385	19
Payroll Preparation.	96,327	4,125	140
Payroll Statistics.	2,000	514	25
	255,041	8,177	333
FOR THE UTILITIES & GENERAL SERVICES DEPT:			
Stores Procurement Actions	1,325	35	3
Electrical Billing	24,665	535	5
	25,990	570	8
GRAND TOTALS	512,570	13,165	398

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EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

SUMMARY -- AUGUST, 1952

The number of applicants interviewed in August was 1,488 as compared with 1,500 in July. Of these applicants, 419 were individuals who applied for employment with General Electric for the first time. In addition, 132 new applicants applied by mail. Open, nonexempt, nontechnical requisitions decreased from 185 at the beginning of the month to 173 at month end. Total Plant roll decreased from 8,901 to 8,885 with total separations including two laid-off for lack of work. Turnover rate increased from 1.75% in July to 2.01% in August. During August, 90 new requests for transfer to other type work were received by Employment and 39 transfers were effected. Attendance recognition awards were distributed for 91 employees who qualified for one-year awards during July, and for 53 employees who qualified for two-year awards during July.

Two employees died during the month, and six employees retired. One hundred and thirty-four visits were made to employees confined at Kadlec Hospital and 72 checks were delivered to employees confined either at home or the hospital. At month end, participation in the Pension Plan was 92.9% , in the Insurance Plan 98.4%, and in the Employee Savings and Stock Bonus Plan 48.6%. At month end there were 1001 registered under Selective Service, and 755 military reservists were on the roll. Since August 1, 1950, 239 employees have terminated to enter military service, of which 29 have returned, leaving 210 still in military leave status.

Orientation of new employees was presented daily throughout the report month. A total of 138 new employees attended this program. Of this number, 81.1% have signed up to participate in the Pension Plan, and 95.6% in the Insurance Plan.

During the month, enough people signed up to participate in the Good Neighbor Fund to place the Plan into effect. As of August 26, 50.3% of all Hanford Works personnel had signed up for this Plan. Also, commencing August 25 the Plan was reviewed with new employees during Orientation and they were given an opportunity to become members of the Fund.

Certification of Hanford Guards Union, Local 21, was received from the NLRB on August 11. In line with the Company's offer to the UE and IUE in the East, a written offer was made to local union representative on August 22, covering a wage increase and substantial improvements in the insurance and hospitalization plan. The HAMTC advised the Company on August 19 that they wished to take the R.E. Mercer (Community Fireman) discharge case to arbitration. The HAMTC was advised that in the Company's opinion the case is not arbitrable.

The report on the Northwest Area Wage Rate Survey was distributed to all participating concerns. Unsigned letters from the WSB approving the increase in isolation pay and holiday pay for Community Firemen were returned for signature.

Employee and Public Relations
Summary

Negotiations of a uniform Project-wide Agreement are stalemated on the subjects of isolation pay vs. travel allowances and overtime. The Contractors' Negotiating Committee is considering seeking further negotiations at the International level. The Teamsters' Union is demanding isolation pay for their members who drive busses to and from the areas on an overtime basis in addition to their normal eight hours' work as Truck Drivers. The construction contractor has denied that such isolation payments are required by the Agreement or were contemplated by the parties when the Agreement was negotiated. In order to avoid a conflict between Building Trades and Metal Trades within the fenced warehouse area in North Richland, all unloading of materials will hereafter be accomplished with GE personnel. A work stoppage involving approximately 100 Millwrights in 100-C was terminated on August 4. At a subsequent hearing before the Davis Panel in Richland, the matter was satisfactorily resolved in favor of the employer. A Carpenter threat to pull their men off the job by August 25 in protest over work assignments in connection with the rigging of concrete form panels failed to materialize but remains a subject of dispute.

Training and Program Development objectives scheduled for August, 1952, and other training activities were completed as follows: Management Orientation, designed to welcome new exempt personnel to the "management team", was presented on Monday, August 4, with 27 new exempt personnel in attendance. Supervisor's Handbook program was presented on Tuesday, August 5, attended by 10 new supervisors. G-E 9-Point Better Job program was presented on Tuesday, August 5, and was attended by 17 new exempt personnel. Effective Business Management was presented on Wednesday, August 13, and was attended by 21 new exempt personnel. Labor-Management Relations program was presented on Thursday, August 14, with 37 new exempt personnel in attendance. Policy Seminar program was presented on Wednesday, August 20 and 21, with 19 new supervisors in attendance. Benefit Plans program was presented on Friday, August 22, and was attended by 7 new supervisors. Principles and Methods of Supervision was presented during four hours a day for a two week period ending August 8 to a group of 24 inner area supervisors and 19 supervisors from the outer areas. SAGE bulletins were issued twice throughout August. A total of 37 pages of additions and revisions to the Supervisor's Handbook were mailed to all holders of the Handbook in August.

A total of 68 releases were distributed during the month. Of these, 30 were sent to the "local list", nine to the "daily list", and 29 received special distribution.

Arrangements were made for C. R. Stark, free lance writer from Spokane, to interview M. F. Rice to gather material for an article on International Harvester trucks, busses, and other automotive equipment in use at Hanford Works.

Employee and Public Relations
Summary -

The Community NEWSLETTER was written and mailed to community leaders in Richland, Pasco and Kennewick.

Four Hanford Works authors submitted papers for approval, one group of photomicrographs for exhibit in New York City was submitted, two notifications of publication were received, and two requests for speakers were filled.

A Civil Defense publicity program was outlined, aimed at acquainting residents with monthly tests of air raid sirens.

CD movies were shown to 35 members of community organizations, and 209 G-E employees.

Tours of the civil defense control center were completed by 16 people.

The Chief Warden gave two talks during the month of August on Civil Defense.

A total of 6047 prints were produced during the month. Of the total prints produced, 4336 were for employee identification and area admittance badges.

The Supervisor of Photographic Services attended the National Convention of Photographic Association of America in Chicago, and the Apparatus Sales Division's Photo House, and the Public Relations Services Divisions Motion Picture production facilities in Schenecta New York.

The seventeenth consecutive weekly program of "Hanford Works Science Forum" was broadcast over KWIE, Sunday, August 31.

The Hanford Works NEWS Readership Survey was completed during the month.

"Home Town...Richland", a 35mm sound slide film produced for the Community Real Estate and Services Department, was completed and received for preview showing.

Two letters to supervisors concerning the wage offer, plus increases in benefit plan provisions, were written and distributed.

The September Health Bulletin, "Putting on Weight?" was produced and distributed.

The September Safety Topic of the Month, "Attention Pays," was written, produced and distributed.

EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

AUGUST, 1952

ORGANIZATION AND PERSONNEL

General

There were no organizational changes during August.

Employment and Employee Services

Effective August 25, 1952, Virginia P. Glasford, General Clerk C, transferred from Investigation and Personnel Files Unit to Employment.

Effective August 21, 1952, Helen H. Williams, General Clerk D, was added to Investigation and Personnel Files Unit.

Effective August 29, 1952, Shirley N. Ostby, Messenger, was added to Investigation and Personnel Files Unit to replace Bernadine C. Tanner, Messenger, who was upgraded to a Steno-Typist C.

Training and Program Development

There were no organizational changes during August.

Public Relations

Effective August 8, 1952, one General Clerk B, terminated voluntarily.

Effective August 15, 1952, one General Clerk D, terminated to return to school. This employee was replaced by a new-hire on August 29, 1952.

Union Relations

Effective August 1, 1952, one Clerical Working Leader, Wage Rates, went on leave of absence.

Effective August 4, 1952, one General Clerk C, was added to Wage Rates Unit.

Effective August 18, 1952, one Steno-Typist A, was added to Wage Rates Unit.

Effective August 22, 1952, one Steno-Typist B, Wage Rates, terminated voluntarily.

Effective August 22, 1952, one General Clerk B, Wage Rates, terminated voluntarily.

Effective August 25, 1952, one Steno-Typist B, transferred from Suggestions & Insurance to Manufacturing-Separations.

Effective August 25, 1952, one Steno-Typist C, transferred from Utilities & General Services to Suggestions & Insurance.

Number of Employees on Roll	August, 1952
Beginning of Month	108
End of Month	108
Net Change	0

Employee and Public Relations

ACTIVITIES -

Employment and Employee Services

Employment	July, 1952	August, 1952
Applicants interviewed	1,500	1,488

419 of the applicants interviewed during August were individuals who applied for employment with the Company for the first time. In addition, 132 applications were received through the mail.

Open Requisitions	July, 1952	August, 1952
Exempt	0	0
Nonexempt	185	173

Of the 185 open, nonexempt, non-technical requisitions at the beginning of the month, 106 were covered by interim commitments. Of the 173 open, nonexempt, non-technical requisitions at month end, 100 were covered by interim commitments. During August, 151 new requisitions were received requesting the employment of 184 nonexempt, non-technical employees.

	July, 1952	August, 1952
Employees added to the rolls	143	166
Employees removed from the rolls	156	182
NET GAIN OR LOSS	-13	-16

Of the 182 employees removed from the rolls, 2 were removed due to lack of work, one of which was in a Bargaining Unit.

Turnover:

	July, 1952		August, 1952	
	Male	Female	Male	Female
Including employees who were laid off for lack of work	1.31%	3.39%	1.22%	5.21%
Excluding employees who were laid off for lack of work	1.26%	3.39%	1.20%	5.19%

Over-all Turnover:

	July, 1952	August, 1952
Including employees who were laid off for lack of work	1.75%	2.01%
Excluding employees who were laid off for lack of work	1.68%	1.99%

Employee and Public Relations

During August, 25 employees left voluntarily to accept other employment, 15 left to enter military service, and 6 left to enter business for self.

Transfer Data

Accumulative total of requests for transfer received since 1-1-52	438
Number of requests for transfer received during August	90
Number interviewed in August, including promotional transfers	120
Transfers effected in August, including promotional transfers	39
Transfers effected since 1-1-52, including promotional transfers	212
Transfers effected in August for employees being laid off	12
Number of stenographers transferred out of steno pool in August	6
Transfer requests active at month end	204

During August, 19 people whose continuity of service was broken while in an inactive status were so informed by letter.

The validation study for metalworkers was continued during the month and to date 21 subjects have been tested. Eleven new employees in the metalworker classification were tested, including 5 who were tested on 8-27-52 at the 300 Area. Plans are now being made to validate a battery of aptitude tests for use in selecting Instrument Trainees. A meeting is scheduled for 9-3-52 with the Instrument Supervisors and the Plant Instrument Engineer to discuss tests that might be used, along with other factors of the program.

Advertisements for IBM Operators, and Mechanical Draftsmen, were placed in newspapers in Ogden, Utah, and Salt Lake City, Utah, on August 11, 12, and 13. To date three inquiries have been received, two Draftsmen and one IBM Operator. Applications forwarded to these prospects have not been returned as yet.

A board meeting of GenTrics was held on August 11, 1952, and plans were made to launch the fall and winter activities of the Club. The general bi-monthly meeting was held on August 27, 1952, at Carmichael Cafeteria. The proposed activities for the coming year were presented and group discussion followed. Entertainment following the business meeting included a talk by Mrs. June Weeks from the League of Women Voters, and a dance exhibition from the Arthur Murray School of Dance. Following the dance exhibition, the group was invited to learn basic South American dance steps under the supervision of the instructors. A cup award was presented to Audrey Pixley, winner of the ladder tennis tournament sponsored by the Club. Refreshments of punch and cookies were served.

Employment Statistics

	7-31-52	8-29-52
Number of employees on rolls		
Exempt - Male	2,030	2,104
Female	57	58
	2,087	2,162
Nonexempt - Male	5,053	4,985
Female	1,708	1,686
	6,761	6,671
Community Firemen	53	52
TOTAL	8,901	8,885

Employee and Public Relations

ADDITIONS TO THE ROLLS

	Exempt	Nonexempt	Community Firemen	Total
New Hires	8	123	--	131
Re-engaged	--	1	--	1
Reactivations	2	29	--	31
Transfers (from other Divisions)	3	--	--	3
Actual additions	13	153	--	166
Payroll exchanges	73[a]	--	--	73
GROSS ADDITIONS	86	153	--	239

TERMINATIONS FROM THE ROLLS

Actual Terminations	7	126	1	134
Removals from rolls (deactivations)	1	44	--	45
Payroll exchanges	--	73[b]	--	73
Transfers (to other Divisions)	3	--	--	3
GROSS TERMINATIONS	11	243	1	255

GENERAL

	7-1952	8-1952
Photographs taken	195	213
Fingerprint impressions (taken in duplicate)	192	248

PERSONNEL SECURITY QUESTIONNAIRES PROCESSED

	7-1952	8-1952
General Electric cases	130	138
Facility cases	44	29
TOTAL	174	167

INVESTIGATION STATISTICS

	7-1952	8-1952
Cases received during the month	221	180
Cases closed	198	216
Cases found satisfactory for employment	167	182
Cases found unsatisfactory for employment	4	4
Cases closed before investigation completed	14	18
Special investigations conducted	9	1

[a]Transferred from Weekly Payroll [b]Transferred to Monthly Payroll

Employee and Public Relations

PERFECT ATTENDANCE RECOGNITION AWARDS

Total one-year awards to date	3,222
One-year awards made in August for those qualifying in July	91
Total two-year awards to date	855
Two-year awards made in August for those qualifying in July	53

Employee Services

The following visits were made with employees during the month:

Employee contacts made at Kadlec Hospital	134
Salary checks delivered to employees at Kadlec Hospital	65
Salary checks delivered to employees at home	7
Disability checks delivered to employees at home	0

At month end participation in Benefit Plans was as follows:

Pension Plan	92.9%
Insurance Plan	98.4%
Employee Savings and Stock Bonus Plan	48.6%

Two employees died during August, namely:

Manufacturing
Utilities and General Services

Twenty letters were written to deceased employees' families during August, concerning payment of monies due them from the Company, and also to answer their questions.

Since September 1, 1946, 95 life insurance claims have been paid totaling $551,000.00.

Six employees retired during the month of August, namely:

Ralph E. Swearingen, W-9171-MM, Normal Retirement
Stephen N. Pierson, W-9315-MM, Normal Retirement
Joseph M. Reaves, W-3840-SO, Normal Retirement
Irvin I. Smith, W-9538-B, Normal Retirement
Leander C. Mathews, W-2684-MJ, Normal Retirement
Carl A. Nelson, W-4222-VRH, Normal Retirement

During August, 37 letters were written to retired employees providing them with information of general interest. To date 210 employees have retired at Hanford Works, of which 103 are continuing their residence in the vicinity.

Employee and Public Relations

Orientation of new employees was presented daily throughout the report month. A total of 138 new employees attended this program. Of this number, 81.1% have signed up to participate in the Pension Plan, and 95.6% in the Insurance Plan.

