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HANFORD
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HANFORD WORKS MONTHLY REPORT

FOR

SEPTEMBER 1952

Compiled By
Department Managers

October 20, 1952

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HANFORD WORKS
RICHLAND, WASHINGTON

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

INV. 9-14-83

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HANFORD WORKS MONTHLY REPORT

GENERAL SUMMARY

SEPTEMBER 1952

Production Operations

New high records were established in the Metal Preparation Section, Manufacturing Department, where production for the month represented 114 percent of forecast. In the Reactor Plants, there was continued slug rupture trouble but only one leaking tube. The Isolation Building processed 116 percent of forecast. Redox processed 95% of material separated, with corresponding benefit to unit costs.

Uranium shipments met the forecast from Redox and cold material used in TBP testing. However, there were continued difficulties in achieving satisfactory waste losses in TBP and processing of tank material has not yet started.

Engineering and Technology

The preliminary project proposal for the 100-K Area facilities was completed during the month and submitted to the Appropriations and Budget Committee for approval. Design progress on 100-K Reactor Facilities advanced to 36.3% complete. At month's end, 100-C was 99+% complete.

Special Agreement G-12 covering the procurement of 4,125 tons of graphite was executed by the National Carbon Company. Modification No. 1 to Special Agreement G-5 covering the supplying of an additional 775 tons of graphite (3,875 total) was executed by General Electric and the Commission and forwarded to National Carbon for approval.

An ultrasonic method is being developed as a device for evaluating the heat treatment of slugs on a production basis.

Promising results were obtained with a slug bonding technique comprising a copper flash on uranium followed by chromium plating and this followed by hot pressing to aluminum can material.

Personnel and Services

The plant roll decreased from 8,885 to 8,802, and the turnover rate increased from 2.01% in August to 2.60% in September.

Since August 1, 1950, 245 employees have terminated to enter military service, of which 33 have returned, leaving 212 still in military leave status.

Following interviews with a random sample of about 160 employees, it was determined that a full scale Employee Attitude Survey should be undertaken.

A fire in the bioassay laboratory severely damaged the building interior, temporarily putting the facility out of operation.

There were 726 housing applications pending.

1201493

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

1201494

FORCE REPORT
SEPTEMBER 1952

	EXEMPT		NON EXEMPT		TOTAL	
	8-29-52	9-20-52	8-29-52	9-30-52	8-29-52	9-30-52
GENERAL	24	24	89	77	113	101
LAW	2	2	3	3	5	5
ENGR. DEPARTMENT						
General	5	5	6	6	11	11
Design	134	136	64	64	198	200
Project	166	198	285	284	451	482
Technical Section						
Administrative	4	4	6	5	10	9
Pile Tech.	156	157	131	124	287	281
Separations Tech.	130	132	45	45	175	177
Technical Services	34	37	135	137	169	174
Applied Research	179	180	161	150	340	330
MANUFACTURING DEPARTMENT						
General	23	23	9	9	32	32
Reactor	215	218	989	988	1204	1206
Metal Preparations	74	73	415	418	489	491
Separations	274	273	1161	1159	1435	1432
MEDICAL DEPARTMENT	45	45	235	229	280	274
RADIOLOGICAL SCIENCES						
General	2	2	2	2	4	4
Records & Standards	26	25	151	149	177	174
Biophysics	55	53	59	60	114	113
Biology	41	42	48	44	89	86
FINANCIAL DEPARTMENT						
General	5	4	16	18	21	22
Engr. Acctg.	13	11	51	35	64	46
Mfg. Cost	9	9	32	31	41	40
Gen. Acctg.	12	14	85	101	97	115
Payroll Section	11	11	70	69	81	80
Internal Auditing	9	12	3	2	12	14
General Cost	11	11	32	31	43	42
EMPLOYEE & PUBLIC RELATIONS	40	40	67	65	107	105
UTILITIES & GENERAL SERVICES DEPT.						
General	18	18	14	16	32	34
Elect. Dist. & Telephone	33	33	145	148	178	181
Transportation	42	42	488	484	530	526
Purchasing & Stores	85	58	298	278	383	336
Statistical & Computing	28	27	49	49	77	76
Plant Sec. & Serv.						
Patrol & Sec.	59	59	558	557	617	616
Safety & Fire	43	43	104	104	147	147
Office Services	29	28	314	300	343	328
COMMUNITY REAL ESTATE & SERVICES	178	175	351	337	529	512
TOTAL	2214	2224	6671	6578	8885	8802

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PERSONNEL DISTRIBUTION - SEPTEMBER 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 Personnel	-	-	-	-	-	-	-	-	-	-	24	24
Cler. & Other Non Exempt	-	-	-	-	-	-	-	-	-	-	77	77
Total	-	-	-	-	-	-	-	-	-	-	101	101
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	-	-	114	119
Tech. Grads.	-	-	-	-	-	-	-	3	-	-	35	38
Clerical	1	-	-	-	-	-	-	-	-	-	25	26
Total	1	-	-	-	-	-	-	8	-	-	191	200
PROJECT												
Supervisors	21	2	-	-	2	1	4	-	1	5	36	72
Other Exempt	21	1	-	-	11	2	6	-	17	18	50	126
Draftsmen & Designers	1	8	-	-	-	2	7	8	-	-	85	111
Clerical	14	-	1	-	2	-	3	-	-	9	89	118
Others	10	3	-	-	9	1	5	-	-	5	22	55
Total	67	14	1	-	24	6	25	8	18	37	282	482
TECH. SECTION												
GENERAL												
Supervisors	-	-	-	-	-	-	-	-	-	-	4	4
Clerical	-	-	-	-	-	-	-	-	-	-	5	5
Total	-	-	-	-	-	-	-	-	-	-	9	9

	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.												
Supervisors	-	-	-	-	-	-	-	4	-	-	-	4
Metallurgist & Engrs.	5	19	-	4	3	-	-	32	-	-	-	63
Physicists	-	6	-	1	-	-	-	5	-	-	-	12
Engr. Assts.	8	28	1	6	6	-	-	29	-	-	-	78
Tech. Grads.	3	9	-	-	1	-	-	27	-	-	-	40
Technologists	-	1	-	-	-	-	-	2	-	-	-	3
Lab. Assts.	1	1	-	-	-	-	-	1	-	-	-	3
Clerical	2	5	-	3	1	-	-	18	-	-	-	29
Engr. Assts.	5	18	1	13	-	-	-	12	-	-	-	49
Total	24	87	2	27	11	-	-	120	-	-	-	281
SEPARATIONS TECH.												
Supervisors	-	-	-	-	-	1	10	10	-	-	-	21
Chemists & Engrs.	-	-	-	-	-	11	50	44	-	-	-	105
Other Exempt	-	-	-	-	-	4	1	1	-	-	-	6
Clerical	-	-	-	-	-	1	5	11	-	-	-	17
Engr. Assts.	-	-	-	-	-	-	-	2	-	-	-	2
Lab. Assts. & Tech.	-	-	-	-	-	-	8	7	-	-	-	15
Tech. Grads.	-	-	-	-	-	5	2	4	-	-	-	11
Total	-	-	-	-	-	22	76	79	-	-	-	177
TECH. SERVICES												
Supervisors	-	2	-	-	-	-	2	7	-	-	3	14
Other Exempt	-	4	-	-	-	-	8	7	-	3	1	23
Technologists & Tech. Grads	-	-	-	-	-	-	-	2	-	-	-	2
Lab. Assts.	-	-	-	-	-	-	-	15	-	-	-	15
Clerical	-	4	1	-	-	-	-	35	-	1	49	90
Others	-	3	1	-	-	-	5	20	-	-	1	30
Total	-	13	2	-	-	-	15	86	-	4	54	174
APPLIED RESEARCH												
Supervisors	2	-	-	-	-	-	22	11	-	-	-	35
Other Exempt	10	4	1	-	-	-	56	73	-	1	-	145
Technologists & Tech. Grads	4	3	-	-	-	-	7	17	-	1	-	32
Lab. Assts.	4	3	2	-	-	-	66	31	-	-	-	106
Clerical	2	-	-	-	-	-	3	7	-	-	-	12
Total	22	10	3	-	-	-	154	139	-	2	-	330

	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
MANUFACTURING DEPT.												
GENERAL												
Supervisors	-	-	-	-	-	-	-	-	-	-	13	13
Other Exempt	-	-	-	-	-	-	-	-	1	-	9	10
Clerical	-	-	-	-	-	-	-	-	-	-	9	9
Total	-	-	-	-	-	-	-	-	1	-	31	32
REACTOR												
Supervisors	37	46	32	33	-	-	-	-	-	-	-	148
Other Exempt	21	11	11	22	-	-	-	-	-	2	3	70
Supv. In Trn.	5	1	-	1	-	-	-	-	-	-	-	7
Operators (Oper.)	57	59	33	33	-	-	-	-	-	-	-	182
Operators (Power)	103	117	69	68	-	-	-	-	-	-	-	357
Craftsmen	76	98	105	47	-	-	-	-	-	-	-	326
Inspectors & Lab.Assts.	7	14	8	11	-	-	-	-	-	-	-	40
Clerical	7	12	8	17	-	-	-	-	-	1	1	46
Others	4	7	7	7	-	-	-	-	-	-	-	25
Tech. Grads.	2	2	-	1	-	-	-	-	-	-	-	5
Total	319	367	273	240	-	-	-	-	-	3	4	1206
METAL PREP.												
Supervisors	-	2	-	-	1	-	-	42	-	-	-	45
Other Exempt	-	1	-	-	-	-	-	27	-	-	-	28
Operators (Oper.)	-	-	-	-	-	-	-	178	-	-	-	178
Operators (Power)	-	-	-	-	-	-	-	14	-	-	-	14
Craftsmen	-	29	-	-	10	-	-	125	-	-	2	166
Clerical	-	1	-	-	-	-	-	24	-	-	-	25
Others	-	2	-	-	1	-	-	14	-	-	-	17
Lab. Assts.	-	-	-	-	-	-	-	9	-	-	-	9
Tech. Grads.	-	-	-	-	-	-	-	9	-	-	-	9
Total	-	35	-	-	12	-	-	442	-	-	2	491
SEPARATIONS												
Supervisors	-	-	-	-	-	13	193	-	-	-	1	207
Other Exempt	-	-	-	-	-	1	61	-	-	-	4	66
Operators (Oper.)	-	-	-	-	-	31	504	-	-	-	-	535
Operators (Power)	-	-	-	-	-	27	87	-	-	-	-	114
Craftsmen	-	-	-	-	-	42	303	-	-	-	-	345
Inspectors & Lab.Assts.	-	-	-	-	-	3	72	-	-	-	1	76
Clerical	-	-	-	-	-	2	59	-	-	-	1	62
Tech. Grads.	-	-	-	-	-	-	6	-	-	-	-	6
Others	-	-	-	-	-	1	20	-	-	-	-	21

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	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	-	-	-	-	-	-	-	-	2	3	8	13
Other Exempt	-	-	-	-	-	-	-	-	-	-	8	8
Technicians	-	-	-	-	-	-	1	-	1	2	14	18
Nurses	4	4	4	1	-	1	6	2	1	2	63	88
Clerical	-	-	-	-	-	-	-	-	2	7	43	52
Others	-	-	-	-	-	-	-	-	-	1	70	71
Total	4	4	4	1	-	1	7	2	6	15	230	274
RADIOLOGICAL SCI. DEPT.												
STAFF												
Supervisors	-	-	-	-	-	-	-	-	-	-	2	2
Clerical	-	-	-	-	-	-	-	-	-	-	2	2
Total	-	-	-	-	-	-	-	-	-	-	4	4
RECORDS & STANDARDS												
Supervisors	-	-	-	-	-	-	-	10	-	-	3	13
Other Exempt	1	-	-	-	-	1	1	2	-	-	7	12
Clerical	-	-	-	-	-	-	-	2	-	-	1	3
Others	11	5	6	7	-	13	30	57	7	-	10	146
Total	12	5	6	7	-	14	31	71	7	-	21	174
BIOPHYSICS												
Supervisors	-	-	-	-	-	1	6	1	-	-	-	8
Other Exempt	-	-	-	-	-	6	21	17	-	1	-	45
Clerical	-	-	-	-	-	1	2	1	-	-	-	4
Others	-	-	-	-	-	19	32	5	-	-	-	56
Total	-	-	-	-	-	27	61	24	-	1	-	113
BIOLOGY												
Supervisors	-	4	-	-	-	-	-	-	-	-	-	4
Other Exempt	-	38	-	-	-	-	-	-	-	-	-	38
Clerical	-	4	-	-	-	-	-	-	-	-	-	4
Others	-	40	-	-	-	-	-	-	-	-	-	40
Total	-	86	-	-	-	-	-	-	-	-	-	86

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	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												
Supervisors	-	-	-	-	-	-	-	-	-	6	36	42
Other Exempt	-	-	-	1	-	-	1	1	-	-	27	30
Clerical	2	-	-	1	-	2	1	-	-	59	222	287
Total	2	-	-	2	-	2	2	1	-	65	285	359
EMPLOYEE & PUBLIC REL.												
Supervisors	-	-	-	-	-	-	-	-	-	-	18	18
Empl. Rel. Counselors	-	-	-	-	-	-	-	-	-	-	2	2
Other Exempt	-	-	-	-	-	-	-	-	-	-	20	20
Clerical	-	-	-	-	-	-	-	-	-	-	51	51
Others	-	-	-	-	-	-	-	-	-	-	14	14
Total	-	-	-	-	-	-	-	-	-	-	105	105
UTILITIES & GEN. SERVICES												
GENERAL												
Supervisors	-	-	-	-	-	-	-	-	-	-	18	18
Clerical	-	-	-	-	-	-	-	-	-	-	16	16
Total	-	-	-	-	-	-	-	-	-	-	34	34
PLANT SEC. & SERVICES												
SECURITY & PATROL												
Supervisors	5	6	6	5	-	5	9	7	9	-	4	56
Other Exempt	-	-	-	-	-	-	-	-	3	-	-	3
Patrolmen	85	47	59	47	-	61	127	77	1	-	26	530
Clerical	-	-	-	-	-	-	-	-	16	4	5	25
Seamstress	-	-	-	-	-	-	-	-	2	-	-	2
Total	90	53	65	52	-	66	136	84	31	4	35	616
SAFETY & FIRE												
Supervisors	14	-	-	-	4	-	4	4	7	-	-	33
Engineers	-	2	1	-	-	2	-	2	1	-	2	10
Firemen	48	-	-	-	8	-	16	16	9	-	-	97
Clerical	-	1	1	-	-	1	-	-	1	-	3	7
Total	62	3	2	-	12	3	20	22	18	-	5	147

	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
OFFICE SERVICES												
Supervisors	-	-	1	-	-	1	2	1	1	-	17	23
Procedures Analysts	-	-	-	-	-	-	-	-	-	-	5	5
Ldry. Operators	-	-	-	-	-	-	1	-	-	-	1	2
Janitors & Servicemen	8	7	6	7	1	3	27	12	-	-	42	113
Clerical	-	-	-	-	-	-	2	-	-	1	46	49
Others	2	-	-	4	2	-	44	9	-	3	72	136
Total	10	7	7	11	3	4	76	22	1	4	183	328
PURCHASING & STORES												
Supervisors	-	1	-	-	-	-	-	-	-	5	26	32
Other Exempt	-	-	-	-	-	-	-	-	1	-	25	26
Clerical	-	-	-	-	-	-	-	-	-	39	113	152
Others	3	2	1	1	10	-	6	1	-	47	55	126
Total	3	3	1	1	10	-	6	1	1	91	219	336
ELECT. DIST. & TELE.												
Supervisors	-	-	-	-	-	9	-	-	3	3	10	25
Other Exempt	-	-	-	-	-	3	-	-	-	-	5	8
Craftsmen	-	-	-	-	-	25	-	-	11	15	40	91
Clerical	-	-	-	-	-	2	-	-	-	1	24	27
Opers. & Dispatchers	4	4	4	4	-	-	-	-	12	-	-	28
Others	-	-	-	-	-	2	-	-	-	-	-	2
Total	4	4	4	4	-	41	-	-	26	19	79	181
TRANSPORTATION												
Supervisors	2	-	3	2	-	1	1	-	3	-	26	38
Other Exempt	-	-	-	-	-	-	-	-	-	-	4	4
Bus Drivers	-	-	-	-	-	-	-	-	-	-	164	164
Journeymen	5	1	1	7	-	-	2	-	6	-	69	91
Trainmen	-	-	-	-	-	-	-	-	26	-	-	26
Servicemen	6	-	1	-	-	-	-	-	1	-	24	32
Equip. Oper.	7	-	11	-	-	1	-	-	-	-	33	52
Clerical	-	-	1	1	-	-	-	1	-	-	30	33
Others	9	-	8	10	-	9	3	-	1	-	46	86
Total	29	1	25	20	-	11	6	1	37	-	396	526

	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
STAT. & COMP. SERVICES												
Supervisors	-	-	-	-	-	-	-	1	-	-	13	14
Other Exempt	-	-	-	-	-	-	-	6	-	-	7	13
Clerical	-	-	-	-	-	-	-	2	-	-	35	37
Technologists	-	-	-	-	-	-	-	2	-	-	-	2
Bus. & Tech. Grads.	-	-	-	-	-	-	-	3	-	-	7	10
Total	-	-	-	-	-	-	-	14	-	-	62	76
COMM. REAL ESTATE & SERVICES												
Supervisors	-	-	-	-	-	-	-	-	-	14	99	113
Other Exempt	-	-	-	-	-	-	-	-	-	-	10	10
Firemen	-	-	-	-	-	-	-	-	-	20	32	52
Patrolmen	-	-	-	-	-	-	-	-	-	14	21	35
Journeymen	-	-	-	-	-	-	-	-	-	-	142	142
Servicemen	-	-	-	-	-	-	-	-	-	-	20	20
Truck Drivers	-	-	-	-	-	-	-	-	-	-	25	25
Power Operators	-	-	-	-	-	-	-	-	-	-	29	29
Clerical	-	-	-	-	-	-	-	-	-	-	54	54
Others	-	-	-	-	-	-	-	-	-	1	31	32
Total	-	-	-	-	-	-	-	-	-	49	463	512
GRAND TOTAL	649	692	395	365	72	317	1920	1134	146	294	2818	8802

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MANUFACTURING DEPARTMENT

SEPTEMBER, 1952

October 9, 1952

METAL PREPARATION SECTION

The production for the month was 46 tons of 4-inch material and 118 tons of 8-inch material for a total of 164 tons. The production represents 114 percent of forecast, and is a new record of achievement for the section. The machining yield was 81.7 percent and 81.0 percent for 4-inch and 8-inch material, respectively.

The canning yield was 80.6 percent for 4-inch material and 72.4 percent for 8-inch material.

The melt plant produced 58 tons of billets with a yield of 83.1 percent and a solid yield of 94.4 percent.

There were no autoclave failures of either 8 or 4-inch material. This is the third successive month with no autoclave failures of 8-inch material.

REACTOR SECTION

The reactor input production was 126.2 percent of forecast and represents a new record of achievement above that established in July, 1952. A new total input production record was established on September 29, representing an increase of 39 MWD. The maximum operating level at the B Reactor was increased 5 MW during this period. The reactor output was 114.2 percent of forecast.

There were 12 uranium slug jacket failures during September, of which three were Group 7, seven were Group 8, and two were Group 9. Five of these were discharged within the scram recovery time, avoiding approximately 100 hours of potential outage time.

The operating efficiency of the reactors was 90.6 percent. This was primarily due to the reduced outage time caused by ruptured pieces.

One leaking tube, 4376-H, was removed at H Area. This tube was located and removed during a regularly scheduled outage.

SEPARATIONS SECTION

The Isolation Building processed 116 percent of forecast. In Redox, 150 runs were started representing 140 percent of forecast. Diversion of the metal to Redox left only a total of 8 runs and 7 acid washes to be processed in the Canyon Buildings.

SEPARATIONS SECTION (Continued)

"Cold" uranium runs from Redox UNH continued in the TBP process. Analyses of metal runs on double diameter TBP pulse column in A line gave expectation of improved performance. These runs included variation of the feed rate, pulse frequency and percent of the RAX feed. At month's end a new RA column was being designed and fabricated for installation in the "B" line.

A total of 76.4 tons of uranium as UO_3 was produced and was 67.6 percent of forecast. In addition, 57 tons of uranium as UNH was produced and shipped to Harshaw. The steam stripping of the UNH from TBP has substantially reduced the foaming troubles, making it possible to convert this material to UO_3.

GENERAL

Personnel

Total on Roll September 1, 1952	3148
Accessions	167*
Separations	76
Total on Roll September 30, 1952	3239

*Includes 93 non-exempt laboratory personnel transferred September 29.

C. N. GROSS, MANAGER

MANUFACTURING DEPARTMENT

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MANUFACTURING DEPARTMENT

PATENT REPORT SUMMARY
FOR
MONTH OF SEPTEMBER, 1952

Richland, Washington
October 8, 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

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Section 10 verified by V. D. Donihee
V. D. Donihee
[redacted]

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October 9, 1952

MANUFACTURING DEPARTMENT
METAL PREPARATION SECTION
SEPTEMBER, 1952

I. RESPONSIBILITY

Responsibilities of the Metal Preparation Section remained unchanged.

II. ACHIEVEMENT

A. Operating Experience

1. Statistics

	September	August	Year To Date
Bare Pieces Machined (4", Tons)	38	64	527
Machining Yield (4", %)	81.7	79.0	79.3
Bare Pieces Machined (8", Tons)	142	71	856
Machining Yield (8", %)	81.0	79.5	80.5
Total Machined - Tons	180	135	1383
Acceptable Pieces Canned (4", Tons)	46	53	556
Canning Yield (4", %)	80.6	76.1	77.9
Acceptable Pieces Canned (8", Tons)	118	91	713
Canning Yield (8", %)	72.4	68.8	68.6
Total Acceptable Canned - Tons	164*	144	1269
Acceptable Pieces Canned (4" & 8") (% of forecast)	114.3	100.7	104.2
Autoclave Frequency (4", No./M)	.00	.11	.06
Autoclave Frequency (8", No./M)	.00	.00	.06
Briquettes Produced (Tons)	20	19	212

*Exceeds record of 150 T established November 1948.

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1. Statistics (Continued)

	September	August	Year To Date
Chip Recovery Yield (%)	85.7	84.5	86.5
Billets Produced (Tons)	58	65	510
Melt Plant Billet Yield (%)	83.1	84.5	84.5
Melt Plant Solid Yield (%)	94.4	95.1	94.0
Oxide Burned (Weight Out Tons)	7	9	66
Poison Canned (Number Pieces)	5469	6909	22577
Chemical 68-56 Canned (Number Pieces)	0	0	296
Chemical 10-66 Canned (Number Pieces)	740	0	2926
Special Requests(Man Hours)	430	459	4171
305 Routine Tests (Man Hours)	136	117	1038
305 Special Tests (Man Hours)	356	342	2751
Maximum Steam Generated (M lbs/hr.)	14.5	15.5	
Total Steam Generated (M lbs.)	8000	7300	
Average Rate Steam Generated (M lbs/hr.)	11	10	
Coal Consumed (Tons)	535	482	
Sanitary Water from 3000 Area (Million gals.)	37	39	
Total Water Average Rate (gpm)	859	863	
Chlorine Residual (ppm)	.39	.42	

2. Activities

The quality of the rods improved over the previous month resulting in an increased machining yield. Approximately 75% of the rods machined into four inch slugs and 25% of the rods machined into eight inch slugs were from Hanford billets. The remaining rods were machined from virgin Mallinckrodt material.

Canning yields for both four and eight inch material increased approximately 4%. During the first part of the month the non-seat rejection rate was extremely high with an average of about 15%. Almost coincident with the addition of more supervision to the canning operation, the daily rejection rate dropped sharply to about 4%, bringing the average for the month to 9.3%. This effect has confirmed previous tests indicating operator technique to be an important factor in determining canning yields.

The decrease in billet yield is largely the result of stopper rod and mold breakage while casting and to a heavier cropping of the billets to maintain billet quality. The solid yield decreased slightly from last month due to an increase in the ratio of TXB to solid scrap processed.

[redacted]

A. Operating Experience (Continued)

3. Special Operations

Considerable difficulty was initially experienced in welding "C" slugs. However, an order for 600 of these slugs is approximately 60% completed to date.

4. Schedule Variance

Machining production was 33% above forecast due generally to additional training of relatively inexperienced personnel and because the machining force was not reduced by transfers to other operations as forecasted. Additional machining was necessary to increase the inventory of bare slugs which was low as machined slugs from off site were not received during August and September as forecasted.

Canning production was 114.3% of forecast. A breakdown of the 14.3% shows that approximately 6.3% was due to a reduction in the eight inch canning time cycle, 4% to improved yields and 4% to working one additional day over forecast.

Billet production exceeded the forecast by approximately 3% due to working one additional day over forecast.

B. Equipment Experience

1. Operating Continuity

Repairs were required on eight canning furnaces during the month, due generally to crucible failures.

The rod straightener required extensive repair resulting in four days outage.

2. Inspections, Maintenance and Replacements

A Brooks Load Lugger truck which hydraulically lifts containers off and on the truck was put in service for trash disposal. These containers have replaced garbage cans and other unsightly receptacles. The equipment is adaptable to handling of other types of containers as well. It is estimated a savings of $8,000 per year will be effected in trash disposal alone through reduction in equipment and manpower requirements.

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).

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1. Production Tests (Continued)

Approximately 29,500 acceptable pieces were fabricated in accordance with this test during the month. The overall yield was greater than the preceding month, primarily because of additional supervisory personnel in the canning operation. Improvements were made in all reject categories except for a slight increase in the percentage of slugs rejected for off-cycle and AlSi spills.

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 in accordance with this test pending completion of tests by the Pile Technology Unit to determine the minimum permissible time cycle to insure complete transformation. A supplement to the test which incorporates the new specifications is being prepared.

2. Process Tests and Revisions

MMP-313-1 - "Fluxing of AlSi Canning Bath" (HW-25622). Analysis of slugs canned in accordance with MFR-247-A showed that the action of Soffelite #2 flux on the AlSi canning bath had no detrimental effect on the slugs from the standpoint of reactivity or bonding layer quality. Consequently a process test was written to determine if fluxing of the bath would have any beneficial effects on canning performance during regular production canning.

The use of powdered graphite in the molds resulted in noticeable improvement of the billet surface which was evident by a marked decrease in the number of billets requiring surface clean up.

3. Inventions and Discoveries

Personnel in the Metal Preparation Section engaged in work which might 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.

D. Events Influencing Costs

1. Labor Variance

The Operations Unit worked one more Saturday than was forecasted.

2. Material Variance

Alcoa caps for eight inch cans continue to be of poor quality. An additional 26,000 of these rejects have been returned to the vendor during September making a total of 34,000 returned to date.

E. Plant Engineering and Expansion

1. Project Status

Project C-199 - 300 Area Sewage Disposal System. Progress remains essentially unchanged. Tests on underground lines continue to show excessive leakage and need for further repairs. Construction is 96% complete.

Project C-394 - Outside Facilities and Utilities for Laboratory Area. New expansion joints were installed in service lines to Library and Files building. They will be tested next month.

The 8" fire and sanitary loop was tested under water pressure. Leakage was over 200% of that allowable. Sewer lines also showed excessive leakage at less than normal pressures. Construction is approximately 76% complete.

Project C-433 - Power House Addition. Two new 1050 gpm pumps were placed in service this month. The existing service pumps in building 384 were removed. The installation of #4 and #5 boilers is complete and they are ready for boiling out. Work was continued on piping, electrical and instrument connections. Construction is 90% complete.

Project C-481 - Equipment for 8" Slug Manufacture. A cost estimate for installing equipment in shipping vans to unload palleted slugs in the 100 Areas was completed. A revised project proposal to cover these facilities is ready for submission.

Project C-451 - Extension Underground Electric Power Distribution System, 300 Area. Excavation outside the 303 Area for underground lines is essentially complete. A sufficient number of the contractor's employees have received security clearance to begin work in the 303 Area in October. Construction is approximately 5% complete.

2. Plant Engineering

Material cost standards were issued for cans and wafers used in the unbonded canning operations. The use of a labor and material standard for processing poison slugs was initiated in order to more accurately control costs incurred in this operation. Work was continued on inspection and testing standards. To date standards have been prepared to cover 70% of the direct labor and 95% of the essential materials utilized in preparation of slugs.

Improvements were made in layout of equipment for cap and can inspection during this period. These changes have resulted in increased capacity and reduced labor requirements. Evaluation of savings is incomplete.

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2. Plant Engineering (Continued)

A study is being conducted to develop a more safe and suitable method for handling crucibles in the melt plant.

The fabrication of pneumatic canning jacks for a second canning line is about complete. Some difficulty has been encountered in the design of reliable gear boxes. Work was continued on an accessory mechanism for slug seating. In addition, work is in progress on the design of an improved bronze bath agitator and a new type basket for the canning jacks.

F. Significant Reports Issued

1. Routine

Number	Title	Author	Date
HW-25236	Monthly Report, Process Unit Metal Preparation Section	E.W. O'Rorke	9-3-52

2. Non-Routine

HW-25622	Fluxing of AlSi Canning Bath	R.C. Aungst	9-15-52
HW-25716	Inspection of Fernald Slugs	J.E. Bergman	9-25-52
HW-25796	Trip Report, Sept. 5-12, 1952	H.G. Henry	9-30-52
HW-25580	Discussion of Variables of Operation Affecting 305 Test Results	S.M. Gill	9-9-52

III. PERSONNEL

A. Organization

No Change.

B. Force Summary

	Start of Month	End of Month	Net Change
Section General	4	4	0
Operations Unit	210	208	- 2
Power & Maintenance Unit	227	234	7
Process Unit	22	20	- 2
Plant Engineering Services Unit	19	20	1
Radiation Monitoring	3	3	0
Section Total	485	489	4

III. PERSONNEL (Continued)

C. Safety Experience

There was one major injury, no sub-majors in the Section during the month.

D. Radiation Experience

A badge film of a metal worker assigned to testing received an exposure of 670 mrep in five working days. This exposure was investigated as a Class II Radiation Incident and will be documented. The cause of the incident was not definitely determined.

An exposure of 320 mrep recorded by the weekly badge film of a melt plant operator can be attributed to a high exposure work schedule, oxide transfer equipment difficulty, and handling of radioactive process material. Steps have been taken to correct these conditions.

E. Personnel Activities

In continuation of the series of training meetings, during September P. C. McMahon spoke on "Manufacturing Cost Coding" and R. F. Cell of Technical Statistics Unit presented a film and lecture on "Statistical Quality Control."

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October 9, 1952

MANUFACTURING DEPARTMENT
REACTOR SECTION
SEPTEMBER, 1952

I. RESPONSIBILITY

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

II. ACHIEVEMENT

A. Operating Experience

The total reactor input production was 126.2% of forecast and 11% greater than for August. This production was a new record having exceeded the previous high established in July, 1952. The record is particularly significant as it was made during a 30-day month. (The per diem production rate for the month exceeded by 90 units the previous high in July.) The established maximum operating level of B Reactor was increased 5 MW during the month. Reactor output production was 114.2% of forecast. This forecast was exceeded in order to allow the Separations Section to meet additional commitments for the calendar year.

There were 12 uranium slug jacket failures during September, five of which were discharged within the scram recovery time limitation. Two of the failures were in eight-inch slugs, making a total of four failures of this type material.

One process tube water leak was encountered at H Reactor during September. This was in a tube suspected of containing a ruptured slug. Subsequent examination of the eight-inch metal, discharged from the tube, failed to reveal any evidence of a rupture.

1201517

A. Operating Experience (Continued)

Details of operation of the reactors and water facilities are set forth below:

1. Statistics

	B	D	DR	F	H	Total or Average
Reactor Time Operated Efficiency (%)	91.0	91.0	92.9	85.0	93.3	90.6
Reactor Outage Time (Hrs.)						
Plutonium Production	60.4	50.0	46.8	105.3	33.7	296.2
Special Irradiation and Production Tests	4.6	15.0	4.5	2.5	14.4	41.0
Total	65.0	65.0	51.3	107.8	48.1	337.2
Reactor Unscheduled Outage Time (Hrs.)	55.1	19.7	11.4	52.6	25.6	164.4
Metal Discharged (Tons)	14.68	29.57	36.13	23.06	24.78	128.22
Water Quality (ppm Iron)						
Raw Water Average	0.06	0.06	0.07	0.05	0.07	-
Raw Water Maximum	0.09	0.12	0.10	0.08	0.08	-
Process Water Average	0.021	0.006	0.023	0.005	0.026	-
Process Water Maximum	0.058	0.015	0.034	0.013	0.054	-
Water Pumped (MM gals.)						
Bldg. 190 to reactor	1555	1579	1720	1480	1844	8178
Bldg. 181	2274	4046		1743	2210	10273
Steam Generated (MM lbs.)	123.0	200.6		106.2	86.9	516.7
Coal Consumed (Tons)	7827	13210		6594	5620	33251

2. Activities

Reactor outage time during the month was reduced 49% below August. Slug failures required 162.1 hours outage time against 315.1 outage hours in August. No outage time was required for correction of process tube water leaks.

A number of slugs discharged from lower left quadrant process tubes at F Reactor were found to contain cavitational type pits indicating that tube deflection may not be the controlling factor in this type of attack.

Coal receipts increased during th- ... in conformance with anticipated requirements.

One boiler in the 101 Area was placed in service on September 15. Operation had been discontinued since July.

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

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2. Activities (Continued)

	Tubes Charged	Tubes Discharged	Casks Shipped
Chemical 10-66	4	7	-
Chemical 72-60	8	-	9
Rala	-	6	3
Production Tests	104	25	18
Total	116	38	30

B. Equipment Experience

Equipment failures caused eight unscheduled shutdowns during September all of which were due to panellit failures.

The number 4 horizontal rod thimble at F Reactor was replaced and the rod returned to service. At B Reactor, the number 9 horizontal rod was removed from service in order to test the thimble for a suspected leak. At D Reactor, the number 7 horizontal rod was removed from service in order to correct rod binding.

Inspection of Power House boilers were completed during the month. The report of the inspection has not been received. However, the inspector's verbal report indicated there were no unusual conditions present.

C. Improvement Experience

The most significant Production and Process Test activities are reported 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 70% 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 - 31%, D - 32%, DR - 58%, F - 33%, and H - 72%. Two eight-inch slug failures were experienced during September.

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 during the month. The water treatment chemical costs were reduced to $2.00 per million gallons, the lowest cost thus far, due to a reduction of alum feed rates from 10 to 6.5 ppm.

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C. Improvement Experience (Continued)

PT-105-508-E (Use of Alum as a Process Water Coagulant in 100-D Area)
Use of alum as a coagulant at the D Reactor water plant continued satisfactory during the month. The rate of film formation in the reactor process tubes continued to be negligible.

PT-105-509-E (Effect of Low pH Alum Treated Water on Pile Operation)
Equipment installation for this test at the D Reactor was completed during the month.

Data on coal analysis were collected during the month and theoretical and actual efficiencies are being computed on the 100 Area Power House Boilers.

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

D. Events Influencing Costs

Water treatment chemical consumption was approximately 13% lower during September than in August principally due to seasonal water changes.

The Reactor Section irradiation unit cost for September will be lower than the cost for August because of the 11% increase in input production and the 49% decrease in outage hours.

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 September 22, 1952, [redacted] R. Stanken to E. P. Lee.

CA-431 (100-C Plant)
The construction of the water plant is approximately 99% complete; the reactor is approximately 99.3% complete. Acceptance testing of these facilities was in progress throughout the month. However, no total acceptance test was completed. Full capacity process water flow, of specification quality excepting pH, was accomplished. Use of alum as a coagulant was decided upon; investigations involving the design and installation of a dichromate system are being made. The Weekly Exception List for construction completion of Building 105-C was issued commencing September 8, 1952.

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1. Project Status (Continued)

CG-438 (Ball 3X Facilities for B, D, DR, F and H Piles)
Procurement schedules for the remaining essential components for this work remain favorable toward starting the initial installation at F Reactor on November 17, 1952.

CG-482 (Pile and Pile Water Plant Improvement)
Part II of the Project Proposal requesting $2,250,000 was approved by the Atomic Energy Commission. The Project Work Authority was issued September 9, 1952.

CA-512 (100-K Facilities)
Design of KW Reactor is approximately 37% complete. Design of the KW Water Plant is 23% complete. Re-orientation of the plant layout to accommodate identical areas, 100-KW and 100-KE, has been approved.

2. Plant Engineering

A number of engineering and development studies were active in the Reactor Section during September. These studies are, in general, aimed at decreased costs and/or increased production. Details are given in documents HW-25807 and HW-25811. The most significant are reported below.

Work in connection with boiler performance tests at Building 184-H was continued. Data on coal analysis were collected and a theoretical efficiency, together with an actual efficiency are being computed.

Efforts to find a suitable film coating to retain reactor gas have been unsuccessful from temperature and moisture resistance considerations. On this basis, the study was terminated.

F. Significant Reports

1. Routine

September monthly reports of Reactor Section Units will be found in the following documents. Operations Unit - HW-25818, Process Unit - HW-25807, Plant Engineering Services Unit - HW-25811, Radiation Monitoring Unit (Technical Report) - HW-25829.

Other routine reports were:

"Slug Jacket Failures During September" - HW-25810.
"Production Summary" - HW-25809.
"Reactor Process Committee Meeting - August, 1952" - HW-25492.

[redacted]

F. Significant Reports (Continued)

2. Non-Routine

"100-C Startup Program, Technical-Operational Process Items"- HW-25613.
"Process Test MR-105-4, Radiation Effects of Removal of Front Cap Supported Shielding Slugs" — HW-25705.
"Calibration of 105-B and 190-B Process Water Flow Meters" — HW-25735.
"Final Report - Calibration of 105-DR Process Water Flow Meters" — HW-25734.
"Final Report - Process Test MR-105-2, Orifice Selection During Reactor Operation" — HW-25620.
"Reactor Gas System Analysis" — HW-25634.
"Six Months Post Acceptance Report, Project C-472 - Thermocouple - Equipped VSR Thimbles - 100-B and D" — HW-25669.
"Project CO-495, Temperature Monitor Thermocouple Replacement 100-B, D and F Areas", to E. E. Weyerts from T. M. Clement, dated September 22, 1952.
"Seventh National Instrument Conference and Exhibit," to E. E. Weyerts from T. M. Clement, dated September 18, 1952.

III. PERSONNEL

A. Organization

There were no appointments made in the Reactor Section during September.

B. Force Summary

	Beginning of Month	End of Month	Net Change
Section General	3	3	0
Operations Unit	261	254	- 7
Plant Engineering Services	18	21	3
Power & Maintenance Unit	827	833	6
Process Unit	34	35	1
Radiation Monitoring Unit	59	57	- 2
Section Total	1202	1203	1

Changes during September consisted of 11 terminations, 5 new hires, 3 deactivations, 3 reactivations, 8 transfers out and 15 transfers into the Section.

C. Safety Experience

No major or sub-major injuries were sustained by Reactor Section personnel during September. The Power and Maintenance Unit Safety and Housekeeping Contest for September was won by 100-B Area.

D. Radiation Experience

No employee of the Reactor Section received a known over-exposure to radiation during September. There were no Class I or Class II Radiation Incidents during September.

The film "Radiation Hazard Control at Hanford Works" was shown to approximately 200 employees during September of which 150 were outside the Section. A total of 1050 employees have viewed the film to date.

The frequency of skin contamination cases, other than hands, was reduced by a factor of 4 over the preceding month as a result of increased protective equipment requirements and an extensive educational program.

E. Personnel Activities

At month end, 22 employees are receiving on-the-job training in order to meet future engineering and supervisory personnel requirements of the Section. Twelve of these employees are on assignment under the Rotational Training Program.

T. M. Clement attended the Seventh National Instrument Conference and Exhibit and the Instrument Maintenance Clinic in Cleveland, Ohio, September 5 through 12, 1952.

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October 9, 1952

MANUFACTURING DEPARTMENT
SEPARATIONS SECTION
SEPTEMBER, 1952

I. RESPONSIBILITY

Arrangements were completed for the transfer of the major portion of the Redox and 234-5 Building Analytical Control and Technical Services personnel to the Process Unit, Separations Section. This move was effective September 29 for Non-exempt personnel and will be effective October 1 for Exempt personnel and will complete the transfers of operating analytical functions to the Manufacturing Department.

The Power and Maintenance Unit assumed the responsibility for the operation and maintenance of the 277-U (TBP) Mock-Up Shop during September.

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	6	8	1	8	7
Charges completed in Conc. Bldgs.	0	6	8	1	8	7
Special charges - Conc. Bldgs.	3		17		20	
Charges completed - Isolation Bldg.	0	1	15	0	15	1
Average Waste Losses, %	-		3.03		-	
Special charges - Isolation Bldg.					37	
Yield through process, %					101.4	
Average cooling time (days)					64	
Minimum cooling time (days)					62	

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1. Statistics (Continued)

b. Redox Operations

	September	August
Charges started	149.8	149.8
Charges completed	145.3	157.2
Tons Uranium delivered to storage	94.9	106.8
Average Production Rate per operating day, Tons	3.72	3.55
Average Daily Operating Rate for the month, Tons	3.27	3.45
Average yield, T		
Uranium	98.2	97.7
Plutonium	101.1	102.2
Total Waste Loss, %		
Uranium	1.28	1.14
Plutonium	1.14	.87
Average cooling time, days	73	73
Minimum cooling time, days	66	64
Percent down time	14.9	2.96

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d. UO_3 Operations

	September	To Date
Uranium drummed, Tons	76.41	358.44
Uranium shipped, Tons	66.28	314.19
Average cooling time, days	102	
Minimum cooling time, days	89	
Waste loss, %	.06	

e. Power

	September	August
Raw Water pumped, gpm	7,525	9,667
Filtered water pumped, gpm	1,337	1,439

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e. Power (Continued)

	September	August
Steam generated, M lbs/hr.	112	109
Maximum Steam generated, M lbs/hr.	161	172
Total steam generated, M lbs.	80,827	81,025
Coal consumed, tons (est.)	5,552	5,156

f. Waste Evaporation

	September	To Date
Gallons feed processed, 200-W	66,000	7,375,000
Percent volume reduction	54.5	72.99
Gallons feed processed, 200-E	537,000	4,242,000
Percent volume reduction	69.8	70.46

g. Waste Storage

	Batches
Metal Waste reserve storage capacity - T Plant	287
1st Cycle reserve storage capacity - T Plant	755
Metal Waste reserve storage capacity - B Plant	597
1st Cycle reserve storage capacity - B Plant	40
Redox Waste reserve storage capacity	2,413

h. Analytical Control

Laboratory	Samples	Determinations
T Plant	1668	3352
Isolation	713	1864
Standards	865	1230
Total	3246	6446

2. Activities

a. Redox Processing

Cyclic flooding in the 1A extraction column forced a gradual decrease in rates from 4.25 tons/day to 3.75 tons/day, at which time the 1S spare extraction column was activated for parallel operation with 1A. This permitted maintenance of 4.5 Ton/day rates until close to month-end when condition of both 1A and 1S Columns made it impossible to continue without flushing each contactor. Reworks of two off-standard streams were completed successfully. A salt waste batch was reworked when losses in the Pu cycles became excessive due to incomplete oxidation of the 1BP stream. A small batch of poorly decontaminated UNH was recycled following a 3D Column upset, occasioned by instrument dip tube pluggage.

2. Activities (Continued)

b. TBP Processing

Studies were confined to "B" line during the earlier portion of the month. Exploratory runs consisted of tests of the effect of an inertia coil in the RAW line, attempts to measure effectiveness of feed mixing (samplers installed to "bracket" the RAF entry point) and operation of the "B" line RC column as a simple RA column. Flow rates on the series of runs varied from 1.5 to 6.25 Tons/day with resulting waste losses ranging from 6.3 to 27% of the feed uranium.