During the month, enough people signed up to participate in the Good Neighbor Fund to place the Plan into effect. As of August 26, 50.3% of all Hanford Works personnel had signed up for this Plan. Also, commencing August 25 the Plan was reviewed with new employees during Orientation and they were given an opportunity to become members of the Fund.

One Joint Manpower Mobilization Committee Meeting was attended by a member of this group during August. At this meeting, matters pertaining to Selective Service and Reservist problems were discussed. Among these items of business was the revision of certain category designations:

1. Business Graduates, changed from "D" to "C" Category
2. Laboratory Assistants "A" and "B", changed from "D" to "B" Category
3. Engineering Assistants, Technical Units, from Category "C" to: (A) above Grade 12, changed to Category "D". (B) below Grade 12, changed to Category "B".

Military Reserve and Selective Service

Statistics with respect to employees who are members of the military reserve are as follows:

Number of reservists on the rolls	755
Number of reservists classified in Category A	119
Number of reservists classified in Category B	56
Number of reservists classified in Category C	73
Number of reservists classified in Category D	507
Number who returned to active duty to date	113
Number who returned to active duty in August	9
Number of reservists for which delays have been requested	50
Number of reservists classified in Category B	3
Number of reservists classified in Category C	3
Number of reservists classified in Category D	44
Delays requested (including renewals)	111
Delays granted	102
Delays pending	1
Delays denied	5
Delay requests recalled	3

Employee and Public Relations

The statistics with respect to employees registered under Selective Service are as follows:

Employees registered	1001
Employees registered who are veterans	404
Employees registered who are non-veterans	597
Deferments requested to date (including renewals)	707
Deferments granted	502
Number of employees for which deferments have been requested	275
Number of employees classified in Category B	7
Number of employees classified in Category C	12
Number of employees classified in Category D	256
Deferments denied and appealed at state levels	11
Deferments denied and appealed at local levels	2
Deferments denied and pending at national level	0
Deferments denied by local board and not appealed	2
Deferments denied by state board and not appealed	12
Deferments denied at national level (by Gen. Hershey's office)	1
Deferments denied at national level (by President)	2
Deferments denied by local and state boards and pending for review	0
Deferments requested, employees later reclassified	61
Deferments requested, later withdrawn	47
Deferments pending	65

Military terminations since 8-1-1950 are as follows:

Reservists recalled	113
Selective Service	123
Female employees enlisted	3
TOTAL	239

Employees returned from military service:

Reservists	22
Selective Service	7
TOTAL	29

Number of employees still in military leave status 210

Union Relations

UNION RELATIONS - OPERATIONS PERSONNEL

On August 11, this office received from the National Labor Relations Board a Certification of Representatives in conclusion to the recent decertification election involving Hanford Guards Union, Local 21.

On August 13, we were advised by the New York Office that the Company was making an offer to the union in the East that day which included a wage increase, as well as substantial improvements in the insurance and hospitalization plan. That same date, without making any commitments, this office met with local union representatives and acquainted them with the Eastern offer, promising more details upon receipt of additional information.

Formal drafts of the Company's offer to the UE and IUE were received on August 20, and with the approval of W. E. Johnson, the Company's offer was reduced to writing and transmitted to local union representatives on the afternoon of August 22. The offer provides that it must be accepted by the unions on or before September 15, 1952, in order to make it effective by that date. At month end, no word had been received from the unions on this issue.

Considerable publicity has been given to the Company's action in the discharge case of Community Fireman R. E. Mercer. Washington's U. S. Senator Harry P. Cain went on record as recommending punishment in this instance less severe than discharge. W. E. Johnson replied to Senator Cain's recommendation, pointing out the Company's long-standing rule with regard to employees fighting on the job. The HAMTC advised the Company on August 19, that they wished to take this case to arbitration. This office replied to the HAMTC on August 20, 1952, that in the Company's opinion the case is not arbitrable. Informally the Council has advised that they may seek a court order to force arbitration on this matter.

Grievance Statistics:

Status of Grievances

	1952 Unit	1952 Nonunit
Received this month	19	2
Received this year	204	9
Settled at Step I this month	4	1
Settled at Step I this year	80	6
Pending settlement at Step I at end of month	9	3
Settled at Step II this month	6	0
Settled at Step II this year	41	0
Pending settlement at Step II at end of month	148*	1
Brought to arbitration during the month	0	0
Pending settlement by arbitration	7**	0
Total number pending settlement	164	4

*Includes 67 bargaining unit grievances brought to Step II by the Union prior to January 1, 1952, merely to avoid automatic settlement at Step I by time limits established by bargaining agreement. Most such grievances, after being reviewed by the Union, are never scheduled for Step II processing. Discussions are taking place with the Union to have grievances in this category withdrawn from Step II and thereby settled.

**Includes four grievances brought to the arbitration level by Union prior to January 1, 1952, to avoid automatic settlement at Step II by time limits established by bargaining agreement. In each of these cases, the Union has not taken any further action. Discussions intended to settle these cases are presently taking place with the Union.

Analysis of Grievances Received this Month

Department	Unit	Nonunit
Manufacturing Department		
Reactor Section	1	0
Separations Section	6	0
Metal Preparation Section	4	0
Total for Department	11	0
Utilities and General Services Department		
Transportation Section	2	0
Plant Security and Services Section	2	0
Total for Department	4	0
Community Real Estate and Services Department		
700-1100-3000 Area Services Section	1	0
Community Services Section	1	0
Community Real Estate Section	2	0
Total for Department	4	0
Financial Department		
General Cost Section	0	1
Engineering Department		
Technical Services Section	0	1
Medical Department	0	0
Law Department	0	0
Employee and Public Relations Department	0	0
Radiological Sciences Department	0	0
GRAND TOTAL	19	2

Employee and Public Relations

Subject Unit Grievances		Subject Nonunit Grievances	
Sick Leave	1	Sick Leave	1
Health, Safety, Sanitation	1	Health, Safety, Sanitation	1
Wage Rates	6		
Discrimination	1		
Jurisdiction	6		
Seniority	1		
Overtime Rates	1		
Subject not covered by Contract	2		
TOTAL	19	TOTAL	2

Five meetings were held during the month for the purpose of processing grievances at the Step II level.

CONSTRUCTION LIAISON

Negotiations looking toward a uniform Project-wide Agreement were actively pursued throughout the month. Very satisfactory progress was noted until the issues were narrowed to the subjects of isolation pay and overtime. It now appears that agreement on these controversial issues cannot be resolved at the Local level and it is expected that the Contractors' Negotiating Committee will request further meetings with representatives of the Internationals involved.

The Teamsters Union through their attorney have demanded isolation pay for those Teamster employees who drive busses to and from the area on an overtime basis in addition to their normal eight hours' work as Truck Drivers. The Agreement provides for isolation pay when employees are "assigned to work within the Hanford Works barricade area." The Union contends that "under the plain and unambiguous terms of the contract these employees are clearly entitled to isolation pay." The construction contractor has denied that such isolation payments are required by the Agreement or were contemplated by the parties when the Agreement was negotiated.

In order to avoid a conflict between Building Trades and Metal Trades within the fenced warehouse area in North Richland it has been determined that all unloading of materials will be accomplished with GE personnel. The matter was brought to a head when construction Plumbers insisted upon accompanying a load of scrap pipe into the area to perform the rigging incidental to the unloading of the material by a GE crane.

Work Stoppages - Actual or Threatened:

The work stoppage in protest over a force reduction of eight to ten Millwrights performing inspection work at 100-C for General Electric and involving approximately 100 members of the craft on AJ payroll, was terminated on August 4. A

subsequent hearing before the Davis Panel was held in Richland on August 26. As a result thereof the matter was satisfactorily resolved in favor of the employer. GE's position at the hearing was one in which we denied being a party to the dispute by virtue of the fact that: (1) the employees involved were not GE employees, (2) the employer was not a GE contractor, (3) the Company was not a party to any agreement involving any employees in the dispute and (4) the Company did not request Panel intervention and did not feel that the subject in dispute properly fell within the purview of the Panel.

Throughout the hearing the position was maintained that it was the Company's contractual obligation to carry out the inspection function and that freedom of judgment as to the engineering methods employed as well as the determination regarding the number, classification and source of persons performing the inspection must be maintained. The Company refused unequivocally to make any commitments regarding future construction. The Union's acceptance of an ambiguous statement to the effect that no reason currently exists for believing that future work will be handled in any manner that differs from past practice probably substantiates the contention that the Union insisted on a Panel hearing only as a face-saving measure.

Under the terms of a decision handed down on May 7, 1952 by the National Joint Board, the Carpenters won jurisdiction over the rigging of concrete form panels which had previously been accomplished on the Project with Ironworkers. In a work assignment dated May 29, issued by the prime construction contractor, provision was made that "the customary Ironworker Signalman will be maintained on the rig." The controversy over this assignment has subsequently been the cause of two minor work stoppages, one of which resulted in the discharge of a Carpenter. The Carpenters' threat to pull their men off the job by August 25 unless Ironworker Signalmen were replaced by Carpenter Signalmen failed to materialize but the issue has not been resolved.

WAGE RATES

Reimbursement Authorization from the Atomic Energy Commission was received for the following new classifications:

Tabulating Machine Operator A, Grade 14
Tabulating Machine Operator B, Grade 10
Tabulating Machine Operator C, Grade 8

The report on the Northwest Area Wage Rate Survey was distributed to all participating concerns.

A request was submitted to the Atomic Energy Commission for reimbursement for the classification of Sub-Station Trainee.

Two unsigned letters were received from Virginia Moore, Executive Secretary of the Wage Stabilization Board, notifying us of the Board's approval of Cases 17-444, 17-446 and 17-447 (the increase in isolation pay) and Case No. 17-448

(the plan to pay double time to Community Firemen whose regularly scheduled work day falls on an observed holiday, and who work on that day). The Executive Secretary promised to forward signed approval letters, which are necessary for reimbursement purposes.

Copies of the country-wide survey to ascertain the prevailing rates paid to Graphic Designers and Illustrators were distributed to all participating concerns.

Notification was received of the proposed company-wide offer of a 2½% increase plus the September 15, 1952 cost-of-living adjustment.

As a result of the Company's appeal in the case of Porter vs General Electric Company (Community Fireman), the reimbursable items concerned with Community Firemen were inserted into the proposed Appendix B and submitted to the Division Counsel.

A request was submitted to the Atomic Energy Commission for reimbursement authorization for a new classification of X-ray Technician and revision of the job contents of Medical Technician A, B, and C.

At the request of the General Electric Company Security Office, we placed into effect a plan for the control of transfers of employees from "non-sensitive" to "sensitive" nonexempt jobs.

Three hundred and ninety-six (396) automatic and 3 merit increases were processed during August. Requisitions for 183 people were processed. One hundred and fourteen (114) new hires and 29 reactivations were investigated concerning replacement, job, pay grade and qualifications. A review was made of 147 temporary reclassifications, 120 reclassifications and 98 transfers before approval was given.

SUGGESTIONS AND INSURANCE

Suggestion System:

	July, 1952	August, 1952	Total Since 7-15-47
Suggestions Received	153	170	9457
Investigation Reports Completed	265	213	
Awards Granted by Suggestion Committee	59	39	
Cash Awards	$ 1,150.00	$ 1,450.00	
Estimated Net Savings	8,726.68	14,041.26	

The highest award of $350 was made to an employee in the Separations Section for his suggestion concerning a method for shortening the time cycle on the D Board in Building 224-B. Increased labor productivity was realized from the adoption of this suggestion.

Employee and Public Relations

An employee in the Purchasing and Stores Section received the second highest award of $300 for his suggestion proposing the use of a welded Saran Liner with flange to replace the Pyrex Side Arm Liner in the "Y" Section of the Scrubber Assembly in Hoods 29 and 30 in Building 234-5. This suggestion resulted in considerable labor and material savings.

The third highest award for the month was made to an employee in the Reactor Section. This award, in the amount of $200, was made to the suggester for his suggestion pertaining to a method of decontaminating 8" Perfs, resulting in a reduction of material.

Workmen's Compensation:

One case under litigation was closed during the month of August.

Liability Insurance:

Two cases under litigation were closed during the month of August.

Life Insurance:

Code information which is known only to Home Office Life Underwriters Association has been furnished 33 insurance companies and investigation agencies during the month of August, 1952. This is in accordance with an arrangement with the Underwriters whereby employees on this project might be insured on the same basis as those working elsewhere.

Insurance Statistics:

	July, 1952	
Claims reported to the Department of Labor and Industries	Long Forms	Short Forms
	194	973
	August, 1952	
	100	872

Total since Sept., 1946 - 10,773

	July, 1952	August, 1952
Claims Reported to Travelers Insurance Company	11	8*

Total since Sept., 1946 - 645

*Of the claims reported to Travelers Insurance Company during the month, seven were property damage claims and one was bodily injury.

TRAINING AND PROGRAM DEVELOPMENT

Training and Program Development objectives scheduled for August 1952 and other training activities were completed as follows:

MANAGEMENT AIDS:

MANAGEMENT ORIENTATION, designed to welcome new exempt personnel to the "management team", was presented on Monday, August 4, with 27 new exempt personnel in attendance. An informal luncheon was held in conjunction with this program and Dr. O. H. Greager, Manager, Technical Section, attended as guest along with participants of the group.

SUPERVISORS HANDBOOK program, designed to assist new supervisors in how to use this valuable management tool, was presented on Tuesday, August 5. This 4-hour program was attended by 10 new supervisors.

G-E 9-POINT BETTER JOB program was presented on Tuesday, August 5, and was attended by 17 new exempt personnel. This 4-hour program is presented to acquaint new exempt personnel with the nine elements essential to a good job and includes a discussion period regarding supervisors' responsibility in administering this desirable way of life.

EFFECTIVE BUSINESS MANAGEMENT was presented on Wednesday, August 13. This 8-hour program includes the three 1½ hour discussion sessions of HOBSO, a review of how to read the General Electric Annual Report, and an explanation of interpretating the annual Benefit Plans Status Report to employees. This program was attended by 21 new exempt personnel.

LABOR-MANAGEMENT RELATIONS program was presented on Thursday, August 14, with a group of 33 new supervisors in attendance. This 4-hour program is a discussion and informative meeting including the philosophy necessary to operate under a union contract and a review of the spirit and intent of the G.E.-HAMTC Agreement which is an assistance to new supervisors to intelligently understand the clauses within the agreement.

SPECIAL SUPERVISORY CONSIDERATIONS program was presented on Thursday, August 14, with 37 new exempt personnel in attendance. This 4-hour program, which includes three important phases with new supervisors, namely: (1) Gaining cooperation (2) Responsibility in regard to accountability of source and fissionable materials, and (3) Highlights of the four M's in cost control, is always well received and well attended.