Following the above series, the modified stroke pulse generator (3½ stroke compared to normal 2" stroke) was installed and a short series of runs made with this equipment. At flow rates of 2.5 T/D and frequencies in range 30-40 pulses per minute, waste losses varied from 26 to 35% of the feed uranium.

The original pulse generator was reinstalled and two runs made at 70 p/m and 2.5 and 5.0 T/D rates. The 5.0 T/D run gave RAW losses averaging 4.3%; the 2.5 T/D run, 16.0% of the feed uranium.

A dual diameter RA column (upper section lengthened and enlarged), equipped with 11 sightglasses and 12 sampler points was installed. The first run, a flooding determination, demonstrated that the unit flooded at a frequency of 80 p/m (5.0 T/D rate). The initial series of runs at 5.0 T/D and frequencies ranging from 35 to 70 p/m resulted in RAW losses ranging from 3.6% (with 115% RAX and 35 p/m) to 21% of the feed uranium. A 2.5 T/D run at 55 p/m and 125% RAX gave RAW losses averaging 15% of the feed uranium.

"A" line operation consisted of a series of 13 runs at flow rates of 2.5 and 5 T/D, and frequency ranges from 35 to 80 p/m and RAX rates up to 125% of flowsheet. The range of RAW losses varied from 1 to 2% (2.5 T/D, 63 p/m and 125% RAX rate) to 19% (2.5 T/D, 45 p/m, 100% RAX) of the feed uranium.

c. UO_3 Processing

The severe foaming in the calcination furnaces previously encountered when processing uranium from the TBP Plant has been virtually eliminated by steam stripping prior to concentration to 100% UNH.

However, when the first few tons of uranium stripped during the month were processed through the calcination furnaces severe caking of the powder occurred. In some instances the agitators were stopped and one of the furnaces was shifted slightly by the extra load on the agitator. Under these conditions the unloading time for the furnaces increased from twenty minutes to as high as five hours. The trouble

c. UO_3 Processing (Continued)

persisted for about a week and then it disappeared even though no corrective action was actually taken. It appears that some of the reworked RCU from the TBP Plant may have contained additional impurities even though sample results were not conclusive.

Capacity tests were made in the calcination furnaces while processing Redox uranium. Radiation time limits were quite short during the test because the material processed was approaching current Redox production and this condition developed into a substantial handicap. However, it was possible during one eight-hour shift to unload and recharge nineteen calcination furnaces. This represents an instantaneous rate of about 15 T per day at flow sheet conditions.

d. Waste Metal Removal

Metal removal activities consisted of continued sluicing of the sludge in the 101-U tank in the West Area and the start of homogenization of supernates in the 101-C series of tanks in the East Area.

Fog elimination has been successful through the use of water sprays. Since spraying adds about 1500 gallons of water to the system each time, other methods are being explored.

3. Special Operations

a. Redox

Treatment and filtration of Tygon contaminated ANN has been completed. Exclusive use of the Darco treated product over two extended periods has proven successful and the balance of material on hand has been blended with receipts of fresh ANN from the vendor.

b. TBP

Concentration of UNH solution which could not be processed in the UO_3 plant, as mentioned in last month's report, was completed in September. A total of five tank cars were loaded and shipped to the Harshaw Chemical Company for further processing.

c. UO_3

It was possible under stable conditions to operate for extended periods at a feed rate to the steam stripper of 60 gpm which is ample to process 10 T of uranium per day at flow sheet conditions and the uranium produced did not foam excessively in the calcination furnaces. The E-D-2 evaporator, 100% uranium concentrator, was not operated at capacity during these tests so the effect of placing the entire nitric acid fractionation load on one fractionator T-D-4, was not determined. In

c. UO_3 (Continued)

addition, it appears that the uranium contained in the overheads from the steam stripper at rates above 25 gpm will be excessive. This condition is being evaluated.

Early in the month capacity tests were made in the 100% UNH concentrator using 60% UNH from Redox as feed. A stable operation at design rates of 13.5 T of uranium per day was achieved for ten hours. None of the other concentrators were operating during this test.

d. Waste Evaporation

All first cycle waste in 200 West Area has been evaporated with the exception of the 104-5-6 T cascade, which is not aged, and that in the 109-TX cascade, which is now filling. September production at 242-T consisted only in processing 66,000 gallons of feed solution to a 54.5% reduction. However, the supernate from the 116-TX bottoms has been pumped to feed tank 118-TX, and cleanouts of the evaporator vessel have reduced the sludge heel to 94 gallons. At month end, repairs are being made to piping and preparations for re-evaporation of residues are underway.

e. Isolation

On September 11, 1952, 23% of a standard run of product was inadvertently discharged to the No. 2 Sump Tank. Twenty-six recycle cans of solution were subsequently jetted from the sump tank in order to recover the product. Total recovery from the F-2 Tank and the No. 2 Sump Tank following this incident was 24% of a standard run. Steps have been taken to prevent a recurrence.

f. 234-5

Hydrofluorination for all charges processed during the month was carried out by diffusion of the gas into the powder rather than drawing it through the filter boat and material. Operations during the month were still handicapped with the necessity for refluorinating 25-30% of the material processed. During the coming month, one unit will be modified to permit drawing the gasses through the filter boat and material in order to re-evaluate this method of processing.

4. Schedule Variance

Redox production exceeded the amount forecasted on September 1st by 19%. T Plant produced eight of the ten runs scheduled.

Failure of the UO_3 Plant to meet its forecasted September production of 113 tons was primarily due to the delayed startup of the TBP operation.

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4. Schedule Variance (Continued)

The necessity for holding Redox UNH for subsequent diversion to TBP interfered with the availability of metal for calcination.

The 234-5 Building produced the commitment for assemblies.

B. Equipment Performance

1. Operating Continuity

All plants were placed in standby status for the Labor Day holiday.

Failure of a metering pump to sustain the proper chemical addition rate was the only mechanical deficiency in Redox which directly affected the extraction batteries. As a result of high Pu cycle waste losses, due to incomplete oxidation of the 1BP stream, a batch of rework through the 1S Column necessitated a decrease of 1A rates for a short period.

2. Inspections, Maintenance and Replacements

a. Redox

All attempts made thus far to satisfactorily operate the B-3 silver reactor which had been regenerated with silver nitrate have failed due to electrical troubles. It had been intended to use this reactor as a replacement for the A-3 reactor which has a number of inoperative heating circuits which prolongs dissolver operation. However, a recently fabricated spare, currently being checked-out in the shop will be installed in its stead.

b. TBP

Installation of the dual diameter (20" diameter extraction section, 26" diameter scrub section) RA column was made on "B" Line. This unit is fitted with vertical baffles between the plates, which divide the column into four quadrants.

Work has been started on a column which duplicates the geometry of the new "B" line column. This unit will be installed in "A" line upon completion.

c. B Plant

At B Plant, Maintenance completed a visual inspection and hydrostatic test of SQ 141, 142, 143 and 144 tanks. All tanks and coils were found to be in good condition with the exception of the steam coils in the 142 tank.

2. Inspections, Maintenance and Replacements (Continued)

d. T Plant

Due to an excessive amount of radioactive particles being emitted from the concentration building exhaust fans, work was started on the replacement of the 2" vent piping from the vessels with 4" polyethylene piping. Approval has also been received to install ductwork to permit operating the stack fans in series in order to increase the quantity of air handled. Both measures should eliminate the contamination troubles that are being encountered.

C. Improvement Experience

1. Process Tests and Revisions

b. Use of Filter Sticks

The first installation of filter sticks was made in the P-1 Tank of Cell 4, Isolation Building. Several runs have been processed, eliminating the normal settling time, by direct filtration of the slurry. These tests are progressing satisfactorily. Consideration is being given to substitution of a smaller pore material to avoid passage of fines.

c. Redox Condenser

A study of the existing piping installation between the D-6 condensate stripper condenser and the G-2 still revealed a probable air pocket in the condensate line responsible for the malfunction of the condenser, its apparent low capacity, and the rapid buildup of liquid in the J-4 filter seal tank. Cross-venting of the condenser during a building shutdown was successful in correcting the difficulty with resulting benefits as follows:

1) Virtual elimination (99% reduction) of liquid buildup in the J-4 seal tank.

2) Smoother operation of D-5 condensate stripper.

3) An increase of approximately 3 inches H_2O in available condenser vent vacuum at the upstream end of the header with no alteration in steam jet or bleed valve setting.

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c. Redox Condenser (Continued)

4) Probable reduction of 30 to 50% in plant daily organic losses (this is being further evaluated).

5) Elimination of a fabrication and replacement program (seven jumpers and a dunnage adapter plate) for the D-6 condenser unit.

d. 2D Column Control - Redox

A short test program was carried out in the plant to evaluate scrub control of the 2D column interface position (rather than let-down valve control) as a means of reducing or eliminating cycling in the uranium extraction columns. Column cycling, responsible for an estimated 0.5 T/D reduction in possible capacity as well as for non-representative stream samples, has been apparent in the 2D column since plant startup and to a lesser extent in the 1A and 3D columns. Previous efforts at minimization of the phenomenon have not met with success. With the 2DW rate held constant by manual setting of the let-down valve, interface position was maintained by varying the rate of scrub flow to the column. Under these conditions, column cycling was almost completely eliminated. Intentional efforts to promote cycling during the test by rapid flow rate changes were unsuccessful, establishing rather definitely that the let-down valve is a major contributor to the condition.

2. Adoptions, Inventions or Discoveries

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

D. Events Influencing Costs

1. Labor Variance

Due to the light analytical load in the T Plant laboratory, it was possible to transfer eleven Laboratory Assistants to the Engineering Department in the 300 Area.

Effective September 1, 1952, the RG Line started operating on the X-Y-Z shift schedule which is the same as RMA. Three supervisors were transferred to the Process Unit and three weekly roll employees were transferred to the Isolation Building.

2. Material Variance

The improved operation of the revised Redox D-6 condenser resulted in a savings of approximately $9,000 estimated as the replacement cost under the Phase I Redox Capacity Increase project proposal. In addition, it

2. Material Variance (Continued)

appears that the $14,000 hexone loss experienced during the month of August (and assumed to be representative) may be reduced by as much as 30% to 50%.

Vacuum equipment in the 222-T Building was connected to the continuously operated steam jet vacuum line wherever possible and the use of water tap aspirators discontinued resulting in a savings of 23,000 gallons of water per day (approximately $800 per year).

In the 234-5 Building RG line, Reactor #4 in Hood 8 failed because of a leaking monel discharge line. Normally, this reactor would have been discarded, but with the provision of "hot" maintenance facilities the leaking section of line was replaced and a savings of approximately $1000 realized.

3. Other

A pressure drop study of the G-3 organic still, vapor line and G-2 condenser combined with the relaxation by the Technical Section of the requirement for hexone distillation from a caustic heel, has resulted in increased organic still capacity by the simple expedient of a 5 to 8 inches H_2O increase in condenser vent vacuum. Adequate still capacity for Phase I rates is now assured without expenditure of the $35,000 fund allotted for G-3 revisions in the Phase I Redox Capacity Increase project proposal.

E. Plant Development and Expansion

1. Project Status

TBP - Project C-362 - Phase II of the project is active with the construction of TXR and BXYR Waste Metal Removal Facilities a little over 80% complete.

2. Plant Engineering

After conducting an analysis of Hanford temperature data since 1913 and calculating steam consumption and production losses on probable weather conditions, various alternatives were explored to supplement steam capacity for the 200 West Area during the winter of 1952 and 1953.

Based on the weather data and 200 West facility steam demands, it was estimated that there is a 65% probability of having a steam deficiency of 30,000 pounds/hour for eight days. The alternatives considered to meet this deficiency were to (1) curtail TBP for a temporary production loss of about 50 tons at an estimated cost of $26,000; (2) curtail Redox and T Plant for a temporary production loss of 25 tons at no appreciable cost if Redox could make up the loss, or $67,000 if T Plant

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2. Plant Engineering (Continued)

were required to take the backlog; (3) supplement existing boilers with two railroad locomotives at an estimated cost of $24,000 - $31,000; or (4) attempt to expedite completion of the fifth boiler, at a presently unknown cost. Possibilities exist for steam conservation by reducing ventilation and building temperature requirements, as well as by the moderate use of steam in process. Temperatures of 0° F daily mean are likely to be experienced one out of three years, resulting in a steam deficiency of 60,000 pounds/hour and a possible loss in production about 50% higher than that indicated above.

F. Significant Reports Issued

1. Routine

Document	Title	Author
HW-25849	Separations Section - Operations Monthly Report	V. R. Chapman
HW-25848	Separations Section - 234-5 Operations Monthly Report	V. R. Chapman
HW-25853	Separations Section - Process Unit Monthly Report	W. N. Mobley
HW-25817	Separations Section - Radiation Monitoring Monthly Report	A. R. Keene
Unclassified	Separations Section-Power & Maintenance Monthly Report	R. T. Jessen
HW-25852	Separations Section - Plant Engineering Services Monthly Report	C. P. Cabell
HW-25633	Separations Process Committee Minutes	L. M. Knights
HW-25863	Essential Materials - Operations Unit Separations Section	J. P. McBride

2. Non-Routine

Document	Title	Author
HW-25496	Specification Letter for Purex Laboratory	P. B. Fisk
HW-25539	Accountability of Final Product in the 231 Building	W. N. Mobley

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2. Non-Routine (Continued)

Document	Title	Author
HW-25551 (PES #31)	Labor & Material Standards, 222-T Laboratory	J. E. Fouts
HW-25578	Eight Months Post-Acceptance Report Additional Effluent Disposal Facilities , 234-5 Building, Project C-446	R. S. Bell by R. S. Himmelright
P.E.S. #32	Labor Standards - Trash Handling	M. Pociluyko
P.E.S. #33	Cost Reduction Instrument Charts	M. Pociluyko

III. PERSONNEL

A. Organization

In conjunction with the transfer of responsibilities for the analytical control laboratories serving the Redox, TBP and 234-5 Plants, ninety-two non-exempt personnel were transferred from the Engineering Department to the Separations Section, Manufacturing Department effective September 29, 1952. Sixty-six exempt personnel will be transferred on October 1, 1952.

B. Force Summary

	Start of Month	End of Month	Net Change
Section General	3	3	0
Operations Unit	711	700	-11
Power and Maintenance Unit	552	556	4
Process Unit	72	159	87
Radiation Monitoring Unit	71	76	5
Plant Engineering Services Unit	21	22	1
Section Total	1430	1516	86

C. Safety Experience

At 10:00 P.M. on 9-3-52 a chemical trainee was descending the F Cell balcony steps in the B Plant Concentration Building carrying a bayonet sample in each hand. He slipped on the stairs, fell and suffered contusions and abrasions to the right lumbar region of his back. He was taken to Kadlec Hospital in Richland for further observation. The injury was later classified a major. The injured returned to work on September 22, 1952.

C. Safety Experience (Continued)

On September 26, 1952 a Power and Maintenance Unit employee dropped a piece of pipe on his foot, sustaining a broken toe. This was classified as a sub-major injury.

D. Radiation Experience

There was one Class I Radiation Incident involving uncontrolled contamination spread to personnel and equipment during the moving of a metal waste supernate pump at the 241-TX tank farm.

At the Redox Tank Farm Facility, emission of radioactive material from the 110-S and 107-S tank condensers continued. Modification of the condensers to permit efficient water cooling is planned and completion is expected during October.

Polyethylene tubing was received which will permit alteration of the 224-T vessel vent system and subsequent reduction in cell air contamination. This emission of contaminated cell air from the 224-T roof exhausts continued to result in frequent contamination of the 222-T and 224-T ventilation supply air above the permissible limit.

E. Personnel Activities

C. F. Falk, along with members of the Engineering Department, journeyed to Wilmington, Delaware to consult with DuPont people concerning the new Separations facility.

P. E. Cunningham attended the Seventh National Instrument Conference and Exhibit in Cleveland, Ohio, during the week of September 8 through September 12.

Separations employees are now engaged in a Safety Contest, the Separations Safety Stampede, which will be conducted during the months of September, October and November.

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ENGINEERING DEPARTMENT

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GENERAL

Special Agreement G-12 covering the procurement of 4,125 tons of graphite was executed by the National Carbon Company on September 15. Notice to proceed was issued the same date. Modification No. 1 to Special Agreement G-5 covering the supplying of an additional 775 tons of graphite (3,875 total) was executed by General Electric and the Commission and forwarded to National Carbon for approval.

TECHNICAL SECTION

The tests of vertical safety rods for C Pile and Ball 3X systems have shown no inherent weaknesses in the systems.

An ultrasonic method is being developed as a device for evaluating the heat treatment of slugs on a production basis. Improvements have made it possible to test either canned or bare slugs satisfactorily; variations between different lots of uranium do not affect the validity of the test. Results of experiments indicate that an electromagnetic test may be satisfactory for measurement of minimum can wall thickness for Al-Si penetration.

The first group of slugs machined from rods which have been heat-treated in a salt bath at Lackawanna are being irradiated. An additional 160 tons of metal will be heat-treated at Fernald and sent to Hanford to be machined into slugs and irradiated.

Experiments to determine the physical expansion during irradiation of transverse graphite samples have shown that under proper conditions no limit to graphite physical expansion is known.

A production test to determine the effect of pH on pile process water was started. Tubes are being supplied with water at a pH of 7.0, 7.3, and 7.65.

Water flow in a glass mock-up process tube is being studied by means of high-speed motion pictures. These studies show the irregularities in the flow pattern and the formation and collapsing of the vapor bubbles in the regions of flow restrictions.

Studies of a four-hour time cycle for the $BiPO_4$ process in T Plant continued to demonstrate the feasibility of this cycle. The program on first cycle wastes using the West Area evaporator was completed and efforts will now be directed toward re-evaporation of the heels.

The Redox Plant operated at 85.1 percent on stream efficiency during the period. New production rates (4-4.5 t/day) were held for appreciable periods with no evidence of instability. In an effort to improve the purity of

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the uranium product, a water scrub is to be tested in the 3D column.

Efforts to improve the performance of the RA column in the TBP Plants were continued. Foaming of the UO_3 conversion pots due to TBP decomposition products was elleviated considerably by steam stripping of the RCU product prior to evaporation and conversion.

In the RMA improvement program, the construction of a new Task III reduction mixer was carried to 50 percent completion. It is expected that the new mixer will improve yields from the present 90 percent to the expected 97-98 percent.

Further work on beta phase rolling of uranium rods, first reported last month, has shown that the mechanical properties obtained are comparable to those of uranium rolled in the alpha phase and then beta heat treated.

Promising results were obtained with a slug bonding technique comprising a copper flash on uranium followed by chromium plating and this followed by hot pressing to aluminum can material. The plated metals formed diffusion bonds with both the uranium and the aluminum.

There is evidence that mercury contamination of aluminum may cause corrosion leading to slug ruptures. To elucidate this possibility, three sensitive (.01μg) methods for analysis of mercury in aluminum were developed and applied to one ruptured and one normally discharged F Area slug, both of which showed serious surface pitting. Mercury was found in several samples from the can walls.

A magnetic focusing beta ray spectrometer has been completed. This instrument is capable of measuring the beta ray energy spectrum to within one percent. It will be used in studies of the disintegration schemes of heavy isotopes.

The first results in an experimental study of the distribution of heavy nuclides as a function of geometrical location in an irradiated slug have shown the g/t (Pu/U) level to be about 1.4 times higher at the periphery than at the center of the slug.

Excellent results obtained with the fast X-ray photometer techniques for determination of plutonium in the final metal castings suggest that it should be feasible to abandon routine determination of impurity elements, basing routine process control on the direct plutonium assay, determination of the additive concentration, and the neutron count.

DESIGN SECTION

Negotiations were started with the Aerojet Corporation for an engineering assistance contract. It is planned to secure the services of a number of engineers and draftsmen from Aerojet for a period of 6 to 8 months and to integrate these people into the working force on the expansion program.

Direct engineering effort of the Section for September was distributed approximately 61.5% to the 1952 Hanford Expansion Program, 27% to other design

projects and 11.5% to research and development studies. This represents an increase of 14% in the effort devoted to the expansion program during the past month.

The preliminary project proposal for the 100-K Area facilities, CA-512, was completed during the month and submitted to the Appropriations and Budget Committee for approval.

Design progress on CA-512-R, 100-K Reactor Facilities, was advanced 2.8% during September to 36.3% completion. Expenditures to date for design are approximately $525,800 against an authorized amount of $1,455,000.

The Title I and Title II design for CA-512-W, 100-K Water Plant Facilities, being performed by C. T. Main, is approximately 29% complete, an advance of 10% during September. Expenditures to date by the Design Section are approximately $48,800. Seventeen scope drawings have been received from the Architect-Engineer and 12 have been approved to date. Eighty-eight detail drawings have been received and 19 have been approved to date.

Design scope progress on CA-513, Purex Facility, for September was approximately 24%, with completion to date 41.1%. Expenditures to the end of September were approximately $52,700. Authorized funds for this work are $715,000. Major progress during the month included preliminary issues of Process Flow Diagrams, Engineering Flow Diagrams and mechanical requirements of the main process equipment.

Design of the Recuplex Installation, CG-496, is approximately 27% complete. Design information has been prepared on all but 15 of the estimated 102 vessels required.

PROJECT SECTION

Major projects advanced during the month and attained construction completion status as follows: CG-349, Hot Semiworks, 100% (with exceptions assigned to Minor Construction); CA-362, Waste Metal Recovery (TBP), 95.7%; CA-431-A, 100-C Production Facility (Waterworks), 99%; CA-431-B, 100-C Production Facility (Reactor), 99.3%; CG-438, Ball Third Safety System, 13.5%; CG-483, Downcomer Repairs in 100-B, D, DR, H and Replacement in 100-F, 11%; CG-506, Repairs to 100 Areas Retention Basins, 5%.

Two major injuries to construction contractors' personnel occurred on September 24. These were the first major injuries amongst the Minor Construction labor force in 123 days. Special safety meetings were held to instruct the Minor Construction labor force recently transferred to CG-362 (TBP).

Inspection Services Unit (formerly with Purchasing and Stores Section) performed its assigned functions during this first month as part of the Project Section. A two-weeks training conference for off-site inspectors began

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on September 29, to familiarize inspectors with the current construction programs. This training program is being given to one-half of the inspectors now and the balance later in October.

The total value of work now assigned to the Minor Construction is $10,077,000, of which $2,406,000 remains to be accomplished. The value of assigned work was increased $1,534,000 during the month with the assignment of the remaining work on TBP (CG-362) to Minor Construction.

Official inspection of major buildings and facilities of 100-C Waterworks was held, and punch list items are being cleared. Remaining work consists principally of remote control installation in the river pump house and changes required by addition of sodium dichromate to the water treatment. These will be handled on Work Orders. Temporary structures are being removed from the area, and its roads and parking spaces are being prepared for paving. Every effort is being made to complete architectural and structural items remaining in the 105-C Bldg. The important items of work leading to acceptance tests are yet to be done, and these are required to be completed before the building will be ready for use. Of 60 major acceptance tests for the 105-C Process Unit, 25 were completed. All others were in progress. The clean-up has been accelerated as a result of a series of meetings between CPFF contractor supervision and General Electric field representatives, with A.E.C. personnel in attendance.

On September 22, management of all construction work on CG-362 (TBP) was reassigned to the Minor Construction Management Unit. A directive, dated September 18, 1952, from the A.E.C. increased funds authorized to General Electric from $49,300,000 to $52,000,000. Work was delayed by contamination in the TXR Area from September 12 to September 24. Work was resumed after contamination was controlled by hosing down the area.

ORGANIZATION & PERSONNEL

Total on Roll September 1, 1952	1,547
Accessions	92
Separations	141
Total on Roll September 30, 1952	1,498

Effective September 1, 1952, the Engineering Department assumed responsibility for providing engineering inspection in connection with procurement of all engineered equipment and material purchased by General Electric or others for use at the Hanford Works. Coincident with the assignment of this function to the Engineering Department, the Inspection Unit of the Utilities and General Services Department, composed of 32 personnel, was transferred to the Project Section, Engineering Department, and re-named the Inspection Services Unit under J. C. Hamilton, Manager.

In preparation for the transfer of laboratory analytical services in support of manufacturing operations to the Manufacturing Department, 77 non-exempt personnel were transferred to Manufacturing Department rolls on September 29, 1952.

A. B. GRENINGER, MANAGER
ENGINEERING DEPARTMENT

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ENGINEERING DEPARTMENT

CONTRACT ACTIVITIES

During the month of September 1952, the following contract activities were handled by the Engineering Department:

1. Special Agreement G-12 covering additional graphite procurement was drawn and executed by General Electric on September 12; was approved by the Commission on September 12, and was completely executed by National Carbon Company on September 15. Conformed copies of the Agreement were distributed on September 22.

2. Representatives of General Electric and Aerojet Engineering Corporation met at the Aerojet offices in Azusa, California, to discuss a contract for engineering assistance and to interview available personnel. A survey of their personnel is now being made by the Aerojet Corporation to determine to what extent they can meet our personnel requirements. Permission to negotiate such a contract has been received from the Commission.

3. On August 19, 1952, a letter was forwarded to National Carbon Company requesting a proposal covering an extension of Special Agreement No. G-3 for an additional period of one year. National Carbon Company has advised that they will forward a proposal, but such was not forthcoming in September.

4. Permission has been received from the Commission to handle the procurement of special clad process tubing on purchase order to the Aluminum Company of America instead of by contract.

5. The Legal Department and the Contract Unit have studied all outstanding claims between Combustion Engineering Co. and General Electric Company arising under Subcontract No. G-182. It is believed that a settlement of all claims has been reached and a modification to Subcontract G-182 will be drafted in early October.

6. Drawings covering the KW Reactor Building were sent to interested structural consultants during the latter part of September together with a letter requesting information regarding their suitability for and interest in a proposed contract to furnish a complete analysis of the design of this building.

7. Modification No. 1 to Special Agreement No. G-5 between General Electric and National Carbon Company covering the supplying of additional special graphite was drafted and executed by General Electric on September 18 and was approved by the Commission on September 30.

8. Special Agreements Nos. G-10 and G-13 with Battelle Memorial Institute covering additional research programs were executed by General Electric and the Commission on September 30.

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9. Modification No. 1 to Subcontract No. G-396 between General Electric Company and Reed College, covering additional research work over the period of the next year, was sent to the College for execution on September 9.

10. Modification No. 1 to Subcontract No. G-400 between General Electric Company and The Haloid Company was written and sent to the subcontractor for execution on September 29. This modification extends the period of lease of Xerox reproduction equipment for a period of one year.

11. In response to the request of the Law Department, the Contract Unit sent petitions for refund of tax payments made by all contractors between the periods August 15, 1948, to March 1, 1950. Forty-six sub-contractors were contacted and requested to file petitions for refund of business and occupation taxes paid during the above period.

[redacted]

HW-25781 [redacted]

PILE TECHNOLOGY UNIT

SEPTEMBER, 1952

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VISITORS AND BUSINESS TRIPS

Visitor	Date	Address	Purpose
J. F. Finley	9-25-52	Alcoa	Conference on aluminum
W. E. Kingston	9-29/30-52	Sylvania Electric Products	Discuss canning techniques
J. R. Lowe	9-24/25-52	Knolls Atomic Power Laboratory	Consultation on material irradiation program
L. F. Wardell	9-15/19-52	General Engineering Laboratory	Consultation on irradiation program

Name	Date	Place Visited	Purpose
M. D. Fitzsimmons	9-16/19-52	Argonne National Laboratory	Consultation concerning the performance of the ANL-140 equipment
E. A. Eschbach	9-8-52	Ames Laboratory	Consultation on fuel element development program
	9-9-52	Battelle Memorial Institute	Consultation on fuel element development program
	9-10-52	Argonne National Laboratory	Consultation on fuel element development program
R. L. Knecht	9-5/30-52	Simonds Saw and Steel Company	Observe a fabricating process
R. O. Brugge G. C. Fullmer D. K. McDaniels	9-10/12-52	Oak Ridge National Laboratory	Attend nuclear and reactor physics conference
E. A. Eschbach	9-11/12-52	Sylvania Electric Products	Consultation on fuel element development program

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Name	Date	Place Visited	Purpose
J. W. Lingafelter	9-5-52	Argonne National Laboratory	Consultation on various welding processes being carried on
	9-8-52	Battelle Memorial Institute	Consultation on various welding processes being carried on
	9-9-52	Savannah River Plant	Consultation on various welding processes being carried on
G. E. McCullough	9-10-52	National Carbon Company	Consultation on graphite and fuel element problems
	9-11/12-52	Sylvania Electric Products	Consultation on graphite and fuel element problems
	9-11/12-52	New York Operations Office	Consultation on graphite and fuel element problems
A. T. Whatley D. B. Lovett	9-30-52	Phillips Petroleum Company	Delivery of samples for exposure in the MTR and technical discussions
A. T. Whatley E. Porasky	9-9/11-52	Seattle, Wash.	Technical discussions on microtome techniques
K. J. Tauer	9-15/19-52	Atlantic City	Attend American Chemical Society National Meeting at which papers were presented having a direct bearing on the graphite program
R. H. Purcell, Jr.	9-5/14-52	7th Annual National Chemical Exposition and Meeting - American Inst. of Chemical Engineers	Attend a symposium on monobed de-ionization

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PROCESS CONTROL AND ANALYSIS

Restrictions to Power Level

The operating levels of all piles were limited by vapor binding throughout the month, except for B Pile, which was limited by corrosion considerations in the lower far fringe during the latter part of the month.

Process Specifications

Work has continued on the preparation of the process specifications for process water using alum as the coagulant and on the compilation of the revised specifications for C Pile. Close liaison has been maintained with the Manufacturing Process Unit during their preparation of Operating Standards.

Ruptured Slugs

Twelve ruptured slugs occurred during the month. Seven were Group 8 Metal, two were Group 9 eight-inch slugs from H Pile, and three were Group 7 Metal charged in fringe tubes. An additional suspect tube was pushed at F Pile but no rupture was found.

The two eight-inch ruptures were side failures, but both were discharged without tended downtime. Although 3577-H was classified as a rupture, damage to the ug did not appear to have penetrated completely to the uranium.

Five of the seven Group 8 failures occurred at F. However, only one of these failures, 0868-F, appeared to have the severe eroded-type surface previously noted on some F discharges. The damaged piece from 2181-F did have some pitting and cannot be excluded with certainty from this type rupture.

Complete data for the failures that occurred and a compilation of current rupture rates will be presented in HW-25784, "Ruptured Slug Data and Comparative Rates for September, 1952", by L. W. Lang.

Calculation of Amount of Process Tube Water Leakage by Reactivity Effect

An investigation of the relationship between the amount of water leaking into the active region of a pile and the initial rate of reactivity loss has been completed. The formula derived allows predictions to ± 25 per cent accuracy if good reactivity data are obtained, and if the tube leak is not close to the control rod. The results of the study are given in HW-25712 which is now in rough draft form.

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. Evaluations of production and cost data have been made to determine the magnitude of losses attributable to specific causes and the gains obtainable through changes in erating limits and equipment. Related estimates of construction and operating

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costs have been prepared. The report of these studies is scheduled for October. A preliminary evaluation of the enrichment of H Pile was completed and circulated for discussion as was a special evaluation of the use of large size process tube outlet piping.

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

Approximately 4100 tubes of eight-inch metal are now under irradiation. Four slug ruptures have occurred in this material and analysis of the rupture rate by the equivalent exposure method indicates that the rupture resistance is as good as that of the recent four-inch metal.

PILE PHYSICS

Pile Activation - C Pile

The procedures to be followed in activating the C Pile, and in performing the associated experiments, have been programmed. The planning and co-ordination of all supplementary considerations, e.g., mass data handling and analysis, instrumentation, and the procurement of experimental components, is proceeding smoothly. The major task remaining in preparation for the start-up is the familiarization of the personnel who will be involved with the detailed program and techniques.

Several measurements in addition to those previously reported[1] have been included in the program. These include a measurement of the reactivity associated with an enriched column in an unflattened pile and the "anti-shadowing" existing between two enriched columns one lattice unit apart. This information will be of direct assistance to Hanford pile enrichment programs. A measurement of the control strength of the Ball 3X system will also be made to provide a direct experimental comparison between the 3X and 2X control systems.

A measurement of the reactivity balance associated with the replacement of the present solid natural uranium slugs with hollow slugs in a Hanford pile is also contemplated. Neither a theoretical approach nor Test Pile danger coefficient measurements appear capable of yielding an accurate quantitative estimate of this effect. It is believed that the precision of reactivity measurement during C Pile loading can be refined sufficiently to permit significant data to be obtained quickly with a small material investment.

Control Studies - "Ink" Facility

A production test is being prepared to authorize pile control investigations following the installation of the experimental "ink" column at DR Pile. Of particular interest will be the effect upon pile reactivity of various

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1. HW-25394, "100-C Start-Up Program, Technical-Operational Process Items", by G. E. McCullough, 8-20-52.

concentrations of the potassium tetraborate pentahydrate solution and the ability of this system to compensate reactivity or temperature transients. An experimental measure of the rate of gas evolution resulting from the n, alpha reaction with the B^{10} in the solution will be attempted.

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

All 90 of the thorium slugs programmed for pile exposure under the production test to ascertain radiation stability characteristics of both rolled and extruded thorium metal are being irradiated. Several of the slugs will be discharged next month to obtain data at the low exposure of 200 MWD/AT with the remainder of the pieces being scheduled for higher exposures.

Reactivity Cycle Damping

An analysis of the production gains to be achieved through the maintenance of a constant pile reactivity residual from product build-up is essentially complete. A study is being made of the practicability of achieving and maintaining such a condition as normal operating pile practice. The basic concept involved is that of scheduling metal for discharge on the basis of pile reactivity loss, as well as total exposure, i.e., each metal discharge would be composed of fringe metal, as well as metal from the central zone which carries a higher reactivity weight per unit plutonium content.

easurement of Fluxes in Hanford Piles

A series of experiments have been made to determine the radial neutron distribution in a uranium slug. Although the measurements made to date have been a composite of the thermal and resonance neutron distributions, the reproducibility and data self-consistency have been good. Plans are being formulated to use gamma ray spectroscopy in conjunction with neutron detectors which are biased with respect to energy to determine both the thermal and resonance distributions independently rather than the composite distribution. These data are expected to be quite helpful in establishing the validity of diffusion theory methods in calculations in the interior of a slug.

A value for the thermal neutron flux in the foil calibration facility in the Test Pile was determined with respect to the Hanford standard pile to an accuracy of three per cent. The quoted uncertainty in the standard pile calibration, seven per cent, must also be considered in assigning a precision to the Test Pile calibration.

Ruptured Slug Detection

The experimental slug rupture detection instrumentation, i.e., the delayed neutron detector and the scintillating crystal gamma ray spectrometer, continued to demonstrate good stability during the past month of continuous operation. Major emphasis during the month was placed on establishing the rupture detection sensitivities of these systems relative to that of the beta monitors. In addition, some improvements in circuitry were made, and additional data were obtained pertinent to establishing more nearly optimum operating conditions.

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Efforts are being made to extend the pile volumes which are continuously monitored by the experimental systems in an effort to observe their performances in the case of an actual rupture. The experimental gamma ray spectrometer system has been revised to permit monitoring of a large fraction of the H Pile effluent in conjunction with the beta system. Instrumentation has been designed and is being fabricated to permit continuous monitoring of effluent water from several crossheaders with the spectrometer being utilized in a more nearly optimum manner.

The delayed neutron detection system continues to operate in a satisfactory manner and to demonstrate a sensitivity somewhat greater than theoretically expected.

A Production Test 105-523-A, "Test of Savannah River Fuel Element Jacket Failure Detectors", has been written to authorize tests of the gamma and beta sensitive systems developed by duPont personnel for use at the Savannah River site. Some aspects of these systems may prove applicable to the Hanford problem.

Automatic Tube Temperature Recording Facilities

The DR Pile IBM automatic tube outlet water temperature recording facilities have maintained the routine schedule of traverses for the month.

The Flexowriter automatic tube outlet water temperature recording facility at B Pile continues to operate in a satisfactory manner. The inlet temperature compensator has been accurately calibrated and exit water temperature rise data are now being recorded, as well as the exit water temperatures.

An operating manual, "Operation of the Flexowriter at 100-B", has been prepared as a guide for instructing others in the use of this equipment. A service manual is being prepared as a guide for maintenance of the installation.

Test Pile - Routine Tests

Regular slug testing proceeded routinely during the month. The reactivity of slugs fabricated from recovered metal continued to be low.

Twenty lots of Mallinckrodt billet eggs were tested during the month with TDS values ranging from 11 to 16.

Five lots of Fernald billet eggs were tested with TDS values ranging from 13 to 16.

Test Pile - Special Tests

Graphite bars from four experimental heats were tested for nuclear purity during the month and the results reported to interested groups. Reactivity measurements were made on a section of the cadmium control rod to be utilized in C Pile as a replacement for boron carbide. The results indicate that the water moderated and cooled cadmium rod will have slightly less control power than the previously proposed boron rod.

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Fuel Element Development

The Test Pile is being utilized as an analytical tool in guiding the fuel element development program from the pile reactivity standpoint. A series of measurements have been made yielding the reactivity invested as varying quantities of several elements are alloyed with the uranium. The test components for this study are being fabricated by Pile Fuels Sub-Unit personnel.

SHIELDING STUDIES

Attenuation Studies

Major emphasis during the month was placed on the compilation and analysis of the data obtained thus far in the DR Pile bulk shield test facilities. These data include thermal, resonance and fast neutron distributions in iron-masonite and Brookhaven concrete.

The final data in the program of determining neutron distributions in iron-masonite shields have been obtained. These data have been compared with the neutron distributions in iron-masonite obtained in the "A" test facility at D Pile and serve to establish the validity of measurements made in the bulk shield test facilities at DR Pile. With the exception of a fast neutron traverse, which is in progress, the measurements of the neutron distribution in Brookhaven concrete are also completed. These latter data have formed the basis for the concrete shield design in future Hanford piles.

Measurements to determine the shielding effectiveness of iron-limonite concrete placed by the "Prepakt" method have begun. The concrete is in the form of slabs into which radiation detectors are inserted and the slabs in turn are inserted into the bulk shield test facilities at DR Pile. Since the elemental composition of the "Prepakt" iron-limonite concrete is quoted to be similar to that of Brookhaven concrete the neutron and gamma distributions should confirm data already obtained with Brookhaven concrete. The most serious questions yet to be answered prior to the use of the "Prepakt" concrete in a pile shield are of a physical properties nature, i.e., rate of water loss as a function of temperature and the effects of irradiation upon thermal conductivity, strength, and dimensions.

Measurements of the gamma ray distribution in iron-masonite are being initiated at DR Pile. This phase of the program was deferred of necessity because the available facilities were utilized for other work. Also, neutrons and gamma distributions cannot be measured simultaneously as the voids associated with the gamma detectors distort the neutron distributions. The appropriate shield geometries and detectors are being fabricated for this work at the end of the month.

Radiation Damage Studies

A routine schedule of accelerated exposures of shielding concretes to pile radiations has been established to determine the rate of damage. Several Brookhaven

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concrete samples previously irradiated are undergoing laboratory measurements to determine the extent of damage. Several additional samples have been prepared for exposure and samples of limonite grout similar to that used in the C Pile top shield are now undergoing irradiation.

A determination of the extent of masonite deterioration in the existing pile shields is being contemplated. Although a similar determination at F Pile three years ago indicated the masonite to be undamaged, it is believed desirable to redetermine the extent of damage at present in view of the higher power levels experienced since the original work. Shield condition and ultimate shield life must be considered in undertaking an enrichment program.

Shielding Effectiveness of Gun Barrels

The study of the shielding effectiveness of the taper bore gun barrel assembly has proceeded slowly during the month due to extensive periods of nonequilibrium operation at D Pile. The radiation leakage through the taper bore assembly will be compared with the leakage previously determined through a standard two piece ring and donut gun barrel assembly.

Bulk Shield Test Facility - C Pile

The bulk shield test facility installed at C Pile is now essentially complete. Acceptance tests on this installation have detected minor faults which are being corrected. A production test to authorize the use of this facility is being prepared.

HEAT STUDIES

Tube Boiling Studies

Studies to determine means by which the tube boiling limits may be relieved were continued. Special efforts were devoted to a study of the value of the Panellit system to detect abnormal tube flow conditions. If tube flow decreases, the pressure at the Panellit sampling point may increase or decrease, depending on the cause of the flow reduction. If the cause of the flow reduction is upstream from the sampling point, the pressure will decrease while it will increase if the cause lies downstream from the sampling point. In the case of an upstream condition which reduces the flow to the point where boiling is initiated, the pressure at the sampling point will decrease initially, but will rise again as steam is formed and the flow restricted at the point of boiling. Since the Panellit gauges will reset if the pressure returns to the normal range, the response time of the instrument must be such as to detect the low pressure condition before boiling can start. Studies indicate that for the most probable pressure change conditions, two or three seconds are required for boiling to commence. However, for severe flow abnormalities, boiling may be initiated within less than a second. Experimental tests were conducted to determine the actual period between the time the pressure changes and the time at which a Panellit gauge will indicate the pressure change. Pile operating conditions were duplicated in so far as possible and several hundred separate tests were conducted utilizing several different

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gauges. The results indicated that the gauges will respond in approximately 0.3 seconds for typical pressure-change conditions. It was found, also, that with air in the Panellit gauge line, the response was on the order of two to ten times as slow as with water in the line.

Abnormal flow conditions may also be detected in most cases by means of thermocouples mounted at the rear of each process tube. Tests were conducted to determine the speed with which the thermocouples respond. As anticipated, it was found that the response rate varied significantly depending upon how the thermocouples were fastened to the thermocouple well. The tests are incomplete, but preliminary data indicate that the couples will reflect temperature changes in about two to four seconds.

Testing of a small scale mercury jet switch suitable for rapid scanning of tube outlet temperatures has been proceeding, but its reliability has not yet been proven.

An additional means to detect unusual flow rates is also being investigated in a preliminary fashion. This method would utilize flow meters, made by the Potter Aeronautical Company, in the inlet pigtail of each tube. The flow meters are of a standard design, and the investigation is being centered largely on the development of specialized instrumentation to permit monitoring of the individual tube flow rates. A small scale system is being set up to determine the feasibility of the use of this method.

In the event that the use of instrumentation proves feasible, it may be desirable to modify the plans to install larger outlet fittings on the 100-H Pile. Consequently, tests were conducted to determine the flow increases resulting from increasing the flow area of only certain components of the outlet fittings. It was found that the tube flow could be increased about six per cent if all of the fittings were enlarged to the size used in this test. If only the nozzle and pigtail flow area were increased, the corresponding flow increase was about 4.2 per cent. Thus, from a flow increase view point only, the value of replacing the outlet Parker fittings is relatively small.

Flow Requirements Following Electrical Outage

A document setting forth new header pressure requirements immediately following an electrical power failure was issued. These requirements, based on a 90°C maximum tube outlet temperature during equilibrium operation, are contained in "Header Pressure Requirements Immediately Following an Electrical Power Failure", by W. D. Gilbert, HW-25558, September 9, 1952. The new requirements are slightly higher than those which have been in existence in the past.

Slug Studies

As the pile power levels are raised, the can-end surface temperatures will approach the saturation temperature of the water in the tube. Should boiling occur, it is presumed that damage would result to the slugs and/or the tube. Thus, it may be necessary to increase the thickness of the can-ends before higher slug powers can be safely attained. Extensive calculations have been made to

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determine the effect of can-end thickness on maximum end temperatures for various power levels. In addition, an investigation has been made to determine the effect on end-cap temperatures of the presence of insulating discs located between the slug and end-cap. It may prove desirable to measure experimentally the end-cap temperatures of slugs in the pile; methods for installing thermocouples on slug ends are being investigated.

Experimental studies of the effect of induced thermal stresses on slug life were conducted during the month. Slug specimens, consisting of four-inch lengths of slug-size uranium bonded to aluminum rods at the ends, were alternately heated and cooled. The heating resulted from the passage of up to 15,000 amperes of current through the uranium. The cooling resulted from removal of the current flow and from the passage of water over the surface of the uranium. By this means, the axis and surface temperatures of the uranium were raised to about 325°C and 75°C, respectively, and then reduced, both to 20°C. Triple-dipped uranium without jackets was used in making the specimens. The cycling rate varied from 10 to 30 seconds to raise the current to full flow, from one to 15 seconds to reduce the current to zero. One specimen was cycled 42 times; two others were cycled 100 times each. The results showed no indication of either slug distortion or rupture. The only undesirable condition detected existed at the interface of the aluminum rods and the end-cap. This difficulty was anticipated, and it limited the life of the specimen which was cycled only 42 times. The fact that the cycling conditions in the test were much more severe than those encountered in the piles would tend to enhance the value of the results. Nevertheless, additional tests of a similar nature will be conducted. It is anticipated that later tests will be conducted with specimens in which small irregularities or fractures exist prior to cycling.

Graphite Temperature Studies

The effect on the adjacent surrounding tubes of replacing the uranium in a tube with a channel thermocouple stringer was investigated. Removal of the heavy metal and replacement with graphite or air result in increased heat generation in the four adjacent tubes. Data, spanning a year of operation, for the heat generation in tubes surrounding air tubes 2577 at the DR and H Piles were analyzed. An apparent increase of from three to four per cent in the heat generation was found for the four tubes surrounding the air tubes. This factor must be considered when the thermocouple channels are installed in the piles, as is presently done with bismuth loadings, to be sure that the higher heat generation in the adjacent tubes does not limit pile power.

Numerous calculations were made on the electrical analogue to assist in determining a coring pattern for the K Piles. These calculations were made in conjunction with personnel of the Process Engineering Unit. Graphite temperatures for various power levels, gas conductivities and gap sizes were computed. In addition, estimates were obtained of the amount of heat flow into the front and rear shields from the graphite. Various means of partially insulating the graphite from the shield were considered.

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General

Tests on thermal and biological shield temperatures with the water shut off in selected cooling pipes were repeated to determine the accuracy of the data. The latter proved to be reliable. The tests at the F Pile are largely completed. Equipment is now being prepared for installation in the H Pile.

A document, "Horizontal Rod Water Investigation", by H. H. Greenfield, HW-25117, was issued during the month. Several potential hazards to pile operation are discussed in the document. Slight modifications to the present horizontal rod piping arrangement will help to eliminate these hazards. "Production Test 105-522-A - Horizontal Rod Cooling Water", by W. D. Gilbert and R. P. Schmitz, HW-25443, September 22, 1952, was issued. The purpose of the test is to determine more accurately the heat generation and cooling requirements of the rods.

A water recirculation system is included at C Pile which can take water from the rear risers, heat the water and feed it into the front risers, as an aid for drying out wet graphite. To determine the usefulness of the proposed design, calculations were made to find the minimum time after shutdown at which the system could be used. A portion of the calculations included an analysis of the operation of a similar system at H Pile to determine the loss of heat from the portion of the system outside the pile. The results of the calculations indicated that the proposed design could be put into operation three to five hours after the pile is shutdown.

Those Process Specifications for C Pile operation which relate to heat transfer and pile cooling were established, and compiled in rough draft form. These include:

1. Tube boiling limits
2. Water supply pressure limits
   a. Riser and header pressure limits
   b. Panellit gauge trip settings
   c. Permissible delay periods for the Panellit system time delay relay
3. Shutdown cooling requirements
   a. Water supply following electrical outage
   b. Time at which flow may be reduced or shut off in tubes of crossheaders during normal shutdown.
4. Film formation
   a. Permissible film build-up based on slug end temperatures

b. Permissible power levels for purging during operation

5. Miscellaneous cooling requirements

a. Horizontal control rods

b. Thermal shield

c. Biological shield

d. Cooled test holes

MECHANICAL DEVELOPMENT STUDIES

Charging and Discharging

Investigation of the slug cocking phenomenon is continuing. Charging tests have been performed with the particular dowelled slug design suggested by Alcoa representatives. The results show that this design is as effective as the previous "ball and socket" design. Cocking is being produced, as yet, by non-standard charging conditions only; the possibility or probability of cocking in the piles is still unknown.

Contrary to the first indications mentioned last month, a second series of high speed movies do show slugs being lifted as they are washed down stream. These same pictures indicate that when a single piece washes down against a previously charged piece, it rebounds slightly but comes to rest in the correct position. Further studies along this line are to be continued when precision bore glass tubing, with process tube track insert, is received.

Horizontal Control Rod Studies

A special horizontal rod is being made up to be tested in C Pile to determine the effect of the water annulus around the neutron absorber. This is being done by welding reject boron carbide cans together so that tests can be run with the water in the annulus only, the center only, or both.

Plans are being laid for full-scale testing of the proposed replacement rod for the old piles. The design is complete and steps are being taken to adapt the horizontal rod mock-up to this study.

Additional Control

Considerable time is being expended in following installation of the "ink" facility in DR Pile. Prefabrication of the component parts is well along and installation is planned during the October shutdown. Installation of the drain line in the ventilation tunnel under the rear face has been a serious bottle-neck but has been overcome by flooding the floor with ten inches of water and erecting scaffolding.

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Information has been found in the classified literature which indicates that dissociation of the water by the alpha particles resulting from the neutron reaction on boron-10 may result in the evolution of undesirable quantities of hydrogen gas. Provisions are being made to vent any gas produced in this test to the exhaust stack.

Preliminary corrosion tests with Al and BF_3, are being run in conjunction with the proposal to use BF_3 gas as a control medium.

Vertical Safety Rods and Third Safety

Functional testing of all components, singularly and collectively, for the C Pile vertical safety rod and ball 3X systems has been completed. There does not appear to be any inherent weaknesses in the systems, although some trouble has been experienced with the VSR shock struts during the acceptance tests. It is understood that this is due to defective material which allows leakage of the shock-strut fluid.

The proposed air-cushioned vertical rod design for K Piles has been installed in the White Bluffs Test Tower and initial tests are being run.

Rear Face Television Monitoring

The mechanical and electrical design for remote control of the television camera been completed. A test structure which simulates a portion of the rear face and rear elevator has been constructed in the 189-D Laboratory. Fabrication of the remote control carriage and the control console has been completed. Testing will begin upon completion of the electrical hook-up.

Underwater Test Facility

A large tank, 9 feet wide by 20 feet long by 12 feet deep, is being constructed by Minor Construction forces to be used as a test facility for underwater equipment. Much of the trouble experienced to date with underwater equipment has been the result of inadequate testing before installation in the basins. This tank, which is equipped with windows around the bottom for viewing, will make possible exhaustive tests on all underwater equipment, such as slug inspection devices, slug air weighers, can opening tools, etc.

IRRADIATION ENGINEERING

High Pressure Water Channel - ANL-M-140

The 30 liter per day water leak reported last month has been repaired, and operation at 1550 psig and 520°F has been resumed.

Gamma Irradiation Program

mples of ion exchange resins irradiated to an accumulated exposure of 10^7R were turned to Westinghouse Laboratories for evaluation of irradiation effects.

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Gamma irradiation of various nonmetallic materials including insulators, lubricants, and gamma dosimeters under Production Test 105-246-P continued during the month.

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

Samples of various gases and graphite, sealed in quartz capsules, were discharged after four months' irradiation in tube 0776-H.

Electrical Heater Test - KAPL-M-109 - Production Test 105-530-SR

This experiment, which was designed to test the ability of a silica and an alumina heater cement to withstand in-pile radiation damage, has been completed and the operational data published.

SPECIAL IRRADIATIONS

Status of Special Requests

P-10-A pieces charged	1
P-10-A pieces recharged	108
P-10-A pieces discharged	183
P-10-A reaching scheduled exposure	0
P-10-A damaged, for burial	1
P-10-A pieces under irradiation	480
P-10-A pieces in storage basin	739
Thorium pieces charged	55
Thorium pieces discharged	121
Thorium pieces being irradiated	755
Thorium pieces shipped during month	0
Thorium pieces held pending shipment	171
Special request samples charged	37
Special request samples discharged	23
Samples being irradiated	429
Samples shipped during September	33
Samples awaiting charging	152
Samples awaiting shipping	13

Single Channel Experiment - Production Test 105-507-A

The instrumentation used to measure cooling water flow in this experiment has failed, so that the third and last series of slugs which was being irradiated will have to be replaced. A replacement flow meter will be available shortly and the necessary production test supplement is being prepared for publication.

Flux Monitoring

A production test authorization has been approved which will permit irradiation of certain materials suitable for monitoring the neutron flux under standard irradiation conditions. Up to ten milligrams of chromium, cobalt, copper, gold,

indium, molybdenum, osmium, silver, tantalum, tungsten, or zinc may be included with standard samples without requiring a special production test.

Borescoping

Tubes 2171-D and 4674-D were borescoped for the Water Plant Development group. A vertical traverse of tube 4674-D was unsuccessfully attempted.

GRAPHITE STUDIES

Pile Motion Monitoring - Tube Bowing

A survey of all process tube bowing data obtained to date has been initiated. Calculations to date indiate that tube curvature has increased only slightly during the last two years.

Stored Energy

Any re-evaluation of the hazards occasioned by possible stored energy release in the graphite moderator of the Hanford piles requires that values of the effective specific heat of the graphite be obtained. Some of these data have been obtained. An average value of the specific heat of graphite from the bore of the process tube block in B, D, and F Piles is about 0.1 cal/gm/°C. An average value for the filler block graphite is about 0.3 cal/gm/°C. The specific heat of nonirradiated graphite is 0.4 cal/gm/°C.

Controlled Temperature Exposure of Graphite

Exposure of graphite samples in tube 1684-B continues at essentially constant temperatures. Arrangements for the installation of an additional facility with a newly designed control apparatus are progressing satisfactorily.

Graphite-Carbon Dioxide-Helium Mixture - Rate Studies

New absorption trains, used in purifying tank helium and carbon dioxide, have reduced the error caused by helium impurities to less than one per cent.

Calibration of jets for the CO_2-He proportioner remains to be done before rate studies can be initiated.

Graphite-Carbon Dioxide Reaction Rates

The reaction kinetics at constant volume for the graphite-carbon dioxide system have been studied at 864°C. The data from these runs indicate that a more uniform and consistent degassing at higher temperatures (950°C) and for a greater length of time (24 hours) is necessary. The extent of surface oxide formation for this series is in agreement with expected values.

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Radiation Induced Reactions

Samples of gases and graphite initially charged in 0776-H in May, 1952, were discharged during the month. High radiation levels have delayed examination of these samples. Due to charging difficulties, the replacement series were not charged.

In-Pile Controlled Atmosphere Experiment

Completion of Project C-410, the facility for in-pile controlled atmosphere experiment, continues to be delayed by mechanical difficulties. An examination of the vendor's welds in the in-pile heater assembly indicated that the welds were defective due to incomplete penetration and gas holes. Samples of Hanford welding have also been submitted for examination.

Damage Gradients in Samples Exposed Under Cold Test Hole Conditions

It has been found that much of the scatter in C_o X-ray data for cold test hole exposed samples can be attributed to damage gradients in an individual sample. It is deduced that the damage gradients follow temperature gradients which arise from the fact that only line contact is made between the graphite cylinder and the cooled aluminum.

Annealing of X-Ray Peak Shapes

Previous work has established that the shape of the 002 diffraction peak must be considered in order to characterize radiation damage which the graphite has undergone. A preliminary survey is in progress which seeks to obtain a more complete characterization of damage to the graphite crystal by studying the effect of the annealing process on the peak shapes.

X-Ray Diffraction C_o Annealing

From comparison of stored energy data and certain functions obtained from 002 annealing data, it has been hypothesized that total stored energy may be related to the surface energy of the crystallite where bonds have apparently been broken and a disordered form of carbon may exist.

X-Ray Diffraction Peak Shapes

From comparison of the peak breadth of a natural graphite sample and a CSF sample, both with an exposure of about 3000 MWD/CT, it has been hypothesized that the larger initial crystallite size and the larger orientation ratio of the natural graphite lead to a lesser degree of disorganization in that material for this long exposure.

Surface Studies

Surface areas have been determined for a series of graphite samples which are representative of irradiated filler block material. It has been found that the reflector graphite has a surface area of about the same magnitude as virgin material, while graphite from about 15 feet into the pile has approximately double

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that surface area.

Three graphite samples had previously been prepared and irradiated in vacua. When removed from the pile, the break-off seals were found to be already broken. The reason for the defect is not known. Six more samples of graphites in vacua and in various gaseous atmospheres have been prepared and will be charged into the pile as soon as possible.

Heat Generation in the Graphite

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

Thermal Conductivity of Graphite

A study is in progress on the interpretation of thermal conductivity of both virgin and irradiated graphite.

Physical Length Annealing

It has been found that the permanent expansion prior to contraction which is found in the annealing of the physical length in irradiated graphite is of smaller magnitude for higher exposures.

re information has been obtained as to the temperature at which annealing egins with various temperatures of irradiation. Results from exposures of 503 MWD/CT are consistent with those from lower exposures.

Thermal Conductivity of Gases

A new vacuum rack was completed and ten vacuum runs have been made at about 10^{-6}mm of Hg. These runs determine the contribution of the cell, exclusive of gas conductivity, to the experimentally determined cooling rate for gases. This information obtained from vacuum runs is needed to determine the thermal conductivity of gases.

Experimental Graphite Program - Special Graphites

Graphite samples from pitch impregnated natural flake graphite and having a high orientation have been irradiated in a papoose tube to an exposure of 3000 MD/CT equivalent test hole exposure. The samples show about 18 per cent physical expansion. Examination by means of X-rays shows that the crystallite expansion as measured by the shift of the 002 peak begins to saturate at about 1500 MD/CT. The present data indicate no tendency of the physical length toward saturation. The fact that the per cent physical expansion can exceed per cent crystal expansion does not necessarily indicate that expansion is occurring independent of that in the crystallite. It is consistent with recently obtained knowledge of X-ray criteria for crystallite damage that the position of the 002 peak at high exposures must be complemented by examination of peak shape and peak width before an accurate determination of damage to the crystallite is obtained. By using

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improved X-ray criteria of damage now being studied, it may be possible to develop a better means of monitoring physical expansion after high exposures by X-ray techniques.

The practical implication of these results is that, given the proper conditions of temperature and flux, no limit to graphite physical expansion is known.

Experimental Graphite Program - TS Graphite

TSGBF graphites have been discharged with an exposure up to about 400 MD/CT equivalent cold test hole exposure. Transverse samples showed a physical expansion comparable to that of CSF material. In contrast, however, to CSF material, parallel samples of TSGBF graphite show an expansion roughly one-third of that in the transverse direction.

Experimental Graphite Program - Impregnated and Nonimpregnated Graphite

The evaluation of the effect of pitch impregnation on TSGBF graphite radiation characteristics is continuing. The highest exposure at the present is about 200 MD/CT. These low exposure results indicate little difference between radiation damage to impregnated and nonimpregnated TSGBF graphites. These results must be considered preliminary to those which will be obtained from higher exposures.

Damage Mechanism

The apparatus for the electrical resistivity-thermal cycling experiment is complete. Silicon is being considered as a catalyst which might accelerate the annealing of damaged graphite.

Exposures in the Arco MTR

Samples have been prepared and the containers leak-tested for the MTR irradiations. The present start-up date for experimental irradiation in the MTR at Arco is sometime in the early part of October.

Electron Microscopy of Graphite

A thin section of graphite has been obtained and successfully photographed with the electron microscope belonging to the Biological Services Unit. The section was distorted and yielded no information beyond the indication that, with modified imbedding techniques, the examination of graphite by means of the electron microscope is feasible.

WATER PLANT DEVELOPMENT

In-Pile pH Tests

Construction of the in-pile water quality facilities was completed and the project was accepted. During the pile outage of September 8, one tube was replaced,

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one tube was borescoped, and the remainder of the production test tubes were charged with weighed four-inch regular metal. All six tubes of this production test are now operating with regular metal loadings, two tubes each at pH's of 7.0, 7.3, and regular process water pH of 7.65. Although high iron concentrations have been determined in the test water, film formation rates have been negligible. No unusual difficulties have been encountered in the operation of the flow laboratory pumping system.

Flow Laboratory Tests

Additional tests were begun during the month to provide correlation of the in-pile test with similar tests in the flow laboratory. Each in-pile water pH is duplicated in the flow laboratory at 65°C and 95°C. The coupon test using filtered water at a pH of 7.3, before lime addition, was begun in the 183 Building. Similar coupon tests using flow laboratory water operated satisfactorily during the month. Two flow laboratory tubes were started using alum water with dichromate addition.

Two mock-up process tubes in series were started up in 183-F using alum-activated silica process water before lime addition. The water is heated to 90°C by means of a steam jacket on the first tube. The purpose of this test is to obtain corrosion data at pH 7.3 as functions of time and temperature.

Twelve slugs were discharged from the test in 105-F Flow Laboratory. Weight loss measurements showed similar results as those reported two months previously, when corrosion rates were relatively high during the first three to four weeks of operation. It is planned to continue the test for two more months.

The ink facility test using ten per cent tetraborate solution continued to operate satisfactorily. Examination of test pieces showed that corrosion is continuing at approximately ten times the rate encountered in process water. No pitting attack was observed.

A test to determine the effects of settled water on screen plugging was conducted at the 183-F settling basin. Results of the test show that the floc accumulated in the strainers and could eventually result in plugging and flow restriction.

Water Treatment Tests at 100-F and 100-D

Production test operation of the 100-F water plant with alum-activated silica and the D plant with alum continued to be satisfactory during the month. It appears that the present aluminum concentration limit of 0.2 ppm is not realistic, and that lower cost production of high quality water can be realized with higher residuals. Supplements are being prepared to raise this limit to 0.5 ppm. Filtering rates at F Area were reduced to 2.9 gpm/sq. ft. to enable a cost comparison of the alum, alum-activated silica, and ferric sulfate treatments. At the present time, there appears to be no significant difference in treatment costs. It is hoped that increase of the aluminum limit will result in a further lowering of the alum treatment costs. Installation of the sampling equipment to be used for effluent activity studies of alum water was not made because of lack of shutdown time at D Pile.

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Water Plant Studies

A reference document was prepared containing sea level elevations of free water surfaces and pump center lines, plus pump characteristic curves, for all 100 Areas water plants. Further study was made of maximum capacities of the present plants and of modifications required to meet possible higher future pile cooling water demands. A document is now being written outlining a program needed before the 190 tank by-pass proposal can be fully evaluated. At present it appears that an electrically activated valve would be required to provide acceleration necessary to meet the revised pile pressure requirements following a power failure.

A method of utilizing available filter capacity has been proposed whereby one K Area filter plant could be eliminated or a new pile could be built at H Area and utilize surplus filtering capacities of the present areas.

PILE COOLANT EFFECTS

Cavitation

A four-foot glass tube, 1.60 inches in diameter, has been used to study cavitation visually. The tube has been loaded with normal and misaligned slugs. Water velocities up to 28 feet per second and temperatures up to 105°C have been maintained for several days at a time. High speed movies have been taken of points of interest. Vapor formation was observed in the vicinity of misaligned slugs. The point of collapse of the vapor bubbles was random, with resulting low degree of attack. Small scale particles from a fouled heat exchanger were found to lodge between the tube and misaligned slugs. Easily visible vapor jets were then observed on the downstream edges of these particles, and in the interstices between adjacent particles. At one location where the particle pattern remained constant for two days, rapid and deep pitting of the slug occurred where the bubbles were collapsing. A standard obstruction, corresponding to a misaligned slug with lodged particles, has been constructed and is being tested in various types of water. The effect of various water compositions and treatments is also being studied by impinging a jet of water on aluminum samples. Severe pitting of the samples was found after 48 hours exposure to alum and Ferrifloc water jets. The presence of 2 ppm dichromate appears to reduce but not entirely eliminate this pitting. Rotating discs with high peripheral velocities are also being used to test various waters.

Front Tube Corrosion

A cursory examination of a small number of the front tubes at all piles except B was made. Large numbers of corrosion product "barnacles" were found at F and D Piles. A few were found in the water flushed from the rear of four tubes at D Pile. None were found at H Pile and a small number were found at DR Pile. Such barnacles were observed in the weighed tube apparatus after two and one-half month's operation with dichromate-free Ferrifloc water, but were not observed in a previous test with dichromate. The current weighed tube test of alum water without dichromate shows only occasional incipient product barnacles after one month's operation.

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It is believed that the routine purging of H, DR, and B Piles minimizes the formation of corrosion product barnacles. A test of this hypothesis, as well as a test of the effect of dichromate, is being carried out in the 50 tube mock-up.

Corrosion Correlation

The tubes for the production test to determine the effect of radiation on corrosion was discharged. The samples are "cooling" and will be weighed to compare with the unirradiated samples. Design of a production test to study corrosion at temperatures above 100°C is nearing completion.

Recirculation

The in-pile test of recirculating cooling water has operated satisfactorily for over a month. If no trouble is experienced before the next regular shutdown at H Pile, the tube will be replaced and regular metal will be charged.

The flow laboratory recirculation test is continuing with the objective to determine the optimum total solids concentration from a corrosion and film standpoint. De-ionization equipment is being installed to study the one to two ppm range.

Film Studies

e electron microscope study of the film is being expanded to detect any changes in the nature of the colloidal particles in process water and the water's film forming properties as it passes through the water treatment plant. Ferrifloc and alum treated waters are both being used for this study. An investigation has begun of the effect of the water temperature on the suspended colloids and on the film that is deposited.

CORROSION STUDIES

Laboratory Equipment

The photographic darkroom has been completed, and substantially all of the equipment has arrived. Facilities are now available for the development and processing of film for the Corrosion and Irradiated Materials groups.

Adequate refrigeration capacity has been installed for the anodization of fuel slugs by the Martin Hard Coat Process.

Anodizing Studies

A consignment of unautoclaved fuel slugs has been successfully anodized for the Pile Coolant Effects group, comprising five lots of 38 specimens each of the following coatings:

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Standard Alumilite, 1 mil.
Alumilite Hard Coat, 1 mil.
Alumilite Hard Coat, 2 mils.
Martin Hard Coat, 1 mil.
Martin Hard Coat, 2 mils.

Autoclave Coating Studies

Preliminary attempts to anodize autoclaved slugs were unsuccessful. The anodized layer could be deposited only at flaws in the autoclave coating.

The autoclave layer was found to be very resistant to common etchants. Its integrity is destroyed, however, by heating to about 400°C, after which treatment the coating is readily removed by the standard mixture of seven per cent phosphoric acid and two per cent chromic acid.

Encouraging results have been obtained with etchants of somewhat novel compositions, but a final recommendation cannot yet be made for a solution suitable for removing the autoclave film prior to anodizing.

Galvanic Couple Studies

A section of process tube anodized by the Martin Hard Coat process has been coupled with a graphite block and exposed to dripping water at 90°C. Preliminary observations indicate that this specimen is superior to Alumilite coatings under these conditions.

Thermogalvanic Studies

Data so far obtained show that a significant amount of galvanic corrosion occurs on a specimen of aluminum maintained at about 90°C in pile process water when coupled to a similar specimen at 18°C. The graph of galvanic current versus temperature differential varies with the nature of the gas in contact with the water.

Boron Trifluoride Studies

Apparatus is being assembled for determining the rate of corrosion of aluminum by moist BF_3. It is required that a degree of precision be obtained sufficient to evaluate the feasibility of using BF_3 as a control in pile operation.

IRRADIATED MATERIALS EXAMINATION

100-C Slug Examination Facility

Tentative equipment specifications for this facility are given in document No. HW-25724, "Design Principles; Equipment for 100-C Slug Examination Facility".

Mock-up viewers intended for use in the 100-C facility are being tested in the 105-DR basin. Additional mock-up equipment will be tested under operating

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conditions in the 100-B examination facility.

The contract with the General Engineering Laboratory for prototype handling equipment has been approved.

100-B Slug Examination Facility

The 100-B examination facility is planned to provide a means for examining irradiated fuel elements in the interval before the 100-C facility is completed. In addition to this use, in which it will replace the present inadequate facility at 105-DR, the installation will provide a means of testing under operating conditions mock-up and prototypes of the proposed equipment for the 100-C facility.

Modification of the 105-B storage basin will include removal of part of the wooden platform along one row, addition of a railing, and the installation of a low wall around the working area.

Equipment specifications for equipment scheduled for installation are listed in document No. HW-25725, "Equipment for 100-B Slug Examination Facility".

108-B Irradiated Materials Examination Facility

Visual examination and photographing of sections from the following pile process tubes are presently being accomplished: 3684-F, 3773-F, 0486-F, 3175-D, 2170-D, 1692-D, 3178-DR, and 2660-B.

Tube 3684-F was removed from the pile on August 8, 1952, after a slug which failed at the cap end was discovered and discharged. The tube did not leak. Internal pitting was extensive and fairly severe between seven and eleven feet from the rear Van Stone flange.

Tube 3773-F was removed at about the same time for the same reason. No severe pitting was observed during visual examination of this tube; however, areas of probable initial attack were noted. The film on the internal surface of the tube was thin and light in color at the upstream end and increasingly thicker and darker in color toward the downstream end. At about seven feet from the rear Van Stone flange, this relatively thick film has been removed irregularly and in patches, apparently by mechanical action of the water. Other areas inside the tube in this vicinity also showed irregular patches where the usual brown film was removed. About eight per cent of the slugs discharged from this tube, as well as those discharged from 3684-F, suffered severe pitting attack on the lateral surfaces of the slug jackets.

A section of process tube 0486-F, which was stored in the 100-B burial ground, was transferred to 108-B for closer inspection. This tube was found to be a leaker on February 11, 1952. The entire outer surface of this section was completely covered with corrosion product, which in some areas was 30 to 40 mils thick. A hole which appeared to have corroded through from the outside in approximately nine feet from the rear Van Stone flange. The corrosion was

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probably caused by the galvanic action of the graphite-aluminum couple, with process water as the electrolyte.

The downstream 18 feet of tube 1692-D, a leaker removed from the pile on August 26, 1952, was visually examined. Pitting attack, resulting in tube wall penetration from the inside was observed about eight and one-half feet from the rear Van Stone flange. This attack is similar to that found last month during the examination of tubes, 3883-F, 1475-F, and 3668-F. The pit which penetrated the tube wall was undercut on the downstream edge.

Visual examination of tube 2660-B, removed from the pile because of a water leak on August 16, 1952, is now complete. No tube wall penetration was found in the vicinity of the reported leak. It is possible that the hole section was inadvertently lost or destroyed during the tube removal operations.

Pictures and more detailed descriptions of interesting sections from the above process tubes, as well as other process tubes, are included in the "Technical Activities Report for September, 1952", HW-25682.

A study of available overhead rectilinear manipulators has been made, since this type of manipulator will best suit the operational needs necessary to the examination of process tube sections in the 108-B cave. The General Mills Mechanical Arm appears to be the best manipulator for this use.

Slug Examination

Examination of slugs discharged from F Pile, which exhibit the recent type of pitting attack on the lateral surface of the slug jackets, is continuing. Some slugs from about one-third of the tubes discharged at F Pile because of slug failures during the last two months showed this type of pitting attack. This pitting attack was also noted on some normally discharged slugs, generally from the upper half of the pile.

The slugs discharged from tube 3684-F on July 31, 1952, with an exposure of 383 MWD because of a slug failure were visually examined, and interesting pieces were photographed. The degree of attack varied from almost imperceptible pitting to severe attack which covered about 80 to 90 per cent of the cylindrical surfaces of the slug jackets. It was not unusual to find areas of slight attack which are appropriately spaced to indicate the area in contact with the process tube ribs. Pictures of pitted slugs from this tube are included in the "Technical Activities Report for September, 1952", HW-25682.

PRESENT CANNING DEVELOPMENT

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

Closer control of fabrication procedures due to increased direct supervision by the Operations Unit coincided with a higher canning yield for eight-inch slugs especially with respect to reduced non-seating. Use of a mechanical agitator on the tin bath failed to improve slug quality.

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Two pile failures occurred during the month. Both failures were side failures similar to the type of failure that has been observed to date for eight-inch autoclave failures.

There were no autoclave failures this month.

Sleeveless Canning

The addition of a ten-second base preheat to the sleeveless canning cycle effectively eliminated non-seating and poor brazes at the base of the cans.

A document, HW-25493, "Proposed Pile Irradiation of Four-Inch Triple-Dipped Canned Slugs", was issued.

Use of Flux on Duplex Bath-Lead Dip Process

The results of destructive testing have indicated that the Oak Ridge slugs may have a higher quality bonding layer due to the use of flux on the lead, Al-Si bath.

The trial of a fluxed duplex bath in the lead dip process (Oak Ridge procedure using Eutector no. 190 flux) has been delayed, as the toxicity of the flux fumes remained in doubt after the first air samples were analyzed by the Radiological Sciences Department. Air tests will be repeated.

Slug Welding

Adoption of the General Electric Filler Weld technique for slug welding was continued. Use of near optimum surface preparation and optimum filler wire positions gave sound welds, 80 per cent of which were silicon-free as determined by macroetching.

Experimental Canning

The experimental canning arrangement has continued to prove satisfactory. The arrangement presently allows us the use of one canning line for two line-days a month for purposes of fabricating slugs under the provisions of the Manufacturing Fabrication Requests.

Interlocking Slugs

Drawings were prepared for ordering well-type caps and special cans needed for the proposed production testing of the new type of dowelled slugs.

A charge of sample slugs with a truncated cone type of projection was prepared for a cocking test by the Mechanical Development group.

Quality of Impact Extruded Caps

During an attempt to pre-clad aluminum caps with Al-Si, it was noticed that the impact extruded caps were subject to mild blistering when heated in the muffle

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furnace. This was very seldom encountered in the old style screw-machined caps. Further testing has shown that the blistering can take place in a few seconds at the temperature of the canning bath in the Al-Si process.

MECHANIZED CANNING

Installation of the Canning Development Line in Building 314 was retarded by unforeseen production troubles which placed heavy demands on the 300 Area Crafts. However, this work is now progressing normally. The two jib cranes were installed early in the month, and laying of the mezzanine floor in the work area has been completed. Both of the low frequency induction furnaces have arrived at Hanford, and the two resistance furnaces have been fabricated and are being installed. The furnace will apparently be completely installed by October 15.

Mechanical and electrical hookup is nearly complete on all units except the canned assembly transfer machine. Fitting the various mechanized units together into a co-ordinated system requires the relocation of some of the electrical and pneumatic gear. These and other indicated alterations are being made, and it is expected that the mechanical units will be ready for trial by the time the furnaces have been completely installed.

Efforts were continued to find a material for tong and tool construction with suitable mechanical properties which will withstand the heat and corrosive action of molten Al-Si for extended periods. An automatic device was designed and built to dip and remove test samples repeatedly, simulating mechanized operating conditions. A promising coating material for ordinary steel is Alcoa's R-20 Insulating Powder which, mixed with various binders, is currently undergoing tests.

NON-DESTRUCTIVE TESTING

Baking Tests

Baking tests are being made on canned slugs in an effort to simulate the effect of pile operation on the bonding layers, and to establish a basis of comparison between slugs canned by various processes and triple dip canned slugs tested so far.

Metallographic examination of the bonding layers has shown no apparent effects resulting from a 1000-hour bake at 250°C. At 350°C, however, some type of intermetallic alloying is evident after 500 hours. After 1000 hours this alloying had in some cases leveled the machining markings on the uranium.

Test for Beta Transformation in Bare or Canned Slugs

Ultrasonic measurement of degree of beta transformation by measurement of relative grain size in uranium slugs is being set up as a go-no-go device for evaluation of properly heat treated slugs. The equipment apparently measures the average grain size along a diameter at which the ultrasonic energy propagates without refraction. It is possible to detect as little as about one per cent of untransformed volume in an eight-inch slug. Either canned or bare slugs can be tested, and no variation

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between different lots of uranium has so far affected the test.

Test for Aluminum-Silicon Penetrations of the Can Wall

The electromagnetic device which is under development for the measurement of minimum can wall thickness has demonstrated its ability to detect a manufactured Al-Si penetration under 14 mils of aluminum. The equipment is being designed so that it is relatively insensitive to Al-Si, voids, or inclusions covered by more than 20 mils of aluminum, but is quite sensitive to such defects with a thinner covering. Considerably more work is required to improve the circuitry, effect optimum resolution of small penetrations, and permit rapid scanning of the slug surface.

Radiographic Inspection of Canned Slugs

A technique for radiographing cap ends of slugs is now fully developed on a one slug at a time basis. Production testing of the method is awaiting installation of equipment for handling larger numbers of slugs. Meanwhile, radiography is being used to test experimental slugs. During this month a batch of cold canned slugs of aluminum plus U^{235} ("C" Slugs), which were welded according to standard "B" Process, was radiographed to determine whether patching of blow holes in the bead from the first welding pass produced sound welds. It was found that such patched welds were no worse than unpatched welds. However, only about 15 per cent of the slugs were free from voids in the weld, some of which were fairly large and some detectable from the external appearance of the weld. Since this is the first time "B" Process welding has been studied this way, it is too early to say whether these voids are characteristic of the "B" canning process.

METAL QUALITY

Uranium Rod Quality

In order to effect a more uniform, high quality rod stock, a program of close liaison at Simonds Saw and Steel Company between technical personnel from Hanford and from National Lead of Ohio was initiated in June. In keeping with this program, the rolling of uranium rods at Simonds during September was followed by a Hanford representative to obtain further information as to the effect of rolling variables on Hanford processes and to make improvements in the uniformity of the rolling practice. Several positive steps were taken to improve the uniformity of the temperature during rolling which should result in a more consistent product.

To evaluate the metallurgical properties of the incoming rod, a new red tag sampling procedure was proposed jointly with the Process Unit. One rod is selected from each MCW lot which consists of a maximum of 32 rods and bundled separately at the mill. Upon receipt at Hanford, samples are taken from this lot for determination of the principal properties of the rod.

Heat Treatment of Rods

The investigation into the feasibility of beta heat-treating uranium in the rod form to eliminate the warp and dimensional changes occurring in beta heat-treating

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of slugs during the canning cycle was continued. One hundred eighty rods (approximately 12 tons) of this material, heat-treated at Fernald, were machined into four-inch slugs. It was decided to heat-treat the balance of the 160 tons of rods in the existing salt bath equipment at Fernald, modified to include a lockout device to insure adequate time in the bath. Hanford representatives will be present to observe the heat-treatment which will be done on a three shift basis starting about October 6, 1952.

Uranium Alloys

An investigation was initiated to determine the feasibility of performing the special heat-treatment required by the uranium-chromium alloys on a production basis. Wafers of uranium - 0.3 atomic per cent chromium alloy were beta heat-treated and isothermally quenched to temperatures from 475 to 575°C. The optimum grain size was obtained by quenching in the range from 475 to 525°C. A production test was written requesting permission to irradiate a small number of uranium-chromium alloy slugs.

63S Aluminum

Further measures are being taken to expedite the delivery of 20 63S aluminum process tubes from Aluminum Company of America. The assistance of the Atomic Energy Commission was requested by Engineering Department Contracts personnel since the principal difficulty encountered in obtaining these tubes has been one of contract stipulations. In anticipation of the arrival of these tubes on site, a production test is being scoped which will provide for in-pile testing of 63S aluminum process tubes.

Zirconium

A technical evaluation of the use of zirconium as a process tube material in the Hanford piles is being written. Although a definite economic evaluation of this material is difficult, the best available economic data will be appended. A vendor, capable of supplying zirconium tubes of full Hanford size and specifications, has not yet been selected.

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Cold Canning of "C" Slugs

Changes in specifications for the cold canning of aluminum-uranium 235 alloy slugs ("C" slugs) were made. They included dimensional changes in the slug, a double cap assembly, and a relaxation of surface requirements of the canned piece. The dimensional changes were made to insure an easier fit in the can and to eliminate necking between the slug and cap. Some difficulties were encountered in canning of "C" slugs. Weldability was improved by using two caps in place of the single cap previously specified. In several stripped canned slugs a grey corrosion product between the can and the slug was found on the slug near the cap end.

Since the anticipated number of cold canned slugs for future pile enrichment is in the thousands, and the experimental sizing press used by the Metal Preparation Section was not designed for production use, a design for a new production press has been completed. A work order for the fabrication of the production press, which has about twice the speed of the experimental press, has been placed by the Metal Preparation Section.

Coatings on Uranium

A nickel-plated uranium slug with a four - five mil thick nickel coat has been held in boiling distilled water for 70 days without visible harmful effects. Two small blisters appeared within the first three days of the test but have since remained unchanged.

The Distillation Products, Inc. metal evaporation coating unit (Type LC 1-14) has been received, installed and tested. Initial work on zirconium coating of uranium will start immediately.

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Criteria for New Canning

Reactivity measurements have been made in the Test Pile on uranium and uranium alloy sleeves for the determination of reactivity effects of several alloying elements and alloying compositions. The sleeves will be fitted with natural uranium cores and again subjected to reactivity measurements. These reactivity data are essential to establish the feasibility of such a slug assembly for pile use.

The feasibility of hollow, internally cooled slugs from the reactivity standpoint is similarly being determined by testing hollow slugs with simulated water coolant in the core in the 305 Pile.

Slugs jacketed with foils of lead, zirconium, aluminum, zinc, copper, and nickel are being tested in the 305 Pile to determine the reactivity effects of the different jacketing materials on several uranium slug diameters. This test is being conducted to check the calculated reactivity data of such assemblies.

Consideration of the mechanical properties required of slug jacketing materials appears to present, from a mechanical standpoint, zirconium, nickel, 2S and 63S aluminum as the most desirable candidate materials.

Preliminary calculations, based upon ideal mechanical considerations only, indicate that during pile irradiation, the slug core, to a radius of 0.29 inches may be heated into the beta phase (approximately 670°C) without exceeding the yield stress of the alpha phase shell surrounding the core.

Insulated End-Caps

Twenty slugs were triple-dip Al-Si canned with Al-Si-Mag 222 insulating wafers cemented to the aluminum end cap. The Al-Si wetting of the caps was inferior because the porous nature of the ceramic wafers prevented the caps being processed through the required precanning cleaning cycle. Evidence of gas release from the porous wafers to the Al-Si was found. However, 95 per cent of the wafers remained cemented to the caps during the canning operation.

Additional canning tests will be made using non-porous wafers which have been either coated or impregnated with a metal such as aluminum. These wafers may be attached to the caps and processed through the cleaning cycle with the caps.

Heat-Treatment of Slugs

The salt-bath treating mechanism used for the heat-treatment of slugs for Production Test 313-105-3-M was re-built for higher agitation speeds. Testing of the machine was completed with satisfactory results. Transformation tests indicated a safety factor of three with the increased agitation of the salt.

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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

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October 7, 1952

SEPARATIONS TECHNOLOGY UNIT

MONTHLY REPORT
SEPTEMBER, 1952

VISITORS AND BUSINESS TRIPS

M. R. Fenske, Consultant from Pennsylvania State College, visited here September 24 through 26, for research and development consultations.

R. W. Benoliel visited the E. I. DuPont Company, Wilmington, Delaware, September 8 through 12, to discuss separations operations and purification and fabrication of plutonium, and the Associated Valve and Engineering Company, Chicago, Illinois, on September 15, for consultation on special valves.

A. G. Blasewitz visited the Ames Laboratory at Iowa State College, Ames, Iowa, September 15 through 17, to attend air cleaning seminar for Atomic Energy Commission personnel.

V. R. Cooper attended the American Chemical Society Meeting in Atlantic City, New Jersey, September 14 through 17, to recruit engineering personnel. He also visited the E. I. DuPont Company, Wilmington, Delaware, September 18 and 19, for discussion of design and process problems relating to 234-5 Building.

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Separations Technology Unit

C. Groot visited the Oak Ridge National Laboratory, Oak Ridge, Tennessee, September 8 through 11, to attend a meeting at K-25 Plant on dry fluorination separations and for discussions on separations processes.

R. E. Burns and H. H. Hopkins visited the Knolls Atomic Power Laboratory and Malta Test Station, Schenectady, New York, September 19 and 20, for waste treatment and solvent extraction studies.

W. H. Reas visited the E. I. DuPont Company, Wilmington, Delaware, September 17 through 19, for conferences with DuPont personnel.

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

R. E. Smith attended the American Chemical Society Meeting in Atlantic City, New Jersey, September 13 through 20, to recruit engineering personnel, and the E. I. DuPont Company, Wilmington, Delaware, for discussion of design and process problems relating to the 234-5 Building.

A. M. Platt and R. E. Tomlinson visited Knolls Atomic Power Laboratory, Schenectady, New York, September 29, 30, and October 1, for technical consultations on Purex.

R. E. Tomlinson visited the E. I. DuPont Company, Wilmington, Delaware, September 25 and 26, for technical consultations on Purex.

ORGANIZATION AND PERSONNEL

Personnel totals are as follows:

	August	September
Administrative	5	5
Chemical Research	43	43
Chemical Development	87	95
Process	43	43
Total	178	186

Chemical Research: One Chemist was added as a new hire, one Secretary "B" and one Steno-Typist "C" were transferred from Utilities and General Services, and one Laboratory Assistant "B" and one Technical Graduate (summer employee) terminated.

Chemical Development: Five Technical Graduates - Rotational were transferred from Pile Technology Unit, one Technical Graduate - Rotational was transferred from Manufacturing - Metal Preparations Unit, one Technical Graduate -

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Separations Technology Unit

Rotational was transferred from Radiological Sciences, one Technical Graduate - Rotational was transferred from Management-General, and one Technical Graduate - Rotational transferred to Pile Technology Unit.

Process: One Technical Graduate - Rotational was transferred from Pile Technology Unit, one Chemical Engineer transferred to Manufacturing - Separations Process Unit, and three Technical Graduates were converted to Engineer Assistants.

$BiPO_4$ PLANT ASSISTANCE

Canyon and Waste Concentration Buildings

Production Test 221-T-16 - T Plant - Evaluation of process changes necessary to achieve a four hour time cycle for the bismuth phosphate process was resumed in accordance with Production Test 221-T-16. A time cycle of four hours was demonstrated in the metal pre-treatment section of the Canyon and the bismuth phosphate by-product and lanthanum fluoride by-product sections of concentration. Decontamination and waste losses were acceptable for the three runs tested.

Decontamination - B Plant - One flush each of Sections 16 and 17 at B Plant was made, using a one per cent trisodium citrate-five per cent sodium hydroxide solution. A 20 to 30 per cent nitric acid flush followed the citrate flush. The waste loss for the citrate flushes were 0.05 per cent and 0.21 per cent for Sections 16 and 17, respectively. The waste loss for the nitric flush in Section 16 was 1.22 per cent, and was 15.23 per cent in Section 17. The Section 16 nitric flush was reworked by a standard second cycle product precipitation to a discarded loss of 0.47 per cent. The Beckman measurements on the individual tanks indicate a decontamination factor of about 10 in Section 16 and of about 100 in Section 17.

Waste Evaporators - B and T Plants - The waste evaporator at T Plant processed five runs normally to a reduction of 75.9 per cent. This completed the processing of all first cycle waste with an age of one year or greater. At the conclusion of the runs, a heel of 1758 gallons remained in the evaporator.

Present plans for re-evaporation will be to obtain the optimum reduction possible for the once evaporated bottoms. As a starting point, the waste will be reduced by 40 per cent. It is hoped that the concentrates can be reduced to some optimum value determined by experiment, dropped to the waste tanks to cool, and again re-evaporated. It has been shown in the laboratory that a total of 96 per cent reduction could be obtained by this procedure.