POLICY SEMINAR program was presented on Wednesday, August 20 and 21, with 19 new supervisors in attendance. This is a comparatively new program designed to bring about uniform understanding, interpretation and administration of the plans, policies and procedures as set forth in OPG's and includes where possible an explanation of the purpose or philosophy of our policies. This two day program also includes highlights of those procedures such as disciplinary action, grievances, rating of exempt personnel, etc., that are of definite interest and concern to supervisors.

Employee and Public Relations

TRAINING AND PROGRAM DEVELOPMENT

BENEFIT PLANS program was presented on Friday, August 22. This 4-hour program was attended by 7 new supervisors and it is designed to assist new supervisors in administering the benefit plans uniformly and to become a reliable source of information to their employees regarding our various plans.

MANAGEMENT SKILLS:

PRINCIPLES AND METHODS OF SUPERVISION was presented during four hours a day for a two week period ending August 8 to a group of 24 inner area supervisors attending these conferences at Dorm W-10, while 19 supervisors from the outer areas attended the conferences at the Hanford High School. This two week program presenting PMS from 8:00 A.M. to 12:00 Noon is a schedule presented by popular demand since this timing is considered desirable because it permits the supervisors to spend at least a half day in conjunction with their regular responsibilities. In fact, this time schedule has met with such approval that additional groups will be made available in the near future.

CONFERENCE LEADING TECHNIQUE MANUAL which has been re-edited will be prepared for distribution to exempt personnel responsible for conference leading in the near future.

MANAGEMENT DEVELOPMENT:

MANAGEMENT CONFERENCES ON HUMAN RELATIONS is progressing on actual development of conference content material for presentation at an early date.

THE HANFORD WORKS "SUPERVISOR AND GENERAL ELECTRIC" (SAGE) bulletins were issued twice throughout August since this is a bi-weekly bulletin. This quick communicator includes items of interest about human relations, current event economics, leadership techniques and successful supervision.

OTHER TRAINING AND PRODUCTION:

SUPERVISOR'S HANDBOOKS are issued to new supervisory personnel as requested by senior management. Summary of Handbook distribution to date includes:

Number of handbooks issued prior to August 1, 1952	- 1341
Number of handbooks issued during August	- 0
Number of handbooks returned during August	- 8
Number of handbooks issued to date	- 1333
Number of handbooks on hand	- 167
Total number of handbooks	1500

SUPERVISOR'S HANDBOOK ADDITIONS AND REVISIONS were mailed to all holders of the Handbook in August. A total of 37 pages including revisions in the Labor Legislation, Payroll Routine, Personnel Policies and Practices, Safety and

TRAINING AND PROGRAM DEVELOPMENT

Fire Protection, and Security Sections; as well as a new Table of Contents and new Cross Reference. A balance of approximately 50 pages are in Printing which will be mailed as soon as possible.

The following FILMS WERE PREVIEWED by members of the Training Section and other interested members of the Department to determine their applicability in conjunction with training activities or public relations activities: "Radiation Control", an HW production depicting radiation process activity in the Reactor Section; "Your Money", an NAM production presenting the flannel board technique of explaining what an individual may do regarding inflation; "Government is Your Business", a Christopher production depicting the importance of voting; "The Jet Story", a General Electric production giving an interesting background on the development of jet aviation in the United States.

MATERIAL REQUESTED: During the current month 50 copies of HAMTC Agreement were furnished to Union Relations and many single copies of miscellaneous literature furnished to members of management throughout scattered sections of the Nucleonics Division. Transcripts covering the program attendance during the past 3½ years were furnished to department director of Radiological Sciences, section manager of Union Relations and to units of the Community Real Estate and Services Department.

MISCELLANEOUS: During the current month Mr. J. B. Polworth, Mr. R. L. Hooper, and Mr. H. E. Thurston of the Atomic Energy Commission attended several of our training programs to determine what they might do in conducting similar programs with local A.E.C. management personnel.

PUBLIC INFORMATION

A total of 68 releases were distributed during the month. Of these, 30 were sent to the "local list", nine to the "daily list", and 29 received special distribution.

A story concerning three G-E employees who received MS degrees through the School of Nuclear Engineering was given special distribution. Individual versions were sent to the local and daily lists and to the papers serving the hometowns, undergraduate and graduate schools attended by the three men, and a list of trade publications. The story was written to point up the unusual aspects of the School and this area.

Photographs were obtained of Atomic Frontier Days for distribution to the G-E representative in San Francisco, and to a list of Pacific Northwest daily newspapers and wire services. Because this was a strictly community celebration, it is expected that editors deleted mention of G.E. from cutlines when they used pictures. Consequently, the clipping service probably will not send us clippings of these pictures. So far, the News Bureau has heard informally that these pictures were used by both Portland papers and one Spokane paper.

Arrangements were made for C. R. Stark, free lance writer from Spokane, to interview M. F. Rice to gather material for an article on International Harvester trucks, buses and other automotive equipment in use at Hanford Works.

A letter has been received from TODAY'S HEALTH stating that they want first crack at our Industrial Medicine story. The story will be sent to them as soon as clearance has been obtained on two remaining pictures. The story itself has been cleared with Medical and Radiological Sciences Department.

The Community NEWSLETTER was written and mailed to community leaders in Richland, Pasco, and Kennewick. Subjects discussed were the current employment situation, the new wage and benefit offer, and the Nucleonics Division "Good Neighbor Fund".

To aid in the "Get Out The Vote" campaign, the local Kiwanis Club was furnished publicity material prepared by the Advertising Council, Inc. The Club, which plans to back the campaign through its "Ballot Battalion" project, was offered assistance in its endeavors.

At the request of the local publicity chairman, the Community Information Supervisor accepted a position on the Community Chest Publicity Advisory Board.

Four Hanford Works authors submitted papers for approval, one group of photomicrographs for exhibit in New York City was submitted, two notifications of publications were received, and two requests for speakers were filled.

"Filters for Removal of Radioactive Cotaminants from Air", by W. W. McIntosh, for inclusion in the 1952 American Society of Heating and Ventilating Engineer's Guide.

"Effects of Pile Effluent Water Upon Columbia River Organizms" by R. F. Foster and J. J. Davis, for presentation at the Oak Ridge Laboratory Symposium, August 28, 1952, and also possible publication by the Oak Ridge Technical Publication at a later date.

"Radioactive Plankton from the Columbia River", by R. W. Coopey, for publication in the Annual Report of the American Society of Limnology and Oceangraphy. This paper was also requested by Schenectady for possible inclusion in the ad series "What General Electric Scientists are Thinking About" which appears in "Scientific Monthly" and other scientific publications.

"A Radio-ecological Survey of the Columbia River", by J. J. Davis and C. L. Cooper for presentation at the Annual Meeting of the American Society of Limnology and Oceanography at Ithaca, New York, September 8 and for publication in the Annual Journal of that organization at a later date.

Four micrographs taken by N. L. Dickum for use at the Biological Photographic Association Exhibition, Hotel New Yorker, New York City, September 10, 1952.

"Looking in our Dangerous Operations", by J. M. Holeman, will appear in the forthcoming issue of the "General Electric Review" accompanied by a biographical sketch of the author.

"Studies of Metabolic Turnover with Tritium as a Tracer", by Roy C. Thompson, was published in the July, 1952 issue of "The Journal of Biological Chemistry".

Arrangements were made to have tape recordings of General Manager, W. E. Johnson's talk before the Northwest Engineers Centennial in Portland, Oregon, August 9, broadcast by local radio stations. A tape recording also was made of the General Manager's talk, "Atomic Energy Industry and the Free Enterprise System," before the Richland Kiwanis Club, August 20.

A tape recording was made of the farewell dinner given in honor of Mrs. George R. Prout, August 14, and records were made from the tape.

A CD publicity program was outlined, aimed at acquainting residents with monthly tests of air raid sirens. Newspapers, radio, letters to community organizations and supervisors, posters, and CD bulletins represent some of the media to be utilized.

Radio broadcasting during a CD alert was discussed in a meeting held with the state director of communications, Federal Civil Defense Administration. It was determined that residents may be told the frequency to dial for public information announcements, during times of emergency.

The CD Public Information Program was reviewed, in the interest of keeping the assistant deputy director informed of the progress being made in achieving the objectives of the Program. The review showed that substantial progress has been made.

Copies of past civil defense bulletins were furnished to the local representative of Newcomers Service, Inc., for distribution to new Richland and North Richland residents.

The Civil Defense float and exhibit project, in connection with the local Atomic Frontier Days Celebration, was completed. For those who saw the float in the AFD parade, and who toured the CD exhibit in Community House, the activities of the Hanford District Civil Defense organizatbn now have greater significance.

CD movies were shown to 35 members of a community organization, and 209 G-E employees.

Tours of the civil defense control center were completed by 16 people.

The Chief Warden gave two talks during the month on Civil Defense. One was presented at the Toastmistresses and Toastmasters Club combined at the Desert Inn on August 11, and the other to the Maintenance Group in the 722 Hangar on August 13.

The greater part of the Chief Warden's work during the month consisted of erecting Atomic Frontier Days Civil Defense floats and exhibits and subsequent dismanteling of the exhibits.

A letter was mailed to all existing wardens, telling of current C.D. events, in an attempt to let the volunteers now that Civil Defense still is in business, in spite of the present inactivity while a decision by AEC concerning the status of the Warden Service is pending.

Classified advertisements for IBM Operators and Design Draftsmen were placed during the month in the Salt Lake Tribune, Deseret News, Salt Lake Telegram, and the Ogden Standard-Examiner.

Two plant-city advertisements were rescheduled to appear in local daily newspapers to coincide with wage negotiations at Hanford Works. These ads originally were scheduled via the Fred Rudge Advertising Agency in New York to appear prior to an offer being made to Hanford Works Unions. A third plant-city advertisement, also placed by the Agency, was cancelled because the union shop issue which it discussed was not pertinent locally. To avoid premature placements of advertisements in the future, a proposal has been made to the New York office whereby all future plant-city advertisements would be scheduled and placed directly with local newspapers by the Employee and Public Relations Department.

PHOTOGRAPHIC SERVICES

A total of 6047 prints were produced during the month. Of these 4336 were for employee identification and area admittance badges.

The Atomic Frontier Days Parade and celebration were photographed and color slides and motion pictures were made, along with pictures for publicity purposes.

The Supervisor of Photographic Services attended the National Convention of Photographic Association of America in Chicago. Ways of saving time, money, and expenses to produce quality photographs, and new and improved photographic equipment was shown. New methods developed by Eastman Kodak Co. were studied and will soon be put into operation in Photographic Services.

Methods of operation and general problems concerning equipment were discussed in a visit to Schenectady. Problems concerning sound slidefilms, our work, and general lay-out procedures were answered by members of the Company's Apparatus Sales Division Photo House, and the Public Relations Services Motion picture production people.
See attached statistical report.

PROGRAM DEVELOPMENT

The seventeenth consecutive weekly program of "Hanford Works Science Forum" was broadcast over KWIE, Sunday, August 31. Outstanding scientists, professional and military men have appeared on the programs during August. Colonel Moffett, Post Commander at Camp Hanford was a principal speaker, in addition to Dr. E. C. Pitzer, who spoke on the electro-plating processes. Maurice C. Lambert's subject was "Light and Color and Some of Their Uses in Analytical Chemistry," Captain Maynard Missall of Camp Hanford spoke on "Flying Saucers" and Dr. W. D. Norwood on "Obesity and Health."

"Home Town ...Richland", a 35mm sound slidefilm produced for the Community Services Section, Community Real Estate and Services Department, has been completed and received for preview showing.

Stories for two 16mm sound motion pictures for training and documentary purposes have been approved by the Redox and Process Units of the Separations Section, Manufacturing Department, and all conditions relative to the production of these two films have been accepted. Production is scheduled to begin September 8.

EMPLOYEE INFORMATION

The Hanford Works NEWS Readership Survey was completed during the month. In addition to sending two letters and questionnaires to a sample group of 500 employees, representing the various departments and breakdowns of employee groups at Hanford Works, the Works NEWS also carried messages urging employees of the sample group to respond.

A response of approximately 67% was achieved. Results of the questionnaire are being tabulated by the Statistical Group and should be available in September.

The Odd-Even Watering Plan promotion was concluded during the month with the publication of two photographs and a news story in the Hanford Works NEWS, plus arrangements for a final story announcing termination of the plan for publication in the September 5 Works NEWS issue. Participation in the plan by Richland residents was credited by Public Works with avoiding serious reduction in water pressure during the hot summer months.

The Nucleonics Employees Good Neighbor Fund promotion activities were concluded during the month with adoption of the fund. More than the required 50% of all employees had enrolled. Adoption of the plan was announced in the Works NEWS issue of August 29. Further publicity concerning election of a Board of Directors will be run in succeeding issues.

Retirement of the 200th Hanford Works employee under provisions of the G. E. Pension Plan provided an opportunity to publicize the plan through a feature article, including photographs.

The Hanford Works Suggestion System was publicized through a feature story with photos of recent award winners.

The Red Cross Blood Donor Program was publicized through a story, photographs and a complete list of donors. A follow-up news story requested people to donate blood at the next drawing, if they had not already done so.

The Separations Safety Stampede was given continuing coverage throughout the month through teaser cartoons and a final story announcing start of the contest. This contest will be publicized continually during the 3-month period during which it will be held.

Human interest stories by a Hanford Works NEWS reporter concerned employees who are directing the summertime activities of a group of young people in the Community. By-line and feature arrangement were used to encourage reporters to send in feature-type articles.

Two letters to supervisors concerning the wage offer, plus increases in benefit plan provisions, were written and distributed.

The September Health Bulletin, "Putting on Weight?" was produced and distributed. In addition, the October bulletin, "When the Temperature Drops," was prepared prior to the commercial artist's vacation so that distribution would not be delayed in October.

The September Safety Topic of the Month, "Attentin Pays," was written, produced and distributed.

Community Services Section's report to Richland residents covering the fiscal year ending June 30, 1952, was written and placed in production. Printed copies of the publication, a four-page photo supplement to last year's report, will be received from the printer next month.

"Confidentially Yours," a booklet for stenographers on preparation and control of classified documents is nearing completion. The title, copy, and cover design have been approved by Technical Information, and rough page layouts have been completed.

A years supply of booklets for the Information Rack Service was ordered via Purchasing from the Good Reading Rack Service. Ten additional information racks have been constructed and will be installed to supplement the original ten racks.

Clarification of requirements for the placing of the standard GE Identification was furnished to those responsible for placing signs at the new North Richland Central Stores Building and at a building occupied by Radiological Sciences people within the 700 Area. Correct usage of the standard GE Signature, including size and use on standard drawing formats was arranged with the drafting supervisor and with the forms control people.