The waste evaporator in East Area operated routinely for the month.

Separations Technology Unit

Isolation Building

Cleanout Recovery and Isolation Building Processing - Filter boat station cleanouts in Cells 2 and 3 (cleanout numbers 103 and 109, respectively) recovered 290 and 250 per cent of a standard run, respectively. Cell 2 had processed 54 runs, Cell 3, 85 runs. In an attempt to prevent a recurrence, cleanouts are now made whenever the accumulative minus discrepancy between the Isolation and Purification Buildings is between 300 and 400 grams for a given cell. Subsequent recoveries have been between 15 and 125 per cent.

Reprocessing plutonium in cleanouts 103 and 109 in the Isolation Building was attempted. The first run, RW-1, Cell 2, included a first cycle peroxide and a second cycle oxalate precipitation. The loss to recycle was 7.4 per cent. The second run, RW-2, Cell 3, was to be processed identically but the plutonium settled poorly as a peroxide. The 234-5 Development group investigated this difficulty and concluded that oxalic acid probably was erroneously added to the P-1 tank.

This belief is supported by the fact that difficulty was encountered in dissolving the precipitate. The final dissolution was accomplished by the addition of potassium permanganate and heating.

High Aluminum in Run Number S-2-9-L-2 - A processing irregularity at S Plant caused run number S-2-9-L-2 to contain approximately 0.9 grams of aluminum per gram of plutonium. This run was already processing when the fact was realized. The washing was increased from 7.5 Kg to 15.0 Kg of oxalic-nitric wash solution. There was less than one part per million of aluminum reported in batch number X-16 reduction button from this run in the Purification Building. The normal range is from less than one to two parts per million. The recycle loss was 22.5 per cent, however.

Americium in S Plant Runs - The laboratory demonstrated that the amount of Am^{241} in S Plant P-1 solution was approximately 0.3 per cent of the alpha activity. The study was suggested to determine the extent that this isotope might influence accountability in the plutonium (IV) oxalate-filter boat process.

Filter Stick - Cell 4 - The 48.5 sq. in. Type D (65 micron) sintered stainless steel filter stick was installed on September 11, 1952, in Cell 4 of the 231 Building currently processing all T and B Plant material through two peroxide and one oxalate strike. The filter was fitted to the end of the original decant line with purge air provided for separation of the mother liquor and subsequent washes from the precipitate. Sixteen runs (T-12-09-44 through F-12-00-RWZ-6) show an average recycle value of 8.7 per cent of a standard run as compared to 6 per cent of a standard run using the decanting procedure. The filtering time for the solution to pass the

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filter on the above runs averaged between 5 - 10 minutes, which is equivalent to a 40 - 50 minute reduction in time cycle. Material for a Type F (20 micron) sintered stainless has been ordered.

Purification and Fabrication Building Process Assistance

RG Line

Task III Reduction - Reduction yields in the RG Line averaged 98.2 per cent during September. This yield figure is based on a conversion of powder to metal. The further breakdown shows that the RG Line yields containing recycle averaged 97.8 per cent and those containing no recycle averaged 99 per cent for the month of September. The table below gives a resumé of the Task III operations. RM Line information is included in this table for comparison.

Task III Reduction Yields RG and RM Lines

	RM(2)	RG(3)	RG with Recycle	RG w/o Recycle
Reductions	81	112	78	34
Per Cent Yield(1)	91.0	98.2	97.8	99.0
Yield Range % of Runs				
>100 per cent	13.6	9.8	7.7	14.7
95 - 100	38.3	84.8	85.9	82.4
90 - 94.9	23.5	2.7	2.5	2.9
75 - 89.9	12.3	1.8	2.5	0
<75	12.3	.9	1.3	0

(1) Per cent yield = $\frac{\text{Button wt. - (70-58 + Recycle)}}{\text{Calculated Pu in } PuF_4} \times 100$

(2) RMX-12-8-60 to RMX-12-9 and 56, inclusive.

(3) Y-12-8-68 to Y-12-9-69, inclusive.

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RM Line

Task II (Hydrofluorination) - Rehydrofluorination was required on 35.1 per cent of the batches processed in Task II during the month of September. This compares with the rehydrofluorination rate of 35.8 per cent for August. The tabulation of percentage of rehydrofluorinations required at each furnace is given below. In this tabulation, the total number of runs processed in each furnace is considered 100 per cent. The leakage of air around the doors of the Task II furnaces is undoubtedly contributing to the high rate of rehydrofluorinations required, however, the extent of this effect has not yet been determined.

Per Cent of Runs Rehydrofluorinated

Furnace No.	August	September
2	37.5	57.2
3	30.0	11.8
4	15.0	30.0
5	80.0	71.5
6	30.0	60.0
7	38.9	27.3

Task III (Reduction) - Reduction yields in the RM Line equipment for the month of September averaged 91 per cent. Powder hold-up in the powder and reduction mixture handling equipment precludes an efficient study of factors which affect the yields. The Task III mixer and all auxiliary equipment is being redesigned and rebuilt. Fabrication of the replacement equipment is approximately 40 per cent completed at month's end.

The Task III conveyor is being redesigned to increase the production capacity of Task III by providing for greater freedom of motion of the conveyor. The redesign will eliminate the present interlocks which prevent conveyor travel when any one furnace is in operation.

Equipment modifications required for Production Test 235-8 were nearing completion at month's end. This Production Test provides for evaluating air displacement from the crucible assembly by admitting argon under pressure.

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Production Tests

Production Test 235-7 was 62 per cent complete at month's end. In this Production Test, high vacuum is replaced by nitrogen purge prior to the coating operation. Although a higher failure rate was obtained with the test conditions the failures appear chargeable to mechanical problems rather than process deficiencies and the failure incidence was declining as the number of test pieces made increased.

Product Recovery

The program for the recovery of product from the 234-5 Building stored liquid wastes was completed with the processing of the final 13 bottles of solution. The conversion to useful form of the 105 grams of plutonium associated with these solutions was accomplished by recycling the material from 12 of the bottles (those high in chloride ion) directly to the F-1 tank in the 224 Building for processing. The remaining solution (containing CCl_4) was treated in the 234-5 Chemical Development Laboratory to place the plutonium in a nitric acid solution prior to processing in the 224 Building.

Skull Dissolver

Following completion of previously recommended modifications, the vessels and instruments associated with the skull dissolution equipment were calibrated and a "cold" operability test was performed wherein mild steel turnings

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were used as a stand-in for plutonium. The test demonstrated that the dry soda-lime scrubber for the removal of the evolved oxides of nitrogen was inappropriate to the system since it removed only a fraction of the NO_2, and the viscous reaction products plugged the scrubber column several times during the run. It is planned to discard the scrubber and vent the off-gases, through a trap, directly to the E-4 system.

Quality Control

Two assemblies were rejected because the tertiary gap failed to meet specifications. Analysis of the problem indicated the distance of the tool generating the parting plane from the center line was too large; reduction of this distance by 2 mils corrected the situation.

All production satisfied the ionization check.

Electrolytic inspection revealed two leaking pieces. Of these, one was surface contamination which was removed and the piece accepted.

All pieces were sound on radiographic inspection.

Miscellaneous

HF Concentration in E-4 Ventilation Air - The concentration of hydrofluoric acid in the 234-5 Building E-4 ventilation air was measured in a series of five tests by passing an aliquot of the gas stream through a water scrubber. The values ranged from two to five micrograms per cubic foot of air and indicated that, on the basis of the available weatherability data, the HF concentration is too high (by a factor of approximately 10) to permit the extended exposure of filter media containing fine glass fibers.

234-5 Process Development

Purification

Plutonium Peroxide Precipitations from Isolation Building Cleanout Solution - Laboratory studies demonstrated that cleanout solutions obtained by a potassium permanganate - nitric acid flush of Isolation Building cells may be processed satisfactorily in the Isolation Building by a normal plutonium peroxide strike

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and that the difficulties experienced in the plant with such a solution (August 29 to September 2) were probably due to the accidental substitution of oxalic acid for hydrogen peroxide.

Plutonium Oxalate

Precipitation of Plutonium (IV) Oxalate - Contrary to early studies which indicated an optimum free oxalic acid concentration of 0.04 M in plutonium (IV) oxalate slurries, recent laboratory-scale precipitations of plutonium (IV) oxalate under proposed Task I conditions (50-75 g Pu/l, 2-4.5 g H+/l, final slurry digestion temperature of less than 10°C.) have shown that minimum plutonium solubilities are to be expected if enough oxalic acid is added to be equivalent to the plutonium and to provide, in addition, 0.07 to 0.01 M $H_2C_2O_4$ in the supernatant. The markedly increased solubilities which resulted when the oxalate was precipitated from solutions containing 50,000 parts of chromium or iron per million parts of plutonium with the additions of only 0.05 M excess oxalic acid, were not evidenced when the oxalic acid excess was 0.1 M.

Chromium increased plutonium solubilities twenty-fold, iron increased them thirteen-fold, and aluminum had no effect for plutonium (IV) oxalate strikes made with 0.05 molar excess oxalic acid and with 50,000 parts of impurity per million parts of plutonium present in sixty gram per liter starting solution. Waste losses were normal when enough oxalic acid was used to convert all of the plutonium to plus four oxalate, all of the impurity to plus three oxalate, and to make the final solution 0.05 molar in oxalic acid.

Drying and Thermal Decomposition of Plutonium (II) and (IV) Oxalates - Current interest in alternate methods of handling plutonium (IV) oxalate in Task I - II operations (filtration, drying, and hydrofluorination in a platinum lined filter boat vs. filtration and at least limited drying in a filter of stainless steel or other material which is not necessarily HF-resistant, followed by transfer to a solid bottom platinum boat for hydrofluorination) has lead to experiments to determine optimum methods of drying oxalate filter cakes. Qualitatively, in one to two hours at 150°C., a fifteen gram sample of plutonium as the (IV) oxalate was found to dry to a rather hard cake which cracked away from the filter around the walls. This could be dumped from the filter upon striking the latter a hard blow, leaving a crust adhering to the sides. The powder obtained by subsequent decomposition for one hour at 300°C. was transferred readily, with less than one per cent adhering to the filter boat.

Dry Chemistry and Reduction

Hydrofluorination - Cake Depth and Hydrofluorination Rates

Preliminary experiments attempting to relate reaction rates with powder bed

depths, for diffusional type hydrofluorination of a powder prepared by decomposition of plutonium (IV) oxalate at 300°C., have given indication of a reaction which is first order with respect to the unreacted powder. The reaction rate was approximately inversely proportional to the powder bed depth.

Recuplex

Slag and Crucible Dissolution - A 30 per cent recovery of the book value of the plutonium in the reduction residue from Run No. Y-12-5-1 was realized when the residue (an A-331 crucible) was dissolved in a solution to which had been added 350 grams of iron, and 1/16 mole Al^{+3} per mole of fluoride It is not yet known whether the apparently low recovery was caused by a faulty book value or by complexing the fluoride ion too tightly. No appreciable amount of plutonium was recovered from a nitric acid-HF cleanout following the run. The silica residue has not yet been analyzed for its plutonium content. The average recovery of plutonium from ton lots of production plant slag and crucible processed in the laboratory is 93 per cent.

The absence of iodate ion from slag and crucible solutions, which have not been given any special iodate-removal treatment, has been further verified by a newly modified analytical procedure.

The procedure, useful for iodate determinations in solutions containing high concentrations of nitric acid and iron, requires large sample dilution and the use of fluoride ion as an iron-complexing agent. The method has been recommended to the control laboratory.

Mini Unit Operations

In three experimental runs with the Mini units, operating on a synthetic feed (CAF composition: 0.3 g Pu/l, 1.3 M ANN, 4 M HNO_3) in simulation of Recuplex Flowsheet No. 5 (reflux type), no emulsification in the CC unit was found with the use of either 0.1 M or 0.2 M H_2SO_4 as the stripping (CCX) solution. Organic (CCW) waste losses were very low (0.11 - 1.4 x 10^{-3} g Pu/l) soon after start-up, but the aqueous (CAW) waste losses were extremely variable and quite high (1.2 to 130 x 10^{-3} g Pu/l).

It is not yet known whether the high plutonium losses to the CAW were caused by mechanical difficulties with the units themselves, or by unfavorable E_a° values in the extraction unit. An E_a° value of approximately one, measured for a batch contacting of a sample of CAW, points to the latter possibility.

Use of the dilute sulfuric acid caused corrosion of the stainless steel balls in the check values of the Milton Roy Mini Pump, but the pump body was apparently unaffected.

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Solvent Recovery

Plutonium present in TBP-CCl_4 solvent as the unstrippable, DBP-Pu complex was removed more conveniently by washing with 0.5 M oxalic acid than with basic solutions, since the latter precipitated plutonium and caused troublesome emulsions. The oxalic acid wash in 1:10 volume ratio removed essentially 100 per cent of the plutonium from the used solvent upon stirring for fifteen minutes. A subsequent wash with 5 per cent Na_2CO_3, to remove TBP decomposition products from the solvent, was made without difficulty. Use of the oxalate treatment will permit simple recycle of the plutonium containing, oxalic wash solution: in Recuplex, to the slag and crucible dissolver; in other solvent extraction processes, to one of the aqueous feed streams after oxidation of the oxalic acid with permanganate.

Recuplex Capacity vs. Separations Plants Operating Schemes

A survey of the Recuplex facility capacity with all likely combinations of separations plants in operation at maximum predictable rates was made. The details of the conditions examined and the conclusions for each separate case are documented in HW-25651 with the general conclusion that Recuplex will be adequate for all envisioned conditions.

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SOLVENT STUDIES

Hydrolysis studies of organo-phosphorus compounds have indicated that (1) alkoxy groups are much more readily hydrolyzed than alkyl groups, (2) smaller alkoxy groups such as ethoxy appear to be more easily removed than larger ones, and (3) the alkoxy group on phosphinates or phosphonates is more easily removed than the same group on a phosphate. The tests were carried out at 120°C. At ordinary temperatures, the compounds are quite stable.

Four samples of hexone given a six day irradiation in the pile basin have been examined. Little change in composition is indicated for pure dry hexone and for water-saturated hexone, although the non-volatile residue was increased. In the case of the samples containing 0.3 M nitric acid and 0.2 M uranyl nitrate, respectively, the non-volatile residue was much higher and considerable chemical change was indicated by the absorption spectra. A caustic extractable species and an inextractable species were present in large amounts. These impurities appear to be identical to these found in the Redox plant hexone samples.

LIQUID DISPERSIONS

Fundamental studies on dispersing time and disengaging time have been started with the emphasis on development of reproducible techniques. The "vibrational" disengaging test has been used to measure the temperature dependence of both dispersing time and disengaging time. Increased temperature markedly decreases both the dispersion time and disengaging time.

HEAD-END SCAVENGING OF RUTHENIUM ACTIVITY

Several Head-End experiments were carried out in the search for a ruthenium scavenger less expensive than BAL (2,3-dimercaptopropanol-1). The compounds β-mercaptopropionic and 2-mercaptoethanol were compared to BAL in experiments at about one-tenth Hanford activity level using 0.01 M $AgNO_3$ as the precipitant. Both direct and reverse strikes were employed and the effect of digestion, both at room temperature and 50°C., noted. The β-mercaptopropionic acid gave results which compared favorably with BAL, the former giving a ruthenium D.F. in one experiment of 170 vs. 108 for BAL. The results of 2-mercaptoethanol were much inferior (maximum D.F. of 4).

One experiment was performed with BAL in full strength dissolver solution to test radiation stability. Although the solution became black upon addition of the BAL and was allowed to stand over night prior to addition of the silver nitrate, decontamination did not appear to suffer. This experiment will be repeated with both BAL and β-mercaptopropionic acid as soon as more dissolver solution can be obtained.

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SOLVENT EXTRACTION OF URANIUM AND PLUTONIUM FROM HYDROCHLORIC ACID SOLUTIONS

A hydrochloric acid solution containing uranium, plutonium, and fission products was obtained by dissolution of a wafer cut from an irradiated slug which had been stored approximately three years since discharged from the pile. Single batch contactings of portions of this solution with 30 per cent TBP-CCl_4 indicated favorable extraction coefficients for uranium at 6-10 M HCl. Plutonium (IV), however, was not appreciable extracted at acidities below 8 M HCl. Fission product extraction, with the exception of niobium, was of the same order of magnitude as in extractions from nitric acid dissolver solutions

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scrub) section for improved zirconium and niobium scrubbing. The improvement here was less marked than with the high acid feed, a factor of about five fold for beta and two fold for gamma. Similar results were obtained with a simulated two year old metal waste (prepared by dissolution of two year old slug wafer). Since zirconium and niobium were the most poorly decontaminated, it is believed that back-mixing of the high acid scrub reduced the effectiveness of the water scrub section.

HYDROGEN PEROXIDE FEED PRETREATMENT

Mini runs were carried out with the two year old waste to determine the effect of feed pretreatment on decontamination in the Metal Recovery system. It was found that heating the feed with hydrogen peroxide (0.3 M) improved the subsequent beta and gamma decontamination by a factor of three in both cases, probably due to decreased ruthenium extraction. A nitrite pretreatment proposed by Oak Ridge National Laboratory for treatment of Purex second uranium cycle feed had no significant effect. Study of the peroxide treatment will be extended to current metal waste to high acid conditions, and to Purex and Redox systems.

RESIN COLUMN STUDIES

Dowex-50W was washed three times with cold ethyl alcohol, then twice using ethyl alcohol at ca. 55°C. as an attempt to remove monomeric resin species. As reported last month, the gassing during plutonium elution using 6.0 M HNO_3-0.4 M NH_2SO_3H decreased to one-third that normally found with untreated resin. However, a second run using the same resin showed the effect of the alcohol wash to be only temporary as the resin gassed during elution to about the same extent as with untreated resin. A third run was carried out after this same resin had been again washed with three volume changes of cold ethyl alcohol. The gassing of the resin bed during the plutonium elution appeared to be about the same as is usually found in runs using untreated resin. Thus, this treatment does not appear promising as a means to permanently reduce gassing during the elution cycle.

RUTHENIUM DECONTAMINATION DURING UNH CALCINATION

Analyses for radioactive ruthenium have been made on samples of Redox product uranium before and after calcination in the UO_3 plant. A ruthenium decontamination of about 10 is observed during the conversion of UNH to UO_3.

UO_3 PURITIES

Sodium, aluminum, and iron distributions were determined for both Redox and TBP scrub systems. The measurements indicate that in the Redox scrub system E_a^s(Na) was 0.02-0.03 with 4g/l Na^+ in the aqueous phase and 0.002-0.004 with

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49g/l Na^+ in the aqueous phase; $E_a^\circ(Al)$ was 0.0005-0.0008 with 49g/l Al^{+3} in the aqueous phase; $E_a^\circ(Fe^{++})$ was $\geq$0.0015 and $E_a^\circ(Fe^{+++})$ was $<$0.0007 with 2.8g/l Fe in the aqueous phase. From these data and assuming no entrainment, the amount of these impurities to be expected in the Redox UO_3 product are about 1000, 200, and 40 ppm of UO_3 for sodium, aluminum, and iron, respectively, though the sodium values must be tempered in light of the uncertainties in the analytical data. It is to be noted that $E_a^\circ(Na)$ varies considerably with ion concentration, suggesting that contamination of samples may be occurring. If so, these sodium values can be considered only as upper limits. Plans to check some of these distribution ratios with radiosodium are being made.

In the TBP Process, E_a° values determined for the scrub section for sodium, aluminum, and iron were ca. 0.003, 0.0001, and $<$0.0003, respectively. According to these data, and assuming that there is no entrainment and that the distribution coefficient is constant in the extraction and scrub sections, the sodium in the RAU stream leaving the RA column should be $<$100 ppm of UO_3 using one scrub stage and $<$10 ppm of UO_3 using two scrub stages. The same uncertainties in these sodium values exist here as in the Redox system. The iron content of the RAU should be $<$30 ppm.

Survey experiments indicated that ion exchange techniques hold little promise for the removal of small amounts of sodium, iron, and aluminum from product uranium streams such as Redox 3EU and Metal Recovery RCU. Very low distribution ratios for these elements between Dowex-50 and concentrated Redox 3EU were obtained in batch contact studies. Little or no separation of these elements from uranium was obtained in column runs involving both cation and anion exchangers. Column tests were made on both concentrated and diluted 3EU.

ION EXCHANGE CLEAN-UP OF PUREX HCU DISTILLATES

In the ion exchange treatment of Purex HCU distillate to remove plutonium, 20,000 column volumes of synthetic distillate (18 mg/l UNH, 600 d/m/ml Pu, 0.01 M HNO_3) have been passed through an hydrogen-form Dowex-50 column at a flow rate of 12 ml/min/cm^2. Uranium broke through at about 11,000 column volumes while plutonium in the effluent is still at background (ca. 2 d/m/ml). Thus, a column of minimum size to handle the daily flow of the distillate would decontaminate the stream for several hundred days.

REMOVAL OF RADIOIODINE FROM PUREX SOLVENT

In the Purex process, iodine is extracted into the organic phase, is only partially removed in subsequent stripping steps, and is only partially removed by the presently proposed organic washing system. When processing

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short-cooled uranium, sufficient active iodine may thus be carried into the solvent clean-up section to present a serious radiation hazard. Modifications of the solvent clean-up procedure to give better iodine decontamination are being studied.

Significantly, both iodide and iodine were found to be soluble in a TBP-Amsco phase while iodate was not. Removal of iodine from the organic phase was more rapid when scrubbing with NaOH solution than with Na_2CO_3 solution; perhaps indicating that the rate of iodine disproportionation is controlling since it should increase with increasing pH. Since iodide is soluble in the organic phase, it appears that little would be gained by scrubbing with reducing aqueous solutions. Preliminary attempts to remove active iodine from the organic phase by scrubbing with aqueous carbonate solutions containing oxidizing agents, hydroxylamine and periodate, have not been completely successful.

REDOX PLANT ASSISTANCE

Plant Performance

The Redox Plant operated at 85.1 per cent time efficiency (IAF Basis) and averaged 3.72 tons of uranium per operating day during the month. Following a planned shutdown for Labor Day and a flush of the extraction columns, production was re-established using aluminum nitrate solution from which the Tygon tank liner contaminants had been removed by Darco treatment. The remainder of the month was utilized for evaluating flowsheet changes and plant performance at high production rates. The following is an overall summary of plant production performance:

	Approximate
Tons of Uranium Shipped	94.9
Plutonium Processed (Batch Equivalents)	158.4*
Per Cent Uranium to Waste	1.25
Per Cent Plutonium to Waste	1.11

*Includes approximately 13 batch equivalents from August production, as a result of changing the report basis.

Operating Performance

Redox operations were resumed on September 3, following a planned holiday shutdown and flush of the solvent extraction columns. Production continued at nominal 3.25 ton/day rates until September 11, at which time the first extraction cycle was shut down for a water flush of IA Column. During this period of operation, two salt waste batches with high plutonium content and

approximately 1.6 tons of uranium containing excessive aluminum were reworked without incident.

Production was re-established on September 12 at nominal 4.0 ton/day rates and continued until September 18, at which time a planned shutdown was made to revise the venting systems between the Condensate Stripper Condenser (D-6) and the Organic Still (G-3). IA Column was also water flushed during this shutdown. Operation was restored at 4.0 tons/day on September 19, and parallel operation of IA and IS Columns started on September 25. At month end, the plant is operating at a 4.5 ton/day rate.

Several special tests have been made in conjunction with personnel of the Process Unit, Manufacturing Department. These included tests to determine: (a) capacity of Cendensate Stripper Condenser (D-6), (b) capacity of Organic Still (G-3) under present operating conditions and potential capacity of pot coil and other components, and (c) cause of "cycling" in the IA, 2D, and 3D Columns and a feasible remedy to permit smooth operation.

The Oxidizer (H-4) agitator began to use excessive gland seal water on September 23, and although it has not completely failed, oxidation procedures are changed so that sparging only will be used. The IAF Make-Up Tank (H-1) agitator began to use excessive gland seal water on September 25.

Activity released to the atmosphere through the ventilation stack averaged approximately 1.5 curies of I^{131} per day and 0.03 curies of Ru per day. Rejuvenation of the B-3 Silver Reactor was completed. However, the unit is not ready for use because only 5 of the 9 heaters are operable, the remaining heaters being grounded due to moisture.

Activity entrained primarily from the Waste Storage Tank 110 has been appreciable. Water sprays installed on the two "air" condensers have reduced the amount of vapor leaving the condensers, but because of poor water distribution, they are not adequate. Since the discharge of radioactive vapors from Building 241-S, Tank 110 (first tank in first cascade) has been excessive, the neutralized salt wastes were diverted to Tank 107 (first tank in second cascade) on August 25. Tank 112 (third tank in first cascade) still has capacity for 300,000 gallons of waste. Additional condensing capacity (flooded condenser) is to be incorporated on Tank 107 soon.

Process Performance

The following tables summarize decontamination and waste loss values by solvent extraction cycle for the month of September.

Period covering 8/25/52 through 8/29/52; nominal production rate of 3.75 tons/day, processing 80-day "cooled" metal.

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	Decontamination Factors (dF)				% to Waste	
	U		Pu			
Cycle	Gamma	Beta	Gamma	Beta	U	Pu
1st	3.5	3.8	3.3	4.3	0.4	0.6
2nd U	2.2	2.1	---	---	0.02	0.05
3rd U	0.6	0.4	---	---	0.34	---
2nd Pu	---	---	2.6	2.0	---	0.17
3rd Pu	---	---	0.9	0.8	---	0.05
Overall	6.3	6.3	6.8	7.1	0.76	0.87

Period covering 9/13/52 through 9/17/52; nominal production rate of 4.0 tons/day, processing 80-day "cooled" metal.

	U		Pu		% to Waste	
Cycle	Gamma	Beta	Gamma	Beta	U	Pu
1st	3.6	3.9	3.8	4.4	0.45	0.49
2nd U	2.2	2.1	---	---	0.01	0.10
3rd U	0.8	0.6	---	---	0.02	---
2nd Pu	---	---	2.2	1.9	---	0.24
3rd Pu	---	---	0.9	0.7	---	0.04
Overall	6.6	6.6	6.9	7.0	0.48	0.87

Feed Preparation - The dissolvers were charged during the month with 23 4.4 ton charges of uranium, with an average pile exposure of 599 MWD/T. Six 4.4 ton charges per week have usually been made, permitting a sustained production rate of 3.75 tons/day. Because of the higher current production rates, the charging schedule has been revised to provide six 4.95 ton charges per week, thus permitting a sustained production rate of 4.25 tons/day. The first two 4.95 ton charges were made on September 24.

The average age of the 33 IAF batches prepared was 78 days. All of these batches have been oxidized with 0.15 M $Na_2Cr_2O_7.2H_2O$ only. Centrifugation of batches from S-2-8-HE-3 through S-2-9-HE-10 was performed at 840 rpm and 60 lb./min. However, it is believed that centrifugation at this low speed may be passing solids into the IAF which are aggravating the IA Column instability. Therefore, IAF batches subsequent to S-2-9-HE-10 have been centrifuged at 1740 rpm and 80-90 lb./min.

Uranium Extraction and Decontamination - In general, nominal conditions of the Oak Ridge National Laboratory June, 1949 (acid deficient) Flowsheet (Document HW-22834) were employed throughout the uranium solvent extraction cycles.

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Several minor changes have been made, however, and the operating flowsheet currently in use is summarized below:

1AF:1AS:1AX:1BX:1BS:1CX = 1.0:1.1:4.2:0.3:1.5:1.8 with 1BS HNO_3 concentration of 0.075 M.

2DF:2DS:2DX:2EX = 1.0:1.0:4.0:1.4 with 2DS modified to 2.0 M ANN, 0.2 M HNO_3-deficient, no Fe II.

3DF:3DS:3DX:3EX = 1.0:1.0:4.0:1.4 with 3DS modified to 2.0 M ANN, neutral, no Fe II.

During the month, the 1BS/1BX flow ratio was changed to flowsheet flow ratio with both flow rates equivalent to 75 per cent flowsheet. The 1BS HNO_3 concentration was increased to 0.075 M again because of continued neutral 1BP solution.

As a result of a plugged, high pressure interface dip tube in the 3D Column, approximately 1.6 tons of uranium were contaminated with ANN from an overflow of 3D Column interface. The uranium was segregated (E-12 Batch 3-2-9-6) and reworked for purification. A spectrochemical analysis of the succeeding batch was analyzed to contain only 200 parts Al per million parts U.

Plutonium Extraction and Decontamination - Nominal conditions (except flow ratios) of the HW #4 Flowsheet were maintained for the Plutonium Cycle operation during the month. The current operating flowsheet ratios are summarized below (1AF = 1.0):

2AF:2AS:2AX:2BX = 0.32:0.60:0.66:0.12
3AF:3AS:3AX:3BX = 0.30:0.60:0.58:0.12

As a result of the 25 per cent drop in the 1BX:1AF flow ratio, the 2AF:1AF and 3AF:1AF ratios were decreased proportionately. The 2AS:2AF and 3AS:3AF ratios were twice the HW #4 Flowsheet ratios at nominal rates of 4 tons/day or less. The 2AX:2AF and 3AX:3AF ratios were increased 10 per cent to prevent recurrence of high plutonium losses due to low acid concentrations in feed streams; in addition, when 3AF HNO_3 concentration drops to a minimum of 0.07 lb. HNO_3/gallon, the 2AX and 3AX are increased another 10 per cent temporarily.

During the start-up of the 3A Column on September 2, the 3A interface was inadvertently overflowed to the 3B Column, resulting in a high ANN concentration (12.5 g. ANN/g.Pu) in PR Batch S-2-9-L-2. This batch was processed through 231 Building with extra washing of the oxalate precipitate to remove aluminum. The recycle from this batch was 22.5 per cent, whereas the normal recycle is approximately 1-3 per cent. However, good separation was achieved since the spectrochemical analysis of the "button" from this batch showed less than 1 ppm.

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ANN Clean-Up

"Acid Deficiency" - Analytical methods for determining acid deficiency quantitatively have been mutually accepted by the vendor and consumer's anaytical control personnel. Clarification of the sample prior to analysis is the prime requisite, and good checks have been obtained throughout this month. Shipment of "acid deficient" ANN is being delayed until the Tygon contaminated ANN inventory is depleted.

Darco Treatment of Tygon Contaminated ANN - Darco treatment and filtration of the contaminated ANN has continued throughout the month. The following conditions have been used for treatment:

Batch size - approximately 3700 gallons 72 per cent ANN.

Temperature - 40° - 50°C.

Filter Aid - 0.02 lb. Dicalite 4200/gallon ANN

Adsorbent - 0.09 lb. Darco G-60/gallon ANN

Filtering Rate - 20-35 gallons/minute

Time Cycle - approximately 4 hours/batch

Of the initial 190,000 gallons of 72 per cent ANN which required treatment, only 16,000 gallons are untreated. Use of the treated ANN in the plant was direct without blending with fresh ANN.

Solvent Treatment

The plant solvent recovery system, IO Column and Organic Distillation Column (G-3), operated satisfactorily with water as a scrub solution in both units. Caustic washing on a bi-weekly basis of three consecutive batches has continued.

Solvent losses have averaged 340 gallons per day (approximately 1.1 per cent of throughput). The inventory is currently 85 per cent Shell Oil Company and 15 per cent Carbide and Carbon Corporation origin.

On September 19, the Condensate Stripper Condenser (D-6) drain line to the Organic Still (G-3) was vented properly for the first time. Previous to this time, the condenser has apparently been flooded. As a result of this revision stripped hexone is being recycled to G-3, and data to date indicate daily solvent losses to be approximately 0.7 per cent of the plant throughput. In addition, the Condenser Vent System vacuum has been increased

approximately 3 inches W.G. at G-3. This increased vacuum plus at least 7 inches W.G. increased vacuum from regulation of the vent jet controls extends G-3 capacity beyond Phase I rates.

Waste Rework

The IS Column was operated (in parallel with IA, IB, IC Columns operating at 3.0 tons/day and flowsheet ratios) at maximum rate (ISF = 2.5 gal./min.) for 25 hours on September 6 and 7. The ISF was composed of Batches S-2-9-PW-11 and 12, which contained 34 units of plutonium resulting from high 2AW and 3AW losses. The waste batches were diluted with water to 2.0 M ANN and processed with the existing 0.03 M Cr^{+6} and 2 per cent Pu IV. When ISW analyses indicated that plutonium recovery was about 73 per cent, the ISX was increased 20 per cent which increased plutonium recovery to 85 per cent. Overall recovery was 81 per cent. Satisfactory decontamination of ISF was achieved.

Rotating Equipment

No agitator or pump failures occurred during the month. Agitators A-H-4 and A-H-1, both 5 HP units, are continuing to use excessive amounts (approximately 1000 cc/hr.) of seal water.

Instrumentation

Observations of the IA, 2D, and 3D Column operation for determination of the cause of cycling interface control has been made. Operation with the IAW on manual control did not improve the cycling conditions, indicating that the aqueous effluent control valves are not the cause of cycling interface control. The most probable cause of cycling interface control is that air is trapped in the organic feed lines causing the organic extractant to flow to the columns in surges.

Control valves and rotameters which will allow production rates of 1 to 10 ton U/day have been ordered. The control valves should be received about November 14, 1952, and the rotameters are scheduled for shipment on October 28, 1952.

Process Chemistry

A laboratory experiment is being planned to duplicate as closely as possible the conditions of Redox H-4 (Oxidizer) operation. A stainless steel oxidizer pot designed to accommodate 20 ml of dissolver solution is under construction. (Scale down factor is about 3 x 10^5 with respect to volume.) The pot is surrounded by a coil of copper tubing for hot water circulation, and the cover is fitted for sparge air, off gas, sample tube, level indicating electrode, and for admitting and removing dissolver solution.

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The off gas passes through three radio-ruthenium traps containing reducing agent. The sampling apparatus comprises an optical method of permanganate analysis developed by Analytical Research.

Several runs are to be made to study the reduction of permanganate occurring during the 4 hour oxidation sparge operation in the plant, in an attempt to isolate and identify the effects of time, temperature, radiation, surface, and surface conditioning. Previous radiation reduction experimental results do not agree with those obtained at Knolls Atomic Power Laboratory, and confirmation or refutation is desired. The dissolver solution will be obtained from dissolution of an irradiated slug.

Studies have been continued using the 3/8 inch 12 stage Mini mixer-settler as a 3D Column, testing proposed modifications to the Redox flowsheet intended to reduce the degree of metal contamination in the recovered product. One run was made according to the flowsheet proposed for the new 3D Column to be installed and tested at the end of this month. This flowsheet differs slightly from that used in previously reported runs, in the following respects: (a) increased extractant flow giving 3DF:3DX = 1:5.5 instead of 1:4, (b) 0.04 M HNO_3 in the top of the column instead of H_2O, (c) neutral 3DX instead of 0.008 M HNO_3 in 3DX, and (d) no iron put into the system. Plant 2DF made 0.2 M acid deficient with NaOH was used as feed and a neutral 2.2 M ANN solution was used as scrub. Both feed and scrub were introduced into stirring chamber 5. The run conditions were identical with those of the previous runs, viz. (1) stirrer speed of 2000 rpm, (2) throughput rate of 1.5 ml./min. (sum of both phases), and (3) introduction of feed and scrub into stirring chamber 5. A summary of data comparing the results of the two different flowsheets, is given in the following table:

MINI REDOX 3D RUNS - COMPARISON OF FLOWSHEETS

Run Conditions	Na (ppmp U)	Fe (ppmp U)	Al (ppmp U)	AT,D.F.	B,D.F.	G,D.F.	U (g/l)
1) 3DF:3DX = 1:5.5 2) Scrub and Feed in Stage 5 3) 3DF -0.2M HNO_3 (NaOH) 4) 0.04M HNO_3 in Stage 1 5) Neutral 3DS = 2.2M ANN	33	1	4	44	210	200	83

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MINI REDOX 3D RUNS - COMPARISON OF FLOWSHEETS (continued)

Run Conditions	Na (ppmp U)	Fe (ppmp U)	Al (ppmp U)	AT,D.F.	B,D.F.	G,D.F.	U (g/l)
1) 3DF:3DX = 1:4 2) Scrub and Feed in Stage 5 3) 3DF -0.17M HNO_3 (NaOH) 4) H_2O in Stage 1 5) Neutral 3DS = 2.2M ANN	65	5	2	23	90	85	112

NOTES: (1) Analyses are average values for from 2 to 5 end stream samples.
(2) Total throughput rate = 1.5 ml./min., sum of both phases.

In addition to the flowsheet test run, an attempt was made to determine flooding capacity to check the possible deleterious effect of the low phase density difference existing at the top of the column. Under the modified flowsheet conditions, the throughput rate (at constant stirrer speed of 2000 rpm) was increased from the normal 1.5 ml./min. to 54 ml./min., sum of both phases, which represents the practical upper limit of the feed system. Flooding did not occur, but approximately 0.5 volume per cent entrainment of the aqueous in the 3DU was noted and the 3DW uranium waste loss reached 20 per cent at this high rate (compared with approximately 1.0 per cent at the normal rate).

Laboratory experiments distilling Redox Plant hexone from a simple pot still (instead of the present plant G-3 bubble-plate tower) have been completed, and the following conclusions have been reached:

1. Satisfactory hexone (based on solvent extraction characteristics) was produced by the use of either H_2O or NaOH solution in the still.

2. Beta and gamma decontamination were excellent - reaching the lower limit of detection in all cases.

3. The use of NaOH rather than H_2O gave slightly better decontamination from methyl isopropyldiketone and mesityl oxide than H_2O, but produced a compound having reducing characteristics similar to MIBC (methyl isobutyl carbinol).

Metal Contamination in Uranium Product - Analysis of cold process chemicals entering the Redox Process has brought to light no sources of serious contamination, other than 300-400 parts of Na per million parts of ANN in the

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72 per cent ANN solution received from General Chemical Company. The 60 per cent HNO_3 was found to contain 10 ppm Na, Fe, Cr, and Ni.

A series of samples taken from the Redox Plant 3DU stream, has shown that entrainment of aqueous phase is occurring to the extent of approximately 0.01 volume per cent. The analytical results, however, have been erratic, and doubt has been cast on their validity, probably necessitating an entirely new approach to the problem. The 3DU analyses, before and after centrifuging to remove the entrained aqueous phase, have consistently shown approximately 2000 parts of Al and 500 to 1000 parts of Na per million parts of uranium, with no apparent effect of centrifugation being noted.

A series of E-12 samples and samples of the UO_3 produced from this E-12 solution were analyzed for Na, Fe, Cr, Ni, and Al. The only significant trend noted was an increase in the iron content from approximately 15 ppm. in the E-12 to approximately 150 ppm. in the UO_3. The others remained essentially constant at 500 ppm. Na, 200 ppm. Al, <1 ppm. Cr. and <10 ppm. Ni.

URANIUM RECOVERY PLANT ASSISTANCE

241-U Tank Farm Operations

During the month of September, tank farm operations consisted of intermittent sluicing of the 101-U tank, visual inspection of the sludge, photographing of the sludge, and continued experimentation with spraying techniques for mist removal. Blending operations have been discontinued since August 2, due to the lack of storage space.

Mist removal in the underground waste tanks by means of water spray nozzles has brought forth the following facts:

a. Best visibility is attained by spraying the tank until its temperature is less than 30°C. (Tank temperature is normally about 35°C.)

b. Visibility at a tank temperature of 30°C. is sufficient to evaluate results.

c. Spraying the tank with steam (in order to reduce the amount of water added) produced no perceptible improvement in visibility.

d. It is estimated that approximately 500 to 1000 gallons of water are added during the 20 to 30 minute spraying period required to produce good visibility. (A water meter is to be installed in the near future.)

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e. A 20 to 30 minute settling period is required after completion of the spraying period.

221-U Plant - TBP Extraction Process

After refabrication of the RA Column jumpers for remote operation and lengthening the scrub sections from 3.3 ft. to 6 ft., the RAW uranium losses which had been demonstrated in the 0.5 to 2 per cent range, returned to on the order of 10 to 30 per cent. Test runs in these plant columns supplemented by development studies in 321 Building indicate that this poor extraction is due to gross channeling of the phases in the extraction section - probably caused by flooding which starts in the scrub section. At month end, a new RA Column had been fabricated with the scrub section diameter increased from the original 20 in. to 26 in. to minimize flooding (6 ft. scrub height), and with the extraction section baffled into 4 quadrants to minimize channeling. Initial operation of this new dual diameter column resulted in uranium losses in the general range from 1 to 5 per cent.

224-U Plant - UO_3 Conversion

195,600 lb. of UO_3 (equivalent to 81.4 tons of U) were produced from 422 calcination batches during the period. The average charge per calcination was 464 lb. of UO_3. Pot charges varied from 240 lbs. to 500 lbs. of U or 60 gallons of 60 per cent UNH to 60 gallons of 100 per cent UNH solution.

Of the total production for the period, 150,600 lb. of UO_3 (equivalent to 62.6 tons of U) were produced from 315 calcinations of Redox UNH, concentrated to approximately 100 per cent UNH before addition to the calcining pots. The average charge per calcination was 478 lb. of UO_3.

The remaining 107 calcinations (45,000 lb. of UO_3) were made using RCU produced from 221-U Building "cold" TBP process runs. This RCU was steam stripped in the revised 224-U Building fractionator (TB-4), to remove residual TBP before concentration and calcination.

Employment of Nitric Acid Fractionator TB-4 as a steam stripper to remove TBP from RCU prior to concentration has been successful in greatly alleviating foaming during calcination.

Some foaming has been encountered during calcination of steam stripped RCU, but not enough to prevent calcination under standard operating conditions. Two pot boilovers occurred when processing TBP steam stripped RCU. This was probably caused by TBP contamination of stripped process solution by inadvertent equipment flushing with steam stripper overhead condensate, (containing the TBP which had been steam stripped from RCU).

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Current steam stripped and concentrated TBP RCU from 221-U "cold" runs is causing very little pot foaming, but a hard lumpy moist product results. Attempts to obtain a product with improved unloading characteristics by varying furnace calcination temperature (TC-1 = 500° to 700°C.) have been unsuccessful. The addition of 60 per cent nitric acid to the calcining pots prior to UNH charging appears to produce a product with smaller, softer lumps.

Between September 12 and 19, a capacity test was made using Redox UNH solution concentrated to 100 per cent UNH in the final product concentrator, ED-2. The final concentrator operated without difficulty at a maximum rate of 13.5 tons of U per day with the feed valve limiting and the concentrate dump valve near maximum. In the calcination pots, a maximum processing rate of 10 tons of U per day was obtained for two days with an average rate of 7.5 tons U per day over the period.

An analysis of the operation of the 224-U Building cyclone separator and the X-3 bag filter has been made and recommendations have been made to improve the cyclone efficiency and relieve the loading of the X-3 bag filter by modification of the operating procedure to keep one unloading tube open at all times. Rough calculations indicate that the bag loading has been of the order of 100 lb./hr. with the unloading system closed, and much higher during unloading.

Process Chemistry

Laboratory batch extractions conducted during the month indicated normal uranium distribution in the RA Column system utilizing current plant solutions. In the numerous equilibrations carried out, no emulsification tendency was noted.

To determine the extraction characteristics of the feed currently stored in the 241-WR Diversion Station, a sample was obtained from TK-WR-002. This feed was given one extraction, one scrub, and one strip contact under TBP-HW No. 5 Flowsheet conditions. An aliquot of the RAU obtained from the extraction contact was given two scrub contacts before stripping to determine the effect of an additional scrub stage on decontamination. Laboratory prepared RAX, RAS, and RCX were used. The results indicated beta and gamma dF's (log values), respectively, of 3.5 and 4.3 for one scrub contact, and 3.9 and 4.0 for two scrub contacts.