Suggested items for publication in the January 1953 issue of the GE REVIEW were received from a representative of the Engineering, Manufacturing and Radiological Sciences Department. Following discussion of the suggested items with Dr. W. I. Patnode, brief write-ups on the items are being prepared by the

various departmental representatives. Appropriate photographs and/or diagrams also are being prepared.

Four photographs and three water color paintings of the areas were framed and placed in the General Manager's Office. The three water colors were originally produced by the Public Relations Illustrator for a recent Hanford Works report.

Art services for the Works NEWS included four editorial cartoons, and revision of a chart showing a comparison of cost of living vs. wage and benefit increases for General Electric employees.

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Hanford Works Photo House
Month of August, 1952

	2" X 2"	2" X 4"	5" X 7"	8 X 10"	NEG.	3¼" X 4"	SLIDE	35 MM	SLIDE	M 160 MMV IE	EKTA	CHROME	11" X 14"	4" X 5"	16" X 20"	3¼" X 4"	COLOR
COMMUNITY REAL ESTATE & SERVICES																	
Commercial Services				34	21												
Police		10	32	10	67									38			
Municipal				16	6												
EMPLOYMENT & PUBLIC RELATIONS DEPT.																	1
Employment	929																
News Bureau			99	186	114									3			
Special Programs			23	2	20										3		
Radio & Special Events			58	4	43				20	300¹				6			
Training				10	4												
Works News			271	8	127												
Community Information				18	15					300¹			4				
ENGINEERING DEPT.																	
Analytical				185	4									3			
Technical			2								9						
Rotational Training			50														
Project				14													
Pile Technology				99	26					400¹							
Process				96	6									4			
MEDICAL																	
MANUFACTURING																	
Reactor Section				23										6			
Separations Section				25	3												
Radiation Montoring Unit				84	23												
Operations				75													
RADIOLOGICAL SCIENCE DEPT.																	
Survey					30	25											2
Operational				2	4												
Aquatic Biology						20											

	2" X 2"	2" X 4"	5" X 7"	8" X 10"	NEG.	3¼" X 4"	SLIDE	35 MM	SLIDE	16 MM	MOVIE	EKTA	CHROME	11" X 14"	4" X 5"	16" X 20"	3¼" X 4"	COLOR
UTILITIES & GENERAL SERVICES					2									9				
Electrical Distribution				24	18													
Reproduction				8														
Security	2,872	491	98	20	5													
Fire & Safety			6		3													
Services				4	3													
MISCELLANEOUS																		
A.E.C. Safety				35	7													
A.E.C. Security	34																	
A.E.C. Reports & Statistics				18	9													
TOTALS	3,835	501	639	999	560	45			20		1000	9		13	60	3	2	

	June	July	August
Total Prints	6943	6291	6047
Total Negatives	534	753	560
Total Assignments	145	105	125

COMMUNITY REAL ESTATE AND
SERVICES DEPARTMENT
AUGUST - 1952

ORGANIZATION AND PERSONNEL

Number of employees on roll.	Suffix	Beg. of Month	End of Month
General Administration	310	1	1
Community Services Section			
Administration	320	5	5
Public Works	321	107	101
Engineering	326	9	9
Recreation & Civic Affairs	327	8	6½
Library	327	10½	10½
Fire (Richland)	328	47	46
Police (Richland)	329	42	42
	Sub-Total	228½	220
Community Real Estate Section			
Administration	330	3	3
Housing Rental	331	26	26
Maintenance	333	138	135½
Engineering	335	5	4
Commercial Property	337	12	12
	Sub-Total	184	180
700-1100-3000 Area Services Section			
Administration	340	2	2
Fire (North Richland)	341	31	31
Patrol (North Richland)	342	20	20
Commercial Facilities (North Richland)	343	3	3
Maintenance	344	57	56
	Sub-Total	113	111
Civil Defense Program	360	2	2
GRAND TOTALS		534½	520

There was a decrease of fourteen and one-half employees in the Department during the month of August, 1952.

GENERAL

Richland was awarded first place in the State Fire Prevention Contest at the Washington State Fire Conference and School for the period July 1, 1951 to December 31, 1951.

Construction consisting of widening and resurfacing Thayer Drive (between Swift and Van Giesen) and installing concrete curbs, gutters and sidewalks was begun August 25.

Construction of the Greenway parking lot in the downtown business area was begun on August 25.

W. S. Stade began operation of a real estate, insurance and accounting office, as a sublessee in the McVicker Building, at 224 Williams Boulevard, during August.

Total housing applications pending - 709.

1216311

CONTRACT SECTION

Contract No.	Contractor	Title and Status	Project
AT-(45-1)-608	Associated Engineers, Inc.	Site Grading Irrigation, Landscaping, Construction of Rest Room, Sewer Lines, Water Lines and Shelterbelt. Contract is approximately 99% complete.	C-425 C-408 L-262 K-562
AT-(45-1)-617	Associated Engineers, Inc.	Additional Fire Protection Desert Inn and Richland Theater; Fire Hydrant Installation Birch Avenue; Sewer Line Installation Along Gillespie from Duane Avenue to Gillespie Property Line. Close out papers and final estimate submitted to A.E.C. August 18, 1952.	S-552 L-641 AEC W/O 0219
AT-(45-1)-619	Royal Company, Inc.	Elimination of Odors at Sewage Lift Station. Bid opening August 7, 1952, contract awarded August 14, 1952. Notice to Proceed issued August 21, 1952.	L-608
AT-(45-1)-635	L. H. Hoffman	Street Improvements, Parking Lots and Related Work. Notice to Proceed issued August 19, 1952. Construction started August 25, 1952.	CA-499 CG-486 L-911 L-662

Payments were made to contractors in the amount of $7,654.16 during the month.

COMMUNITY SERVICES SECTION

SUMMARY

AUGUST, 1952

ORGANIZATION & PERSONNEL:

	BEGINNING OF MONTH		END OF MONTH	
	Exempt	Non-Exempt	Exempt	Non-Exempt
ENGINEERING	6	3	6	3
FIRE	47	0	46	0
LIBRARY	4	6½	4	6½
POLICE	16	26	16	26
PUBLIC WORKS	14	93	15	86
RECREATION & CIVIC AFFAIRS	4	4	4	2½
	91	132½	91	124

Richland was awarded another first place award in the State Fire Prevention Contest at the Washington State Fire Conference and School at Yakima for the period July 1, 1951 to December 31, 1951.

Construction began on the improvement of Thayer Drive, between Swift and Van Giesen, on August 25, 1952. The work will consist of widening and resurfacing the street and the installation of concrete curbs, gutters and sidewalks. Construction of the Greenway parking lot in the downtown business area also began on August 25, 1952.

COMMUNITY REAL ESTATE AND SERVICES DEPARTMENT
PUBLIC WORKS UNIT
AUGUST 31, 1952

ORGANIZATION AND PERSONNEL

	Exempt	Non-exempt
Employees Beginning of Month	14	93
Transfers In	--	--
Up-grade Weekly to Monthly	(Plus) 1	(Minus) 1
Transfers Out	--	--
New Employees	--	--
Terminations	--	6
Total - End of Month	15	86

SANITATION

Total weight of waste material collected and disposed of during August was 1494 tons. Plans are now being formulated to change from twice weekly residential collection frequency to a once weekly residential collection schedule on 9-29-52, in accordance with policy.

ROADS AND STREETS

"Notice to Proceed" on Projects CG 486 and L-622, Improvement of Thayer Drive, and Mansfield Street, was issued to the sub-contractor on 8-18-52. Actual construction commenced on 8-25-52.

Routine seasonal maintenance of streets, street drainage systems, street markers, and public parking lots was continued.

GROUNDS MAINTENANCE

Acceptance inspection of automatic irrigation system and grass seeding which was completed at Columbia Playfield as part of Project C-425, was held on 8-27-52, and responsibility for the area will be assumed by Grounds Maintenance on 9-2-52.

Availibility of water for irrigation purposes, and cooler weather has allowed for transferring of irrigation crews from graveyard shift to day shift, effective 9-2-52.

GROUNDS MAINTENANCE (Continued)

Routine maintenance of Parks properties and grounds, shelterbelt plantings, and other grounds and plantings assigned to the care of this sub-unit was continued.

DOMESTIC WATER

Normal operations and maintenance were continued. Average daily water consumption for August was 19.93 million gallons, and peak usage for the month occurred on 8-6-52 when 23.37 million gallons were consumed.

The concrete slab roof was poured on the 1182 north reservoir on 8-19-52, and forms are now being stripped. It is anticipated that the reservoir will be returned to service by 9-15-52. Drilling of the recharge (or inverted) well at the 300 Area recharge basin was started on 8-26-52 and is continuing. Work continues on the 5 million gallon reservoir across the Yakima River, but progress has been hindered somewhat due to a lack of reinforcing steel workers. (These three items being part of the "Water Development Project".)

Production and consumption records for August are as follow:

DOMESTIC WATER

	Well Production Million Gallons	Avg. Daily Production	Total Consumption Million Gallons	Avg. Daily Consumption
Richland	220.7377	7.1206	481.5853	15.5350
North Richland	240.2270	7.7493	97.6328	3.1494
Columbia Field	157.3228	5.0749		
300 Area			38.7002	1.2484
TOTAL	618.2825	19.9448	617.9183	19.9328

SEWERAGE

Normal operation and maintenance of the collection system, lift station, and treatment plants was carried out. Daily flow through the treatment plant averaged 3.81 million gallons.

Flow records for August are as follow:

SEWERAGE

	Total Sewage Flow Million Gallons	Average Daily Flow Million G. P. D.	Average Rate of Flow Gals. Per Minute
Plant No. 1	35.750	1.153	801
Plant No. 2	82.368	2.657	1845
TOTAL	118.118	3.810	2646

IRRIGATION SYSTEM

Aquatic week killer was introduced into the canal system on 8-15-52.

Normal operation and maintenance of irrigation water canals and gravity lines, irrigation pumps and pressure distribution grids was continued through August.

RECREATION AND CIVIC AFFAIRS UNIT

MONTHLY REPORT

AUGUST, 1952

ORGANIZATION AND PERSONNEL

	Exempt	Non-Exempt
Beginning of Month	4	4
New Hires	0	0
Terminations	0	1-1/2
Transfers - IN	0	0
OUT	0	0
	4	2-1/2

SCHOOLS

The following is a tabulation of full-time paid School District #400 personnel as of August 31, 1952:-

Administration	6
Principals & Supervisors	14
Clerical	22
Teachers	0
Health Audiometer	0
Cooks	0
Nursery School & Extended Day Care	0
Bus Drivers	0
Maintenance	10
Operations	44
	96

CLUBS AND ORGANIZATIONS

As of August 31, 1952, the employees of the listed organizations, exclusive of thos included in the Real Estate, Commercial and Other Properties Unit Report, include:-

Youth Council - Chest	1
Boy Scouts	1
Camp Fire Girls	1
Hi-Spot Club	2
Girl Scouts	2
Justice of the Peace	1
Y.W.C.A.	2
Chamber of Commerce	1
	11

On August 2, and 3, 1952, a District Little League Baseball Tourney was held at the Little League Baseball Field at Jefferson Playground.

On August 8, 9, and 10th, the Annual Atomic Frontier Days' Celebration, sponsored by the Richland Junior Chamber of Commerce, was held at Riverside Park. Assistance was given the sponsoring group by the Unit throughout the event which was attended

by approximately 15,000 persons.

On August 9, and 10, 1952, the Northwest Regional Little League Tournament was held in Richland at the Jefferson Playground Little League Baseball Field.

The Northwest Regional Softball Tournament was held on August 29, 30, 31 and Sept. 1, 1952, at the Memorial Softball Field. Approximately 6,000 persons attended the games during the tournament.

The regular monthly meeting of the Parks and Recreation Board was held on Aug. 14, 1952 in the Community House. The next regular meeting of the Board is to be held on Sept. 4, 1952.

The number and types of organizations presently served by the Recreation and Civic Affairs Unit include:-

Business and Professional Organizations		23
Churches and Church Organizations		27
Civic Organizations		19
Schools		13
Fraternal Organizations		25
Political Organizations		5
Recreation & Social Clubs -	Alumni	3
	Art,Music,Theater	10
	Bridge	3
	Dance	5
	Garden	3
	Hobby	10
	Social	11
	Sports	19
Veteran & Military Organizations		14
Welfare Groups		7
Youth - Boy Scouts		20
Girl Scouts		49
Camp Fire Girls		36
Miscellaneous		15
		317

RECREATION

The Summer Playground Program came to a close on Thursday Night, August 28th with a Demonstration Program witnessed by approximately 450 parents and children.

The final concert of the Summer Community Band series was given on Wednesday Night, August 27, at Riverside Park.

Recreation and Civic Affairs Unit (Continued)

The Play-For-Fun League operated by our Unit came to a close, Thursday, August 28, after a highly successful season. This league was composed of all those boys of little league age who were unable to make a league team and others who expressed a desire to play but didn't have the opportunity to do so. A trophy presentation by the Junior Chamber of Commerce was awarded to the Champion Yankees of the Play-For-Fun League at our Closing Program of August 28.

The last two special events of the summer playground program were the Olympics Track and Field Events and the Football Pass-Catch Contests.

Below is a cumulative attendance record of the athletics and playground program being sponsored by the Unit:-

	Children	Adults	Totals
General Attendance	11,918	10,578	22,496
Special Events - Participants	890	983	1,873
Spectators	745	1,563	2,308
Assisted Activities	2,347	4,820	7,167
Totals for Month	15,900	17,944	33,844
At End of Previous Month	22,485	18,654	41,139
Fiscal Yr. Totals To Date	38,385	36,958	74,983

Organized groups and classes conducted or assisted by the Recreation and Civic Affairs Unit during August, 1952, are as follows:-

Organized Groups or Classes	Children	Adults	Totals
Picnic (21 Bookings)	1,279	1,556	2,835
Burlin Camp (2 Bookings)	46	23	69
Ball Fields (107 Bookings)	1,122	804	1,926
Wellsian Lake (0) - Closed Area			
Triple-O-League (16 Bookings)	0	400	400
Summer Band (2 Bookings)	285	365	650
Demonstration Night Program	267	145	412
Field Day	17	46	63
Football Pass Catch	13	41	54
	3,029	3,380	6,409

COMMUNITY HOUSE

The Summer Craft Program held at the Community House came to a close on Friday, August 29th. Five classes were held each week.

The Civilian Defense Group utilized the Games Room at the Community House for their three-day exhibit, August 8, 9, 10 in conjunction with the Atomic Frontier Days' Celebration.

The Fall and Winter co-sponsored youth activities program of our Unit and the

[redacted]

Bookings are now being taken for the Fall and Winter period at the Community House.