UO_3 Reactivity - Twenty-six reactivity runs on 104 samples were made during the month. The following tabulation summarizes the UF_4 conversion ratios for 224-U Building regular production lots through Lot 100, vs. Mallinckrodt standard, and vs. the K-25 (Harshaw UO_3) standard for subsequent lots.

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The relative reactivity of the two standards is uncertain at present due to analytical difficulty. However, several of the unknowns have been separately run against the two standards, and in very case but one the conversion ratio vs. the Harshaw control was slightly the higher of the two. This indicates that the Harshaw control is slightly less reactive than the Mallinckrodt standard. This confirms K-25 feed plant experience which shows a feed rate of 260 lb./hr. for Harshaw UO_3 and 300 lb./hr. for Mallinckrodt UO_3 on the same line.

REACTIVITY OF RECENT PRODUCTION LOTS OF UO_3

Lot No.	Conversion Ratio*	Lot No.	Conversion Ratio
79	1.06	101	0.93
80	1.17, 1.20	102	1.10
81	1.03	103	1.14
82	1.10, 1.06	104	1.17
85	0.98	105	1.24
86	1.13	106	0.92
87	0.83, 0.86	107	0.83
88	0.93	108	0.86
89	0.93	109	0.92
90	0.89	110	0.87
91	0.92	111	0.95
92	1.01	112	119
93	0.91	113	0.95
94	0.97		
95	1.06		
96	0.86		
97	0.89		
98	0.75		
99	0.95, 0.97		
100	0.94		

$$\text{* Conversion ratio} = \frac{\%\ UF_4 \text{ in test sample}}{\%\ UF_4 \text{ in control}}$$

Lots 79 through 85 were made from Redox UNH, Lot 86 is 1/4 Redox product and 3/4 TBP product, Lot 87 is 1/8 Redox and 7/8 TBP, Lots 88 through 101 were all produced from Redox UNH, Lots 102 through 105 are TBP product, and Lots 106 through 113 are from Redox UNH. These production breaks correspond with the reactivity breaks apparent in the above table. The high reactivity of Lot 112 is at present unexplained. It appears that in the course of running, a significant increase in reactivity has been realized. Better than half of the lots listed above are in the range of MCW and Harshaw reactivities which show suitable processing in the K-25 feed

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REDOX AND URANIUM RECOVERY DEVELOPMENT

Process Studies

Purex Flowsheet - Addendum No. 2 to the Purex Chemical Flowsheet was issued as HW-25594. This addendum establishes the minimum slug "cooling" period at which adequate process performance is considered assured as ninety days. Tentative metallic impurities specifications for the uranium product have been established as 300 parts per million parts of uranium, with a declared goal of 100 parts per million. Sodium and calcium are particularly undesirable and their sum will be held to 20 ppm total if possible. Provisions for steam stripping any TBP from the 2EU and 2BP streams were requested. Minor changes were made to the waste and organic treatment flowsheets.

Sodium Removal From Redox and TBP Process UNH - Efforts to process UO_3 from the Hanford Works in the reduction and fluorination facilities at Oak Ridge (K-25) have shown that the presence of iron, aluminum, and particularly sodium impairs the capacity of the K-25 feed plant due to mechanical plugging by the impurities, and due to lowered reactivity of the uranium in the hydrofluorination step. Accordingly, efforts are in progress to minimize the concentration of sodium in the uranium recovered by the Redox and Metal Recovery processes.

Two possible flowsheets were developed on paper for use in the third Redox uranium cycle, each designed to scrub the sodium from the uranium in the 3D Column. These flowsheets make use of a water scrub, and introduce the salting agent near the uranium feed point. One of the flowsheets employs acid-deficient salting conditions, while the other employs acidic salting conditions. These flowsheets will be tried in the Redox Plant in the near future.

Two possible flowsheets were also developed for removing the sodium from the uranium recovered by the Uranium Recovery Plant. One of the flowsheets employed a separate RA Scrub Column outside 221-U (Canyon) Building to be run in series with the RA-RC battery. The other flowsheet envisioned a new facility, processing the uranium through Purex-type A and C Columns.

TBP Removal from RCU - The presence of TBP or DBP is known to cause foaming during the calcination of uranyl nitrate. Development data reported elsewhere indicate that TBP may be steam stripped from the RCU stream (about 6 per cent UNH) prior to concentration. Accordingly, an investigation was made to determine if existing equipment could be modified to effect this stripping. As documented in HW-25588, it was concluded that the top section of one of the nitric acid fractionators would probably handle this duty with minor modifications, or that more extensive modifications would probably permit the adaptation of a spare de-entrainment tower from the Metal Recovery feed concentrators.

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Chemical Engineering Development

Uranium Recovery Solvent-Extraction Studies - During the month, 47 uranium recovery solvent-extraction pulse column studies with "cold" (unirradiated) uranium were carried out in the 321 Building pilot plant, to investigate the causes and possible remedies of the high uranium losses from the Uranium Recovery Plant RA Columns. These studies included two RA Column and four RC Column runs in a 16 inch diameter stainless steel pulse column, and 38 RA and three RC Column runs in 3 inch diameter glass pulse columns. The highlights of the new findings are as follows:

1. The flooding characteristics of the RA Column scrub section were studied in a 3 inch diameter column. The findings (under TBP-HW #4 Flowsheet condition with a "standard cartridge", except as otherwise noted) were as follows:

   (a) The RA Column scrub section could not be operated without flooding (complete or cyclic local) at rates higher than about 900 gallons/(hour)(sq. ft.) sum of both phases (corresponding to 4 tons U/day in the 20 inch diameter plant RA Column scrub section) even at the mildest pulsing conditions tried (36 cyc./min., 1 inch amplitude).

   (b) The highest rate at which the RA scrub section operated without flooding at approximately the optimum pulsing conditions for the extraction section (about 50 to 55 in./min.) was about 500 gal./(hour)(sq. ft.), sum of both phases (corresponding to 2.5 tons U/day in a 20 inch diameter plant column).

   (c) Increasing the nitric acid concentration in the scrub stream (RAS) from the flowsheet value of 2 M to 5 M made the scrub section operable without flooding at 50 to 55 in./min. at rates equivalent to as high as about 4.5 tons U/day (based on a 20 inch column).*

   (d) Increasing the plate spacing from 2 inches to 4 inches resulted in little or no improvement in the RA scrub section flooding characteristics.

   (e) There were no significant differences in flooding characteristics as determined with (i) simple scrub sections and dual purpose RA Columns; (ii) 6 ft. and 9 ft. scrub section heights in simple columns; (iii) 3 ft. and 6 ft. scrub section heights in dual purpose columns (although at

threshold conditions the floods with the 3 ft. scrub section took about twice as long...up to about 10 minutes longer... to develop than with a 6 ft scrub section); (iv) solutions brought in from the Uranium Recovery Plant on the one hand, and solutions synthesized from chemicals in the pilot plant and carbonate washed RAX on the other; (v) perforated plates cut from plant plates (0.065 in. thick) and the plates used in previous pilot plant studies (0.025 in. thick); and (vi) with the ferrous ammonium sulfate and sulfamic acid present in and omitted from the RAS (scrub stream).

*However, studies conducted at the month's end (to be reported upon more fully next month) indicated a substantial lowering of the cyclic local flooding capacity of the extraction section upon increasing the scrub stream acidity to 5 M HNO_3.

2. Two Uranium Recovery Plant RA Column runs (reported elsewhere in this report), which gave uranium losses of over 20 per cent, were repeated in a 3 inch diameter column under conditions simulating as closely as possible those employed in the plant. Both pilot plant runs gave uranium losses of about 0.1 per cent.

3. In a series of 3 inch diameter dual purpose RA Column runs with a 6 ft high scrub section ("standard cartridge") the RAU (uranium bearing organic effluent) contained about 5 parts of sodium and 40 or less parts iron per million parts of uranium. The accuracy of the sodium and iron analyses in these very low concentration ranges was under study at the month's end.

Steam Stripping of RCU - 27 RCU steam stripping (RS Column) studies were conducted in 321 Building during the month. A three inch diameter column packed with 1/4 inch stainless steel Raschig rings was used. The highlights of the new findings are as follows:

1. No significant removal of DBP (dibutyl phosphate) was achieved by steam stripping. This was concluded from runs in which the RCU was spiked with known amounts of DBP, as well as conjectured from the failure to obtain a non-foaming concentrate upon steam stripping samples of an off-standard partially concentrated plant batch of RCU which had been stored in Tank X-1.

2. A 10 ft. packed height permitted the clean-up of RCU to a sufficient extent to prevent any substantial foaming in calcination, even when the unstripped RCU contained as much as 2 g./l. of TBP (introduced by deliberately entraining some solvent phase).

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3. A 5 ft. packed height was sufficient when the RCU contained about 0.2 g./l. TBP (dissolved), but not when it contained 2 g./l. TBP (dissolved plus entrained).

Continuous UO_3 Conversion Development

Design of a 1/10 scale pilot plant model screw calciner has been initiated.

A laboratory model fluidized-bed calciner has been set up and qualitative observations have been made employing aluminum oxide in place of UO_3. Introduction of a milliliter or so of water into a fluidized bed of aluminum oxide, heated to 300°C. with a gas burner, resulted in flash evaporation of the water coincident with violent agitation of the bed. Introduction of large amounts of water (10 to 20 per cent of bed volume) resulted in the formation of large lumps of oxide which were suspended in the bed and disappeared in a few seconds. After operational techniques have been developed by aluminum nitrate calcination, preliminary UNH calcinations will be made.

Mechanical Development

Bearing Development - Glass bearings operating against Stellite journals were tested in the bearing test machines at various speeds of rotation. The results showed a very low minimum coefficient of friction and good load carrying capacity. Unlike Graphitar or filled Teflon bearings, the glass bearing binds rapidly when the minimum coefficient of friction or critical loading is reached, causing galling of the journal and fusing of the glass. This is similar to the action of boron carbide. Dry running tests were made with a Stellite No. 1 journal. After 24 seconds at a 75 lb./sq. in. loading, and a speed of 3400 rev./min., the bearing and journal were still usable, but the running surfaces were appreciably damaged.

Pump Development - A 5 HP G.E. and C.L. "canned" motor pump, has been installed in a test stand as an in-line (not submerged)pump. Process fluid discharges from the pump through the motor case and between the rotor and stator. Electrical components (rotor and stator) are protected from process fluid by stainless steel envelopes. This pump will be given an extended life test pumping Purex 2EU solution.

Corrosion Studies - Corrosion tests on SAE 1010 mild steel exposed to simulated, concentrated, neutralized, Purex waste solutions at elevated temperatures have been under way for two weeks. These tests are being made to determine the effect on corrosion rates of localized heating in Purex waste storage tanks when self concentration takes place. Specimens are being exposed to Purex neutralized waste concentrated to one-half volume and concentrated to 75 per cent solids, by volume. These waste solutions are being maintained at a temperature of 250 to 260°F. The tests are scheduled to end on October 20, 1952.

Separations Technology Unit

Process Chemistry

Purex Solvent Treatment - To obtain an evaluation of the removal of fission products (primarily radioruthenium) from the organic phase in the Purex IO contactor, a synthetic HCW was prepared and contacted with aqueous Na_2CO_3 as follows:

Run 1: 1/5 volume 5 per cent Na_2CO_3 - very vigorous agitation

Run 2: 1/5 volume 10 per cent Na_2CO_3 - very vigorous agitation

Run 3: 1/5 volume 5 per cent Na_2CO_3 - very mild agitation

The phases were sampled as a function of time and analyzed. The results are incomplete, but the data are presented below.

DECONTAMINATION OF PUREX HCW

	B D.F.				
	5 minutes	10 minutes	20 minutes	40 minutes	90 minutes
Run 1	32	89	171	171	185
Run 2	15	30	36	79	148
Run 3	12	17	17	65	158

The results of Run 1 agree with data reported in KAPL-584 in that scrubbing of the activity from the organic phase occurs rapidly for the first 20 minutes and then progresses slowly. The results of Run 2 were wholly unexpected and indicate a slower conversion of ruthenium to the scrubbable species in the presence of 10 per cent Na_2CO_3. The differences between the results of Runs 1 and 3 are attributed to the difference in agitation.

Hot Semiworks

Normal rotating shift operation at the Hot Semiworks was resumed on a reduced manpower schedule on September 15, with the return of 75 per cent of the Hot Semiworks technical personnel from the 300 Area.

Calibration of process tanks is 94 per cent complete.

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Separations Technology Unit

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.

R. B. Richards

R. B. Richards, Manager
Separations Technology Unit

October 10, 1952

RBR:eb

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October 10, 1952

APPLIED RESEARCH UNIT

September, 1952

VISITORS AND BUSINESS TRIPS

There were no visitors during the month.

D. E. Davenport, G. E. Duvall, W. J. Ozeroff and J. R. Triplett attended the Nuclear and Reactor Physics Conference in Oak Ridge, Tennessee, September 10-12.

W. J. Ozeroff spent September 15-16 at KAPL attending a conference on Reactor Physics and Uranium Crystal Structure, and September 17-18 at ANP, Lockland, and ANL, Chicago, discussing reactor physics.

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E. M. Kinderman spent September 14-19 at Atlantic City, N.J., attending the National ACS Meeting, September 22-23 at KAPL discussing analytical methods for Purex, and September 24-26 at ANL, Chicago, discussing isotopic measurements.

R. Ward spent September 8-13 at Spokane, Seattle, Vancouver and Portland speaking before the American Society for Metals Chapters in each of the four cities.

D. E. Davenport spent September 15 at the A.E.C. Office, Washington, D.C., September 16 at the Brookhaven National Laboratory, Upton, New York, and September 18 at ANL, Chicago, discussing reactor physics.

J. A. Parodi spent September 14-19 at Atlantic City, N.J., attending the National ACS Meeting.

G. L. Flint spent September 24 at Columbia University, New York City, attending a conference on metallography.

D. M. Newell spent September 29 at the Dow Chemical Company, Rocky Flats Plant, inspecting gloved boxes.

ORGANIZATION AND PERSONNEL

Personnel totals as of September 30 were as follows:

		Technical Graduates				
	Exempt	Permanent	Summer	Rotational	Non-Exempt	Total
Physics	24			6	7	37
Metallurgy	26	2		7	31	66
Analytical Research	30			4	7	41
Analytical Service	91			1	19	111
Administration	4	-		-	3	7
Total	175	2		18	67	262

PHYSICS

Lattice Studies

The diffusion length, L, of graphite obtained from measurements in the Hanford standard pile is approximately 54 cm. That obtained from measurments in the 105 production piles is about 59 cm. Both of these values (and any other values below) are corrected to a density of 1.6. In an attempt to resolve the discrepancy between these values, a series of measurments is being made in the 7-1/2 inch exponential pile. Two measurements have been made to date. In one

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the process tube holes are left empty; in this case the value obtained for L is 55 ± 0.5 cm. In the other, the process tube holes are filled with graphite bars; in this case a value of 54.5 ± 0.5 cm is obtained. These are to be compared with the measurement of 54.4 ± 0.5 cm obtained from the Hanford standard pile. The discrepancy appears to be within the expected error; however, the major disagreement with the production pile measurements remains as before. Further experiments in which the flux will be measured in solid graphite and in the empty process tubes will be done to see if streaming down the tubes affects the measurement.

An exponential pile with the spacing of 6-3/16 inches is partially assembled. The entire requirements of machined graphite and uranium metal are now available. The first measurements in this lattice will be made with standard Hanford slugs.

The thermal utilization of the graphite and of the uranium in all the lattices measured to date has been calculated in two ways; from the average cadmium ratio in the cell, and from Project Handbook formulae. At present the theoretically calculated values for the thermal utilization of graphite are ten to twenty per cent different from the values obtained from the average cadmium ratios. This is to be explained by the discrepancy between the theoretically assumed neutron distribution and the actual distribution and in part by the uncertainty in cross sections and appropriate pile temperatures to be used in the calculations.

Preliminary values of the blackness have been obtained for three types of slugs. These, and the results, are: (1) P-10 blackness: 0.60 ± 0.01, (2) standard Hanford slug blackness: 0.47 ± 0.01, (3) bare hollow uranium slug (OD 1.375", ID 0.500") blackness: 0.51. The uncertainty limits indicate only the range of values obtained in the measurements.

A critical equation which treats the energy dependence of the resonance absorption has been obtained for a large cylindrical pile. It is hoped to extend this result to a small reactor consisting of only a few fuel rods. Such an extention would make possible the determination of resonance capture from critical measurements with the lattice test reactor.

Experimental Physics

Further measurements on the reproducibility of the xenon dilution system have been made. Values of dilution obtained are as follows: 32.6, 34.2, 42.7 and 41.2. Of these values, 32.6 and 34.2 are unambiguous and agree within counting statistics. Further refinements in the apparatus will be made to increase its reliability.

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The iodine elimination experiments were completed last month using radioactive I^{131}. In these experiments iodine is swept with helium through a charcoal trap kept at room temperature. Iodine passing through the trap is then collected in a second charcoal trap kept at liquid nitrogen temperature. This second trap is removed after sweeping and the activity which has been collected is measured using the crystal scintillation counter. In this way a decontamination factor for the room temperature trap may be obtained. In these experiments a decontamination factor of 10^7 was realized after eight hours of sweeping with helium. Since a factor of 10^5 is considered satisfactory for shielding purposes, it appears that a charcoal trap at room temperature will be adequate for the removal of iodine in the proposed xenon generator installation.

In the course of the experiments, several traverses of the trap length were made with the scintillation counter in an attempt to observe the movement of the radioactive iodine through the charcoal trap. It was found that nearly all of the iodine was initially deposited in the first two millimeters of trap length. After eight hours of sweeping, a movement of about three millimeters along the trap length was observed. A document reporting all the work on iodine removal is in preparation.

A small nearly transparent (0.01 per cent absorbent) BF_3 proportional counter is being built to monitor the neutron beam at DR Pile. This counter should register approximately 25,000 counts per minute and permit accurate normalization of transmission measurements to a single beam strength.

The possibility of measuring the scattering cross section of xenon 131 has been explored. It appears that unless scattering is at least ten per cent of the total cross section the measurement will be very difficult.

A previously unreported X-ray from thallium 204 has been detected with a sodium iodide scintillation spectrometer. The decay is being studied to determine the source of this X-ray.

The positions of various important crystal planes in a beryllium single crystal have been found and these agree to within one per cent of their calculated positions. In particular, the positions of the planes 1, 0, $\bar{1}$ and 1, 2, $\bar{3}$ have been determined. These planes have the important property that they suppress the higher order components of the diffracted beam.

The collimator for the cross section measurement of plutonium 239 was installed in the collimator shield at the Y Hole facility at DR Pile. The counting rate of this collimator was 1.3×10^6 counts per minute from a beryllium crystal and at the peak of the spectrum.

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An experiment was made to determine the scattering properties of an effectively infinite block of concrete with and without a 1-1/4 inch layer of graphite on the scattering surface. This experiment was performed to determine if the addition of such a graphite layer would increase or decrease the total scattering. The experiment was done with the use of the neutron spectrometer. Measurements were taken on the intensity of the scattered neutrons as a function of the scattering angle for various angles of incidence. The general result of these measurements is that the 1-1/4 inch layer of graphite reduces the number of neutrons scattered from the concrete, hence it is not beneficial in increasing the scattered intensity.

Operational Pile Problems

The multiplication of Hanford slugs containing 1.75 per cent of U^{235} has been calculated for various cell radii where the moderator is water. The minimum critical mass for a cylindrical array occurs at a cell radius of 3.45 cm. and requires 447 four-inch slugs. These calculations are described in document HW-25614.

During the C Pile atmosphere purge at startup, the volume of air displaced will be measured as a function of the time reckoned from the beginning of the purge; it will thus be possible to determine if the air entrapped in the graphite bars is driven off during the purge. The necessary gas samples will also be analyzed for nitrogen and oxygen to determine if either is preferentially adsorbed.

METALLURGY

Fabrication of Uranium

The experimental beta phase rolling program, reported last month, was continued. The mechanical properties of four additional samples rolled in the temperature range of 700-760°C were found to be comparable to the properties of alpha rolled, beta heat-treated uranium. Dilatometric results indicated that the sample obtained from the rod rolled at 700°C was randomly oriented, whereas the results obtained from three other samples taken from rods rolled at higher temperatures indicated that either the "a" and/or "c" axes were preferentially oriented in the rolling direction. These results differ slightly from previous X-ray data on similar samples. Further work is underway to resolve this discrepancy.

The experimental alpha phase rolling program was also continued. A series of heat-treatments were run on numerous samples obtained from uranium rods rolled at approximately 530°C. These, as well as additional samples now being prepared, will be examined soon.

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Bonding Studies

Two uranium wafers previously given a flash of copper and then chrome plated are being evaluated for the tendency to form diffusion bonds during warm pressing to aluminum. Metallographic examination of the samples showed that diffusion bonds were formed between the copper and the uranium base metal; likewise, diffusion bonds were formed between the chromium plate and the aluminum. No bonds were formed between the chromium plated surfaces and non-plated uranium wafers on warm pressing. Tukon hardness surveys are currently being made on these diffusion bonds.

Nine additional uranium wafers were plated with varying thicknesses of nickel, copper and chromium. These samples are to be evaluated for plate porosity before and after warm pressing as well as for bonding tendency following warm pressing.

Alloy Studies

A program to investigate the effects of irradiation upon the structure and the corrosion resistance of uranium alloys was continued. Two cast alloy slugs, 6.8 atomic per cent niobium and 4.5 atomic per cent zirconium, were rolled at 600°C. These samples will be used for studying the effect of various heat treatments on both the structure of the alloys and their corrosion resistance.

Properties of Uranium

Small discolored "imperfections" have been noted at the fracture of some uranium tensile specimens tested at room temperature. The "imperfection" is usually located at the edge of a sample and the manner in which the fracture flares from this "imperfection" indicates that the fracture is initiated at this point. X-ray powder patterns were obtained on scrapings from three such "imperfections" and in each case a metal carbonate was identified. Additional X-ray powder patterns will be obtained as these "imperfections" are noted.

A study of the anistopic properties of uranium single crystals was initiated. The properties are to be investigated both as a function of thermal cycling and irradiation. Two electrolytic crystals obtained from Los Alamos were examined by X-ray diffraction procedures and their crystallographic directions determined. The diffraction patterns consisted essentially of layer line spots characteristic of a single crystal with a few extraneous diffuse spots. Since the crystals are large enough they will be reduced in size in order to remove any possible surface imperfections such as twins, parallel growths or overgrowths.

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Hanford Structural Materials

Results of corrosion tests of the type 304 piston-ring expander-springs designed for use in the uranium recovery process pulse columns indicated that the fabricating methods used in their manufacture did not decrease the corrosion resistance of the steel. Tests of the spring specimens, in both the stressed and unstressed conditions, were conducted in boiling 70 per cent nitric acid and in synthetic RCU solution at room temperature.

The problem of determining the nature and extent of the pitting to be expected in the mild steel tanks proposed for storing and concentrating the Purex waste was begun. The investigation will use mild steel coupons whose surfaces have been sandblasted under controlled conditions. Microscopic examination of specimens blasted with 40-50 mesh sea sand under reduced air pressure showed that the maximum depths of the grooves made by the sand were less than 0.001 inches, and that most of the groove depths were approximately 0.0005 inches. With the specimen surface blasted with the fine sea sand, it is anticipated that pit depth measurements, accurate to ±0.001 inches, can be made.

An investigation was started to determine the cause of the failure of two stainless steel gate valves connected to a sulfamic acid make-up tank in the metal recovery process. The 18-8 grade stainless steel valves were connected directly to a tank made of 25-12 grade stainless and were subjected to the action of 10 per cent sulfamic acid at room temperature. Visual inspection of the valves showed that the bodies of the valves were badly pitted and that the gates had become porous after only three months service.

Recommendations concerning the specification of alloys to be used in the construction of various canyon, gallery and outdoor storage vessels for the proposed Purex plant were made. The recommendations were made with the object of conserving supplies of the stategic elements niobium and nickel. To accomplish this conservation, a number of applications for type 430 stainless steel, aluminum, mild steel and chemically resistant protective coatings for mild steel were recommended.

Corrosion tests on type 316 stainless steel in sulfuric acid-nitric acid mixture were complete. The tests were calculated to simulate some of the worst possible corrosion conditions which would be met in the proposed Recuplex process where nitric acid and sulfuric acid solutions are used. After a total of 1224 hours exposure at room temperature corrosion rates less than 0.00005 inches per month were recorded.

The increased use of an aluminum cleaning solution containing 5 per cent phosphoric acid and 2 per cent chromic acid prompted a corrosion test to determine whether a plain 18-8 stainless steel might be used in the as-welded condition for a container. Sensitized duplicate specimens of type 304 stain-

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less steel were exposed to the solution for 240 hours at boiling temperature. No apparent attack resulted.

A preliminary investigation of the corrosion resistance of pipe weldments made by the Heliarc process using nitrogen as a purging gas in place of argon was begun. Available weight loss data from a Huey test indicated that the standard argon purged welds were slightly better than the nitrogen purged welds but that the difference may not be significant. On completion of the Huey tests it is planned to section the specimens for a more detailed examination.

Metallurgy of Plutonium

Work on minor construction project MWI-38(1) was finished on September 5,1952. Final inspection and formal acceptance was made on September 11, 1952. This project provides an X-ray diffraction laboratory, a room for the metallograph and Tukon hardness tester, temporary office space for three to five people and installation of laboratory furniture and utilities.

Maintenance forces continued work on final details of the laboratory facilities which are required before "hot" work can begin. Tests of the controlled atmosphere system have been held up due to lack of piping material and labor. The work of final hood sealing has started on Hood 11, and will proceed to other hoods as they are made available. Approximately fifteen items remain to be completed on the various hoods ranging from installation of additional glove ports to providing thermocouple entry ways.

A stress rupture testing machine is being constructed to test material for reduction bombs. The anticipated life of reduction bombs has been estimated from published stress-rupture data obtained under steady state conditions of temperature and stress. No data are available for evaluating the effect of cyclic heating and loading. The investigation of the effects of cyclic heating and loading will permit determination of maximum economical service life consistent with safe operation of reduction bombs.

A simplified container for viewing "hot" metallographic specimens has been devised. The new container consists of a short length of rigid plastic tube in the end of which is cemented a microscope coverglass. The plastic tube is sealed to a plastic bag which may be attached to a hood glove ring. A "hot" specimen may be inserted into the plastic tube, the plastic bag sealed and the specimen container detached from the plastic bag with the contents completely enclosed.

The necessary equipment for electroforming has been set up, electrolytes prepared, and plating mandrels fabricated. Electroforming of shells is being started.

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A tool-room lathe has been received and is being installed for test. Design of a hood with suitable modifications to simplify machining of plutonium was started

Radiometallurgy Facilities

Work flow diagrams and equipment requirements for the whole slug examination and the metallographic cells in the Radiometallurgy Building has been formulated. The diagrams will provide scheduling to permit the proper operation of the cells after installation is completed. Bausch and Lomb Optical Company and Grey and Erb were the only interested vendors for the design and fabrication of a cell metallograph. Bausch and Lomb's original bid of $45,000 seemed to be excessive so that individual conferences were scheduled to resolve the cost. Bausch and Lomb will submit another bid. Grey and Erb will be available for consultation soon.

The second model of a mechanical slug can-wall stripper was used to obtain can wall samples and to remove the cap from a normally discharged slug which had been cooled two months.

The completion of the target tube mechanism for the double crystal X-ray spectrometer was delayed because of difficulties encountered in obtaining delivery of the shock-proof case. The monochromating crystal was preliminary tested and found to give a monochromatic and effectively focused beam of X-rays.

Radiometallurgical Examinations

One ruptured and one normally discharged slug were received and examined to determine the extent of the surface pitting. Three representative areas of the can wall were sampled from each slug for chemical analyses. Mercury was reported as definitely present in one sample and possibly present in another sample from each slug. Twelve other pairs of ruptures and normally discharged slugs with similar surface pitting have been selected for future analyses and metallography.

The can wall thicknesses at the center of an unbonded and a bonded "C" slug after exposures of about 400 MWD/T were observed to be 25 and 24 mils respectively. Metallographic examination of irradiated and unirradiated "C" material at 1000 to 2000X showed no evidence of microstructural differences.

Plant Services

During the last several months the reported results from Hanford for grain size and per cent recrystallization of rolled uranium rods have not agreed with those from Fernald. In order to resolve this discrepancy, similar samples were examined at both Hanford and Fernald. The results showed that the difference in grain size was caused by using different grain size charts at the two sites, while the variation in per cent recrystallization was attributed to the sampling procedure.

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A number of uranium samples were examined from Hanford billets which were produced from molds with and without graphite additions. Examination of the samples disclosed that the inclusion content increased slightly in the egg portion of the billet when graphite powder was used in the molds.

A cast brass sleeve which was removed from the vertical safety rod shock absorber from "C" Pile was examined. This sleeve, as well as others, leaked when subjected to air pressures of about 150 psi. Macroetched sections of the cast sleeve revealed extreme overall porosity, which was also verified by microscopic examination.

Additional data which were obtained from samples of boron stainless steel indicated that the structure is unstable austenite at room temperature. Cooling to -56°C initiates that formation of alpha iron, accompanied by a volume expansion and increased magnetism. Upon heating, a large portion of this alpha phase transforms to austenite in the temperature range of 515-656°C, and after cooling to room temperature the steel is only slightly magnetic. This degree of magnetism corresponds approximately with that exhibited by the as-cast material.

ANALYTICAL RESEARCH

Radiochemical Instrumentation

The in-line gamma counter, which has previously been described, is now located in the 202 Building sample gallery. It was found that with no shielding the unit records a background reading in the gallery of only 80% of the tolerance value for the stream to be monitored. Thus, in a shielded operating unit, the background interference should be inconsequential. The final installation has been delayed by TBP start-up difficulties.

The gamma ray spectrometer was found to be stable over several week periods, having a standard deviation in reproducing gamma energies of only ± 2%. The limit of detection is such that if a component is present to less than 10% of the total activity, it would not be observed. The resolution of the gamma ray spectrometer is 14% at 0.66 Mev energy gamma, using the best 5819 photomultiplier tube on hand. Several of the fission products have gamma rays which cannot be resolved, making identification of unknowns sometimes difficult from gamma ray analysis alone. However, the development of a scintillation beta ray spectrometer will be of great assistance in providing additional data that simplifies the problem.

The characteristics of a total ionization chamber for precision alpha counting are being studied to aid in the development of an alpha counting unit that is better than the present ASVP standard instrument. It was found that the pulse height distribution of the total ionization chamber is ideal for the purpose and that the plateau is greater than 1000 volts long with a slope of less than 0.1% per 100 volts.

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Radiochemical Techniques

An investigation of the radial and longitudinal distribution of plutonium and U-235 in irradiated slugs was started, employing samples cut by the Radiometallurgy group. Tentative analytical results show that the concentration of plutonium/uranium ratio at the surface is 1.4 times that at the center. Qualitatively, the curves of beta and gamma activity versus radial distance follow that found for the alpha counts. The concentration of americium per mg. of uranium will be determined on each sample to give an indication of the isotopic composition of the plutonium produced, and the isotopic composition of the uranium will be determined mass spectrometically to define U-235 burnout.

Studies were continued with paper pulp adsorption as a means for effecting absolute purification of uranium and for allowing complete recovery of fission products from mixtures. Conditions were found that permitted essentially complete recovery of fission products from Redox uranium product; ruthenium and zirconium, which are difficult to separate, were included but uranium daughters accompanied the fission product group completely. Further work defined conditions for separating tracer zirconium from uranium and its daughters with an 85% recovery.

Spectrochemical Techniques

X-ray photometry as applied to Hanford problems has hitherto been restricted to solutions in which the uranium falls in the range 10-50 g/l, or to more concentrated solutions handled by dilution. It has recently been shown that solutions as concentrated as 500 g/l can be handled by the simple expedient of shortening the cell path length to 1 or 2 mm. Precision with a manually operated instrument applied to such concentrated solutions has been demonstrated to be ± 0.4 to 0.7%. It is predicted that automatic in-line instruments will operate with a precision at least as good as ± 1.0 to 1.5%. Under these conditions, the X-ray photometer can be applied in-line in the Purex Process to seven aqueous and three organic uranium solutions and one each of aqueous and organic plutonium solutions.

The X-ray photometric determination of plutonium in final metal has received continued study. Control laboratory personnel applied the method to 26 samples during the past month; the average result was 98.76% as compared to 98.86% calculated from the additive and impurity contents of the samples. This result is in excellent agreement with the observation at Los Alamos that the purity calculated by difference is usually 0.1% higher than that obtained by direct assay. In this study of 26 samples the precision for a single determination was ± 0.54% as compared to ± 0.62% for the chemical assay method, both figures representing the 99 in 100 precision limit. The chemical method results averaged -0.14% low compared to the X-ray results. The X-ray method has been modified to allow a rapid check designed to reveal instrumental errors in time to allow repeat determinations before the sample

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cell is emptied. Precision and accuracy were further enhanced by weighing the solvent into the volumetric flask thus eliminating errors due to faulty flask calibration.

Preliminary investigation of the determination of uranium in nitric acid solutions at low concentrations by a direct optical density method indicates that the uranium nitrate peak at 460 mu is sufficiently intense and free from interference by other constituents in a typical Purex waste stream that it could be useful as a direct in-line method of analysis. The absorption follows Beer's law, and the system lends itself to calibration with sufficient reproducibility that at least a semiquantitative determination is possible. The method would not require a dilution step nor the measurement of volumes of sample.

The functional test of the condition of recovered TBP-Shell base extractant by measurement of the uranium distribution coefficient has been further modified to require only one ml. of sample, thus providing a scaledown factor of 10 over the present method.

A program was initiated to develop a simple, rapid method for determining optimum focus of the Baird 3-meter spectrograph. The conditions for obtaining all wave-length regions of a plate in good focus at the same time were found to be unique. A graphical method has been developed whereby these conditions can be accurately determined by comparing the resolution of lines in successive iron spark spectra photographed on a single plate.

In the study of trace elements in pile process water, it was formerly shown that iron could be quantitatively recovered from distilled water in the range 5-100 ppb, but it has recently been shown that recoveries are very poor when the method is applied to 100-F pile process water. Experiments on synthetic solutions indicate that an as yet unidentified component prevents quantitative recovery of the iron by use of the present method. Studies of manganese dioxide as a scavenging agent have shown promising results.

Continued investigation on the head-end treatment step for the Redox Process by Redox Plant Assistance personnel calls for the determination of permanganate in a reaction vessel on a more or less continuous schedule. Accordingly, the direct colorimetric permanganate determination, discussed last month in conjunction with in-line analysis studies, is being prepared for the group. The method does not require the removal of samples from the reaction unit, and present apparatus allows rapid determinations in the range 0.05 to 0.005 M potassium permanganate. The interference due to manganese dioxide was eliminated by introducing a fine porosity, sintered glass, filter disc in the line to remove the solids from the sample. It was found that variations of the temperature affected the optical density appreciably, and accordingly, adequate provision for cooling of the sample before it enters the optical cell was provided.

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Mass Spectrometry

Research work was continued on the installation and testing of components which convert the Building 3706 Consolidated mass spectrometer to an uranium isotope ratio instrument similar to the instrument used in routine control in the 222-S Laboratory. Each of the individual components has been installed, aligned and tested. Preliminary runs have been made on two uranium hexafluoride samples. The uranium hexafluoride cracking pattern, the voltage calibrations and the various peak intensities were normal. Some improvement of the resolution is still required for accurate isotopic ratio measurements of U-235 and U-238.

A brief investigation was made of the effect of high concentrations of nitrogen matrix material on tritium-hydrogen ratios as measured by the Consolidated-Nier Isotope Ratio Mass Spectrometer in the 108-B Building. Deuterium-hydrogen was used as a stand-in. It was found that the ratio of deuterium to hydrogen can be determined with adequate accuracy in the presence of up to 98% of nitrogen; above 98% nitrogen, the ratio measurements become non-reproducible. Recommendations for preparation of Biology limit tritium samples in accordance with these findings were made.

Samples of gas from the 100-H Pile were obtained for mass spectrometer analysis as the start of a program to find the normal variation in pile atmosphere composition. No significant differences in composition of the gas from the inlet, the outlet, and from several plenums were found. The samples contained 95.5% carbon dioxide, 2.5% carbon monoxide, 1.9% nitrogen and a trace of oxygen.

The start-up committee for the 100-C Pile is planning a vigorous gas analysis program for the first few weeks of operation to determine the rate of oxygen and nitrogen removal from the pile. Accurate mass spectrometric determination of these constituents is difficult when the major constituent of the sample is carbon dioxide. Accordingly, a way was found to remove the major part of the carbon dioxide from such samples, comprising freezing out the CO_2 in a trap at approximately -110°C, using a slush of alcohol in liquid nitrogen as a coolant. The residual from the cold trap can then be taken into the spectrometer and analyzed for nitrogen, oxygen and carbon monoxide.

Technical assistance was given to the 222-S Control Laboratory during the month on two occasions to help correct faulty mass spectrometer performance. Technical assistance to the 108-B Building mass spectrometer laboratory led to a thorough overhauling of the G. E. Mass Spectrometer in order to correct difficulties which were causing inaccurate analyses of standard gas samples.

Electrochemical Techniques

Work was continued on the development of a method for the coulometric determination of plutonium. Some difficulty is being experienced with the oxidation step due to the formation of traces of peroxide in the hot concentrated perchloric acid solution. Apparatus has been constructed which will enable

suitable sample size reduction and panel board type operation for radioactive samples.

A new type current integrator, which is intended to integrate currents in the range of 0-100 ma., has been set up on a "breadboard". It involves the charging of a single high capacity condenser, so that the voltage on the condenser at any time is directly proportional to the total number of coulombs that has flowed through the appropriate circuit. Results of preliminary tests show the unit to be promising for application to variable speed coulometric titrations.

A new conductimetric method for the determination of the acidity of uranium and/or aluminum solutions has been reported by L. D. Pepkowitz of KAPL. Tests indicate that the method has usefulness for Hanford control laboratory use, and an attempt is being made to scale it down to sufficiently small sample sizes for the 1AF and 1AW type samples of the Redox Laboratory. Results to date have been about 10% low in the 10 ul. sample size range.

Tests on the radiation stability of glass and calomel electrodes continued. Tests begun last month using P-32 were completed. A two weeks' exposure of two sets of glass and calomel electrodes to solutions containing approximately 20 millicuries of P-32 showed no instability or unusual drifting of the electrodes. Additional tests using current Redox 1AW solution at a pH of approximately 2 were conducted with two sets of commercial Beckman glass and calomel electrodes, and at the end of two weeks the electrodes were still functioning satisfactorily with no abnormal drifting, although the glass had darkened markedly under the effects of the radiation. Each pair of electrodes was inserted in 5 ml. of the 1AW solution. Studies are continuing with other commercial electrodes.

Analysis of Fuel Element Components

Three methods have been investigated for the purpose of determining trace quantities of mercury in aluminum cans and associated materials. The direct determination of mercury vapor was established by modifying a G. E. Instantaneous Vapor Detector to allow the examination of mercury distilled directly from the metallic sample into a cell of approximately 100 ml. volume. The extent of absorption of the Hg 2537 line is measured by means of two photocells arranged in opposition. This instrument is normally used as a flow type tester for atmospheric contamination, in which function it is claimed to have a sensitivity of 10 ug. per cubic meter of air. The present application makes use of this extreme sensitivity to detect a minimum of 0.005 ug. Hg. Difficulties with instrument stability are being examined, and an instrument specifically designed for the present analytical problem will be made. A second method is called the microscopic method. The mercury is recovered from a nitric acid solution by electrodeposition on a platinum or copper wire. The wire is then enclosed in a capillary tube and the mercury driven off the wire by heating and condensed in a thin film or droplet at the cool end of

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the capillary tube. An 0.05 ug. of mercury is easily visible under the microscope, and blanks have been lowered below 0.01 ug. The third method is based upon the fact that an amalgamated area of aluminum will form an intensely colored lake with alizarin, whereas a normal aluminum surface will not. The method is qualitative only but is extremely sensitive.

Attempts have been made to evaluate direct chlorination of aluminum cans and sections of canned slugs as a means of detecting nonmetallic inclusions which might cause slug failures. The bulky chlorination product, the difficulty in controlling reaction rate, and the shrinkage and distortion of the oxide skin remaining after chlorination renders this approach of doubtful value.

Standard Samples

Two standard gas samples, one containing six components and the other containing seven components, were submitted to the control laboratory for Orsat analysis. The results were slightly better than obtained on the previous study. However, due to difficulties with analysis for certain constituents, an analyst training program will be inaugurated.

The standard sample program has continued with the completion of sample studies involving six determinations this month. Standard samples are in process in the control laboratories involving 28 separate determinations.

ANALYTICAL SERVICE

Work Volume Statistics

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

	August		September	
	Samples	Det'mns	Samples	Det'mns
Process Control - 234-5	406	2,883	412	3,049
Process Control - Metal Preparation	730	4,007	580	1,496
Research and Development Programs	3,749	7,737	3,832	7,036
Water Quality	101	906	252	1,563
Redox	1,500	5,015	1,247	3,826
TBP	804	2,235	816	2,090
UO_3	316	621	358	657
Essential Materials	111	647	107	481
Special Samples	236	1,262	584	1,707
Process Reagents	601	1,248	516	1,198
Totals	8,554	26,561	8,704	23,103

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Applied Research Unit

100-300 Area Laboratories

In anticipation of the Jarrell-Ash spectrograph being out of service while a new grating is installed, work has begun on adapting the Bausch and Lomb spectrograph for use during this period for the determination of Sn in Al-Si. It appears that modification in the arc-spark stand and the power source wiring will be necessary before this determination can be made.

Analyses of total fluoride in PuF_4 are now being made by the pyrohydrolysis method for samples submitted by Chemical Research personnel. The method had been previously tested on available UF_4 samples and gave results that were ca. 2% lower than theoretical; however, analysis of a UF_4 sample obtained from ORNL yielded results in agreement with those of ORNL (20.3% F by ORNL and 20.4% F by Hanford). Further efforts will be made to check the accuracy of the method.

234-5 Building Laboratory

Recent variations in the concentration of carbon in plutonium metal resulted in an extensive testing of the validity of the analytical determination and results of the first series of tests were reported in the Applied Research Unit report for July, 1952. Further tests performed in September were made by analyzing samples of open-hearth iron and high-silicon steel obtained from the National Bureau of Standards. Twenty-one determinations on the iron (100 ppm C) gave a precision of ± 26.4% (95% limits) and an average recovery of 106%. Twelve determinations on the steel (580 ppm C) gave a precision of ± 14.8% (95% limits) with an average recovery of 93%. Several plutonium samples spiked with the standard steel also gave good recoveries. From the data obtained, it is concluded that the variations in carbon concentration in plutonium metal cannot be attributed to the method of analysis.

The revised method for the determination of boron in plutonium metal was placed in use at month-end. The modification eliminates the distillation of the boron as methyl borate and the need for delicate and hazardous all quartz equipment, and also decreased the analytical time per sample from 1.6 man-hours to 0.6 man-hours. The revisions are based on the method in use at Los Alamos and are described in Document LA-1344.

Complete data obtained using the proposed TTA extraction method for recovering impurities from plutonium metal prior to spectrographic analysis indicate that the method is inferior to the cupferron for plutonium extraction, and inferior to both the cupferron and carrier distillation methods with respect to sensitivity. It is concluded that the TTA Method offers no significant advantage over present methods, and actually presents several undesirable disadvantages.

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Applied Research Unit

222-S Building Laboratory

A detailed analytical manual for the 222-S Building Laboratory was issued during the month by Methods Control. The methods included in the manual are specific for all processes serviced by the analytical laboratory, and for special analytical service performed for Process Chemistry and Chemical Research programs.

The sodium nitrite titration of process reagent sulfamic acid was modified in that sodium bromide is added as a catalyst and a dead-stop rather than a potentiometric end point is used. The need for heating the solution is thus eliminated, and ca. 0.5 man-hour is saved per sample. Work is continuing toward use of this technique on process stream samples containing ferrous sulfamate.

In response to a request from Separations Technology, an attempt was made to extend the lower range of the titrimetric phosphate determination for TBP in concentrations below 0.1 g/l. TBP in concentration of 0.1 g/l in aqueous solutions gave normal recoveries for phosphate, but at 0.01 g/l the results were erratic and unreliable. It will be necessary to request Analytical Research assistance if analyses in the lower ranges are required for the development studies.

An inter-laboratory standard sample comparison study was made of the precipitation process starting solution (6-1-MS) and the extraction process metal solution (H-7), and the precision of the analyses was in agreement with previous studies for both AT and Am-Cm. The recoveries obtained on the H-7 solution AT were excellent, but recoveries were somewhat low on the 6-1-MS AT. The reason for this low recovery is being investigated, and the test will again be made in October. Recoveries for Am-Cm were satisfactory and showed definite improvement over previous studies. The results are tabulated below:

			AT		Am-Cm
Laboratory	Sample	N	C/M/Ml x 10^7	N	C/M/Ml x 10^5
222-S	H-7	20	2.405 ± 0.103	--	---
222-T	H-7	11	2.421 ± 0.132	--	---
Standards	H-7	--	2.42	--	---
222-S	6-1-MS	20	1.135 ± 0.044	12	4.13 ± 0.50
222-T	6-1-MS	16	1.141 ± 0.076	15	4.05 ± 0.41
Standards	6-1-MS	--	1.163	--	4.25

Safety and Special Hazards Control

Two high air samples were recorded in the 234-5 Building Laboratory during the month, but no personnel contamination resulted. Both samples were obtained as a result of gross plutonium spread in Room 153 when a chemical reaction in a

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four-liter bottle of laboratory waste solution (containing ca. 0.4 g/l Pu) ejected the stopper and sprayed the solution outside the hood. Although the area was unoccupied when the incident occurred, four employees later entered the room without respiratory protection prior to discovery of the incident. Bio-assay samples were taken from these employees, but results are not available at month's end. The incident was apparently caused by a reaction of acetone-nitric acid, a mixture which is routinely accumulated from pipet washings and stored prior to process recycling. There is also a possibility that another waste mixture was added inadvertently to the stored bottle. The waste storage problem is undergoing complete review to prevent recurrence of such an incident, and to correct other hazards associated with plutonium waste solution storage.

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 September, 1952. 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: F. W. Albaugh

F. W. Albaugh, Manager
APPLIED RESEARCH UNIT

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TECHNICAL SERVICES UNIT

SEPTEMBER 1952

10-6-52

VISITORS & BUSINESS TRIPS

Off-site visitors to this Unit were as follows:

R.D. Fletcher from the American Cyanamid Co., Idaho Falls, Idaho, visited this site September 22-24. While here he discussed remote equipment design and fabrication problems with personnel of this Unit and visited other Units to discuss laboratory operations.

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

D.C. Kaulitz spent September 3 at the Precision Machine Works, Tacoma, Washington, inspecting and accepting machine work fabricated by that Company.

ORGANIZATION AND PERSONNEL

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

	August	September
Laboratory Engineering	79	62
Technical Information	83	86
Administrative	3	3
Unit Totals	165	151

Effective September 29, the Bldg. 222-S Laboratory Services organization was disbanded. The two exempt personnel were reassigned to other duties within Technical Services and 18 non-exempt personnel were transferred to the Manufacturing Department's Separations Process Unit. Technical Services will continue to operate the stockroom temporarily.

One exempt Mechanical Engineer was employed for this Unit.

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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	August No. of Jobs	August Man-Hours	September No. of Jobs	September Man-Hours
Work Done on Jobs Completed	Applied Research	17	172	23	433
	Pile Technology	44	449	67	1635
	Separations Tech.	17	379	29	802
	Technical Services	2	14	8	415
	Others	8	129	12	94
	Sub-Totals	88	1143	139	3379
Work Done on Jobs Not Completed	Applied Research	9	398	4	125
	Pile Technology	22	1247	13	381
	Separations Tech.	7	156	10	611
	Technical Services	7	393	7	483
	Others	1	13	2	16
	Sub-Totals	46	2207	36	1616
Total Work Done			3350		4995
Work Backlog:					Man-Hours To Complete
Jobs Started	Applied Research	9	241	4	115
	Pile Technology	22	689	13	483
	Separations Tech.	7	537	10	959
	Technical Services	7	891	7	676
	Others	1	2	2	28
	Sub-Totals	46	2360	36	2261
Jobs Not Yet Started	Applied Research	9	233	4	55
	Pile Technology	22	1594	17	974
	Separations Tech.	17	1427	16	1260
	Technical Services	4	150	3	92
	Others	0	0	1	6
	Sub-Totals	52	3404	41	2387
Total Backlog			5764		4648

These figures include:

	Jobs	Man-Hours
Cross-Orders	2	140
Off-Site	2	381

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Work requests estimated to require 606 man-hours and included in the previous month's tabulation were cancelled after it was decided to purchase the items from off-site vendors. The increase from 3350 to 4995 total hours completed results from the periods covered by the tabulation. Shop journals are set up to cover two-week periods and a six-week period is covered in the tabulation for September as opposed to four weeks normally reported.

The following work was completed for the Technical Units:

Applied Research

An X-ray target tube adjustment mechanism was completed for use with the previously fabricated hot integrating sample holder and monochromator mechanism in the new bi-crystal X-ray diffraction unit. Total tolerance on these various units, when assembled, must be less than .0005".

A wood model of the high level cell to be used in the Radiometallurgy Building was fabricated with the aid of an additional carpenter obtained on loan from 100-D Maintenance.

Separations Technology

Approximately two man-months of shop time has been expended toward the completion of four miniature mixer settlers. The stage blocks and end plates for all units are complete.

An additional two and one-half months of shop time was expended in connection with 234-5 RM Line work, which is approximately 60% complete.

One miniature constant temperature bath and one calciner were fabricated.

Pile Technology

The television camera control console was completed. This piece of equipment and the camera and wire carriage required 249 man-hours for completion.

A special boron carbide sample for in-pile testing in connection with the 100-C Area horizontal rod design was fabricated on an emergency basis. The shop was later requested to weld 40 of the boron carbide cans into one continuous 20 foot section.

The shop developed a welding technique for the joining of two concentric aluminum tubes, without destroying the water flow characteristics in the annular spaces between the two tubes.

The air weigher and remote control tongs were completed after the expenditure of four and one-half man-months effort. The air weigher consists of a large steel tank equipped with a Lucite window and two pipe couplings and will be used to contain a five kilogram balance when lowered into a retention basin. The Lucite panel is equipped with gaskets and ball-socket type manipulators. The entire unit is leak-tight.

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An ultrasonic production test set-up was fabricated for the nondestructive slug testing program.

The shop was successful in Heliarc welding zirconium to zirconium, and the technique was employed in forming a tube of this material from a zirconium sheet.

Revisions to the slug pre-heater mechanism and quenching mechanism for the 300 Area mechanization program were completed.

Technical Services

Approximately two man weeks of shop time were expended on research and development programs for Laboratory Equipment Development. Routine machinist and painter services in Buildings 3706 and 222-S were continued.

Glass Shops (Buildings 3706 and 222-S)

Work volume statistics for the Glass Shop are as follows:

	August	September
Jobs Completed		
New	85	104
Revisions	11	17
Repairs	23	23
Totals	119	144

Of this total, 15 jobs were fabricated from quartz or vycor. At the present time the shop has a backlog of eight large jobs which will require approximately five man days to complete. All work completed was of a routine nature.

Equipment Development

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

	August		September	
	Engineering	Drafting* & Misc.	Engineering	Drafting** & Misc.
Pile Technology				
Engineering	-	271	-	137
Pile Materials	-	166	-	35
Pile Fuels	159	43	94	223
Separations Technology				
Chemical Research	513	343	431	238
234-5 Plant Assistance	126	333	229	155
Applied Research				
Analytical Services	34	373	212	473
Analytical Research	8	60	37	18
Metallurgy Research	50	98	103	121
Physics Research	-	59	-	10

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	August		September	
	Engineering	Drafting* & Misc.	Engineering	Drafting** & Misc.
Technical Services				
Laboratory Engineering	440	1008	568	783
Laboratory Equipment Development (RDA #TC-1)	350	364	718	158
Totals	1680	3122	2392	2351

* Includes 1488 hours of drafting time.
** Includes 1464 hours of drafting time.

Principal development activities are indicated below:

Pile Fuels

A radiographic mechanism was designed for routine automatic photography of slug jacket welds. The device is experimental and is now being fabricated in the shops.

A split die was designed for bonding slugs and slug cans by high temperature and high pressure. Since the design is experimental, its feasibility is being reviewed carefully prior to fabrication with experienced tool and die personnel.

Chemical Research

Design and shop drawings of a Hanford miniature mixer-settler were completed. This device has been made in a variety of forms in the Hanford shops, but this is the first time that shop drawings have been prepared.

Designs were completed on a series of associated remote handling equipment to be used in one room in the Redox Laboratory for research. This equipment includes manipulators, a pump and feed system for miniature mixer-settlers, a hoist for 500 pound sample casks, etc.

234-5 Process

An engineer assistant was assigned direct responsibility for continuing the development on the dry mixer cell and equipment and its installation in the RM line. Designs were reviewed during fabrication.

Analytical Services

The simplified analytical line equipment station was installed in the Redox Laboratory. This station carries out liquid sampling and measurement, density measurement and pH. The revised installation is expected to require very little maintenance, and to be very easy to repair when necessary. The du Pont Company, at the Savannah River Project, has asked for full information on this design.

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Metallurgy Research

Design of the major components for the double crystal X-ray spectrometer was completed. Some accessories will be designed during assembly.

An "integrating sample holder" was designed for holding and rotation of a metal sample about a fixed center for X-ray diffraction studies.

Laboratory Equipment Development (RDA #TC-1)

The airborne alpha detector was in continuous operation all month without breakdown, although during one case of high air contamination the detector chambers became contaminated. This event occurred as a result of an unknown spill of a hot sample in a laboratory. The chart recorder was not under observation at the time, but later examination of the chart showed at what time the spill had occurred.

New Laboratory Planning

Redox Analytical and Plant Assistance Laboratory - Proj. C-187-E, Phase II

This project was completed on September 23, except for the air conditioning balancing which is being done on work order by the Separation Plant Engineering Unit.

Mechanical Development Building, Proj. C-406

Complete approved drawings and specifications for the design of the Interior (Phase II) of this building were submitted to the Commission on September 19. At month end the bid assemblies were nearing completion.

Radiochemistry Building, Proj. C-381

This building is approximately 42% complete. During this month, most of the progress was made in the roofing, the ceiling support grid and the heating and service piping. The stainless steel tubing and the metal partitions are still the most serious delaying factors.

Outside Facilities and Utilities, Proj. C-394

This project is approximately 76% complete. Testing of the underground water and sewer lines progressed through the month. More than the average number of failures delayed the progress of the tests. The neutralization tanks which arrived last month have been inspected, rejected, repaired and accepted for installation. Work continued on the power lines.

Radiometallurgy Building, Proj. C-385

This building is approximately 80% complete. All phases of the construction work are proceeding very satisfactorily. Factory representatives of the partition manufacturer began installation of the partitions on September 29. Directives have been approved and placed with the vendor of the G.E. procured special equipment to insure delivery of the Decontamination Cell by October 20 and the High Level Cell on or before November 15.

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Library and Files Building, Proj. C-421

This building is approximately 95% complete. The air washers are being installed. The ceilings and partitions are complete except for painting of the filler panels above the Hauserman partitions. The electrical work lacks only the wiring of some panels, and the installations of the transformer which is expected early next month. The exterior painting has been delayed because of substitutions.

Solvent Storage Building, Proj. C-441

The rescoping has been delayed by the rush of priority work in the Design Section.

Pile Research and Development Building, Proj. C-414

The general contractor is continuing to make good construction progress on this building. The second floor windows have been set in place and approximately 30% of the metal ceiling and lights have been installed for this floor. The asphalt and gravel roof has been completed. The building is rapidly being enclosed for the detailed interior finishing.

Building Services

Building 3706

Material control, work order control and miscellaneous services activity is summarized as follows:

	August	September
Purchase Requisitions		
Total number processed	164	159
Number requiring special expediting	131	30
Number requiring emergency handling	-	12
Work Orders Processed	90	62
Miscellaneous Services		
Number store orders processed	1166	799
Stores stock requests	-	-
Office furniture requests	8	11
Office machines sent in for repair	16	7
Precious metal transactions	27	12
Trips to 200-W for contaminated waste disposal	7	7
Photographic work requests	32	27
Special messenger trips	35	42
Standards Laboratory		
Number of standard solutions prepared	10	11
Stock solutions dispensed	29	69
Calibrations Laboratory		
Number of calibrations performed	13	18
Pieces of calibrated glassware dispensed	13	23
Number of checked glassware dispensed	135	243

Contamination of the southeast corridor of Building 3706 resulted when a chemist dropped a combustion tube containing radioactive aluminum dust in Laboratory #54. Contaminated dust was tracked throughout the corridor when the chemist failed to monitor and clean up the spill. The entire area was successfully decontaminated.

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Removal and examination of several of the most corroded, electrical conduits to the hood motors in Building 3706 indicated that the lines were still well protected.

A photographic plot was made of 241-U underground tanks for the Separations Section. This work involved sixty exposures.

Building 222-S

Laboratory Services - 222-S activity may be summarized as follows:

	August	September
Material dispensed, 222-S stockroom	$4812	$3838
Withdrawals (customer orders)	1990	1815
Emergency trips (pick-up and delivery)	10	11
Work orders processed	42	30
"Hot" waste transferred to storage (219 to 202-S) gals.	4900	4867

Concurrent with the reassignment of the analytical service responsibilities in Building 222-S on September 29, all non-exempt personnel assigned to Laboratory Services, Bldg. 222-S, except those assigned to the stockroom, were transferred to the Manufacturing Department, Separations Process Unit. Exempt personnel were reassigned within Technical Services. Technical Services will continue to operate the stockroom temporarily and will staff the glass and equipment development shops.

The drain lines from the decontamination room sinks to the main line were removed, cleaned and the threaded joints backwelded to eliminate the maintenance difficulty created by frequent leaks in these lines.

The ball check valves installed experimentally last month in the main decontamination room slurping jets have proved satisfactory, and there has been no evidence of blow-back since their installation. Similar units have now been installed in the multicurie wing decontamination room.

A valve was installed in an acid sink of the decontamination room to provide a source for filling bottles with technical grade acid from the main building supply system. Previously, CP acid has been used in many locations because the less expensive technical grade was not available in bottles.

TECHNICAL INFORMATION SERVICES

Plant Library

Work in the Plant Library proceeded routinely during the period. Work volume and book statistics were as follows:

	August	September
Number of books on order received	303	208
Number of books fully cataloged	442	231

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	August	September
Number of bound periodicals processed but not fully cataloged	217	67
Pamphlets added to the pamphlet file	20	496
Miscellaneous material received, processed and routed (including reprints)	36	33
Books and periodicals circulated	4,723	5,332
Reference services rendered	1,463	1,711
Inter-library loans	63	29
Photostats from off-site	9	20
New periodical titles added to Kardex	9	10

	Main Library	W-10 Library	108-F Library	Total
Number of books	9,736	4,500	573	14,809
Number of bound periodicals	5,994	1	737	6,732
Totals	15,730	4,501	1,310	21,541

During the month the transfer of all books ordered but not received on the 1951 book contract with Stechert-Hafner, New York (Purchase Order HW-75300) to the current contract (Purchase Order HWC-20742) was completed. This involved extensive back checking and the preparation of 25 pages of alterations. These alterations are necessary to permit Accounting to pay against the current contract outstanding items carried over from the previous contract.

A change in the present purchasing procedure of the Library was effected during the month to assist in getting the requested material more rapidly. In instances where the books ordered are coded to a cost code other than that of the Plant Library (see OPG 21.4) the Library has been returning the requisitions to the requesting department for signature. In the future these requisitions will not be returned to the requesting department but will be signed by the Manager, Technical Services, who routinely signs purchase requisitions for the Plant Library. This is on the assumption that the approval signature on the Request for Library Procurement form is sufficient authority to proceed with the purchase. Notices of the change, which has the approval of both Financial and Purchasing, were sent to all Plant personnel authorized to sign purchase requisitions.

A sampling of typical reference questions handled by the Library reference staff is as follows:

Sputtering apparatus, particularly for zirconium.
Early research on which the solids feed purge in the 105 Reactor is based.
World production of uranium in any recent year.
Solubility of mercury in water and how to measure it.
Washington State code on ventilation of office buildings.
Effects of radiation on metals, plastics and other materials.
Government regulations on the selection of subcontractors on Government contracts.
Standards for commercially drawn aluminum tubing.
Resistance of Neoprene to 2% chromic-8% phosphoric acid solution.
Specific heats of uranium at 100°, 400°, 600° C. in cal/gm.
Address of the Armed Forces National Research Council Vision Committee.
Manufacturers of chemical lime.

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Electroplating with tungsten.
Specifications for electric overhead cranes.
Haldane gas analysis apparatus.
Kjeldahl method for analysis of nitrogen in coal.
Where to obtain 2'x3' first aid charts.
Use of abbreviation "circa."
A list of textbooks on corrosion.
Heat of fusion of titanium.
Specifications for SAE 660 brass.
Toxicity of chlordane.
Books on pre-stressed concrete.

An interesting example of the value of professional library training in reference work turned up during the month. A list of references on the subject of cavitation included one to the German periodical, "Verein Deutscher Ingenieur", which is not in the Library files. Extending the search beyond the list of references requested by the client turned up another version of the same article which the author had published in English in the transactions of the American Society of Mechanical Engineers. Furthermore, additional valuable references on the subject of cavitation of aluminum were found to supplement the original request.

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:

B.F. Goodrich Chemical Company, Cleveland, Ohio
Hycar Technical Manual

University of Missouri, Columbus, Missouri
The effect of high temperature steam on a nickel-chromium-iron alloy.
Equivalent load method for analyzing pre-stressed concrete structures.

Bureau of Mines, Pittsburgh, Pennsylvania
Haldane gas-analysis apparatus.

Association of Iron & Steel Engineers, Pittsburgh, Pennsylvania
Specification No. 6, Electric overhead traveling cranes, Rev. May 1, 1949.

H.J. Heinz Company, Pittsburgh, Pennsylvania
Nutritional data.

Harvard University, Cambridge, Massachusetts
Executive development; a selected list of books, pamphlets and periodical articles published since 1935.

U.S. Department of the Army, Washington, D.C.
A ceramic coating of HAE for magnesium, applied by an anodizing process.

Sardine Research Program, Department of Natural Resources, Sacramento
Progress reports, 1951 and 1952.

Institute of Life Insurance, New York, New York
Publicity for technical libraries.

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Classified Files

Work volume statistics for the Classified Files were as follows:

	August	September
Documents routed and discharged	20,070	22,636
Documents issued	7,918	8,428
Registered packages prepared for off-site	393	367
Inter-area mail sent via transmittal	35,339	43,713
Holders of classified documents whose files were inventoried:		
(a) Because of normal perpetual inventory procedure	147	156
(b) Because of transfer of work assignment	3	2
(c) Because of termination	6	8
Inventory reductions:		
Copies of documents destroyed	2,519	6,615
Copies of documents downgraded to:		
RESTRICTED and OFFICIAL USE ONLY	0	236
CONFIDENTIAL	0	0
Copies of documents declassified	73	152
Classified documents located which were unaccounted for in previous inventory	32	95
Standard storage cartons of material retired to the Records Center:		
Unclassified and Official Use Only	44	68
Classified	10	9
Off-site originated reports requested by Hanford personnel	158	139
Hanford originated reports requested by off-site personnel	152	343

A sampling of reference questions worked on by Classified Files personnel is as follows:

Program for enrichment of 100-H pile.
Rear face modifications of H pile with special reference to pig tails.
Material on capture of gamma rays subsequent to work reported at Summer Shielding Session at ORNL in 1949.
1948 report on rolling specifications at Simonds Saw and Steel.
Blueprints on the Simonds Saw and Steel roll pass design used to roll uranium at that site in 1948 or 1949.
Reactor test hole equipment.
Thermal spikes in uranium metal.
Processing of uranium sludge.
Application of ion exchange principle to decontaminating contaminated water.
Metal Preparation Section monthly reports for 1952.
Effects of radiation on plastics.

A decision was reached during the month to discontinue the Pink File, since the use made of it was insufficient to justify the work required to maintain it.

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The decision was approved by the Records Committee. Office Letter No. 162 embodying the decision was issued on September 29. References to the Pink File in the Organization and Policy Guides and the secretarial manual, "This Way, Please," will be eliminated in future revisions.

As a result of a suggestion from a staff member, "drop" filing was adopted in the Classified Files. Present procedure is to file the documents in folders by copy number. This was to aid the Audit and Inventory Unit. However, the time expended in arranging the documents in copy order did not appear to be justified since Inventory personnel routinely check the entire folder for "misfiles." It is anticipated that this change in procedure will save approximately 20% of the time of two filing clerks.

A meeting was held with representatives of Printing, Blueprint Reproduction, Duplicating and Mail, Security and Classified Files to discuss revision of OPG 15.20. This Organization and Policy Guide, which is presently concerned with rough draft documents, contains the only clear-cut instructions regarding the handling of classified masters by the duplicating facilities. It was felt that an expanded OPG should be devoted to this specific topic. It was also agreed that the proposed OPG would eliminate the present provision which requires (a) that reproduction orders for classified photographs, drawings, charts, etc., be cleared through the Classified Files if the material is destined for inclusion in a classified document; and (b) that the illustrative material prepared on the reproduction order be returned to the Classified Files for temporary charge out to the author pending its final inclusion in a properly issued and controlled classified document. Under the new procedure, a copy only of the reproduction order would be supplied to the Classified Files, so that they would know the number of copies supplied to the customer. When the document is issued through the Classified Files it will be checked to see that all material supplied has been included. If not, the Classified Files will be responsible for picking up the balance of the material from the author.

The meeting also discussed at length the problem of rough draft classified documents, and there was general agreement that it constituted a major security hazard at the Hanford Works. In a subsequent meeting between Security and the Audit and Inventory group, a decision was reached to revise OPG 15.6 to require the Audit and Inventory Unit to prepare a written report to Security and to Department Managers as each individual file is inventoried. This report will indicate whether the file inventory disclosed undocumented rough draft material in the individual's file.

On September 9 a training program for Classified Files personnel was launched to meet the problem of high turnover. Twenty-seven meetings were held during the month. Indications are that the program will be helpful in reducing errors and increasing job satisfaction. It is planned to revise the program as experience is gained, so that the second presentation will be considerably improved. The program has also provided an excellent opportunity to staff personnel to bring directly suggestions which they believe would improve Files procedures.

The program for centralized control of classified photographs has been hampered by lack of full information on the area photographic facilities. To assist in this matter Security sent a letter to all holders of contraband passes with a

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request to indicate the departments for whom photographs were being taken and the facility doing the developing and printing. An analysis by the Classified Files of the replies received indicates that there are nine complete photographic facilities, including the Photo House, actively engaged in developing and printing photographs at the Hanford Works. Monitoring the output of these facilities in accordance with OPG 15.32 will help greatly to advance this program.

Considerable effort was expended during the month in the recall of HW-25014, "Spectrochemical Determination of Lithium in Plutonium," and HW-24049, "Studies of Diffusion in the Atmosphere, Progress Report No. 1." Both of these documents were distributed from Hanford in accordance with TID-4500, "Standard Distribution Lists for United States Atomic Energy Commission Nonclassified Research and Development Reports." Unfortunately, the unclassified distribution list contains a number of installations outside the continental limits of the United States. Recall of such documents is time-consuming and involves close liaison with the Atomic Energy Commission office in Washington. These incidents have re-emphasized the necessity for careful review of all unclassified Research and Development reports. It would appear that, when doubt exists, it is advisable to classify the document as confidential or secret and then process it through declassification before giving it broad distribution.

During the month 67 classified documents, which had been loaned to the National Carbon Company, Morganton, North Carolina, under Contract G-135, were satisfactorily accounted for. At the close of the contract in July, 1951, the subcontractor returned the documents in error to the Hanford Operations Office where they were later retired to the Records Center. However, since the General Electric Company held primary responsibility for the documents, it was necessary to properly account for them at the close-out of the contract. Those missing were subsequently located in the local Records Center and permanent accountability transferred to the local Atomic Energy Commission.

Reports and Abstracting

The work statistics for the group were as follows:

	August	September
Formal Research and Development Reports	12	7
Formal reports in process	13	10
Reports abstracted	367	523

Work in the Reports and Abstracting Unit proceeded routinely during the month. The bibliography on "Coating, Canning and Testing Methods for Natural Uranium Fuel Elements" is being given top priority to meet an assigned deadline. The first two volumes have been completed and Volume III, which will comprise the indexes, is being typed. Unfortunately, the program for indexing and abstracting the 760 Classified Files and the Vitro Job 15 reports has been temporarily discontinued due to the termination of one of the abstracters. Approximately 400 to 450 reports remain to be done. The recently hired Technical Reports Editor, who has been awaiting his "Q" clearance, has been abstracting and indexing unclassified reports.

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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

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DESIGN SECTION

September, 1952

VISITORS AND BUSINESS TRIPS

E. L. Knoedler, Shepard T. Powell, Baltimore, Maryland, visited Hanford September 24-30 for consultation on ground water development.

M. J. Hamner, Administration Department, Nela Park, Cleveland, and John Flaws, Jr., Cleveland Equipment Works, visited here September 3-4 to discuss RDS-13, Metallurgy canning problems.

M. F. Parr, Foxboro Co., Foxboro, Mass., visited Richland September 8-30 to discuss calibration of power calculator, CG-431-B.

E. B. LaVelle visited American Welding Society, Portland Section, Portland, Oregon, September 9 to give an address titled "Application Analysis of Inert-Gas-Shielded Electric Welding".

S. F. Schure visited Aerojet Engineering Corp., Los Angeles, California, September 25-26 for contract negotiations and personnel interviews.

J. H. Snyder and E. P. Peabody visited Chas. T. Main, Boston, Mass., September 15-19 for engineering consultation on water plant design.

C. W. Harrison and E. Hollister visited Cleveland Equipment Works, General Electric Lamp Division, Cleveland, Ohio, September 15-19 for consultation on automatic machinery and components.

E. Hollister attended the ASME Convention, Chicago, Illinois, September 10-11 for conferences on mechanical engineering; Argonne National Laboratories, Chicago, September 12 for conference on slug canning and testing; and Inland Steel Co., Indiana Harbor, Indiana, September 13 on an inspection trip.

R. G. Hoff attended the I.S.A. Convention, Cleveland, Ohio, September 8-12 and presented a paper on mercury jet switch.

W. P. Ingalls visited the American Platinum Co., Newark, New Jersey, September 8 to discuss techniques of platinum working; and Dupont Co., Wilmington, Delaware, September 9-12 to discuss purification and fabrication lines.

H. F. Peterson and E. F. Smith visited Chicago Bridge and Iron Works September 10 to discuss storage tanks; and attended the Centennial of Engineering Conference September 8-13.

H. S. Davis attended meetings of the American Society of Engineers and the American Concrete Institute, Chicago, Illinois, September 5-13.

B. E. Woodward attended the I.S.A. Convention, Cleveland, Ohio, September 8-13; and visited Bailey Meter Co., September 12 to consult with vendor representatives on temperature monitoring.

G. R. Wilde attended the I.S.A. Convention, Cleveland, Ohio, September 8-13; and visited General Engineering Laboratory, Schenectady, New York, September 12 to consult with vendor representatives on gas analysis.

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ORGANIZATION AND PERSONNEL

Personnel Statistics:

	August 31			September 30		
	Exempt	Non-Exempt	Total	Exempt	Non-Exempt	Total
Design Management	5	2	7	5	1	6
Process Engineering Unit	55	17	72	56	21	77
Design Planning Unit	11	13	24	12	13	25
Design Engineering Unit	70	19	89	70	17	87
Total Section Personnel	141	51	192	143	52	195
Technical Graduates (Rotational)	___	28	28	___	24	24
TOTAL	141	79	220	143	76	219
Personnel on loan to Design Section			10			11

Accessions = 7
Separations = 8

GENERAL

Design Section engineering effort for September was distributed approximately as follows:

	Man Months Expended	% of Total
Expansion Program	103.8	61.7
Research & Development	19.4	11.6
Other Projects & Design Orders	44.9	26.7
TOTAL	168.1	100.0

Negotiations are in progress with the Aerojet Corporation for an engineering assistance contract. It is planned to secure the services of a number of engineers and draftsmen from Aerojet for a period of 6-8 months and to integrate these people in the Section working force on the expansion program.

DESIGN DEVELOPMENT

Statistics:

The total number of engineering man months expended on research and development during September was distributed as follows:

		Man Months Expended	% of Total
RDS-10	Reactor Design Development	1.4	7.2
RDS-11	Water Plant Design Development	.5	2.6
RDS-12	Separations Design Development	3.3	17.0
RDS-13	Mechanical Design Development	9.2	47.4
RDS-14	Utilities & Services Design Development	1.2	6.2
RDS-15	Engineering Standards and Materials Development	3.8	19.6
		19.4	100.0

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Accomplishments:

RDS-10 - Reactor Design Development

A final draft of the "Summary Report of Hazards Associated With Twin Type Reactors" was prepared. The final report will be completed and issued early in October.

A tentative test program on high-density concrete to be conducted by the North Pacific Division Laboratory, Corps of Engineers, was submitted to the NPD Laboratory and returned with their comments and suggestions. The total cost of the contemplated program is estimated at $16,000, and the duration is estimated at seven months after receipt of materials.

Testing of a new downcomer approach section, as provided by an extension to Special Agreement G-6 with Washington State College, was started September 15.

RDS-12 - Separations Design Development

Recommendations for increasing the capacity of the 234-5 process to meet requirements of the expansion program were submitted, and material in support of these recommendations was prepared for presentation to the Design Committee.

The study initiated last month concerning the anticipated UO_3 requirements after completion of the Hanford Expansion Program and the means for meeting the peak capacity requirements was continued. Material is being organized for a scheduled review meeting with the Design Committee.

Preliminary design for the complete segregation of UO_3 derived from Redox and from TBP material was prepared and submitted for cost estimate purposes.

RDS-13 - Mechanical Design Development

Development of the preliminary design criteria for the 313 Building slug canning mechanization was completed. Drafts of these criteria and specifications have been prepared and are being analyzed for possible correction and additions. Scope design work on three types of canning machines progressed during the month.

Preliminary scope drawings of the recommended installation for the RG Line modernization in the 234-5 facility are being prepared in accordance with the recommendations forwarded by the Separations Development Committee (HW-25515).

All parts for the reactor vertical safety rod, Model X-1, have been received and installed. Preliminary testing and adjusting have started.

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RDS-14 - Utilities and Services Design Development

Assistance given the Manufacturing Department in the preparation of the Coulee Dam disaster study is complete. All drawings, curves, maps and factual data have been transmitted to the Manufacturing Department.

RDS-15 - Engineering Standards and Materials Development

Thirteen design orders have been written to date covering the development of engineering standards. These orders represent a total commitment of $38,200.

The progress this month on the most important active standards and materials development work is as follows:

a. Four standard welding specifications were started and are approximately 70% complete.

b. A new Design Guide Book presently being prepared for issue is approximately 15% complete.

c. The preliminary work in connection with the recall, rehabilitation and re-issue of all the existing Standards Books was started.

d. Progress was made on the preliminary work being done to determine the feasibility of conducting tests on the use of nitrogen in place of argon as a purging gas for welding stainless steel.

DESIGN ENGINEERING

Statistics:

Design Engineering effort for the month of September was expended in the following categories:

	Man Months Expended	% of Total
CA-512-R 100-K Reactor	58.5	39.4
CA-512-W 100-K Water Plant	14.8	10.0
CA-513 Purex Separations Facility	26.2	17.6
CA-514 300 Area Expansion	4.3	2.9
Major Projects - Other than Expansion Program	35.1	23.5
Minor Projects and Design Orders	9.8	6.6
TOTAL	148.7	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
CA-512-R	350.0	0	21.8	328.2
CA-512-W	48.0	0	4.3	43.7
CA-513	19.0	0	3.2	15.8
CA-514	10.3	71.0	1.4	79.9
Research & Development	86.8	0	7.6	79.2
Major Projects - Other	58.4	25.2	19.9	63.7
Minor Projects and D.O.'s	98.1	.0	15.9	87.2
TOTAL	670.6	101.2	74.1	697.7

The backlog for the Design Engineering Unit as noted above is scheduled according to the following table:

	AVERAGE MAN MONTHS						
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Balance
CA-512-R	23	22	23	23	23	22	192.2
CA-512-W	6	6	6	5	5	5	10.7
CA-513	3	2	2	2	2	2	2.8
CA-514	2	10	13	13	7	5	29.9
Research & Development	7	9	8	8	7	6	34.2
Major Projects - Other	16	12	10	6	5	2	12.7
Minor Projects and D.O.'s	16	16	13	11	11	10	10.2
*Anticipated Future Work	0	0	2	10	18	26	—

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	140.0	42.0	182.0
Mechanical	210.0	65.0	275.0
Electrical	168.0	50.0	218.0
Instrument	132.7	40.0	172.7
Standards	47.0	14.0	61.0
TOTAL	697.7	211.0	908.7

*Includes UO_3 Capacity Increase and 234-5 Modernization.

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Accomplishments:

The preliminary project proposal for the 100-K Area facilities, CA-512, was completed during the month and submitted to the Appropriations and Budget Committee for approval.

CA-512-R - 100-K Reactor

Design progress for the 100-K Reactor Facilities was advanced 2.8% during September to 36.3% completion.

Expenditures to date are approximately $525,800 against an authorized amount of $1,455,000. Eighty-two requisitions have been issued to date by the Design Section for procurement of engineered items for the 105-KW and 105-KE facilities. The approximate dollar value of this equipment is $5,660,000.

The latest estimated number of drawings required for the design of Project CA-512-R is 1510. Of this number, 811 have been started, 577 issued for preliminary comment, 339 issued for final comment and 169 approved to date.

With the general approval by the Project Committee of test facility provisions in 105-K, details were firmed-up on affected process unit components, such as moderator, thermal shield and biological shield.

Work orders and work requests, with necessary sketches, were prepared and placed in the shops for fabrication of parts for a mock-up of the process tube assembly, thermal and "B" shields, process piping, instruments and moderator. It is estimated that assembly of the mock-up will start at the 101 Building the first week in Octobe

Drawings for the horizontal control rods were rescheduled during the month. A complete new design approach will be necessary as a result of the development on Project CG-431-B of the gassing problem associated with the use of boron carbide in hermetically sealed cans. A design is being developed for the control rods using titanium as the outer shell with boron carbide sandwiched between it and an inner aluminum tube.

Several arrangements for the vertical rod hoisting machanism are being laid out. The design aim is to simplify the system as much as possible to reduce initial cost and maintenance. Present layouts show a decided improvement in winch accessibility.

Work has been completed on the trip mechanism assembly and the hopper and chute assembly for the Ball 3-X System.

The building utilities and services criteria were reviewed by the Project Committee, and general concurrence was obtained on the basic items with the exception of the section on the heating medium.

Drawings, specifications and material requisitions have been completed and approved for the following building mechanical items: (1) base plate and membrane, (2) "C", "D" and "F" Elevators, (3) wash pad hoists and monorail system and (4) storage basin monorail system.

The requisitions, specifications and drawings for the Pressure Monitoring System were issued for procurement, together with a letter which recommended that a special procurement procedure be used in the procurement of this system.

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CA-512-W - 100-K Water Plant

The Title I and Title II design being performed by C. T. Main is approximately 29% complete, an advance of 10.5% during September.

Expenditures to date by the Design Section are approximately $48,800.

Major effort this month was directed toward the study of and comment on design drawings, requisitions and specifications. Nine scope drawings were approved during the month including the Basic Flow Diagram,and Site Plan and Plant Layout. Major requisitions and specifications which were approved during the month included the 230-KV transformers, the process pump drive assemblies and steam generators.

One hundred and five construction drawings have been received from the Architect-Engineer of the estimated total of 694 drawings. Of these, 26 have been approved for design. During the month, all the construction drawings for the river pump house and outfall structure were approved. Of 64 requisitions to be prepared, 31 have been received and 20 have beer approved and submitted to Purchasing. Fifteen of these requisitions were approved this month. These 31 requisitions have an estimated value of $13,000,000.

CA-513 - Purex Facility

Design scope progress in September on the Purex separations facility was approximately 24%, with completion to date 41.1%. Design scope activity is being performed with the assistance of 13 Vitro Corporation engineers.

Expenditures to the end of September were approximately $52,700. Authorized funds for this work are $715,000.

Major progress during the month included the preliminary issue of the following: (1) Primary Flow Sheet, (2) Process Design Criteria, (3) Material Balance Flow Sheets, (4) Process Flow Diagrams and (5) Engineering Flow Diagrams.

The process equipment design criteria was issued for formal comment during the month. This presents in narrative form the bases for equipment design.

Information is being compiled on the mechanical requirements of the main process equipment. Rough drafts have been issued on the vessels, concentrators, fractionators and extraction equipment. Requirements for the agitators, pumps, centrifuges and pulse generators have been issued for formal comment.

A take-off of the stainless steel plate and tubing requirements was prepared, and a purchase requisitions will be issued the first week in October.

Equipment arrangement study drawings were issued. Revised drawings are being prepared based on the latest information available on the engineering flow diagrams.

Design criteria for the site location and overall plot plan were approved by the Design Committee during September.

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The instrumentation design criteria was issued for formal comment early in September and will be ready for approval the first week in October.

Shielding calculations were begun for thickness of concrete at various critical points in the canyon structure.

CA-514 - 300 Area Expansion

Preparation of design scope and the preliminary project proposal continued during the month.

Major effort included the development of several preliminary equipment layouts for study of the flow of raw material.

Details for the expansion of the 313 Building, process equipment, process sewer and caustic storage facilities were developed during the month for use in preparing cost estimates.

CA-516 - Gable Butte Railroad

A preliminary design showing a plan and profile of a new second track and a realignment of the existing track of the Gable-Butte section of the plant railroad was completed and transmitted to the Project Section.

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 completed during the month. The final construction drawings were issued to the field September 25.

CG-431-B - 100-C Area Production Facilities

Engineering work continued on the "clean-up" of miscellaneous items connected with the 105-C Pile.

A recommendation for providing an additional low water pressure trip on the Vertical Safety Rod circuit was approved.

Drawings for the Gas Dehumidification System were issued for construction and the basic arrangement drawings were revised to suit vendor's equipment. Acceptance test procedures were issued for comment.

CG-482 - Pile and Pile Water Plant Improvement

Design is essentially complete. Additional work was requested during the month by the Project Section. Construction sequence, scaffolding layouts and material handling procedures are being developed.

CG-496 - Recuplex Installation - 234-5 Building

Design is approximately 27% complete, an advance of 2% during the month. A revised design schedule was prepared and submitted to the Project Section. This schedule calls for design to be completed by March 1, 1953.

Revisions are being made on tanks for the slag and crucible hood as required by the actualities of hood arrangement. A change in the hood shape has been made as a result of the decision to enlarge the space available for Recuplex installation.

CG-502 - Additional Indication of Moderator Temperature, 105-B, D, F and DR

The mechanical design work on this project has been completed except for installation instructions and test write-up. Instrument Design is now estimated at 80% complete, an advance of 60% during the month. Instrument drawings for the 105-B, D and F installations have been approved by Design and transmitted to the Manufacturing Department for further approval.

D.O. 100239 - Sample Gallery Ventilation - 202-S Building

Final design work on ventilation for the 202-S Building Sample Gallery is about 75% complete, an advance of 50% during the month. Completion of the eight drawings required is expected early in October.

D.O. 100300 - Soil Science Laboratory Facilities - Bldg. 222-U

A drawing showing the scope of work to be included in this project is being prepared and is approximately 75% complete.

D.O. 100314 - Installation of Lubrication Pits in 1716-D & F Garages

Final design of these additional facilities is approximately 30% complete, an advance of 10% during the month.

D.O. 100325 - Activated Silica-Alum Test Facilities - 100-D

The design scope and project proposal for the 100-D test facility were completed during the month.

D.O. 100329 - New 101 Fabrication & Storage Facilities

The design criteria and preliminary drawings for the 101 graphite facility in the 200-E Area were completed during the month and transmitted to the Project Section. Detail design will be done on an Architect-Engineer Design Contract.

D.O. 100346 - Final Design Auxiliary Civil Defense Center

The scope of this work has been completely revised by Civil Defense. A new floor plan is being prepared to incorporate these requested changes.

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D.O. 100350 - Additional Office Space - 234-5 Building Development Laboratory

Preliminary design of a 3,700 sq. ft. Development Laboratory annex was started during the month and is approximately 20% complete.

DESIGN SECTION WORK IN THE CLOSING STAGES OR COMPLETED DURING SEPTEMBER

CG-362 - Waste Metal Removal & Recovery
CG-413 - Expansion of 234-5 Capacity
CG-447 - Portable Meteorological Mast
CG-475 - Cross Header Monitoring System, 105-B, D, F, DR & 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
*E.O. 010667 - 700 Area Building Drainage
E.O. 010671 - 700 Area Shot and Cover vs. Seeding
E.O. 010681 - 700 Area Roads and Walks
*D.O. 100094 - 700 Area "As-Builts"
D.O. 100231 - Waste Gas Disposal - 234-5 Building
D.O. 100258 - Restroom Alterations - 700 Area Buildings
D.O. 100268 - Administration Building - 300 Area
*D.O. 100302 - Adaptation of 200-W Laundry Building for Branch Files Use
*D.O. 100321 - Painting 300 Area West High Tank
*D.O. 100322 - 100-B, D & F Electrical Material Estimate
D.O. 100343 - Additional Facilities - 189-D Building
*D.O. 100349 - Investigate Radiochemistry Beam Supports
D.O. 100355 - Extension of Flagler Avenue & 720 Building Site Parking Lot

*Design Section Work Completed During September.

INACTIVE PROJECTS

No active design work was performed during the month on the following assignments:

CA-192 - Biology Laboratory, 108-F Building
D.O. 100289 - Fire Protection, Filter Rooms - 234-5 Building
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 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.

NONE

R. H. Beaton

MANAGER, DESIGN

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9-30-52

MONTHLY NARRATIVE REPORT

PROJECT SECTION

SEPTEMBER 1952

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Copies 1 through 13 - combined in Plant Monthly Report

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MONTHLY NARRATIVE REPORT - SEPTEMBER 1952

PROJECT SECTION

I. SUMMARY

A. ORGANIZATION

Effective September 1, 1952, the Project Section received the transfer of the Inspection Unit from the Purchasing and Stores Section, Utilities and General Services Department. This Unit, consisting of 27 exempt and five non-exempt personnel, was re-named the Inspection Services Unit, with J. C. Hamilton, Manager. An office was provided in 760 Building for the Unit Manager. Other Inspection Services personnel stationed at Hanford have interim offices in the 703 Building.

Following is a summary of personnel data for the Project Section covering September, 1952:

	September 1, 1952	September 30, 1952
Employees on Payroll	469*	469
Technical Graduates-Rotational	4	4

The end-of-month status involved these changes:

	Project Section Personnel	Tech-Grad-Rotational
Payroll Additions	9	
Payroll Removals	10	
Transfers into Section	3	
Transfers from Section	2	
Transfers within Section	1	

* Includes 32 people transferred as Inspection Services Unit.