The Games Room is again being utilized on a Drop-In basis for both youth and adults in the week-day afternoons.

Attendance - Community House

	Children	Adults	Total
General Attendance	1,702	1,403	3,105
Special Events - Participants	58	86	144
Spectators	925	1,572	2,497
Assisted Activities		473	473
Totals for Month	2,685	3,534	6,219
At End of Previous Month	1,787	1,850	3,637

RICHLAND PUBLIC LIBRARY

AUGUST 1952

ORGANIZATION AND PERSONNEL	Exempt	Non-Exempt
Employees - Beginning of Month	4	6½
Transfers In	0	0
Transfers Out	0	0
New Hires	1	1
Terminations	1	1
End of Month	4	6½

GENERAL

Circulation		
Books	14,775	(Adult - 8,250; Juvenile - 6,525)
Magazines	322	
Pamphlets	52	
Records	843	
Special Loans	0	
Interlibrary Loans	49	
Grand Total	16,041	
Current Book Stock		
Books added this month	173	
Books dropped this month	0	
Grand Total	20,907	
Registration		
Adult	189	
Juvenile	59	
Total	248	
Total Registered Borrowers	10,854	
Children's Story Hour Attendance	219	(175 - Park story hour; 44 - Pre-school)

Ten meetings were held in North Hall this month.

Fifty-seven children who were enrolled in the children's summer "Circus Reading Club" finished reading and reporting on ten books during the summer, thus qualifying them for a reading certificate and a baton which is the prize to be given for the winners in the reading club. In addition, the book report booklets which each child made were judged by a committee and the owners of the twelve best booklets were given a ticket to the Shrine Circus. The circus tickets were given to the Library by the Columbia Basin Shrine Club. The "Circus Reading Club" party will be held Saturday, September 6, in the North Hall at which time games will be played and popcorn and pink lemonade will be served. The expenses for the reading club activities are part of the special children's activities program which is being sponsored and financially supported by the Richland Rotary Club.

The fall and winter story hour schedule will start the first of September. Pre-school story hours will be held Tuesday and Wednesday mornings at 10:30. The older children's story hour will be at 2:00 P.M. on the first and third Saturdays of each month.

The Richland Public Library Board held its July-August meeting on Wednesday, August 13, 1952.

RICHLAND POLICE DEPARTMENT

AUGUST 1952

GANIZATION AND PERSONNEL	Exempt	Non-Exempt
Employees - Beginning of Month	16	26
Transfers In	0	0
Transfers Out	0	0
New Hires	0	0
Terminations	0	0
Total - End of Month	16	26

GENERAL

Capt. J. S. Johnson of the Crime Prevention and Investigation Division gave a talk to the Public Health group at Kadlec Hospital relative to Juvenile Delinquency problems and how they are handled by the Richland Police Department.

Capt. C. F. Klepper appeared on a radio program Saturday and Sunday evenings, August 30 and 31. The program, which consisted of a round table discussion, was sponsored by KPKW in the interest of safety on the highways over the Labor Day weekend. Others participating on the program were Sgt. Paul Schlagel of the Washington State Patrol, Capt. Glen Sickles of the Pasco Police Department, Chief Dutch Lincoln of the Kennewick Police Department and Judge Mike West of Pasco, who served as moderator.

Two new public address speakers were received during the month, purchased on the Civil Defense budget, and have been installed on two of our police cars. One of the speakers places one other worn out unit; and the one additional was installed on one of our regular police sedans. These speakers are very convenient for use in emergency work and in controllir traffic.

A new Graflex Identification Unit was received by this department during this past month for use in making head-and-shoulder identification pictures. This equipment will be used in developing a "Mug" file.

Eleven Boy Scouts from the L.D.S. Trail Blazers, with two sponsors, were escorted through Police Headquarters on the 13th of this month.

During the month, 134 letters of inquiry were received.

Twenty prisoners were processed through the Richland Jail during the month of August, nine of which were from North Richland.

Sixteen gun registrations and 47 bicycle registrations were recorded this month.

A total of 373 police and traffic reports were processed through the records section of the Police department, consisting of reports originating from both Richland and North Richland police departments.

Richland Police Department

TRAFFIC

There were 11 reportable accidents this month as compared to 18 last month and 22 for the month of August in 1951. This brings the total accidents for this year to 179 as compared to 152 for the same period last year or an increase of 17.7%.

Two people received minor injuries in two separate accidents this month. This is only one-half of the persons injured last month, and 3 less than were injured in August of last year. There have been 32 people injured in automobile accidents this year and one fatality, as compared to one fatality and 41 injuries for the same period last year. This is a 22% reduction in injuries.

Seven accidents this month occurred in the residential district, three were reported in the business district and one in open districts where there were no adjacent buildings.

Property damage this month, as a result of traffic accidents, was $2,655.91, or an average of $241.44, as compared to $4,827.00, which averaged $268.16 for last month.

Nine of the above accidents were investigated by members of the Richland Police Department, and these investigations resulted in criminal complaints being issued against 7 drivers for traffic law violations.

Traffic violations which contributed to the above accidents were:

Failure to yield right-of-way	4
Negligent driving	3
Turning from wrong lane	2
Following too close	1
Improper turn	1

It is very encouraging to note that there has not been a reportable pedestrian accident this year to date as compared to 5 for the same eight months period last year, and bicycle accidents have been reduced from 5 to 2 for this period.

During the month of August, 31.5% of the total drivers involved in accidents were not residents of Richland, and 3 of the 11 accidents were caused by soldiers.

Richland Police Department

INING

Advance training for Richland Police members at the Small Arms Range for the period in Field Instruction was as follows:

Pistol 2 hours

Total number of men reporting at the Range	16
Total number of men instructed in Field	16
Number of men fired over the F.B.I. Course	3
Number of men fired over the Army-L Course	13

Qualifications on the F.B.I. Course were as follows:

	No. of Men	Per Cent
Marksman	1	25%
Unqualified	2	75%

Qualifications on the Army-L Course were as follows:

	No. of Men	Per Cent
Expert	7	55%
Sharpshooter	1	10%
Marksman	2	15%
Unqualified	3	20%

ACTIVITIES AND SERVICES

	June	July	August
Doors and windows found open in facilities	50	77	82
Children lost or found	11	15	21
Dogs, cats reported lost or found	45	56	33
Dog, cat, loose stock complaints	20	28	22
Persons injured by dogs	5	4	6
Bank escorts and details	0	0	0
Fires investigated	8	17	9
Miscellaneous escorts	12	9	14
Complaints investigated (no enforcement action)	35	30	12
Deaths reported	0	0	1
Property lost or found	30	29	20
Records inquiries	105	103	95
Law enforcement agencies assisted	7	2	2
Private individuals assisted	29	40	40
Plant departments assisted	15	16	15
Emergency messages delivered	28	27	18
Street lights out reported to Electrical	163	81	91
Totals	563	534	481

MONTHLY REPORT
RICHLAND POLICE DEPARTMENT
AUGUST 1952

	OFFENSES	KNOWN	UNFOUNDED	CLEARED OTHER*	CLEARED ARREST
ART I					
1.	Murder				
2.	Rape				
3.	Robbery				
4.	Aggravated Assault				
5.	Burglary - Break & Ent.				
6.	Larceny - Over $50.00	1			
	Under $50.00	16	2**	3	2**
	Bicycle Theft	15		17**	
7.	Auto Theft				
	TOTAL PART I CASES	32	2**	20	2
ART II					
	Other Assaults				
	Forgery & Counterfeit	1			
10.	Embezzlement & Fraud	1			1
11.	Stolen Prop:Buy:Rec:Poss.				
12.	Weapons:Carrying:Poss.				
13.	Prostitution				
14.	Sex Offenses				
15.	Offense Ag. Fam. & Child				
16.	Narcotics - Drug Laws				
17.	Liquor Laws				
18.	Drunkenness	6	-	-	6
19.	Disorderly Conduct				
20.	Vagrancy				
21.	Gambling				
22.	Driving while Intox.	3	-	-	3
23.	Violation Rd. & Dr. Laws:				
	Speeding	37			37
	Stop Sign	23			23
	Reckless Driving	2	-	-	2
	Right of Way	9	-	-	9
	Negligent Driving	16	-	-	16
	Defective Equipment	7	-	-	7
24.	Parking	56	-	-	56
	All Other Traffic Viol.	22	-	-	22
	All Other Offenses:				
	Malicious Mischief	3	-	3	
	Carried forward to page 2	186		3	182

	KNOWN	UNFOUNDED	CLEARED OTHER*	CLEARED ARREST
Brought forward from page 1.	186	-	3	182
Vandalism	7		2	-
Disturbance -	10		10	
Dest. Pers. Prop.	5		4	
Pickup for outside agency	2		1	1
Juvenile Invest.	2		1	1
Investigation	9		5	
Car Prowl	1			
Juvenile with Liquor	1		1	
Public Nuisance	4			3
Prowler	6	1	2	
Ill. Shooting	2		1	
27. Suspicion	3	1	1	
TOTAL PART II. CASES	238	2	31	187
PART III.				
28. Missing Persons	3		3	
Lost Persons	6		6	
Lost Animals	7		3	
Lost Property	5		2	
29. Found Persons	1		1	
Found Animals	8		4	
Found Property	1			
AL PART III CASES	30		19	
PART IV.				
30. Fatal Mot. Veh. Traf. Acc.				
31. Pers.Inj.Mot.Veh.Traf.Acc.	2			
32. Prop.Dam.Mot.Veh.Acc.	9			
33. Other Traffic Acc.				
34. Public Accid	)			
35. Home Accidents	)	No Accurate Statistics Kept		
36. Occupational Accidents	)			
37. Firearms Accidents				
38. Dog Bites				
39. Suicides				
40. Suicide Attempts				
41. Sudden Death & Bodies Fd.	1		1	
42. Sick Cared For				
43. Mental Cases	2		1	
TOTAL PART IV CASES	14		2	
COMPOSITE TOTALS PARTS I,II,III,IV CASES	314	4	72	189

* Cases listed under "Cleared Other" are those cleared by various means other than arrest, such as: orders from prosecutor, juvenile probation officer or other situations in which a mutual agreement is obtained. They are definitely "cleared" cases and differ from the arrest colum only in that there was no arrests.

- Petit Larceny cases cleared unfounded and 2 Petit Larceny cases cleared by arrest. Two bicycle thefts clearedother. These cases cleared for previous months.

Property reported stolen $610.00 (including 15 bikes)
Property recovered $447.75 (including 17 bikes)

MONTHLY REPORT — RICHLAND POLICE DEPARTMENT — JUVENILES INVOLVED — AUGUST, 1952

OFFENSE	NO. CASES	JUVENILES	SEX	5	7	9	10	11	12	13	14	15	16	17	TOTAL
Disturbance	1	2	M					1		1					2
Juvenile Investigation	2	2	M											2	2
Vandalism	3	5	M	1		2	1	1							5
Petit Larceny	1	4	M									2	-	2	4
Ill. Shooting	1	3	M							1	1	1			3
Malidious Mischief	2	5	M				1		1	1			2		5
Juvenile with Liquor	1	1	F											1	1
Ill. use of Sling Shot	1	4	M		1		2			1					4
Prowler	1	2							1	1					2
TOTALS	13	28		1	1	2	4	2	2	5	1	3	2	5	28

9-Ft

Number of offenses known to police per 25,000 inhabitants in cities of 25,000 persons:

	Wash,Ore.& Calif. Six months (Jan.-June 1951)	One month average	Richland January - June 1951	Richland July - Augus 1952	
Murder	;34	.056	-	-	-
Robbery	9.35	1.56	-	-	-
Agg.Assault	6.65	1.10	1	-	-
Burglary	64.87	10.81	17	2	-
Larceny	205.90	34.30	141	16	17
Auto Theft	32.12	5.35	8	3	-
Bicycle Theft			158	22	15

Number of offenses known to police per 25,000 inhabitants regardless of whether offenses occurred in cities or rural districts.

	State of Washington Six months (Jan.June 1951)	One month average	Richland January - June 1951	Richland July - August 1952	
Murder	.31	.051	-	-	-
Robbery	6.85	1.140	-	-	-
Agg.Assault	2.45	.410	1	-	-
Burglary	56.50	9.400	17	2	-
Larceny	196.10	32.700	141	16	17
[illegible]o Theft	32.5	5.400	8	3	-
[illegible]ycle Theft			158	22	15

The portion of offenses committed by persons under the age of 25 years in shown:

	National Average Percentage of cases (January - June 1951)	Richland January - June 1951	Richland July - August 1952	
Robbery	53.6	-	-	-
Burglary	61.7	4	-	-
Larceny	45.2	25	3	[illegible]
Auto Theft	69.7	-	-	-

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 arrests recorded is doubtless incomplete in the lower group because of the practise of some jurisdictions not to fingerprint youthful offenders."

RICHLAND POLICE DEPARTMENT
RICHLAND JUSTICE COURT CASES
AUGUST 1952

VIOLATION	NO OF CASES	NO OF CONV.	NO OF FORF.	CASES CONT.	CASES DISM.	WARR. ISS.	SENT JAIL	SENT SUSP.	LIC. REV.	CASES ORIG. PREV. MON.	CASES INCL. OTHER VIOL.	BAIL FORF.	FINES	FINES SUSP.
DEFECTIVE EQUIPMENT	8	6		2						3	1	$	$ 41.00	$15.00
DISPLAYED DR. LIC. NOT ISSUED TO HER	1	1											12.50	
DRIVERS LICENSE	21	11	3	3	4					7	6	5.00	58.50	15.00
DRUNKEN DRIVING	1	1							1				52.50	
F.T.S. & I.	1	1							1				12.50	
F.T.Y.R.O.W.	4	1	1	1		1							10.00	
FOLLOWING TOO CLOSELY	1			1						1				
ILLEGAL PARKING	22	6	11	5						1		42.00	17.50	17.50
ILLEGIBLE DR. LIC.	1	1									1			
IMPROPER PLATES	1	1									1			
LOANED DR. LIC. TO UNLICENSED OPERATOR	1	1											10.00	
NEGLIGENT DRIVING	22	13	7	2						2		180.00	300.00	12.50
NO ARM SIGNAL	1		1									5.00		
NO REGISTRATION	3	2	1							1	3			
PERMITTING CHILD TO OPERATE MOTOR VEHICLE	2	1	1									10.00	12.50	
RECKLESS DRIVING	3	1		2					1				17.50	
SPEEDING	40	11	22	6		1				5		270.00	119.50	20.00
STOP SIGN	14	3	9	2						1		62.50	15.00	
GRAND LARCENY	1				1					1				
PETIT LARCENY	1				1					1				
PUBLIC INTOXICATION	5		5									62.50		
PUBLIC NUISANCE	1		1									17.50		
SODOMY	1			1										
TOTAL	156	61	62	25	6	2			3	23	12	$654.50	$679.00	$80.00

TWO DRUNKEN DRIVING CASES AMENDED TO NEGLIGENT DRIVING.
TWO RECKLESS DRIVING CASES AMENDED TO NEGLIGENT DRIVING.
ONE SODOMY CASE TAKEN TO SUPERIOR COURT.

1216330

JUDGE E. W. BROWN WAS ON VACATION FROM AUGUST 8 TO SEPTEMBER 2 AND DURING THAT PERIOD OF TIME TRAFFIC CAS WERE SENT TO JUDGE C. T. MORBECK IN KENNEWIC

POLICE DIVISION - TRAFFIC CONTROL STATISTICS
AUGUST, 1952

MOTOR VEHICLE ACCIDENTS:

	Total Number		Fatilities		Major Injuries		Minor Injuries	
	July	Aug.	July	Aug.	July	Aug	July	Aug.
Richland	18	11	0	0	0	0	4	2

ACCIDENT CAUSES:

	Negligent Driving		Failure to Yield Right of Way		Reckless & Drunken Driving		Other Cases	
	July	Aug.	July	Aug.	July	Aug.	July	Aug.
Richland	4	3	6	4	0	0	8	4

PLANT WARNING TRAFFIC TICKETS ISSUED:

Richland: NO WARNING TICKETS ISSUED FOR JULY AND AUGUST, 1952.

TRAFFIC CHARGES AND COURT CITATION TRAFFIC TICKETS ISSUED:

	Speeding		Stop Sign		Drunken Dr.		Reckless Dr.		Right of Way V.		Neg. Drvg.		Parking V.		Other V.		Totals	
	July	Aug	July	Aug	July	Aug.	July	Aug.	July	Aug.	July	Aug.	July	Aug.	July	Aug.	July	Aug.
Richland	41	35	21	13	3	3	8	5	4	4	23	16	73	21	43	29	216	126

TRAFFIC VOLUME: No Traffic Volume Count taken for the month of August, 1952.

NOTE: Traffic Control Statistics show ORIGINAL CHARGES ONLY.

COMMUNITY SERVICES

RICHLAND FIRE DEPARTMENT

AUGUST 1952

Organization and Personnel

	Exempt	Non-Exempt
Employees - Beginning of Month	47	0
Transfers In	0	0
Transfers Out	0	0
New Hires	0	0
Terminations	1	0
End of Month	46	0

Fire Protection

		This Month	Year To Date
Fire Loss (Estimated):	Government	$10.00	$682.50
	Personal	0.00	504.50
	Total	$10.00	$1,187.00

Response To Fire Alarms	20	125
Investigations of Minor Fires and Incidents	10	95
Ambulance Responses	33	331
Inside Schools or Drills	28	298
Safety Meetings	8	64
Outside Drills	15	174
Security Meetings	3	33
Fire Alarm Boxes Tested	186	1504
Airport Standbys	0	12
Fire Hydrants Tested	0	35
Burning Permits	22	576

Eighty four sections (4200 feet) of 2½ inch fire hose were pressure tested during the month of August.

Firemen and fire apparatus were used as subjects for photos being used for Fire Prevention Week promotion and the Community's Annual Report.

Firemen were detailed to remove weeds that obstructed the use of 14 fire hydrants.

When Engine 3 was returned from the paint shop, Engine 1 was removed from service and sent in for painting.

Two Boy Scouts were examined for Firemanship Merit Badges.

Fire Prevention

A total of 276 fire inspections were made during the month, resulting in 16 hazard reports. Fire extinguisher service performed during August included 392 inspected, 2 installed, 6 removed and 4 refilled. A total of 142 fire hose standpipes were also inspected.

Following a report of inadequate exit facilities in the VFW Club building, an inspection was made and a report of findings forwarded to Real Estate.

Fire Prevention (Continued)

Steps were taken to have hazardous weed growth eliminated in the 700 Area.

In cooperation with the Police Department, a display was arranged in the Community House as a part of the Frontier Days exhibit on Civil Defense.

Following an accidental alarm August 6th in the Lewis and Clark School, school authorities were requested to have certain repairs made to the building alarm system.

Hazardous trash conditions in the Riverside Park swimming pool, under the Softball Park bleachers and under the Community House were reported to the Recreation Unit.

Acting upon the complaint of a transfer truck driver, an inspection was made of a blocked service entrance in an Uptown business building and a report submitted to Real Estate.

Inadequate fire protection devices in the 704 and 722 Building alteration plans were reported to Plant Safety and Fire Protection.

Six meetings were held in August to prepare for the forthcoming Fire Prevention Week campaign, one being an evening meeting with the entire Chamber of Commerce sponsoring committee.

A request was made that approved sweeping compound rather than sawdust be used in the 722 Machine Shop. It was also recommended that creosoting large quantities of lumber be performed outside this building.

The replacement of carbon tetrachloride fire extinguishers with dry chemical type is awaiting receipt of store orders from all Community units. Replacements will then be requisitioned.

A quarterly inspection of all public school buildings revealed excellent conditions prevailed except for structural hazards previously reported in the older buildings.

The 1951 Fire Prevention display book and the national award plaque awarded to Richland were exhibited at the August 20-23 conference of the Washington State Firemen's Association. At this conference, Richland was awarded first place for unincorporated cities in the State of Washington Fire Prevention Contest.

Conferences were held with the newly appointed Chief Fire Warden for the 700 Area and certain changes suggested in evacuation procedures to conform to recent building alterations.

A damaged fire hose box north of the 703 Building was reported to Plant Safety for repairs.

The Assistant Fire Marshal attended a meeting of the Richland Safety Council and requested the Council's assistance in promoting Fire Prevention Week.

Fire Prevention (Continued)

Erection of the new security fence south of the new 703 Building wing created access difficulties for the Fire Department. Recommendations were submitted that would eliminate these difficulties.

The Assistant Fire Marshal addressed a safety meeting of the Mechanical Engineering Development Group on fire safety.

Inspection of Lewis and Clark School alterations revealed hazardous verticle openings being created, highly combustible Cellotex being installed in violation of AEC Procedure No. 24 and fire alarm circuits divided by a fire wall without proper annunication. These items were reported to AEC Engineering and Safety.

All employees of the 706 Building witnessed a fire extinguisher demonstration by the Assistant Fire Marshal.

When the annunciator legend was received for the enlarged 703 Building fire alarm system, steps were taken to have copies made and posted in appropriate places in the building.

COMMUNITY REAL ESTATE AND SERVICES DEPARTMENT
ENGINEERING UNIT

AUGUST 1952

PERSONNEL

	Exempt	Non-Exempt	Total
Employees - Beginning of Month	6	3	9
Employees - End of Month	6	3	9

The Status of Active Projects is as follows:

K-562 - Automatic Irrigation Levee 2-C - Work complete. Job being closed.

L-608 - Odors Emanating from Sewage Lift Station - Bids opened. Notice to proceed with project given contractor August 21, 1952.

L-911 - Resurfacing of Parking Lot at Village Drugstore and Campbells Food #2 - Contract let. E. J. Middlebrough is Field Engineer.

L-662 - Mansfield Street Improvement. - Under contract but not started.

C-425 - 1951 Park Development Program - 99% complete. To be closed about September 15.

C-486 - 1952 Street Improvement Program - Construction work started.

C-488 - Additional Erosion Control and Development, Public Areas, F.Y. 1952 - Design in progress.

C-499 - Alteration of Greenway for Parking Area - Construction work started 8-25-52.

Status of Active ESRs

396-CA - Site Map CAP Field - Deferred for other work.

510-M - Roads and Streets Drawings - 1950 Construction - Deferred for other work.

544-SD - Tree Planting for Schools - Additional work to be done in Fall, 1952.

547-MD - Fixed Irrigation System - Work on project proposal in progress.

561-SD - Chief Joseph Grounds - 100% complete, ESR closed.

565-RC - Site South of Tract House 0-1224 - Deferred for other work.

570-RC - All Saints Episcopal Church - Work progressing - 60% complete.

571-M - Free Methodist Church - Work progressing - 70% complete.

572-M - First Baptist Church - Work progressing slowly - 60% complete.

574-M - Assembly of God Church - Work progressing slowly - 24% complete.

Engineering Unit

579-MS - Goethals Drive to Williams, Study of Intersection - Deferred for other work.

31-RC - "As Built" Plans for LDS Church -Plans returned to building committee.

588-M - Alteration Permits - An open active file.

591-M - Preparation of Advise Pamphlet for Contractors - Delayed for other work.

596-M - Store Building #3, C. D. Joseph Building - Materially Complete. Final inspection to be made.

605-PR - Erosion Control - 100% complete.

609-M - Plan Checking, Store Building #4, C. D. Joseph Building - Materially complete. Final inspection to be made.

612-RC - "As Built" plans for Richland Thrifty Drug - Returned to Architect for correction.

615-M - Plan Checking, McVicker Building #4 - Materially complete. Final inspection to be made.

616-M - Level Control Valve, Sewage Treatment Plant - Deferred for other work.

624-M - Landscaping Estimate for Central Fire Station - Work temporarily withheld.

628-M - Prepare "As Built" plans for Richland Fire Alarm System - Given to Engineering Department for completion with other work.

630-M - Correction of Master Plan - To be accomplished as time permits.

631-M - "As Built" plans for Sewer System - To be developed as time permits.

632-M - "As Built " plans for Water System - To be developed as time permits.

633-M - "As Built" plans for Streets - To be developed as time permits.

634-M - Engineer Liaison, Richland Water Expansion - Preparing and submitting data as requested. Work progressing.

637-M - Engineering, Parking Lots, Chief Joseph School - 100% complete. ESR closed.

646-M - Engineer Liaison, Central Fire Station. - Following construction of building. Submitting data as requested by AEC or GE.

651-M - Estimate for Dog Pound - Estimates prepared and submitted.

653-M - Willard Parker Building Addition - Building materially complete. Final inspection to be made.

654-M - Elmer J. Hansen Building Addition - Building materially complete. Final inspection to be made.

656-M - Plan Checking, Kidwell-Gerdes Service Station - Awaiting receipt of plans.

Engineering Unit

657-M - Review Richland Fire Station - To be developed as time permits.

658-M - Grounds Maintenance Report - Report submitted.

660-RC - Rex L. Jensen Proposed Site - 95% complete.

661-RC - Richland Development Co. Site, Block 5, Uptown Area - 99% complete.

663-M - Richland Development Co., Block 5, North Commercial Area, Plan Checking - Work progressing. Partial permit issued. 35% complete.

665-RC - Richland Labor Temple, Site for Labor Hall - 90% complete.

668-RC - Legal Description, American Legion Post No. 71 - 90% complete.

669-M - Alterations for Frank Berry Sporting Goods Store - Construction complete. Final inspection to be made.

674-RC - Uptown Parking Lot Study - Deferred for other work.

676-M - Sidewalks, Aprons and Drives in Vicinity of Swimming Pool and Bathouse - Design under review.

677-M - Addition to Ernie's Restaurant, Dine and Dance - Work progressing slowly. 40% complete.

678-RC - Legal Description and Extend Utility Lines, Drive-In Theater Site - 75% complete.

681-RC - "As Builts" for Richland Laundry and Dry Cleaners - Checked and final inspection made.

682-M - Alterations to Joseph-Cannon Building - As Built plans received for checking.

683-RC - Legal Description - Tri City Herald - 95% complete.

685-M - Set Bluetop 350' Elev. markers, Telephone Submarine Cable - 100% complete.

686-RC - Utility Lines, Vacant Commercial Sites - An open active file.

689-RC - "As Builts" C. D. Joseph Building #2 - Plans received for checking with exception of "As Built" plans for plumbing.

693-M - Tracings up to Date, Richland Water and Sewer Systems - To be developed as time permits.

694-M - Plans, Specifications, and Inspections, John L. Miller Building. - Construction work progressing, 20% complete.

695-RC - Revised Legal Description - McVickor Building #3 - 100% complete.

Engineering Unit

696-RC - Revised Legal Description, Bus Depot - 100% complete.

697-M - Plans, Specifications, Inspections, Drive-In Theater - Awaiting submission of plans.

698-M - Plans, Specifications, Inspections, Rug Cleaning Plan - Plans checked and accepted.

699-M - Tastee-Freeze Drive In, Plans, Specifications, Inspections - Construction work progressing. 15% complete.

700-RC - Legal Description, Grace Bacon Site - 10% complete.

701-RC - Legal Description, Geo. Wash. Way to dike between Newton Street and Desert Inn Service Road - 75% complete.

703-RC - Plat of Storage and Construction areas for M-1 and K-4 Housing Areas, Bauer-Day - 95% complete.

704-RC - Extend Water & Sewer Facilities, Medical-Dental Properties, Inc. - 50% complete.

705-RC - Field Supervision - Parking Lots, Chief Joseph Jr. High School - Bids received 8-25-52. No award to date.

706-RC - Plans, Specifications, Inspections, Medical Dental Properties, Inc. - 5% complete.

707-RC - Study - Baptist Church, Richland Heights - To be started.

COMMUNITY REAL ESTATE SECTION

SUMMARY

AUGUST
1952

ORGANIZATION AND PERSONNEL:

	BEGINNING OF MONTH		END OF MONTH	
	Exempt	Non-Exempt	Exempt	Non-Exempt
Commercial Property Unit				
337	7	5	7	5
Housing & Maintenance Unit				
331	5	21	5	21
333	13	125	13	122
335	2	3	2	2
Community Real Estate Sect.				
330	2	1	2	1
	29	155	29	151

Decrease in Employees for month of August 4

GENERAL

Wardell S. Stade commenced operation of a real estate, insurance and accounting office, as a sublessee in the McVicker Building, at 224 Williams Boulevard.

The Co-Ordinate Club of Richland discontinued all activities effective August 31, 1952.