B. SCOPE OF ACTIVITIES

Major projects advanced during the month and attained construction completion status as follows: CG-349, Hot Semiworks, 100% (with exceptions assigned to Minor Construction); CA-362, Waste Metal Recovery (TBP), 95.7%; CA-431-A, 100-C Production Facility (Waterworks), 99%; CA-431-B, 100-C Production Facility (Reactor), 99.3%; CG-438, Ball Third Safety System, 13.5%; CG-483, Downcomer Repairs in 100-B, D, DR, H and Replacement in 100-F, 11%; CG-506, Repairs to 100 Areas Retention Basins, 5%.

C. MATERIAL PROCUREMENT

Deliveries of steel to the contractor for the boiler to be added in 200 West have

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been scheduled. For CG-438 (Ball 3X), the ball deliveries to the plater are on schedule. The shipment by the vendor of 29 hopper and step plug units is scheduled for October 1, 1952. The vendor of nozzles for CG-482 (Pile and Pile Water Plant Improvements) is working to correct deficiencies in sample nozzles. There was general improvement in procurement during the month. The stores stock material used by Minor Construction experienced better than 10% turnover, the highest of the calendar year.

D. CRAFT LABOR

A jurisdictional dispute between boilermakers and plumbers concerning construction of a 60-inch pipe line at 107-C is being referred by both disputants to the National Joint Board for the Settlement of Jurisdictional Disputes. The IBEW has demanded that an electrical contractor sign the IBEW Area Agreement by September 30. The issue is stalemated. Negotiations continued on the "Master Agreement" for Hanford Works, with some progress made among basic crafts. Negotiations are continuing with the shop crafts. At the boilermakers' negotiations regarding the Seven Western States 1952 Agreement, the union took a strike vote. The result was twelve locals for and two against. Negotiations were resumed. On September 11, the question of exclusive bus transportation for electricians was placed before an arbitration hearing. On September 17, the arbiter decided for "all-craft" bus transportation. The local carpenters' union has reaffiliated with the Pasco-Kennewick Building Trades Council.

E. SAFETY AND SECURITY

Approximately 291 Project Section personnel attended ten Safety and Security meetings. Two major injuries to construction contractors' personnel occurred on September 24. Special safety meetings were held to instruct all personnel recently transferred to CG-362 (TBP). The regular special hazards meetings were held in the 200 Areas on the topic, "Job Planning and Organization".

F. HIGHLIGHTS OF UNIT ACTIVITIES

Inspection Services Unit (formerly with Purchasing and Stores Section) performed its assigned functions during this first month as part of the Project Section. Special expediting assistance was given on two orders. A two-weeks training conference for off-site inspectors began on September 29. About half (12) of the field inspectors were called in for this first session of orientation and familiarization on current construction programs. Plans were made for a similar conference in late October for all other off-site inspectors.

Minor Construction Management Unit completed ten work orders. The Unit accepted 12 work orders and IR-134 (Additional Facilities in 189-D Building.) A revised project proposal for completion of the Minor Construction Shops is awaiting AEC approval. Total value of work now assigned to the Unit is $10,077,000, of which $2,406,000 remains to be accomplished. The great increase was caused by

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reassignment to this Unit of remaining construction of CG-362 (TBP). About 240 men were transferred to Minor Construction forces. Construction procedures for CG-438 (Ball 3X) are to be distributed during October, 1952. New personnel for CG-362 have been instructed in work methods for S.W.P. conditions.

Project Engineering Unit worked on 71 project items and 16 informal requests, totaling $20,762,800. Six project proposals were transmitted to sponsoring organizations. Five project proposals and one informal request were approved by the A & B Committee. Three authorizations were granted by the A. E. C. The Unit accepted and began work on two informal requests, five engineering requests, and one miscellaneous job. Completed work consisted of two projects, two informal requests, four engineering requests, and one study. Important projects now in progress include Ball 3X, Pile and Pile Water Plant Improvements, Downcomer Repairs, Experimental One Tube Ink Facility, Recuplex Installation, and Repairs to 100 Areas Retention Basins.

Project Services Unit received a greatly increased workload of drafting and reproduction work. Drafting production was 325 new drawings, 21 charts and graphs, and 284 revisions. The drafting room average was 5.5 man-days per drawing. Reproduction output was 130,188 prints, representing over 320,000 square feet. The Estimating group completed 32 estimates. Field Services personnel began preliminarey surveys to obtain design information on Purex Utilities and Facilities. The History group issued three histories. Project Control continued its routine functions and also furnished special budget information to Engineering Accounting and to the Inspection Services Unit. A manual of operation for Blueprint Reproduction is being completed.

Reactor Projects Unit: Official inspection of major buildings and facilities of 100-C Waterworks has been held, and punch list items are being cleared. Remaining work, consisting principally of remote control installation in the river pump house and changes required by addition of sodium dichromate to the water treatment, has been assigned on Work Orders. Temporary structures are being removed from the area, and its roads and parking spaces are being prepared for paving. Every effort is being made to complete architectural and structural items remaining in 105-C. The important items of work leading to acceptance tests are yet to be done. These are required to be completed before the building will be ready for use. Of 60 major acceptance tests for the 105-C Process Unit, 25 were completed. All others were in progress. The clean-up has been accelerated as a result of a series of meetings between CPFF contractor supervision and General Electric field representatives with AEC personnel present.

Separations Projects Unit: Construction on CG-362 (TBP) progressed 1.7% to a total of 95.7%. As of September 22, management of all construction work on CG-362 (TBP) was reassigned to the Minor Construction Management Unit, which began a review of construction schedules, cost estimates, and manpower requirement necessary to completion. A directive, dated September 18, 1952, from the AEC authorized an increase of funds from $49,300,000 to $52,100,000. Work was de-

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layed by contamination in the TXR Area from September 12 to September 24. Work was resumed after contamination was controlled by hosing down the area.

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: September 30, 1952

II. STATISTICAL AND GENERAL

A. Significant Assignments

1. Initial Reporting

IR-101, Retention Basin Sumps 100-B and F Areas

Design had been completed; construction was 50% complete. A request for an extension of time to March 31, 1953, is being routed for approvals. This request was made in order to correlate this work with the revised schedule for Ball Third Safety System.

IR-133, (Formerly ER-2721) Water Quality Laboratory 108-B

Design was completed; construction was 3% complete. Design and material procurement are to the stage that construction can progress rapidly.

ER E-481, Conduit Runs from Pit No. 3 to Pole No. 48, 300 Area

Design has been completed; construction has not begun. This work comprises a short run of conduits to permit the connection of new facilities in Building 384 to aerial distribution lines. The design has been transmitted to AEC with the recommendation that this work be negotiated with the contractor for Projects CG-404 and CG-451.

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1. Initial Reporting (cont'd.)

ER-A-729, Auxiliary Civil Defense and Plant Disaster Control Center

Design was about 10% complete. A project proposal has been prepared for the relocation of the present control center from 712 Building to the basement of the new wing of 703 Building.

ER A-731, 300 Area Utilities Study

Design was 50% complete. This study is being made to determine the additional equipment needed to supply steam, water, and sewer facilities for the 300 Area expansion for Program "X".

ER A-733, Asbestos Shakes - 100-B, D, and F Buildings

Design was about 5% complete. Scoping of this work has begun. Some material from other jobs is available to fulfill part of the requirements for shakes.

ER A-2728, Replace Five Wocden Elevated Water Tanks 200 E & W

Design was about 5% complete. A project proposal has been prepared for one tank in 200 East Area and 4 tanks in 200 West Area.

D.O. 100325, Activated Silica-Alum Preparation Facilities, 183-D

Design was about 10% complete. A project proposal for this facility is being prepared by the Design Planning Unit, Design Section. The Project Engineering Unit is supplying the schedule of work performance.

2. Final Reporting

CG-424, Water Quality Experimental Facilities

All work was completed, and a closing notice is being prepared.

CG-510, (ER A-718), Extraordinary Maintenance, 101 Building

With design at 25% complete, this request has been approved and assigned to the Reactor Section.

IR-112, Building 224 Waste Diversion, 224 E & W

The AEC has approved the downward revision of scope. Funds were adjusted accordingly. The closing notice has been issued.

IR-129, (ER-2722), Duct Level Elevator Stop - 234-5 Building

Construction was completed September 17, 1952. The work was accepted by the Manufacturing Department.

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2. Final Reporting (cont'd)

ER A-667, Water Drainage Around 700 Area Buildings

A report outlining corrective action has been submitted to the sponsoring unit.

ER A-703, Sanitary Facilities - Surplus Sales Yard

The informal request was rejected by the A & B Committee. The sponsor has requested that the work be discontinued.

ER A-1179, High Pressure Water Supply to Front Face, 100-B, D, F, DR and H Areas

This project was submitted to the A & B Committee on September 29, 1952. If approved, the work is to be managed by the Reactor Section.

ER A-1190, Replacement of Heating Coils 105 B, D, F, DR and H Buildings

Since the work is to be performed by work orders, no project proposal is required. The work order has been closed out.

DO 100288, Miscellaneous Items - Program X

Since two letters, dated July 19, 1952, and August 11, 1952, were written, no work has been required.

3. Current Projects

CG-349, Hot Semiworks

Design had been completed previously; construction was completed except for minor items which will be assigned on work orders to Minor Construction. All of the start-up work remains to be done; however, the requirements for it have been determined.

CA-362, Waste Removal and Recovery Facilities (TBP)

Design had been completed previously; construction progressed 1.7% to a total of 95.7%. As of September 22, all construction work under this project was transferred to the Minor Construction Management Unit. The CPFF contractor has continued the functions of warehousing, payroll, purchasing, and health services. Minor Construction personnel are reviewing construction schedules on work to be completed in the BXR and TXR Areas. Except for clean-up items, construction work under SWP conditions in Tank Farms BX, BY, T and TX was scheduled for completion by October 10, 1952.

An AEC directive dated September 18, 1952, addressed to the General Electric Company increased the authorized funds from $49,300,000 to $52,100,000. This

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3. Current Projects (cont'd.)

CA-362 (Cont'd.)

latest directive is $900,000 under the estimated project cost as shown in Revision No. 5. The present spending rate of $700,000 per month allows funds to proceed into the month of December, 1952.

CA-406, Mechanical Development Building (Phase II)

Design progressed 5% to completion; construction has not begun. Design changes were completed by General Electric Company during the month. Drawings, specifications, and other data for bid assemblies were transmitted to the AEC Hanford Operations Office on September 19, 1952.

CA-431-A, New Reactor - 100-C Plant (Waterworks)

Design had been completed previously. Construction progressed 3.3% to a total of 99%. The construction of major buildings and facilities progressed through official inspections. Remaining work has been assigned on work orders, and punch list items are being cleared. Temporary structures are being removed from the areas, and its roads and parking spaces are being prepared for paving. General project facilities, such as water and steam lines, railroads, and emergency sewers are complete.

CA-431-B, New Reactor - 100-C Plant (Reactor)

Both General Electric and architect-engineer design were completed; construction progressed 2.3% to a total of 99.3%. The 105-C building was completed except for such clean-up work as painting and installation of hand rails and hardware. Major work leading up to acceptance tests remains to be done.
For the 105-C process unit, final tests on horizontal rods was completed. On September 1, there were approximately 60 major acceptance tests to be conducted. At the end of the month, 25 tests were completed, and the remainder were in progress. The clean-up work on this project has been accelerated as a result of a series of meetings between the CPFF contractors' personnel and General Electric field representatives, with AEC personnel present.

CG-433, 384 Steam Plant Addition

Design had been completed previously; construction progressed 7% to a total of 90%. Work continued on all phases of construction; however, there was considerable delay because temporary electrical supply facilities had to be constructed. (Project CG-404 facilities were not available.)

CG-438, Ball Third Safety System

Design had been completed previously; construction progressed 2.5% to a total of 13.5%. Because of the urgent need for replacement of process tubes in the 100-F

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3. Current Projects (cont'd.)

CG-438 (Cont'd.)

Reactor, the schedule for shutdown of Reactors has been revised to place 100-F Area first. The revised construction schedules are: F Area, November 17, 1952; B Area, January 5, 1953; with D, DR and H Areas proceeding on a six-weeks cycle.

Deliveries of the boron balls to the plater are on schedule. The vendor in San Jose, California has scheduled the 29 hopper and step plug units for shipment October 1, 1952.

The area battery rooms are completed. All temporary buildings are located in the 105 Exclusion Areas; and the temporary bridge crane is on top of the Reactor Unit, awaiting installation at the next scheduled shutdown.

CG-482, Pile and Pile Water Plant Improvements

Design completion status was revised downward to 75%; construction has not begun. Directive No. HW-272, Modification 2, dated August 27, 1952, authorized expenditures of $2,250,000 for this project. Design is proceeding on construction drawings.

Delivery of critical materials according to requirements has been promised by vendors. Since sample nozzle castings have been inferior, an inspector has been assigned full time to this vendor. Their combined efforts are producing the necessary improvements.

CG-483, Downcomer Repairs in 100-B, D, DR and H and Replacement in 100-F

Design progressed 1% to completion; construction progressed 6% to a total of 11%. Since the schedule for Ball Third Safety System has been altered, the schedule for this project has been revised to conform. The 100-F Downcomer Replacement work will be performed during the November 17, 1952, shutdown. Downcomer sections are being prefabricated where possible, without special steel shapes which are scheduled for delivery about October 10, 1952. An epon base coating is being applied to protect the inner surfaces of the downcomers against corrosion.

CG-506, Repairs to the 107-B, D, F, and DR Retention Basins

Design progressed 10% to a total of 20%; construction remained at 5% complete. The consulting engineer (R. A. Moncreiff of the C. T. Main Company) visited the project sites on September 29, 1952. His proposed solution is an extensive grouting to consolidate the foundation of the basins. This entails drilling well point holes on 10 or 12 -foot grid pattern over the entire basin, then grouting in layers to a depth of about 5 feet below the basin floor slab. This work is being rushed as much as possible in order to establish repair techniques which can also be used in the retention basins of other areas.

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B. OTHER ASSIGNMENTS

CG-187-E, Conversion of Unassigned Space for Radiochemistry Laboratory

Design had been completed previously; construction progressed 2% to a total of 99%. Installation of laboratory furniture and utilities was completed. Balancing of ventilation system was 80% complete. All material for air conditioning refrigeration unit was received, except for minor piping items which are scheduled for delivery October 6, 1952.

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. The G.E.-furnished items for this project are now complete. The two stainless steel hoods have been received, and the growth chamber is ready for shipment.

CG-404, Primary Power Lines for Hanford Works Laboratory

Completion status remains at design 100%, construction 83%. Revision 4 of the project proposal requesting an extension of the completion date to January 1, 1953, was authorized by AEC on September 12. Meanwhile the contractor for this project and for CG-451 is proceeding with work on CG-451.

CG-419, Induction Heating Unit - Building 3732

Completion status remains at design 100%, construction 0%. A revised project proposal requesting change in scope and extension of the completion date to January 1, 1953, has been submitted to the A & B Committee. All material is now in the plant.

CG-420, CO_2 Bulk Storage Facilities

Design had been completed previously; construction progressed 31% to a total of 73%. The work in 100-B Area is being pressure-tested by Minor Construction personnel. The 100-D Area is scheduled for completion next.

CA-434, New Bio-Assay Laboratory

Completion status remains at design 50%, construction 0%. This revised project proposal is still being held by AEC, on the basis that the authorized funds of $257,000 is the maximum at this time. If the facility is to be constructed according to present scope, additional funds cannot be obtained except from the budget for FY 1954.

CA-441, Solvent Building

Completion status remains at design 30%, construction 0%. Further work is awaiting information on design and scope.

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B. Other Assignments (cont'd.)

CG-442, X-Ray Machine - 3745-A

Design progressed 3% to a total of 98%; construction remained at 85% complete. Bids are being requested for the additional building shielding. Since the new diffusion pump for the X-Ray machine was not satisfactory, the High Voltage Engineering Corporation has shipped a larger vacuum pump and a new tube.

CG-445, B-Y Telephone Exchange Additions and Changes

Completion status remains at design 100%, construction 73%. Further work is awaiting delivery of telephone equipment. It may become advisable to close the project and issue a work order to the Telephone Section for installation of the equipment when it is received.

CG-447, Portable Meteorological Mast

Design progressed 2% to a total of 92%; construction progressed 5% to a total of 65%. Development and field erection work are being expedited in order to complete the project as scheduled for December 1, 1952.

CG-451, Extension of 300 Area Underground Electrical Power Distribution System

Design had been completed previously; construction progressed 5% to a total of 6%. A revised project proposal has been approved to extend completion date to January 1, 1953.

CA-452, Meteorology Tower Elevator

Completion status remains at design 100%, construction 0%. Preliminary design drawings submitted by the contractor have been approved. Final detailed construction drawings are almost complete. The contractor is procuring materials for construction.

CG-454, Spectrometer Shielding

Design completion status remained at 98%; construction progressed 1% to a total of 66%. Work was begun on the special step plug and test hole shield which represent the revised scope of the project. This work is scheduled for completion December 1, 1952.

CA-455, Replace Two Elevated Water Tanks in 200-E Area

Design progressed 5% to a total of 75%; construction has not begun. Final bidding specifications are scheduled for completion in early October, 1952.

CA-473, 100-B Automatic Dial Telephone Exchange

Completion status remains at design 100%, construction 0%. It has been decided to combine the telephone exchange facilities for the 100-B-C Areas with the proposed new K Area and to locate this exchange in the 1704K Building. A revised

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B. Other Assignments (cont'd.)

project proposal is being prepared to change the title, scope, funds, and completion date for this work.

CG-477, Building 284-W - Fifth Boiler Addition

Design progressed 5% to a total of 85%; construction progressed 15% to a total of 19%. The contractor has received a firm schedule of shipment from the boiler manufacturer; so the job has been rescheduled for completion February 4, 1953. In the field, structural steel work is nearing completion.

CA-478, Area Fence and Minor Repairs Excess Material Warehouse - North Richland

Completion status remains at design 100%, construction 99%. All work on the project has been completed including installation of the truck scale by Minor Construction forces.

CA-479, Replacement of Docks and Outside Stairs - 700 Area Permanent Buildings

Design had been completed previously; construction began and progressed to 8%.

CA-480, Remodeling 722-C Building for Office Equipment Repair

Design had been completed previously; construction began and progressed to 16%.

CA-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 7% to a total of 57%. Since field work on this installation is behind schedule, AEC management is being requested to expedite construction.

CG-492, Experimental One-Tube Ink Facility

Design progressed 1% to completion; construction progressed 15% to a total of 30%. A revised project proposal is being prepared to request an extension of completion date to February 1, 1953. It has been decided that four pile shutdowns will be required to complete the work. All instruments are expected on the site by October 15, 1952. The Pile Technology Unit advises that hydrogen will be generated within the bayonet tube during the operation of the facility; so a means of removing the hydrogen must be added to the system.

CG-493, Duct Level Safety Showers, Building 234-5

Completion status remains at design 100%, construction 0%. Construction has been delayed by work of higher priority. Since funds appear to be marginal, they will be resurveyed when the job is approximately 65% complete.

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B. Other Assignments (cont'd.)

CG-496. Recuplex Installation, 234-5 Building

Design progressed 6% to a total of 26%; construction has not begun. The status of this project regarding the Construction Rider remains unclear. Consideration is being given to making procurement on AEC funds in order to expedite critical and engineered materials on order. During September, the scope was enlarged to include floor space released by removal of hoods Nos. 29, 30, 31, and 32.

CA-497, New Substation Fences and Grounding of Existing Fences

Design progressed 50% to a total of 100%; construction has not begun. Plans and specifications for lump sum contract bidding were transmitted to the AEC September 22,1952.

CA-500. Lubrication Pits, 1716-D and 1716-F Garages

Design was about 60% complete; construction has not begun. Design is scheduled for completion about October 15, 1952.

CG-501, Repair of 105-DR Effluent Line Junction with 107-DR

Design progressed 1% to completion; construction progressed 25% to a total of 50%. Repair work to the east effluent line was completed September 10, 1952. Since a review of costs indicated an overrun, a stop work notice was issued September 10. A revised project proposal has been submitted to the A & B Committee.

CG-503, Waste Storage Hutment - 234-5 Building

Design had been completed previously; construction progressed 8% to a total of 98%. Remaining work consists of installation of the Gamewell Alarm system and connections to the A.D.T. Alarm system. Project completion date is November 15, 1952.

CG-511, Completion of Minor Construction Fabricating Shops

Design was about 15% complete; construction has not begun. This project proposal, which was forwarded to AEC on August 25, 1952, is awaiting authorization.

CA-516 - (ER A-722), Gable-Butte Railroad

Design has been completed, and the project proposal is being routed for signatures. The total estimated cost is $288,000 which includes 2.2 miles of new track and the realignment of 2,000 feet of existing track.

CA-517, Fire Protection Buildings, 272 E and W

The project proposal was returned unapproved by the AEC on September 19, 1952.

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B. Other Assignments (cont'd.)

CG-519 (ER A-1184), Replacement of 100-D Reactor Effluent Line

Completion status remains at design 20%; construction 0%. The project proposal requesting $219,000 was submitted to the AEC September 2, 1952.

IR-96, Replacement of Air Lock Doors, 234-5 Building

Completion status remains at design 100%, construction 38%. The request for additional funds and extension of time until December 16, 1952, was approved by the AEC. Construction is to be resumed during October.

IR-113, Pile Technology Metallurgical Laboratory Alterations - 234-5 Building

Design had been completed previously; construction progressed 7% to a total of 97%. This work has been accepted with the exception of one pair of metal doors which are on order.

IR-116, (015), Combined Civil Defense and Plant Disaster Control Center

Completion status remains at design 5%; construction 0%. Civil Defense authorities have decided to use mobile equipment for the control center. A revised informal request letter has been submitted to the A & B Committee.

IR-122, Facilities for Contamination Control - Shipping Casks

Design had been completed previously; construction was advanced .5% to a total of 99.5%. All work has been completed except for the motor on the exhaust fan. This motor is to be replaced by a totally enclosed motor that has been secured from excess.

IR-128, Remote Supervisory Control 100 Area Water Plants

Design progressed 1% to a total of 5%; construction has not begun.

IR-134, (ER A-1180) - Additional Facilities in 189-D Building

Design was about 75% complete; construction began and advanced to 2%. Drawings are being approved; work was begun on the removal of electrical equipment from the motor - generator room.

* * * * * * * * *

The following studies and engineering requests, involving preparatory work and scoping of future projects, were active during the month:

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ER-A-661, Central Distribution Headquarters

Design was about 20% complete. The project proposal is being routed for signatures; however, the sponsor has been requested to develop information on alternate sites and the use of existing structures.

ER-A-663, Pile Technology Test and Storage Building

Design was about 30% complete, and a project proposal is being prepared.

ER-A-671, Crushed Rock and Oil Covering, 700 Area

Design was about 25% complete. The sponsor has decided to proceed with the grass seeding propcsal.

ER-A-681, Roads and Walks - 700 Area

Design was about 25% complete. Preliminary design is being completed, based upon decision of the sponsor to seed grass in the 700 Area.

ER-A-686, Painting High Tanks - 105-B and 105-F

Design was about 25% complete. The project proposal, for estimated cost of $42,000, is being prepared on the basis of work performed by Minor Construction.

ER-A-704, Addition to Kadlec Hospital

Design was about 20% complete. The project proposal for design and construction of additional hospital space was rejected by the A & B Committee since construction funds are not available. A revised project proposal requesting final design funds only is being prepared.

ER-A-706, Area First Aid Buildings

Design was about 25% complete. This work is being included as a portion of the project propcsal covering instrumentation for the 100-C metal inspection basin.

ER-A-709, Replacement of Fire and Sanitary Water Tank, 100-D

Design was about 15% complete. The scope revision by the sponsor now includes tank replacement for B and F Areas also.

ER-A-712, Richland Air Raid Shelter Study

The informal request is awaiting authorization.

ER-A-713, Substation Service Building 1100-300 Area

Completion status remains at design 100%, construction 0%. This work has been

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ER-A-713 (cont'd.)

contracted with Projects CG-404 and CG-451. Work is scheduled to be begun and completed during October, 1952.

ER-A719, Administration Building, 300 Area

Design was about 15% complete. Preliminary scoping and design has been completed for a concrete structure of about 15,000 square feet. The estimate and project proposal data have been forwarded for use in preparation of the 300 Area X program.

ER-A-720, Operations Change House - 300 Area

Design was about 20% complete. Information necessary to a 300 Area X program project proposal has been forwarded to the sponsors.

ER-A-721, Additions to 202-S (PR Operating Area)

Design was about 20% complete. The informal request is being routed for approvals.

ER-A-723, Personnel Meter Gatehouse Facility Improvements

Design was about 20% complete. The preliminary design and estimate have been prepared.

ER-A-724, Soil Science Laboratory Facilities

Design was about 20% complete. The preliminary design and estimate have been prepared.

ER-A-725, Particle Problem Animal Exposure Equipment

Work is being delayed by high priority jobs.

ER-A-726, 300 Area Parking Lot

Design was about 25% complete. The preliminary design and an estimate for $23,000 have been completed. A project proposal is being prepared for submittal to the A & B Committee in October, 1952.

ER-A-727, 313 Building Roof Repair or Replacement

Design progressed 40% to a total of 50%; construction has not begun. An estimate has been obtained, but the work may be delayed until the new building adjacent to the present 313 facility has been constructed.

ER-A-728, Graphite Production and Storage Facility

Design was about 10% complete. The design criteria were completed during September and forwarded to the architect-engineer.

ER-A-1182, P-13 Pressure Assembly Removal

The project proposal was returned by the A & B Committee September 8, 1952. A revised project proposal requesting funds to provide facilities for removing the assembly out of the unit and to the "X" level is being routed for approvals. This revised proposal is to be submitted to the A & B Committee on October 13, 1952.

ER-A-1185, Car Puller and Car Shake-Out

At the request of the Manufacturing Department, the project proposal is being held pending further investigation of alternate types of car shakers on the market.

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 copy of the project proposal has been returned by the Reactor Section for final preparation.

ER-A-1187, Metal Examination Facility 105-C

Design progressed 5% to a total of 70%; construction has not begun. A revised project proposal is being prepared for project CA-431 to include the installation of this facility. A new estimate is being prepared on the basis that all examination equipment will be fabricated and installed by G. E. Company personnel.

ER-A-1188, Xenon Generator

Design was about 5% complete. Preliminary design is scheduled on the basis of installing the special slug in a process tube rather than a test hole.

ER-A-1191, Storage Basin Roof Reinforcement

A rough draft and cost estimate of the project proposal are being prepared for consideration by the Reactor Section.

ER-A-1192, Vertical Rod Test Tower

Scoping has been delayed pending more information from the sponsor.

ER-A-3096, 314 Building Revision for Canning Development

The project proposal is being routed for final approvals.

ER-A-3097, 300 Area "X" Program

A cost estimate and information for a non-process project proposal are being assembled for inclusion in the 300 Area X Program. Main phases of work included

ER-A-3097 cont'd.

are: administration building, change house, facilities, and the conversion of several existing buildings to office space and control storage.

ER-2718, Fire Protection - 200 E and W Spare Parts Warehouse

Completion status remains at design 50%, construction 0%. Since the Manufacturing Department decided to include cost of a fire detection system for the warehouse, the total estimate cost of the work was increased to $21,000. A project proposal is being submitted.

ER-2720, Fire Protection Equipment - Building 234-5 Filter Rooms

Completion status remains at design 20%, construction 0%. The original scope to provide CO_2 fire extinguishing service has been temporarily abandoned, and the sponsors are considering other solutions.

ER-2723, Steel Handling System - 272 W

Completion status remains at design 20%, construction 0%. At the request of the sponsor, work on this project was delayed, pending a change in scope.

ER-2724, Insulation of Powder Handling Facilities - 224U

Design progressed 15% to a total of 50%. Construction has not begun. An informal request is being prepared for submittal during October.

ER-2726, Adaption of 200-W Laundry Building to Branch File Use

Design progressed 5% to a total of 20%; construction has not begun. A project proposal for about $100,000 is being prepared.

ER-2727, 235 Building Laboratory Revisions

Design progressed 10% to a total of 20%; construction has not begun. Design Section has been requested to prepare scope drawings for an addition to the west end of the building.

ER-6012, Hanford Works Standards Evaluation

Design progressed 10% to completion. The final report has been submitted to the chairman of the Standards Committee.

ER-6016, Equipment Price Standardization

Design progressed 10% to completion. The report has been submitted to the secretary of the Standards Committee.

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ER-E-478, Inter-Plant Telephone System - Hanford Expansion Program

Design progressed 30% to completion; construction has not begun. Preliminary scoping for the 100-K and 300 Area facilities has been completed. There is little, if any, work expected for the 200 Areas expansion.

ER-E-479, Hanford Works Official Telephone Exchange

Design progressed 5% to a total of 10%; construction has not begun. Scoping and preliminary design are nearly completed. A project proposal is being prepared for submittal about October 10, 1952.

ER-E-480, Storage Building Addition to 3730 Building

Design progressed 10% to completion; construction has not begun. The design has been transmitted to AEC with recommendation that the work be negotiated with the contractor for CG-404 and CG-451.

Job No. 022, Painting West High Tank - 300 Area

Bid opening is scheduled for about October 8, 1952.

C. RELATED SERVICES

1. Project Services

The drafting work load increased considerably during the month, with projects CA-512-R, CA-513 and CG-496 being the largest jobs. Total production was 325 new drawings, 21 charts and graphs, and 284 revisions. The drafting room average was 5.5 man-days per drawing.

Reproduction output likewise increased during September. The volume of prints increased by 34,173, comprising a total of 320,382 square feet. The largest single order processed was 2,783 prints for project CA-512-RW. A procedure for production and control of film slides by the Blueprint Reproduction Shop was established and placed in operation.

Of the 55 estimates scheduled, the Estimating Services Group completed 32. The project proposal estimate for 100 Areas expansion was completed on September 15. Similar estimates are being prepared for the expansion programs in the 200 and 300 Areas. The Field Services Group is beginning preliminary surveys to obtain design information for Purex utilities and facilities.

The Project Control Group continued its routine functions, and prepared the Mid-year Review 1953 Man Power Budget for Engineering Accounting. This group also provided studies and charts to be used in conferences conducted by the Inspection Services Unit.

The History group issued 3 histories during the month. The editing and production of an operations manual for blueprint reproduction has reached the final stages.

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C. Related Services (cont'd.)

2. Inspection Services

The Inspection Services Unit, consisting of 32 people, was transferred to the Project Section on September 1. The Unit continued to perform its assigned functions in the various industrial areas of the United States. Special expediting assistance was given on two orders. A two-weeks training conference for off-site inspectors began on September 29. Twelve inspectors, representing about half of the field personnel, were called in for this first session of orientation and familiarization on current construction programs. Early indications were that this conference is producing great benefits for both the Project Section and the Hanford Works construction program. Plans were made for a similar conference in late October for all other off-site inspectors.

Following is a resume' of inspection activities during the month:

Item	Number
Open requisitions requiring inspection	82
Orders assigned to inspection	85
New orders received	36
Orders completed	8
Sub-vendor orders assigned to inspectors	5
Total requisitions for Program "X" transmitted	121
Total orders placed for Program "X"	16

Methods and procedures to control the flow of requisitions and information on the expansion program were established and put into effect. Inspectors were assigned to cover particular problems and conditions, notably the casting of outlet nozzles for project CG-482 (Pile and Pile Water Plant), the hoppers and step plugs for project CG-438 (Ball 3X), and the boron steel balls for CG-438.

A step towards standardization of testing procedures was taken as a result of difficulties with rod liner cans. Field construction forces reported leaks, and it was discovered after extensive investigation that the inspection at the vendor's plant was made at 30 inches of vacuum while field construction tested at 20 inches of vacuum. Since inspectors had observed leaks at less than 20 inches of vacuum, which later sealed at higher vacuum, the procedures were standardized at 20 inches.

D. CRAFT LABOR

On September 22 the responsibility for management of CG-362 (TBP) was transferred from Separations Projects Unit to Minor Construction Management Unit. With this transfer of responsibility, about 250 men were likewise transferred to continue work on TBP.

Craft work in the 100-C Area was poor during the early part of the month, but it

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D. Craft Labor (cont'd.)

improved during the last two weeks due to pressure exerted on the CPFF contractors' personnel.

Voluntary terminations of CPFF contractors' personnel decreased slightly from the August rate. Percentage of terminations in September was 4.2%.

Negotiators on the "Master Agreement" for Hanford Works made some progress toward aligning the basic crafts. However, the shop crafts have insisted upon conditions which are not uniform for the project. The main issue is still isolation pay. The contractors' negotiators have indicated some monetary concessions to shop crafts, and these matters are still being discussed.

A jurisdictional dispute occurred between plumbers and boilermakers over the construction of a 60-inch pipeline at 107-C. Both crafts have agreed to submit the question to the National Joint Board for the Settlement of Jurisdictional Disputes.

A dispute over the contract between IBEW electricians and an electrical contractor has continued from September 16 to the end of the month. The IBEW wanted to replace the present Agreement with the IBEW Area Agreement by September 30, 1952. After several exchanges of correspondence, the disputants have not reached a settlement. The electrical contractor maintains that the present Agreement is effective until August 1, 1953.

The question of whether a local electrical contractor was contractually obligated to provide exclusive bus transportation to electricians (IBEW) was submitted to an arbitration hearing on September 11. The arbiter announced on September 17 that the contractor was not required to provide exclusive bus transportation, and that "all-craft" transportation was sufficient.

At the boilermakers' negotiations regarding the Seven Western States 1952 Agreement, the union took a strike vote, 12 locals for and two against. Negotiations were resumed; so the threatened strike for October 1, 1952, has not materialized.

After about two years of being outside the organization, the local carpenters' union has reaffiliated with the Pasco-Kennewick Building Trades Council.

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SEPTEMBER 1952

General

Personnel Changes

The roll decreased from 280 to 274. It was 265 a year ago.

Visits

Mr. O. E. Bakko attended the annual convention of the American Hospital Association in Philadelphia.

Miss Swift, head anesthetist, spent one day at Swedish Hospital in Seattle observing methods.

Doctors Cutting and Collins of Kaiser Corporation were visitors who discussed medical coverage for employees on new construction soon to start.

Industrial Medicine

Medical examinations increased from 1823 to 2775. The increased load in contractor employee examinations resulted in an indefinite curtailment of examinations of operations employees. Dispensary treatments decreased from 7787 to 6980.

General Electric employees were treated for 2 major and 2 sub-major injuries. Contractor employees sustained 2 major and 3 sub-major injuries. The health topic of the month dealt with proper house heating from a health standpoint.

Analysis of data on absenteeism continued - taking every tenth employee as a sample. Sickness absenteeism was 1.41% for September as compared to 1.36% for August.

Kadlec Hospital

The average daily census increased from 86.9 (73.3 adult, 13.6 newborn) to 90.9 (78.2 adult, 12.7 newborn.) Newborn deliveries were at record high of 95 for the month. The hospital occupancy percentage was 71.7%, broken down as follows: Mixed services (Medical, Surgical, Pediatrics) 73.7; Obstetrical 62.9. Nursing hours per patient per day were 3.87 for the mixed services.

Public Health

The total cases of communicable disease remained about the same. However there was a sharp rise in Polio from one to seven cases, with one fatality. However, the incidence was comparable to that experienced in the rest of the state.

Costs-August

Medical Department costs before assessments to other departments were as follows:

	July	August	August Budget
Industrial Medicine (Oper.)	$35,644	$37,200	$38,083
Public Health (Oper.)	11,267	11,147	12,822
Kadlec Hospital (Net)	21,640	25,707	30,605
Hospital Expense Credits	2,276	2,732	2,584
Sub-total-Medical Dept. (Oper.)	70,827	76,786	84,094
Construction Medical (Industrial and Public Health)	11,953	11,481	15,357
Total-Operations & Construction	82,780	88,267	99,451

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General (Continued)

Costs-August (Continued)

The net cost of operating the Medical Department before charges were made to other departments for services rendered was $88,267, an increase of $5,487, as compared to previous month. The primary reason for this increased cost is the fact that hospital revenue was $6,237 less because of a decrease in average patient day census from 73.8 to 73.3 and a decrease in number of operations performed from 276 to 190.

1201672

MEDICAL DEPARTMENT

SEPTEMBER 1952

Industrial Medical Section

Medical examinations increased from 1823 to 2775 in September, chiefly as a result of contractor pre-placement and termination examinations. Because of this load it was necessary to cut down on General Electric periodic examinations at the end of the month for an indefinite period. Dispensary treatments decreased from 7787 to 6980. General Electric employees sustained 2 major injuries and 2 sub-majors. Contractor employees sustained 2 major injuries and 3 sub-majors. The decrease in dispensary visits was due to a decrease in contractor employee visits as a result of nearing 105C building completion.

The Industrial Physicians' Scientific Meeting included a discussion of plutonium metabolism and the showing of a film on Radiation Hazard Control.

Doctors Cutting and Collins of the Kaiser Corporation were visitors and discussed construction medical services for contractor employees.

The Chemical Hazard Committee met on September 12th. Hazards discussed included beryllium flouride, lead, nitrogen oxides, silicon tetrachloride, hydrogen peroxide, acetic acids and solvents.

The Health Activities Committee met on September 18th and the health topic for the coming month dealt with home heating. The plant sickness absenteeism was 1.41% for the month of September as compared with 1.36% for August.

Gross cost for Operations has shown an increase from $36,672 in July to $38,170 in August, a net increase of $1,498. The details are as follows:

	August	July	Increase (Decrease)
Salaries	$28,738	$27,095	$1,643
Continuity of Service	2,874	2,709	165
Laundry	275	250	25
Utilities, Transportation, Maintenance	3,235	3,357	(122)
Supply and Other	3,048	3,261	(213)
Total Gross Costs	$38,170	$36,672	$1,498
Less: Revenue	970	1,028	(58)
Expense Credits	4,702	4,752	(50)
Net Cost of Operations	$32 498	$30,892	$1,606

As is noted, the increased gross costs is shown as salaries and is represented primarily by Clinical Laboratory and X-Ray. The expenses of these two sections are prorated between Hospital and Industrial on the basis of services rendered during the month and consequently will vary somewhat from month to month. Industrial physical examinations increased from 814 in July to 1008 in August, laboratory examinations increased from 3787 to 4837 and x-rays from 554 to 646. The hospital patient census decreased an average of .5 per day, consequently the Industrial Medical Section was charged with a higher proportionate share of expense.

Industrial Medical - Construction

Gross costs for this section have shown a decrease of $476 and may be detailed as follows:

1201673

Industrial Medical (Continued)
Costs-Construction (Continued)

	August	July	Increase (Decrease)
Salaries	$8,930	$9,147	$ (217)
Continuity of Service	893	915	(22)
Laundry	57	52	5
Utilities, Transportation, Maintenance	94	50	44
Supplies and Other	945	1,231	(286)
	$10,919	$11,395	$ (476)

The above charges are relatively small and require no explanation. During the month there were 55 complete physical examinations given to Kaiser Engineer Company employees and their sub-contractor, the Foothill Electric Company. The costs of these examinations are chargeable to A.E.C., however since the A.E.C. is charged with the total costs of the Construction Medical program, no separate billing was made, but merely a notation to that effect was made on the monthly cost report.

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MEDICAL DEPARTMENT

SEPTEMBER 1952

Industrial Medical Section (Continued) Physical Examinations	August	September	Year to Date
Operations			
Pre-employment	119	129	1138
Rehire	25	15	161
Annual	399	441	2767
Interim	105	249	963
A. E. C.	41	7	419
Re-examination and rechecks	113	100	799
Termination	206	214	1554
Sub-total	1008	1155	7801
Contractors			
Pre-employment	103	402	1588
Rehire	114	78	1446
Recheck	32	18	414
Termination & Transfer	531	1122	6411
Interim	35	44	118
Sub-total	815	1620	10214
Total Physical Examinations	1823	2775	18015
Laboratory Examinations			
Clinical Laboratory			
Government	179	36	1918
Pre-employment, Termination, Transfer	2873	4576	29661
Annual	2201	2284	15525
Recheck (Area)	693	1552	6268
First Aid	26	18	324
Clinic	282	302	4345
Hospital	4008	4507	40236
Public Health	3	0	140
Total	10265	13275	98417
X-Ray			
Government	36	6	341
Pre-employment, Termination, Transfer	346	652	4314
Annual	412	461	2925
First Aid	215	154	1997
Clinic	235	311	2544
Hospital	287	291	2896
Public Health	0	10	50
Total	1531	1885	15067
Electrocardiographs			
Industrial	70	36	311
Clinic	49	6	94
Hospital	5	35	348
Total	124	77	753

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MEDICAL DEPARTMENT

SEPTEMBER 1952

Industrial Medical Section (Continued)	August	September	Year to Date
First Aid Treatments			
Operations			
New Occupational Cases	400	369	3670
Occupational Case Retreatments	1478	1234	12647
Non-occupational Treatments	2456	2684	26182
Sub-total	4334	4287	42499
Construction			
New Occupational Cases	539	427	6523
Occupational Case Retreatments	2331	1784	25835
Non-occupational Treatments	537	435	7329
Sub-total	3407	2646	39687
Facility Operators	46	47	359
Total First Aid Treatments	7787	6980	82545
Major Injuries			
General Electric	3	2	13
Contractors	9	2	124
Total	12	4	137
Sub-major Injuries			
General Electric	2	2	19
Contractors	10	3	100
Total	12	5	119
Absenteeism Investigation			
Total No. calls requested	5	3	90
Total No. calls made	5	2	89
No. absent due to illness in family	0	0	1
No. not at home when call was made	1	0	17

1201676

MEDICAL DEPARTMENT

SEPTEMBER 1952

Hospital Section

The average daily adult census increased from 73.3 to 78.2, as compared to 85.2 a year ago. This represents an occupancy percentage of 71.7, broken down as follows: Mixed Service (Medical, Surgical, Pediatrics) 73.7; Obstetrical Service 62.9. The minimum and maximum daily census during the month ranged as follows:

	Minimum	Maximum
Mixed Service	39	82
Obstetrical Service	6	22
Total Adult	45	99

The average daily newborn census decreased from 13.6 to 12.7, as compared to 14.0 a year ago.

Nursing hours per patient per day:

Medical, Surgical, Pediatrics	3.87
Obstetrical	3.56
Newborn	2.85

The ratio of in-patient hospital employees to patients (excluding newborn) for the month of August was 2.33. When newborn infants are included, the ratio is 1.88.

The net expense for the operation of Kadlec Hospital for August was $25,707 as compared to $21,640 for July. Summary is as follows:

Kadlec Hospital net expense $25,707.
This is an increase of $4,067 over July primarily as a result of a decrease in revenue of $6,237. The patient census decreased slightly in July and it is felt that the decrease in surgical activity had a greater effect on the lowered revenue. Gross costs decreased by $1,714, and expense credits increased by $456, but these savings were overshadowed by the loss in revenue.

During September ninety-five babies were born at Kadlec Hospital. This is the largest number to be born here in one month since the hospital opened in 1944. The previous high was 91 which occurred in July, 1952.