1216339

HOUSING AND MAINTENANCE UNIT

August, 1952

ORGANIZATION AND PERSONNEL

Number of employees on payroll:

Beginning of month:	20 Exempt	
	149 Non-Exempt	
	169	169
End of month:	20 Exempt	
	145 Non-Exempt	
	165	165

RICHLAND HOUSING

HOUSING UTILIZATION AS OF MONTH ENDING AUGUST 31, 1952

HOUSES OCCUPIED BY FAMILY GROUPS

	Conventional	A&J	T	Precut	Ranch	Prefab	Dorm Apt	A&J Apt	2BR Apt	Fourth Housing	Tract	Total
G.E.Employees	2209	257	9	375	812	1159	9	46	62	198	37	5173
Commercial Facilities	94	12	1	38	82	55		7	3	8	5	305
Community Activities	9				7	5					1	22
Medical Facilities	3	17			2	1				3		26
Post Office	5				3	12				1	3	24
AEC	90	27		21	55	18		4	2	16	2	235
Other Government	10	2			4	3			1		1	21
Schools	53	1		6	10	58		1	1	1		131
Atkinson Jones	8	12		2	9	5		4				40
Vitro Corp	5	2		2	4	3						16
Charles T. Main	1			3	3	10		1				18
P.S.Lord	3				3					2		8
Newberry Neon	2	1		1				1		1		6
Vernita Orchards											5	5
Urban-Smythe-Warren					2							3
Universal Foods						3						3
Robert's Filter	1											1
[illegible] Jenkins					1							1
[illegible] Exchange	1			1								2
	2494	331	10	449	997	1332	9	64	70	230	54	6040
Houses assigned Leases written	1	1				1						3
Houses assigned Leases not written	3	1		1	3	4	1				1	14
Available for assignment	2					5						7
	2500	333	10	450	1000	1342	10	64	70	230	55	6064

	Begin Month	Moved In	Moved Out	Month End	Difference
Conventional Type	2494	31	31	2494	
A&J Type	332	7	9	330	Minus 2
"T"	10	—	—	10	
Precut	450	3	5	448	Minus 2
Ranch	998	14	19	993	Minus 5
Prefab	1339	48	48	1339	
[illegible] Apts	10	1	2	9	Minus 1

DORMITORY STATISTICS

Dormitories:

		Occupants	Vacancies	Total Beds
Men Occupied	15	616	0	616
Women Occupied	12	481	0	481*
		1097	0	1097*

Women's Dormitories occupied by:

G. E. Office	2
Education	1
Apartments	1

*This includes space of 2 beds in W-9 used for supply rooms and dormitory offic

There are 134 Men waiting for rooms in Richland
There are 20 Women waiting for rooms in Richland
There are 39 Men waiting for Single Rooms
There are 65 Women waiting for Single Rooms

GENERAL

ALLOCATION SECTION STATISTICS

Houses Allocated to new tenants	46
Exchanged Houses	20
Moves (Within the Village)	18
Turnovers	17
Total leases signed	115
Total Cancellations	124
Houses Assigned "As Is"	51
Houses sent to Renovation	21
Applications pending	709

STRAIGHT CANCELLATIONS

Voluntary Terminations	32
R. O. F.	2
Discharge	-
Transfers	8
Retirement-Divorce-Misc.	3
Move off Project	10
Deaths	2
Total straight Cancellations	57

TENANT RELATIONS WORK ORDER AND PROGRESS REPORT MONTH OF AUGUST, 1952

Processing of Service Orders, Work Orders and Service Charges

	Orders Incomplete as of July 31, 1952	Orders Issued 7-31 to 8-31	Total Orders Incomplete as of August 31, 1952
Service Orders	83	1587	83
Work Orders	547	503	469
Service Charges		263	

Principal Work Order Loads

	Incomplete as of July 31, 1952	Incomplete as of August 31, 1952
Laundry tub replacement	38	46
Bathroom Renovations (tub, tile, lino	30	43
Tileboard only (bathroom)	8	1
Kitchen cabinet lino.	31	40
Kitchen floor lino.	37	27
Shower stall	11	19

Alteration Permits issued during the month of August totaled 75 compared to 91 issued in July.

Install fence	7	Install air conditioner	8
Install auto. dryer	8	Sand floors	3
Move hot water tank	1	Install wallboard in basement	1
Construct shed	1	Install oil burner	3
Install auto. Washer	10	Install water softener	4
ove cupboards	1	Construct patio	3
emove wall	1	Construct playhouse	2
Reverse range and refer.	2	Install 220 V. line	1
Excavate basement	3	Insulate attic	1
Install back door	1	Install cooling pads	1
Install lattice work	1	Convert to gas heat	2
Install auto. stoker	1	Install driveway	2
Glaze porch	1	Install dishwasher	1
Install clothes poles	5		

1418 Inspections were made during the month of August compared to 1570 made during July.

Alteration permits	43	Screen doors	5
Bathtubs	42	Shades	2
Cupboards	1	Shower stalls	19
Drainage	31	Sidewalks	57
Driving on grass	1	Sinks	20
Floor boards	14	Tileboard	36
Grass seed	14	Toilet seats	34
House siding	2	Topsoil	36
Jack & Shim	1	Walls	6
Leaking basements	6	Cancellations	82
Linoleum	141	Shows (new tenants)	58
Lot Lines	11	Renovations	90
nt	40	Windows	17
orch & Steps	52	Miscellaneous	557

I. HOUSING MAINTENANCE BACKLOG REPORT

TYPE OF WORK	OLDEST ISSUE DATE	BACKLOG	RATE OF REPLACEMENT
Bathtubs, including: Tile board (bath) Floor linoleum (bath) Painting (bath)	7/10/52	43	10 per wk.
Tile Board - A & J (Other than tub installation)	6/24/52	1	None
Painting (Misc.)	5/29/52	150	20 per wk.
Kitchen Floor Linoleum (Prefabs)	8/5/52	4	2 per wk.
Kitchen Floor Linoleum (Conventional)	5/22/52	23	7 per wk.
Bathroom Floor Linoleum (Prefabs)	5/21/52	2	None
Bathroom Floor Linoleum (Conventional)	5/2/52	1 "D" 1 "TR"	None
Kitchen Sink Linoleum (Prefabs)	7/15/52	18	5 per wk.
Kitchen Sink Linoleum (Conventional)	6/27/52	22	6 per wk.
Shower Stall Installations	8/5/52	19	None
Laundry Tubs	7/12/52	46	1 per wk.

II. MAINTENANCE TRANSPORTATION EQUIPMENT

TRUCK TYPE	NO. IN POSSESSION	CRAFT
1/2 ton Pickups	4	Painters
1/2 ton Panels	2	Painters
1½ ton Flatbeds	3	Painters
1/2 ton Pickups	8	Carpenters
1½ ton Flatbeds	6	Carpenters
1/2 ton Pickup	1	Sheetmetal
1/2 ton Panel	1	Sheetmetal
3/4 ton Panels	2	Millwrights
3/4 ton Walkin	1	Millwrights
1/2 ton Pickups	5	Plumbers
3/4 ton Pickups	3	Plumbers
Subtotal:	36	
SERVICE ORDERS:		
1/2 ton Pickups	3	Plumbers
3/4 ton Pickup	1	Plumbers
1/2 ton Pickups	5	Electricians
1/2 ton Pickups	2	Carpenters
1/2 ton Pickup	1	Lock & Key
1/2 ton Pickup	1	Glazing
Subtotal:	13	
RENOVATION & LABOR:		
1/2 ton Pickup	1	Renovation
1½ ton Panel	1	Renovation
1½ ton Flatbed	1	Renovation
Chev. Carryall	1	Renovation & Labor
3½ ton Dumps	2	Labor
Subtotal:	6	
GENERAL:		
Sedans	2	Supervision
Subtotal:	2	
GRAND TOTAL:	57	

III. PROGRESS REPORT

A. INTERIOR PAINT PROGRAM:

During the month of August, 45 units of housing had carpenter repairs made and were completely painted on the interior. These 45 units consisted of the following types of housing:

"B" houses:	3	"S" houses:	4
"V" houses:	9	"M" houses:	1
"U" houses:	2	"3 BR" prefabs:	1
"Y" houses:	1	"1 BR APT" - A & J	2
"Q" houses:	12	"H" houses	1
"R" houses:	9		
		Total:	45 Units

B. EXTERIOR PAINT PROGRAM: (A & J SECTION):

The exterior carpentry repair on A & J houses was completed earlier prior to the start of painting. Since the painting was started, the following number of houses have been processed completely or in part:

147 houses have been primed. (After sanding).

81 houses have been completely painted; both prime and second coat.

C. FIELD CARPENTRY - LINOLEUM & TILE:

The following units of work were completed by this group during the month of August.

Installed tile board:	30	Repaired porches:	36
Replaced & repaired sink lino:	67	Installed tile LR & DR:	2
Replaced floor lino:	82	Replaced lino LR & DR:	2
Replaced bath lino:	36	Installed metal edging - Kitchen lino:	6
Installed filler strips - Bath lino:	3	Installed plastic tile (bath):	1
Applied roof coating:	31	Repaired coal bin wall:	1
Repaired wood floor:	9	Repaired asphalt tile floor:	3
Jack & ShiM:	10	Repaired doors:	3
Repaired roofs:	10	Replaced workbench lino:	5
Raised rear slabs:	7	Chempoint jobs:	124
Replaced rear thresholds:	8		
Replaced sash balances:	5		
Replaced bedroom lino:	1		

D. CARPENTER SHOP:

This group accomplished the following units of work during the month of August.

Repaired exterior doors:	49	Made new cabinet doors:	23
Repaired Screen doors:	165	Repaired cabinet drawers:	13
Repaired window screens:	14	Made 500 screen door push bars:	500
Recovered office chairs:	10	Made & installed st. step forms:	39
Repaired window sashes:	15	Time making material sacks:	94 hrs.

(Carpenter Shop - Continued)

Paint Shop Work in Carpenter Shop:

Painted exterior doors repaired at shop:	49
Painted screen doors repaired at shop:	165
Painted window screens repaired at shop:	14
Painted office chairs:	10
Painted office desks and tables:	8
Painted window shashes repaired at shop:	15
Painted new cabinet doors:	23
Painted repaired cabinet drawers:	13
Paint touchups throughout village:	127

Painted Civil Defense posters.

E. PLUMBING:

The Plumbing group accomplished the following units of work during the month of August:

Installed bathtubs:	24	Installed water heaters:	10
Installed laundry tubs:	38		

1. Cleaned 25 sewer laterals clogged with tree roots.
2. Completed 51 lino repairs consisting of removing and replacing toilet bowls so linoleum could be replaced.
3. Completed 32 plumbing Work Orders consisting of repairing water lines, sewer lines, replacing broken plumbing fixtures, etc.
4. Completed 27 steam Work Orders consisting of repairing steam valves, traps, rusted out piping, etc.
5. Steam inspection was made once a week to steam heated hot water tanks in dorms and commercial buildings.
6. All steam return lines underneath the hospital were regraded.
7. Replaced septic tank and drain field at Tract House L-852.

F. MILLWRIGHTS:

1. All furnaces in A & J and "C" and "K" type houses were serviced and lubricated in past thirty days.
2. All heating plants in commercial facilities have been inspected and all necessary repairs made.
3. A stoker was installed on steam boiler at Village Pharmacy.

G. SHEETMETAL:

All three of these men have been on "loaned labor" to the 300 AREA for the past month with one man returning a week ago. He has been replacing several smoke pipes and about fifteen gutters.

H. RENOVATION:

During the month of August, twenty-two (22) units of housing were processed by the Renovation crew. Only one (1) unit was completely painted. All units were completely cleaned on the interior and all received necessary carpentry repairs. Dorm. W-7 was painted on Interior Program by this crew.

I. SERVICE ORDERS:

The following is a status report of Service Orders:

A.	On hand at the beginning of the month:	83
B.	Received during the month:	1556
C.	Completed during the month:	1303
D.	On hand at the end of the month:	336
E.	Total No. of hours spent on Work Orders:	463 Hours.

All unit heaters for commercial facilities are being cleaned and lubricated.

The electrical inspections for Division I is approximately 48% complete.

Backlogs:

Plumbing:	Approximately 125 hours.
Locksmith:	Approximately 210 hours.

J. LABOR:

The Labor crew performed the following units of work during the month of August:

1.	Blacktopped walks and steps:	49
2.	Removed trees;	7
3.	Gradedfor drainage:	1
4.	Emptied septic tank:	2
5.	Picked up oil and disposed of same:	2
6.	Dug up and backfilled sewers:	18

REAL ESTATE ENGINEERING UNIT
August 31, 1952

Following is the status of active projects being handled by this Unit:

L-911, Resurface Parking Lot Between Campbell's Food Store #2 and Village Pharmacy

Contract awarded to Hoffman of Portland, Oregon. Work to be completed during September.

S-939, CHANGE HEATING SYSTEM IN BUS DEPOT

Project approved August 11, 1952. Plans & specifications being prepared.

C-930, Concrete Walks and Steps - 552 Houses

Held up pending further developments.

Following is the status of active ESR's being handled by this Unit:

903-RH, Alteration Inspections

Routine Work.

904-RM, Procurement Aid and Material Studies

No activity.

910-RC, Approval of Pasture Land Permits

Routine work.

917-RH, Drainage of Inner Block Areas

No activity.

919-RC, Approval of Alterations - Desert Inn Hotel

Installation of Shower Stalls to begin during September.

929-RH, Study Possible Alterations - 413 George Washington Way

Recommendations made.

933-RM, Electrical Alterations - The Mart

Work completed and final inspection made August 29, 1952.

936-RH, Alterations to Building No. 1116

Preliminary plans being prepared.

938- RH, Study of Oil Heat in Prefab Houses

Study in progress.

COMMERCIAL PROPERTY - REAL ESTATE SECTION

August, 1952

PERSONNEL - COMMERCIAL PROPERTY:

	August
Beginning of month	12
End of month	12
Net difference	0

PERSONNEL - COMMERCIAL AND NONCOMMERCIAL FACILITIES:

	Commercial	Noncommercial	Total
July	1,403	126	1,529
August	1,375	124	1,499
Net decrease	28	2	30

SUMMARY OR ROUTINE ITEMS PROCESSED:

Work Orders	63	4	67
Back Charges	2	0	2

CONTRACTS AND NEGOTIATIONS:

A. Commercial:

1. Lease:

John L. Miller: covering the construction and operation of a one-story commercial building to be located south of the Village Theater, Downtown Shopping District.

2. Supplemental Agreement:

Spencer-Kirkpatrick Insurance: covering the construction of a building addition to expand subrental space.

B. Noncommercial:

1. Contract of Sale:

Parish of All Saints (Episcopal Church): covering the sale of 100 metal folding chairs.

2. Letter of Authorization:

Richland Council No. 3307, Knights of Columbus: to enter into a shelter and ground lease with General Electric Company for the use and occupancy of Building 0-1223 (Co-Ordinate Club Bldg.).

SUMMARY OF OCCUPANCY AND EXPANSION STATUS:

	July	August
A. Commercial:		
1. Number of Government-owned buildings	37	37
a. Number of businesses operated by prime lessees	41	41
b. Number of businesses operated by sublessees	17	17
c. Total businesses operating in Government-owned buildings	58	58
2. Doctors and dentists in private practice, leasing space in Government-owned buildings	22	22
3. Number of privately-owned buildings	45	45
a. Number of businesses operated by prime lessees	38	38
b. Number of businesses operated by sublessees	52	53
c. Total businesses operating in privately-owned buildings	90	91
4. Privately-owned buildings under construction	4	7
5. Total number of businesses in operation	148	149
B. Noncommercial:		
1. Government-owned buildings		
a. Churches	4	4
b. Clubs and organizations	9	9
c. Government agencies	3	3
Total	16	16
2. Privately-owned buildings		
a. Completed and in use	7	7
b. Under construction	6	6
3. Sites tentatively allocated or leases in process of negotiation	2	2
Total	15	15
4. Pasture Land Permits	81	35

GENERAL:

A. Commercial

1. John L. Miller: commenced construction of a privately-owned building, a portion of which will be used as a radio repair shop and the remainder of which will be sublet for other uses.

2. Medical-Dental Properties, Inc.: commenced construction of a commercial-professional office building, 750 Swift Boulevard.

3. Parker Hanson: commenced construction of a "Tastee Freez" facility, South of Anderson Motor Co., Light Industrial Area.

4. Wardell S. Stade: commenced operation of a real estate, insurance and accounting office, in space sublet from Virgil O. McVicker, at 224 Williams Boulevard.

B. Noncommercial:

1. Five new pasture permits were issued and one existing permit was cancelled.

2. The Co-Ordinate Club of Richland: all activities of the club were discontinued, effective as of August 31, 1952.

COMMERCIAL PROSPECTS:

Inquiries were received during the month concerning the establishment of the following types of commercial enterprises:

Children's shop	Marine service store
Television service	Beer-delicatessen store
Two drive-in restaurants	Motel

NONCOMMERCIAL PROSPECTS:

Inquiries were received during the month concerning the establishment of the following types of non-commercial enterprises:

1. Richland Junior Chamber of Commerce: construction of a privately-owned building.

2. Richland Junior Chamber of Commerce: Leasing Building O-1223 (Co-Ordinate Club Building).

700-1100-3000 AREA SERVICES SECTION
MONTHLY REPORT
AUGUST, 1952

STEAM AND GENERAL MAINTENANCE UNIT:

General Maintenance:

Several partition changes were made in 700 Area Buildings. Rearranging of office space involved removal of 64' of sheetrock partition, relocating 48' of Hauserman partition, installation of 159' of new Hauserman partitions, exchange of doors, and relocation of doorways. The rearrangement of office space also involved moving of light fixtures, service outlets and buzzers, including installation of new fixtures and outlets.

Metal panels were removed from 9 sections of Hauserman partition and glass installed. Several feet of previously installed Hauserman partition was extended to the ceiling.

Five 32" doorways in 762, 761 and 703 Buildings were replaced with 44" doors to provide convenience in moving office furniture and equipment from one building to another. Several counters, shelves, bookcases, etc. were constructed or altered for office personnel.

Approximately 200 venetian blinds were installed in the 5th wing of 703 Building. No provisions were made in the concrete walls at the time of construction for hanging blinds.

Eighteen Indians, Hatchets, Scalps, etc. were made and painted for the Area Safety Program.

[illegible]oors and docks were repaired at Stores' North Richland Warehouses.

Banding, crating and shoring work for excessing program required the services of two carpenters full time.

All the equipment, files, map cabinets, desks, chairs, etc. in the Reproduction Print File Vault at 760 Building were repainted with 3 coats of gray to provide uniform color.

Street crosswalks (92) near schools were striped prior to the start of school.

Several nameplates, posters and signs were made, including street signs for Public Works.

Two desert coolers in 722-A, one in 703 Vault, and one in the Hospital have been replaced with larger coolers.

Exhaust fans were installed in the 703 Vault and 712 Rest Rooms for increased ventilation.

Relocated Ozalid Reproduction machine in 760 Building.

Transformer platforms were made for Electrical Distribution.

Overhauled Boiler Feed Pump at 784 Heating Plant.

Condensate lines were regraded at 761 and 762 Buildings and tied in to recently installed dry wells.

[illegible]ain line P. R. V. for Hospital was replaced and steam lines under O. B. Wing were insulated. Real Estate pipe fitters completed the regrading of Hospital condensate lines.

700-1100-3000 AREA SERVICES SECTION

'ir line was installed in 722-A to provide air to clean I. B. M. equipment.

Steam service was shut off to the nursery building and line capped at the main line. The condensate meter was removed.

The overhaul of #3 boiler was completed. Overhaul of boiler #1 is 40% complete.

Ash ejector was repaired and ash wash nozzles replaced with smaller jet nozzles.

Summer repacking of main steam line valves is practically complete. Through use of a better quality packing, it is now necessary to repack many valves on a bi-yearly basis instead of every year, with considerable saving in labor and valve replacement.

Routine plumbing and steam orders were above average for the month.

Radiator valves and traps at 704 Building were inspected and repaired.

A Foxboro Flow Meter was installed on the steam line to the Hospital for recording steam usage.

Steam Operation:

No. 4 Boiler was in service for the entire month; No. 1 and 2 Boilers were being overhauled during the month, with No. 3 in reserve.

The quantity of steam generated at 784 Heating Plant was 10.0% less than that for August of previous year.

Soft Water usage at Kadlec Hospital increased to an average consumption of approximately 108,000 gallons per day.

After numerous procurement delays, Steam Flow Meter at Kadlec Hospital was placed in service on August 29.

At the request of school authorities, the steam line to Carmichael Junior High School was energized on August 29.

Steam Statistics:

Coal Consumed	584.20	Net Tons
Total Water Softened	4,300,000	Gallons
Soft Water Sent to Kadlec Hospital	3,349,800	Gallons
Soft Water Sent to 784 Heating Plant	950,200	Gallons
Soft Water Served to Kadlec Hospital	741.9	Hours

Maintenance Backlog:

Foreman	Type of Work	Manhours	No. of Crew Days	Men on Routine	Tot.
Bennett	Electrical	1271	40	3	7
.tney	Machinist	13	4	.5	[illegible]
	Welder	34	8.5	.5	[illegible]
	Sheetmetal	133	11	.5	2
	Millwright	170	7.4	3	5
	Painters				

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Vaught	Painters	400	25	—	2
	Sign Painting	200	24	—	1
	Carpenter _	900	25	4.5	9
Marzyck	Pipefitters	890	37	1	4
	Servicemen	—	—	2	2

* One pipefitter journeyman removed from roll August 29 because of illness absence of 4 consecutive weeks.

NORTH RICHLAND FIRE UNIT

Alarm No.	Response to Alarms	Cause for Alarms	How Received
174	First Street and "W" Avenue	False alarm	Box
175	East of 11th Street along river	Probably children playing with matches	Phone
176	Enterprise, Washington	Called to aid Richland Fire Dept.	Verbal (radio)
177	5th Street and "M" Avenue	Overheated electric motor	Phone
178	6th Street and "M" Avenue	Smoke scare	Phone
179	South "W" Avenue in Army Whse. Area	False alarm	Box
180	First Street and "W" Avenue	Accidental alarm	Box
181	Near Warehouse 1236	Short in wiring to transformer	Phone
[illegible]	Geo. Wash. Way between 3rd & 4th Sts.	Unknown	Box
	Barracks 249-D	Overheated equipment room	Box
184	Rear of 214 "C" Avenue	Unknown	Phone

Investigations:

		Personal Loss	H.W. Loss	Total Loss
8/7/52	Barracks 214-B, bed fire	6.51		6.51
8/9/52	Hospital dining room, elec. short circuit			
8/15/52	3rd St. & Geo. Wash., bed fire	19.57		19.57
8/16/52	210 "C" Avenue, refrigerant escaping from refrigerator			
	TOTAL	$ 26.08	$ 0.0	$ 26.08

Miscellaneous Activities:

Ten 2-hour, American Red Cross classes were given to North Richland housewives by Lt. Wagster and Lt. Bugg at Fire Station.

There were 3 safety and security meetings; 6 inside drills; and 12 outside drills during August.

One hundred four fire alarm boxes were tested during the month.

[illegible]ire extinguishers were refilled during August.

Fire Department participated in Fire Drill held at W.A.C. Quarters.

700-1100-3000 AREA SERVICES SECTION

[illegible] inspections were made by It. Mitchell and Lt. Wagster.

It. Guinn cleaned and adjusted valve on pump primer on Engine #2513.

NORTH RICHLAND PATROL UNIT

Fifty-eight Traffic Warning Tickets were issued during the month of August. These tickets were mainly for minor traffic violations.

Twenty-six Traffic Citation Tickets were issued - 5 for Illegal Parking, 9 for Speeding, 2 for No Operator's License, 1 for No License Plates, 1 for Invalid Plates, 6 for Stop Sign Violations and 1 for Negligent Driving.

Eight persons were incarcerated in the Richland jail by this Unit - 4 for Public Intoxication, 2 for Drunk and Drinking in Public, 1 for Negligent Driving, Liquor Involved and 1 for Driving While Under the Influence of or affected by the use of Intoxicating Liquors.

Thirty-seven inquiries regarding formerly employed General Electric and construction personnel were answered by this office. These inquiries came from the DuPont Company, the U. S. Army, the U. S. Navy and the U. S. Civil Service Commission.

All Fire, Safety and Traffic hazards observed by this department during the month of August were reported to the proper authorities.

All Facilities, Warehouses, Buildings and the John Ball School were checked on the number and number three shifts daily and on all shifts on Sundays and holidays.

There were three firearms registered in the contraband room in North Richland Patrol Headquarters.

The following time was spent on the bank money escort from Pasco during the month: Weekly Payroll - 24 hours, Monthly Payroll - 8 hours.

Every Thursday at 7:00 p.m., an Appearance Officer was assigned by this department to appear in either Judge C. T. Morbeck's Court or Judge E. W. Brown's Court to appear against persons cited in to court by this department.

During the month of August the North Richland Patrol worked a total of 2079.7 man hours.

Unusual Incident Reports:

Public Intoxication	4
Drunk and Drinking in Public	1
Vagrancy	1
Driving While Under the Influence	2
Unattended Death	1
Failure to Stop & Identify & Contributing to delinquincy of a minor	1
Negligent Driving--liquor involved	3
Accident (1 private car & 1 Army Sedan)	1
Accident (2 private cars)	1
Family Trouble	1
Boys adrift on river	1
Possession of Government Property	1

1216356

Special Services Performed:

Emergency Messages Delivered	57
Emergency Messages (Telephone Calls)	126
Western Union Telegrams	4
Fires (Sig. 12)	3
False Fire Alarms	4
Unusual Conditions Reported to Maintenance	5
Persons Detained for Questioning	17
Escorts for Wide and High Loads	4
Escorts to First Aid	2
Billfolds Turned into Patrol	3
Billfolds Returned to Owners	3
Soldiers Turned Over to M.P. Detachment for Disposition	3
Suspicious Persons Investigated	1
Disturbances Investigated	5
Bicycles Reported Lost or Stolen	4
Bicycles Found	5
Bicycles Returned to Owners	3
Cars Impounded at North Richland Hdqrs.	4

Open doors and windows

John Ball School

Open Doors	3
Open Windows	5

Facilities

Open Doors	6
Open Windows	2

Buildings

Open Doors	4

Complaints:

Miscellaneous——3; Petit Larceny——3; Grand Larceny——

ORGANIZATION AND PERSONNEL

Number of Employees on Roll	Beginning of Month Exempt	Non-Exempt	Total	End of Month Exempt	Non-Exempt	Total
Maintenance & Steam	8	49	57	8	48	56
North Richland Fire	31	—	31	31	—	31
North Richland Patrol	6	14	20	6	14	20
North Richland Commercial Facilities	1	2	3	1	1	2
	46	65	111	46	63	109

Personnel Changes During Month: Non-Exempt Exempt

pipefitter journeyman removed from roll because of illness absence of 4 consecutive weeks.

1

1216357

NORTH HIGHLAND COURT CASES

AUGUST, 1962

OFFENSE	NO. OF CASES	NO. OF CONT.	NO. OF CONF.	CASES CONT'D	CASES DISM.	WARR. ISS.	SENT JAIL	SENT. SUSP.	LIC. RVKD.	TOTAL FINES	[illegible]	[illegible] DAIL [illegible]TED
Speeding	8	2	5	1						$ 55.00		$ .50
Negligent Driving	5	2	2	1						42.50		.00
No Oper. Lic.	4		2	2								.50
Stop Sign Violation	7	1	6							7.50		.00
Illegal Parking	4	2	1	1						16.00		.50
Drunken Driving	1	1							1	52.50		
Vagrancy	1						*1					
Public Intoxication	4	4								40.00		
Total	31	12	16	5			1		1	$233.50		$3.50

* Sentenced to 20 Days in County Jail.

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700-1100-3000 AREA SERVICES SECTION

NORTH RICHLAND COMMERCIAL FACILITIES UNIT

Sixteen commercial facilities continued operation during the month - 9 in Government-owned and 7 in privately-owned buildings.

A total of 192 employees were on payroll of North Richland Commercial Facilities.

The following cost estimates have been requested covering work to be done on North Richland Commercial Facility Government-owned buildings:

1. Interior painting of North Richland Commercial Government-owned buildings.
2. Mopping and patching.
3. Replacing battleship linoleum on Building No. 2 dining room floor.

Nineteen routine Work Order requests were issued during the month.

PROJECT & RELATED PERSONNEL

AUGUST 1952

GOVERNMENT EMPLOYEES	7-31-52	8-29-52
Civilian Personnel-Atomic Energy Comm.	452	443
Civilian Personnel G. A. O.	0	0
Total	452	443
RICHLAND VILLAGE PERSONNEL		
Comm. Facilities (Incl. No. Richland)	1419	1567
Govn. Agencies, Churches, Clubs, Etc.	125	124
Schools	107	96
Organizations	11	11
Total	1662	1798
CONSTRUCTION SUB CONTRACTORS		
Atkinson & Jones	3017	2811
Newberry Neon	359	344
Urban Smyth Warren Co.	889	811
Vitro Corp. of America	51	48
V. S. Jenkins	34	48
J. G. Shotwell	5	5
Elect. Smith Inc.	4	0
L. H. Hoffman	5	2
Charles T. Main	102	21
The Bay Company	21	0
Anderson Decorating Co.	5	0
Pittsburg Des Moine Steel Co.	9	37
Associated Engrs.	8	12
Haughton Elevator Co.	7	36
Bumstead-Woolford	35	32
Dix Steel Bldg. Co.	5	0
Arthur Forsyth Co. (Thermostatic Install.Co.)	1	19
Coates Electric Co.	3	2
Minnis & Schilling	2	9
Johnson Service Co.	1	0
W. G. Clark Co.	9	1
TOTAL SUB CONTRACTORS	4572	4238
GENERAL ELECTRIC TOTAL	8901	8885
GRAND TOTAL	15,587	15,364