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MEDICAL DEPARTMENT

SEPTEMBER 1952

Hospital Section (Continued)	August	September	Year to Date
Kadlec Hospital			
Average Daily Adult Census	73.3	78.2	82.3
Medical	23.7	24.2	26.1
Surgical	28.8	29.8	31.1
Pediatrics	7.6	11.0	12.2
Mixed	60.1	65.0	69.4
Obstetrical	13.3	13.2	12.9
Average Daily Newborn Census	13.6	12.7	12.3
Maximum Daily Census:			
Mixed Services	70	82	95
Obstetrical Service	21	22	23
Total Adult Census	89	99	110
Minimum Daily Census:			
Mixed Services	43	39	39
Obstetrical Service	6	6	6
Total Adult Census	56	45	45
Admissions: Adults	464	555	4881
Discharges: Adults	493	498	4851
Newborn	98	81	743
Patient Days: Adult	2273	2345	22545
Newborn	422	381	3365
Total	2695	2726	25910
Average Length of Stay: Adults	4.6	4.7	4.6
Medical	4.2	5.0	4.9
Surgical	6.0	4.7	4.6
Pediatrics	3.6	4.8	4.6
Mixed	4.7	4.8	4.7
Obstetrical	4.1	4.1	4.2
Newborn	4.3	4.7	4.5
Occupancy Percentage: Adults	67.2	71.7	75.5
Medical	64.1	65.4	70.5
Surgical	90.0	93.1	97.2
Pediatrics	40.0	57.9	63.2
Mixed	68.3	73.7	78.9
Obstetrical	63.3	62.9	61.4
Newborn	52.3	48.8	47.3
(Occupancy Percentage based on 109 adult beds and 26 bassinets.)			
Avg. Nursing Hours per Patient Day:			
Medical, Surgical, Pediatrics	3.87		
Obstetrics	3.56		
Newborn	2.85		
Avg. No. Employees per Patient (excluding newborn)	2.33		
Operations: Major	76	72	731
Minor	64	87	783
E.E.N.T.	18	54	547
Dental	1	1	11
Births: Live	86	95	753
Still	0	3	17

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MEDICAL DEPARTMENT

SEPTEMBER 1952

Kadlec Hospital (Continued)	August	September	Year to Date
Deaths	6	6	49
Hospital Net Death Rate	.34	.69	.43
Net Autopsy Rate	50.0	83.3	59.2
Discharged against advice	0	0	7
One Day Cases	90	97	1048
Admission Sources:			
Richland	79.3	74.1	76.4
North Richland	9.5	13.3	11.4
Other	11.2	12.6	12.2
Admissions by Employment:			
General Electric	73.7	72.1	71.8
Government	3.4	3.2	2.5
Facility	6.5	4.9	6.2
Contractors	8.4	10.8	12.7
Schools	.2	1.6	1.7
Military	.4	.7	.8
Others	7.4	6.7	4.3
Hospital Outpatients Treated	449	432	4031
Physical Therapy Treatments			
Clinic	171	221	2101
Hospital	144	181	1234
Industrial: Plant	212	141	1898
Personal	1	1	47
Total	528	544	5280
Pharmacy			
No. of Prescriptions Filled	2869	2958	27626
No. of Store Orders Filled	579	651	6212
Patient Meals			
Regulars	3901	3753	35450
Children under 8	373	584	5060
Specials	953	1197	11865
Lights	0	0	29
Softs	929	769	7969
Tonsils	15	90	996
Liquids	167	163	1615
Surgical Liquids	115	128	867
Total	6453	6684	63851
Cafeteria Meals			
Noon	2010	2062	17021
Night	264	252	2318
Total	2274	2314	19339

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MEDICAL DEPARTMENT

SEPTEMBER 1952

Public Health Section

General

The outstanding event in the communicable disease picture was the sharp rise in the number of poliomyelitis cases reported. However, from the statistical standpoint, the incidence was comparable to the same rate that the state of Washington is experiencing at this time. There was one death from bulbar type and the remainder of the cases were of a mild paralytic nature. It is anticipated that there will be recovery without too much residual in the paralytic cases.

The other disease of significance was mumps which remained at the same level as previously.

The number of home visits made by the public health nurses remained about the same, since there was no change in staff. We are presently short two nurses.

With the opening of schools, visits were made to each school in an attempt to explain the school health program carried on by our section. There appears to be better reception and cooperation of the program by the school district.

Miss Helen Petersen, Field Consulting Nurse of the State of Washington Department of Health, visited this department at the time Dr. Albert Allen conducted his chest clinic.

A sanitary survey of schools, with particular emphasis being placed on cafeterias, was conducted. Results indicated all to be in excellent condition insofar as sanitation was concerned.

Bakeries and restaurants were inspected. All were in satisfactory condition with the exception of one bakery, which was found in poor condition.

Samples of soft ice cream taken from restaurants in the area were analyzed by the bacteriological laboratory. Tests indicate a majority of the operators were not properly sterilizing machines before using. Instructions on cleaning and sanitizing of equipment were given.

Bacteriological results of pasteurized milk samples showed an improvement over the preceding month. Samples which show a high bacteria or coliform count are rechecked on a weekly basis. This method has resulted in an improvement of the milk supply.

Water and sewage samples taken during the month were satisfactory.

Mosquito control crew was used on a limited basis. 400 gallons of DDT in all was used for larviciding. The entire village was fogged for adult control. Mosquito control operations were terminated September 30th. Equipment has been dismantled and crew released to the Transportation Division.

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Public Health Section
General (Continued)

Incidence of dog bites has decreased 50% over the preceding month.

The bulk of services given by the Social Service Counselors continued to be in the area of family relationships. There was a slight increase in the number of situations requiring a direct focus on problems of marital adjustment. All of these cases involved an employee who, because of home and personal tensions, was not performing adequately on his job. The efficiency of these employees will increase in proportion with their increased awareness of and control over the emotional factors in their environment.

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MEDICAL DEPARTMENT

SEPTEMBER 1952

Public Health Section (Continued)	August	September	Year to Date
Education			
Pamphlets distributed	10,989	10,435	141,584
News Releases	5	12	42
Staff Meetings	2	0	11
Classes	18	16	76
Attendance	92	240	1,441
Lectures & Talks	2	14	79
Attendance	111	332	2,483
Films Shown	4	11	129
Attendance	158	285	6,589
Community Conferences & Meetings	23	41	279
Radio Broadcasts	0	3	17
Immunizations			
Diphtheria	34	10	169
Diphtheria Booster	6	39	686
Tetanus	34	10	366
Tetanus Booster	7	39	665
Pertussis	34	10	71
Pertussis Booster	6	39	277
Smallpox	2	48	225
Smallpox Revaccination	3	29	1,517
Tuberculin Test	0	17	22
Typhoid	0	0	12
Typhoid Booster	0	0	4
Rocky Mountain Spotted Fever	0	0	2
Immune Globulin	3	11	106
Other	0	0	7
Social Service			
Cases carried over	103	104	725
Cases admitted	14	18	171
Cases closed	13	25	144
Remaining case load	104	97	752
Activities:			
Home Visits	21	18	90
Office Interviews	210	236	2,220
Conferences	43	55	542
Meetings	4	12	61
Sanitation			
Inspections made	223	154	1,412
Conferences held	44	24	303

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MEDICAL DEPARTMENT

SEPTEMBER 1952

Public Health Section (Continued)	August	September	Year to Date
Bacteriological Laboratory			
Treated Water Samples	206	219	1,793
Milk Samples (Inc. cream & ice cream)	47	54	206
Other bacteriological tests	245	320	2,262
Total	498	593	4,261
Communicable Diseases			
Amoebic Dysentary	0	0	4
Chickenpox	2	0	102
Erysipelas	0	0	1
Food Poisoning	0	2	2
German Measles	12	8	588
Gonorrhea	3	6	22
Impetigo	1	1	5
Influenza (U.R.I.,)	0	0	1
Malaria	0	1	1
Infectious Mononucleosis	0	0	3
Measles	2	0	13
Mumps	38	38	404
Pediculosis	0	0	1
Pinkeye	0	0	24
Poliomyelitis	0	7	8
Rheumatic Fever	0	0	2
Ringworm	0	0	12
Roseola	0	0	2
Scabies	0	0	1
Scarlet Fever	0	0	31
Thrush	0	0	1
Tuberculosis	1	0	6
Whooping Cough	0	0	2
Total	59	63	1,236.
Total No. Nursing Field Visits	692	585	7,713
Total No. Nursing Office Visits	48	76	1,189

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MEDICAL DEPARTMENT PERSONNEL SUMMARY

September 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
3000 1100 Areas	Department Admin.	2	2								2	1		3	4.									1	2	1	18.0
	Industrial	3.5	8		1					1		1	1		12.4								4.4				32.3
	Hospital	2	*59	3	26	4	9	4	2	1		4			11.5	3	2	5	11				7			7	160.5
	Public Health	1	8		1							2			1.1					3	2	1	.6				19.7
Outlying Areas	Industrial	2.7	1				1	1							7								.7				13.4
	Public Health		1																				.3				1.3
	100-B	.1	1				1								.3												1.5
	100-D	.1	1				1								.3												1.5
	100-F	.1	1				1								.3												1.5
	100-H	.1	1				1								.2												1.4
	100-C	.2	3																								3.2
	200-E	.3	1				.2								.3												1.8
	200-W	.7	6				1								.3												8.0
	300	.2	2				.4								.3												2.9
	White Bluffs		1																								1.0
	TOTAL	13	102	3	28	4	12	5	2	2	2	8	1	3	38	3	2	5	11	3	2	1	13	1	2	8	274

*Includes 1 part-time and temporary nurse

Number of employees on roll
Beginning of month 280
End of month 274
Net decrease 6

Radiological Sciences Department

RADIOLOGICAL SCIENCES DEPARTMENT

SEPTEMBER 1952

Summary

Four Class I radiation incidents and two Class II incidents were reported. In no case was the exposure of sufficient degree to cause concern.

A fire in the bioassay laboratory severely damaged the building interior, temporarily putting the facility out of operation. Progress on minimum rehabilitation underway appears satisfactory. The need for a new bioassay facility remains unresolved.

In the area of personnel monitoring, items of interest included the deliberate exposure of an employee's film badge to an X-ray beam by an associate. This represented the second such incident in Plant history, the first having occurred in 1944. Contamination spread in the 241-TX tank farm and adjacent 244-TX construction area necessitated the shut-down of construction activities until necessary decontamination could be effected.

Research and development activities progress satisfactorily. Preparation in support of our responsibilities as host for the forthcoming A.E.C. Bio-Medical Program Directors' Meeting to be held in Richland neared completion.

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Radiological Sciences Department

RADIOLOGICAL SCIENCES DEPARTMENT

SEPTEMBER 1952

Organization

The month end force of 367 included 28 supervisors, 92 engineers and scientists, 14 clerical, and 233 other personnel. This represented a net decrease of 6.

General

A fire in the bioassay laboratory, in which the sensitive analyses of urine for plutonium, uranium and fission products have been undertaken for years under inadequate conditions, temporarily put the facility out of operation. Arrangements were made to effect emergency analyses in other laboratories, all subject, however, to a risk of extraneous contamination. Routine sampling was suspended. Minimum steps for rehabilitation were begun. There has still been no resolution of the pressing need for a new bioassay facility.

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
None	None

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Radiological Sciences Department

RADIOLOGICAL RECORDS AND STANDARDS SECTION

1. Radiation Monitoring Services

General Statistics

	August	September	1952 To Date
Special Work Permits	800	695	6832
Routine & Special Surveys	1238	1199	11849
Air Samples	2324	2101	17199
Skin Contamination Cases	51	41	644

During removal of temporary operating equipment by Separations Section personnel at the 241-TX tank farm, contaminated material was spread over a considerable area in the farm and the adjacent 244-TX construction area south of the farm. Construction work at both locations was discontinued until some decontamination work could be effected. Minor construction later took over the work in the 244-TX area.

Gross contamination spread involving milligram quantities of plutonium occurred in room 153 of the Purification building (234-5) when a waste bottle containing ethanol was inadvertently mixed with nitric acid. The resulting chemical reaction blew the stopper out of the bottle some hours later and spread the contamination to the laboratory floor. The contamination was then tracked into four other rooms and a corridor.

A 25-mg radium source was dropped in one of the calibrations buildings. The outer plastic case was broken, but the inner capsule remained intact. No contamination spread or overexposure to personnel resulted.

Two incidents involving improper handling of personnel monitoring equipment were reported. In one case, an employee of the Pile Technology Unit apparently purposely exposed the film badge of a fellow employee to an X-ray beam in the 3706 building. In the other case, an employee of the Applied Research Section carried his badge in his pocket and placed a wafer of uranium in the same pocket. In the latter case, the exposure to the individual could not be determined accurately and is considered to be an overexposure.

Three surveys were made at the Kadlec Hospital on injured employees of the Metal Preparations Section. Low level uranium contamination was found on the face and hands of one of the employees and was easily removed.

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2. Standards

(a) Exposure Investigations

Two Class II and four Class I radiation incidents were reported. Five of the incidents are summarized above. The second Class II incident involved overexposure of an operator in the Metal Preparation Area. In none of the incidents was there indication of significant harm to the individuals involved.

3. Exposure Records

(a) Personnel Meters, and Records and Photometry

General Statistics	August	September	1952 To Date
Gamma pencils read	223,454	228,760	1,915,620
Potential overexposures	6	8	57
Confirmed overexposures	0	0	0
Slow neutron pencils read	754	956	8,230
Potential overexposures	0	1	2
Confirmed overexposures	0	0	0
Beta-gamma film badges processed	41,073	47,818	406,019
Potential overexposures	8	11	93
Confirmed overexposures	1	2	9
Fast neutron badges processed	338	360	3,997
Potential overexposures	0	0	0
Confirmed overexposures	0	0	0
Lost readings (all causes)	38	28	344

(b) Bioassay

A fire in this laboratory on September 12, 1952 necessitated shutdown of routine sampling and analyses during the remainder of the month. Routine sample in Kennewick was started early in September.

1) Plutonium analyses:

	August	September	1952 To Date
Samples assayed	640	302	4,645
Results over detection limit	1	3	21
Maximum d/m/sample	0.34	0.61	1.70
Resamples of previous months	1	1	14
Maximum d/m/sample	BDL*	BDL*	BDL*

*Below detection limit.

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2) Fission Product Analyses:	August	September	1952 To Date
Samples assayed	628	264	4,642
Results above 10 c/m/sample	0	0	0

3) Uranium analyses:

Results of 175 samples were as follows:

METAL PREPARATION - 300 AREA

Job Description	End of 4th Day Exposure µg/liter Maximum	Average	Number Samples	End of 1 Day-No exposure µg/liter Maximum	Average	Number Samples
Canning	11	5	13	3	2	7
Machining	30	11	21	12	5	13
Melt Plant	30	14	21	14	8	20
Material Handling	27	10	14	11	6	7
Testing	15	7	12	4	3	5
Coverage	14	7	4			

	Before Job Maximum	Average	Number Samples	After Job Maximum	Average	Number Samples
Car Unloading	3	1	12	14	8*	9

*Three values 512, 412, and 294, which were not confirmed by subsequent samples are not included in the average.

	Miscellaneous Samples Maximum	Average	No.Samples (µg/liter)
Random Samples	0	0	0
224-U	6	1	17

4) Tritium Analyses:	Activity Density (µc/cc x 10^3) <2	2-20	>20	Total
Number of samples	44	0	0	44

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(c) Thyroid Checks

All thyroid checks were below the warning level.

(d) Hand Score Summary

There were 46,738 alpha and 57,065 beta scores reported. About 0.06% of the alpha scores and 0.04% of the beta scores were above the warning level. Decontamination was attempted and successful in all cases.

4. Calibrations

	Number of Routine Calibrations		
	August	September	To Date
Fixed Instruments	92	174	1,848
Portable Instruments	2,407	1,657	18,728
Personnel Meters	11,215	8,381	127,713
Total	13,714	10,212	148,290

BIOPHYSICS SECTION

CONTROL UNIT

Regional Survey

The general findings are summarized in the following table:

SAMPLE TYPE AND LOCATIONS	Activity Type	Average Activity Density μc/cc
Drinking Water		
Benton City Water Co. Well	alpha	1.1×10^{-8}
Richland, N.Richland, Benton City Wells	alpha	< 5 to 1.1×10^{-8}
100 Areas	beta	< 0.5 to 2.5×10^{-7}
Pasco, Kennewick, McNary Dam	beta	< 5 to 6.3×10^{-7}
Backwash Solids-Pasco Filter Plant	beta	1.6×10^{-2} μc/gm
Backwash Liquids-Pasco Filter Plant	beta	5.8×10^{-7}
Sand Filter-Pasco Filter Plant	beta	1.0×10^{-4} μc/gm
Anthracite Filter-Pasco Filter Plant	beta	3.4×10^{-4} μc/gm

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CONTROL UNIT (Continued)

SAMPLE TYPE AND LOCATIONS	Activity Type	Average Activity Density
Other Waters		
300 Area Wells #1, 2, 3	alpha	2.9 to 5.3 x 10^{-8} µc/cc
300 Area Well #4	alpha	1.2 x 10^{-7} µc/cc
Well #4 measured as uranium	U	9.4 x 10^{-8} µc/cc
48 Wells on the reservation	beta	< 0.5 to 1.0 x 10^{-7} µc/cc
Columbia River-Hanford Ferry	beta	6.5 x 10^{-6} µc/cc
Columbia River-Patterson to McNary	beta	4.0 x 10^{-7} µc/cc
Columbia River-Shore Mud	beta	7.5 x 10^{-5} µc/gm
Raw Water-Operating areas	beta	< 0.5 to 5.6 x 10^{-7} µc/cc
Pile Effluent retention basins	beta	1.8 x 10^{-3} µc/cc
Pile Effluent retention basins	alpha	< 5 x 10^{-9} µc/cc
I^{131} in farm wastes	I^{131}	3.6 x 10^{-6} µc/cc
I^{131} in Columbia River-Hanford	I^{131}	8 x 10^{-8} µc/cc
Atmospheric Pollution		
Gross alpha emitters	alpha	< 0.4 to 3.5 x 10^{-14} µc/cc
Gross dose rate-Separations areas	beta-gamma	0.4 to 1.6 mrep/day
Gross dose rate-Residential areas	beta-gamma	0.3 to 1.2 mrep/day
Filterable beta-Separations areas	beta	0.2 to 4.9 x 10^{-12} µc/cc
I^{131}-Separations areas	I^{131}	0.2 to 3.1 x 10^{-12} µc/cc
I^{131}-Separations stacks	I^{131}	4.2 curies/day
Ru - Redox stack	Ru	5.9 x 10^{-2} curies/day
Active particles-Wash.,Ida.Ore,Mont.	-	< 0.001 ptle/m^3
Active particles - Hanford Works	-	0.004 to 0.2 ptle/m^3
Tritium(as oxides)-Reactor stacks	T	1.1 x 10^{-8} µc/cc

	Activity Type	Average Activity Density
Vegetation		
Environs of Separations areas	I^{131}	0.3 to 1.3 x 10^{-5} µc/gm
Residential areas	I^{131}	< 3 x 10^{-6} µc/gm
Eastern Wash. and Oregon	I^{131}	< 3 x 10^{-6} µc/gm
Non-volatile beta emitters-Wash. & Ore.	beta	2.1 x 10^{-5} µc/gm
Alpha emitters-Separations areas	alpha	< 0.5 to 1.8 x 10^{-7} µc/gm
Alpha emitters-300 Area	alpha	7 x 10^{-8} µc/gm

The concentration of particulate matter in the atmosphere near the 200 Areas increased markedly during the week ending September 5. Comparison of readings from remote locations with those at 200-West Area indicated that the source was in the latter area with peak concentrations of 1.4 particles/cubic meter of air occurring at the monitoring location near the Redox facility. Concentrations have been normal since the period mentioned.

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Radiological Sciences Department

CONTROL UNIT (Continued)

The concentration of gross beta particle emitters in water at the Redox swamp averaged 5.7 x 10^{-6} μc/cc. Results from weekly samples collected at that location during the last five months have shown concentrations less than the detection limit, 5 x 10^{-8} μc/cc.

ANALYTICAL CONTROL LABORATORY

Routine and special analyses were carried out as follows:

Laboratory

Type Sample	September	Analyses Completed 1952 to Date
Vegetation	1194	13311
Water	1980	17643
Solid	397	3403
Air samples	421	4238
Uranium (Fluorophotometer)	651	5193
Special survey samples (RMU)	23	365
Special survey samples (RS)	99	613
Dow Background survey samples	0	177
Total	4765	44943

Counting Room

Beta measurements (recounts included)	5593	57379
Alpha measurements (recounts included)	3205	34439
Control points (alpha and beta)	3307	26676
Decay curve points	3193	32589
Absorption curve points	162	1548
Total	15460	152631

Control Services

Revision of correction factors for the measurement of gross beta emitters in reactor effluent water was completed and application of them to the data from past routine measurements was begun. Statistical correlation of readings from the BM chamber, the Ryerson electroscope, and the mica window counter in the determination of gross emitters in reactor effluent water was continued. Calibration curves based on fluorophotometer readings for oil-fog measurement were computed for the Methods group.

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Synoptic Meteorology

Forecasts	Number made	September Percent Reliability
Production	90	88.5
24-hour	60	87.8
Special	58	96.6

The monthly average temperature was 69.0. This was 4.5° above normal, and was the third highest average for September in 41 years of records in the Hanford area. Precipitation was also much below the normal for September.

ENVIRONMENTAL HAZARDS AND GENERAL STUDIES UNIT

Experimental Meteorology

The analysis of photographs from field tests conducted in July to study the diffusion of oil fog from a source 183 feet high during inversion conditions was completed. The results indicate that the mean peak concentration under these conditions was nearly proportional to the -1.4 power of the distance from the source.

A series of experiments was performed during unstable temperature gradients in which the oil concentrations were determined in 206 puffs that reached the ground from the 183 foot level. Of these puffs, 176 were sampled in the 400 to 600 foot annular ring around the tower. A comparison between the dilution factor and the oil concentration in those puffs expected to pass through the 400 to 600 foot ring during these conditions indicated that about one puff per hour with a dilution less than 300 would be expected. A similar field test conducted under superadiabatic conditions with windspeeds of 14 to 22 mph indicated that the distance at which maximum concentration probably occurred was about 2100 feet or 11 stack heights from the source.

Analysis of the records of the meteorological field stations continued. Eleven months of wind data were used to determine whether an emergency emission from the 100 Areas could pass through the Ringold Coulee region. It was found that when the wind was essentially parallel to the river (northwesterly), at Hanford and White Bluffs, the stream lines were through the Coulee 22% of the time.

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Geology and Hydrology

The long-term concentration fluctuations in both beta-gamma and alpha emitters in the ground waters of the 241-B region, when correlated with the changes in the volumes of water discharged to the various swamps, has suggested a slight movement or oscillation back and forth of the ground water in response to slight changes in the gradient of the water table. Nitrate concentrations also vary in a cycle roughly corresponding with the concentrations of radioactive materials.

A combination of increases in radioactive contamination in specific wells and nitrate concentration in the 241-T Area has indicated an eastward movement of the ground water; directing influences are presumably the existence of a less permeable area lying partly along the path of movement and the rising ground water mound beneath the Redox swamp. The presence of beta-gamma emitters in the ground water in the vicinity of the 241-T second cycle, 224-T, and 5-6 cribs and tile fields appear to be confirmed both by measurements of radioactive materials and by nitrate analyses. The ground water appears to be moving south at this general location down the dip of the mound beneath the T Plant swamp and toward the mound being created by the Redox swamp.

A ground water table map of the project area for August, 1952, was completed to show conditions prior to the startup of the TBP process. The water table beneath the Redox swamp has risen 12 feet since January 1952.

The concentration of radioactive materials in the 107-H Well continued high, although leakage from the basin has been reduced.

The contamination of the wells located between the 300 Area retention pond and the river continued to increase, while that in wells west of the river decreased as in previous years. The concentration of radioactive materials in the former was found to be nearly identical to that in springs issuing from the river banks below the wells.

Soil Science

Determinations of the exchange capacities of soil samples obtained from various sites on the Hanford Works area gave values ranging from 0.8 to 35.4 m.e./100 grams of soil.

In the general program to study the movement of ions of radioactive elements through the soil, equilibrium studies to determine the effect of adding successive increments of cesium solution to soil indicated that more

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Radiological Sciences Department

Soil Science (Continued)

than 90% of the cesium was adsorbed from each added increment until the exchange capacity was approximately 1% saturated with that ion. Above 1% saturation, the soil continued to adsorb cesium, but the percentage removal from each added increment gradually decreased. Column studies indicated that these equilibrium data can be applied directly to a given increment in a column at concentrations of cesium < 0.01% of the exchange capacity. Above this value the amount adsorbed in a column becomes less than the equilibrium value as the amount of cesium added increases.

The adsorption of cesium in soil from sodium nitrate solutions was found to decrease with increasing cesium concentration. These data indicate that the efficiency of the soil underlying the second cycle Crib with respect to the adsorption of cesium is lessened considerably by the high sodium salt content of the waste.

Industrial Hygiene

A study was made for the Technical Section of the beryllium exposures possible from laboratory investigations. The highest concentration found in the air was only 1/30 the recognized MAC for this metal.

An investigation was commenced on the possible lead and fluoride air contamination in the canning section of Building 313.

A preliminary survey was made for the Industrial Medical Section of acetic acid mist exposures in the 200-W Laundry.

Methods

Several trial calibrations of the Kanne chamber for the noble gas monitoring of the Separations areas stacks were made by comparison of the ionization current against the reading obtained on an internal proportional counter. Preliminary calibrations appeared to be on the order of 3×10^{7} μc/cc/amp.

Experiments on the use of tributyl phosphate for the extraction of three gallon water samples were directed toward the removal of the uranium and plutonium from the tributyl phosphate after extraction. Certain ammonium compounds were tried as reagents for this re-extraction with none found satisfactory for both plutonium and uranium.

A new series of samples for the determination of noble gases in the reactor effluent water was taken and decay measurements commenced. Results appeared to duplicate those obtained on previous samples; both series show an

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Methods (Continued)

important fraction of material with a longer half-life than could be accounted for from expected fission product components.

A procedure for the concentration of the radium from a 5 gm soil sample into a 30 ml final volume has been devised and is under test with spiked soil samples.

Radiochemical Standards

Counting characteristics of S^{35}, Ca^{45}, and Ru^{103}-Rh^{103} were studied using 2 π, 4 π, and mica window counters and various mountings to determine backscatter and absorption coefficients. Entirely satisfactory agreement was obtained between the disintegration rates calculated from the proportional and the mica window G.M. counters for the Ru-Rh isotopes indicating that the proportional counter is effective for the 0.02 and 0.03 Mev beta particles concerned. Disintegration rates determined from the 2 π proportional counter results were about 8% higher than those from the mica window counter for S^{35} and about 15% lower for Ca^{45}; some anomalies in absorption coefficients and backscatter factors were shown for these two isotopes.

RADIATION MEASUREMENTS

Physics

The special ionization chamber for determination of plutonium surface dose was completed during the month. Internal dimensions of the chamber were measured on radiographs. All measurements except a few needed for correction factors were completed on both bare and coated pieces.

Measurement of the beta dose was completed for various distances from the Sr^{90} source using the external extrapolation chamber.

The theoretical analysis of data from a moderated BF_3 fast neutron counter used in free air experiments at several different locations indicates the strong possibility that none of it is free from error due to scattering from nearby surfaces. Preparations are being made for a free air experiment in which the apparatus will be suspended from a cable of the Meteorology Tower; the nearest scattering surface will be 100 feet away. The lucite-zinc sulfide scintillators developed for fast neutron counters were modified by the inclusion of a boron compound making them sensitive to slow neutrons also; first trials show them to be about one-half as sensitive as a standard BF_3 counter.

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Physics (Continued)

Aging tests of the early part of the lives of a capacitively-loaded and of an unloaded geiger counter have been completed; results are essentially the same as those found earlier for the later stages in the life of similarly loaded tubes.

Instrument Development

Development work was started on a single channel scintillation spectrometer to be used for gamma spectrum analysis.

Work progressed on the test well monitor.

An amplifier for a portable alpha scintillation counter was designed, built, and laboratory tested.

Laboratory tests of the detector and amplifier for the recently completed recording anemometer indicated that the instrument was generally satisfactory. The design was released for the construction of those circuits for six units to be used on the portable mast.

A G.E. pencil charger-reader was investigated in detail and a report prepared for the manufacturer. Three Victoreen G.M. survey meters were also tested and found to be acceptable except for uniformly unreliable vibrator power supplies.

BIOLOGY SECTION

AQUATIC BIOLOGY UNIT

Biological Chains

Inactive, pending installation of flow regulating equipment.

Ecology

Survey of the Columbia River

Collecting operations were carried out according to schedule throughout the month. A suitable area for dredging was located behind McNary Dam and satisfactory samples were obtained. Although the activity density of the water apparently increased over that of last month, the activity density

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Radiological Sciences Department

Survey of the Columbia River (Continued)

of small fish, insect, larvae and bottom algae decreased. Plankton remained at about the same level. Average values for Hanford were; 1.9×10^{-3} μc/g of small fish, 3.5×10^{-3} μc/g of algae, 7.6×10^{-3} μc/g of caddis fly larvae, and 12×10^{-3} μc/g of plankton. Maximum radioactivity found in large fish was 1.2×10^{-2} μc/g of chiselmouth scales, while in game fish a maximum of 2.2×10^{-3} μc/g of bass bone associated with 1.5×10^{-4} μc/g of flesh was observed.

Effluent Monitoring

Routine monitoring of the area effluent was continued throughout the month but was virtually concluded at the end of the period. Marking of the control and 5% effluent lots by removal of pelvic fins was continued, and about 9,000 fish were transferred to the Applied Fisheries Laboratory at the University of Washington on September 30 for acclimatization and eventual release to Puget Sound. Results are indicated in the following table:

Condition	River Water	1%	2%	3.5%	5%	10% Effluent
Fingerling Mortality %	9.2	8.4	8.6	13.5	11.1	33.5
Size in grams	6.4	7.0	7.2	6.6	6.0	5.7

Increased mortality and retarded growth indicate definite toxicity at the 10% level, probable toxicity at 5%, and possible toxicity at 3.5%.

BIOLOGICAL SERVICES UNIT

Biological Monitoring

Routine collections showed no marked increase in activity densities of thyroids sampled. Jack rabbits collected near the 200-East Area were more active than those from other sites, showing an average of 0.001 μc I^{131}/g thyroid.

Clinical Laboratory

Nine hundred and twenty-six determinations. Improved precision in hemoglobin determinations was realized by utilizing new standards based on total iron content of pooled blood.

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Radiological Sciences Department

Microscopy

Routine histological preparations, photomicroscopy, and electron microscopy. In electron microscopy, effort is being directed toward assisting the Technical Section in problems on pile process water, graphite, and special alloys.

Radiochemistry Laboratory

Services included 269 TTA and ether extraction determinations in biological samples, the preparation of 37 isotope solutions, and the analyses of special and routine samples involving approximately 3700 alpha and beta counts.

METABOLISM UNIT

Animal Metabolism

Analyses were completed on the skeletons of the group of rats sacrificed 250 days after cessation of plutonium feedings. Plutonium deposition did not vary significantly from that in animals sacrificed at 3, 90, and 180 days.

Analyses were completed on the soft tissues of two rabbits sacrificed 90 days after plutonium administration. The total retention and the distribution of plutonium were very similar to that previously reported for rabbits sacrificed 12 days after plutonium administration.

Microbiology

No result.

Plant Nutrition

The iodine uptake efficiency of barley, tomato, and bean plants was studied in nutrient culture under greenhouse conditions. Barley was approximately twice as efficient as either tomato or bean, as interpreted from the ratio of activity in leaves to activity on roots. Fruit accumulation of iodine in the bean and tomato was also studied. Activity in the leaves was greater than that in the fruit by factors of twenty to fifty.

I^{131} absorption from the atmosphere was shown to be greater under conditions of alternating light (16 hours) and darkness (8 hours) than under continuous light. This effect may be due to stomatal functions.

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Plant Nutrition (Continued)

Activity densities of vegetation and seeds of barley irrigated with control well water, 5% pile effluent, and 100% pile effluent, do not show significant differences. This is no doubt due to the fact that the pile was down during most of the irrigations. Total nitrogen and percent germination was determined for the harvested grain. The 100% pile effluent grain was slightly lower in total nitrogen and also in percent germination, but the differences are of doubtful significance.

Plant Metabolism

Subculturing, on various media, of algae grown in tritium oxide solution (6,000 rep per day) indicates the absence of any reversible growth inhibition and the absence of biochemical mutants unable to synthesize sugars, amino acids or vitamins. The initial exposure resulted in the death of two-thirds of the cells and the enlargement of surviving cells.

The previously reported isotope effect in the incorporation of deuterium by growing algae was shown to be unaffected by D_2O concentration in the media in the range of 5% - 25%.

TOXICOLOGY UNIT

Experimental Animal Farm (Toxicology of I^{131})

The ratio of I^{131} deposited in the thyroid gland to the amount of I^{131} administered daily is somewhat lower in the adult ewes fed 5 μc or more per day than in the 0.15 μc per day group.

A further examination of thyroid sections in the various 5 μc groups in relation to control sections reveals no findings which may be definitely attributed to radiation. Some isolated suggestions of damage were observed, however, but are equivocal.

There is no histological evidence of damage observed thus far in the 15 μc groups, but the study of these groups is incomplete.

Four animals previously fed 480 μc of I^{131} per day for 20 days in July, 1951, were sacrificed. Three were given 135 μc tracer doses 4, 4, and 8 hours prior to death.

The remaining six ewes in this group are being bred and will be sacrificed when the fetuses are 4 - 9 weeks old and autoradiographs made of the embryonic thyroids to ascertain the age at which I^{131} uptake occurs.

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Experimental Animal Farm (Continued)

In continuation of the study to determine relative efficiency of various routes of administration, it was noted that if the wool were clipped only with shears and scissors there appeared to be little or no detectable absorption through the skin. If the clipped area were cleansed with 70% alcohol, the uptake of I^{131} seemed to be augmented. The high value (31% of applied dose) obtained in the first study was probably due to a break in the continuity of the epidermis, although there was no visible trauma noted on the shaved area. With the exception of the lamb given the intravenous tracer dose, the blood activity densities were highest in all sheep at the four hour sampling time. The highest value at four hours was obtained in the sheep receiving I^{131} by oral administration, and was 3 times that in sheep receiving I^{131} topically. The total μc of I^{131} excreted in feces and urine during the first 72 hours is as follows:

Route of Administration	Feces	Urine
Intravenous	9.0	5.0
Intrapulmonary	8.0	11.0
Per os	13.0	7.0
Topical	5.0	7.0

Physiology

All animals previously given plutonium and treated with zirconium citrate were sacrificed and radiochemical analysis of tissues is about 75% complete.

The strain A mice housed in the Separations area are now entering their fifth month of exposure. Investigations are now underway to determine another suitable exposure area as the present laboratory is scheduled for closure.

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FINANCIAL DEPARTMENT MONTHLY REPORT
SEPTEMBER, 1952

Summary

Work was started on the mid-year review of the budget for fiscal year 1953. Key program assumptions for the budget review, prepared by Nucleonics Division personnel, were concurred in informally by HOO-AEC. Mid-year budget review data will be submitted to HOO-AEC about December 15, 1952.

A uniform cost coding system for the Nucleonics Division, to be effective October 1, 1952, was issued to department and section managers on September 8. The system provides uniform codes to be used by all departments in place of the varying codes used in the past. The uniform system is expected to result in better understanding of the codes, and to facilitate the use of machine accounting. Use of the uniform coding system, in conjunction with increased use of machine accounting, is expected to permit earlier issuance of cost reports.

Preparations were made in September for converting the distribution of costs of the Technical Section of the Engineering Department, effective October 1, 1952, to a system whereby predetermined standard rates per man-hour of productive time are charged to research and development, process control and customer sections. Prior to October 1 actual overhead costs were distributed on the basis of salary dollars for productive time. The revised system facilitates cost estimating, provides reports better suited for control of costs, and aids in the early issuance of cost reports. The revised system was made effective in the Design and Project Sections in March and April, 1952, respectively.

The Plant and Equipment statement for fiscal year 1952 was issued early in September. This statement shows asset and depreciation reserve balances at the beginning and close of the fiscal year, and changes during the fiscal year. The statement shows data by types of facilities, area locations, and (for the first time) departments having landlord responsibilities.

September salary payments to employees reflected increased rates for isolation pay and area differential pay. The increased rates, approved in September, were effective as of March 17 and March 15, 1952, respectively, and retroactive payments to active employees were also made in September.

Statistics

A summary of cash disbursements and receipts (excluding reimbursements by AEC) for the months of September and August, 1952, is shown below:

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Disbursements	September	August
Payrolls (net)	$2 646 532	$2 931 483
Materials and Freight	1 434 789	1 910 430
Payroll Taxes	540 521	618 430
U. S.Savings Bonds	219 873	164 079
Pension Plan - Employees' Portion	68 878	69 287
Payments to Subcontractors	19 912	10 434
Other	291 436	254 062
Total	5 221 941	5 958 205
Receipts		
Rents	90 031	93 710
Sales to AEC Cost-Type Contractors	83 054	88 912
Hospital	66 077	57 967
Utilities	54 863	22 722
Telephone	19 413	18 344
Scrap Sales	18 649	5 687
Bus Fares	9 794	9 144
Miscellaneous Accounts Receivable	9 582	12 327
Refunds from Vendors	5 159	6 966
Refund of Group Insurance	-0-	27 223
Other	8 158	13 442
Total	364 780	356 444
Net Disbursements	$4 857 161	$5 601 761

Advances as of September 30 and August 31, 1952 may be summarized as follows:

	September 30	August 31
Cash in bank - contract accounts	$4 467 839	$4 723 239
Cash in bank - salary accounts	50 000	50 000
Travel advance funds	125 000	125 000
	4 642 839	4 898 239
Disbursements not reimbursed	4 857 161	5 601 761
Total	$ 9 500 000	$10 500 000

Personnel and Organization

Personnel Changes During Month	Current Month	Prior Month
Employees at beginning	356	358
Additions and transfers in	13	11
Removals and transfers out	(13)	(13)
Employees at close	356	356

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Personnel and Organization (continued)

	Current Month	Prior Month
Personnel by Sections at Month-End		
General	10	10
General Accounting Section		
General Accounts	23	23
Plant Accounts	26	25
Accounts Payable - General	24	25
Accounts Payable - Engineering	18	*
Accounts Receivable	21	20
General	2	2
	114	95
* Included in Engineering Accounting Section		
Payroll Section		
Payroll Preparation	31	35
Employee Benefit Plans	14	14
Confidential Payroll	15	14
Payroll Records	7	8
Statistics & Reports	7	3
General	7	7
	81	81
General Cost Section		
Consolidated Costs and Budgets	5	5
Utilities & General Services	15	16
Community Real Estate & Services	13	14
Radiological Sciences and Other	6	6
Medical	3	3
General	2	2
	44	46
Manufacturing Cost Section		
Costs and Budgets	34	35
General	6	6
	40	41
Engineering Cost Section		
Project Section Costs	20	20
Design Section Costs	9	9
Technical Section Costs	9	8
Accounts Payable	*	20
General	5	5
	43	62
* Included in General Accounting Section		
Internal Audit Section	13	12
Rotational Trainees	11	9
Total	356	356

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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	Ia-1 through Ia-9
Payroll Section	Ib-1 through Ib-8
General Cost Section	Ic-1 through Ic-3
Manufacturing Cost Section	Id-1 through Id-2
Engineering Cost Section	Ie-1 through Ie-2
Internal Audit Section	If-1

GENERAL ACCOUNTING SECTION
MONTHLY REPORT - SEPTEMBER, 1952

ACCOUNTS PAYABLE

As of September 1, 1952, accounts payable functions previously handled by the Engineering Accounting Section were transferred to the General Accounting Section. The responsibility for audit of construction and operations invoices has remained with the respective supervisors, but general functions have been consolidated under the direction of the operations group.

In view of the revised cost coding system which is to be made effective October 1, 1952, arrangements were made with all cost sections for their representative to examine open purchase orders in the accounts payable file room and revise codes to the new system.

At the present time, approximately 3,000 purchase orders relating to prior construction programs have not been financially completed and are currently active.

Final audit was completed in September of approximately 1,000 completed purchase orders. As this audit is completed, files are forwarded to the Records Center.

ACCOUNTS RECEIVABLE

The accounts receivable balance at September 30, 1952, amounted to $508,332, a decrease of approximately $15,000 from the balance at August 31, 1952.

Electricity consumed in August for which billings were mailed on September 13, 1952, totaled $43,360. This amount represented $2,657 billed to facility operators and $40,703 billed to residence leaseholders. In addition to the amount billed to facility operators, $8,298, representing energy consumed, was not billed due to the fact that their leases do not provide for payment of electricity on a metered basis. Total electricity bills issued totaled 6,139. At September 30, 1952, approximately 1,600 accounts, totaling $11,885, were still unpaid. This is approximately a fifty per cent decrease from the number of unpaid accounts at August 31, 1952.

201706

General Accounting Section

ACCOUNTS RECEIVABLE (CONTINUED)

Kadlec Hospital out-patient invoices numbered 2,023, amounting to $9,495, as compared to 1,983, amounting to $9,167, in August. In-patient revenue increased approximately $3,050 in September as compared to August. Sales of $64,641 were booked in September, and cash receipts amounted to $66,077.

The Kadlec Hospital accounts receivable balance of $106,307 comprises 1,332 individual accounts. Charges making up this balance may be segregated as follows:

Month	Number of Items		Amount
September	762	41%	$ 43 437
August	266	13%	13 266
July	98	5%	5 335
Prior to July	383 *	41%	44 269
Total	1 509	100%	$106 307

* Includes:

119	accounts at collection agencies	$ 15 009
226	accounts on which payments are being currently received, some of which may ultimately become uncollectible	24 865
38	accounts being processed through insurance companies, welfare organizations, etc.	4 395
383		$ 44 269

An article was prepared and was submitted to the Hanford Works News for publication in the September 19 issue. This story clarified certain points with respect to billings for electricity.

In accordance with Atomic Energy Commission Bulletin GM-159, relative to write-off of uncollectible accounts, 44 accounts, in the total amount of $5,169, were assigned in September to the Atomic Energy Commission, and Accounts Receivable ledgers were relieved of this amount. All these accounts had been returned by our collection agent as uncollectible.

GENERAL ACCOUNTS

Advances from the Atomic Energy Commission were reduced by $1,000,000 during September to $9,500,000. This reduction was effected through reduced reimbursement by the Commission of cash disbursements for the month of August.

Procedures regarding the handling of shipping documents were revised in September. As revised, procedures now provide for the recording of all documents issued and the follow through and ultimate notation in a register as to disposition of dollar amounts.

1201707

GENERAL ACCOUNTS (CONTINUED)

Arrangements for payment of billings from travel agencies and airlines from the Travel Advance bank account instead of from the Contract bank account were made this month. Such payments will be charged to employees' cash advance accounts, and as a result, total costs of specific trips, as well as total monthly costs, will be more readily available for auditing and reporting purposes.

The balance of the Travel Advance Account increased from $32,168 as of August 31, 1952, to $42,732 as of September 30, 1952. The September 30, 1952, balance may be segregated as follows:

Month Advanced	Number Open Advances	Amount
September	136	$34 578
August	29	5 458
July	5	813
Prior to July	4	1 883
Total	174	$42 732

A total of 186 expense reports, in the total amount of $20,570, were processed in September, as compared to 177 expense reports totaling $19,636 processed during August.

PLANT ACCOUNTS

During the month the annual Statement of Plant and Equipment, fiscal year 1952, was issued. This report showed balances at June 30, 1951, net changes for fiscal year 1952, and ending balances at June 30, 1952. The amount of annual depreciation expense based on June 30, 1952, asset balances and the composite rate of depreciation in effect at that date is also shown in the report. Plant and Equipment balances were segregated according to control accounts, by detail functional breakdown, and finally by departmental responsibility, in accordance with Organization and Policy Guide 04.4, Assignment of Landlord Responsibilities. This is the first time the annual report has shown asset and reserve balances according to landlord responsibilities.

Studies are under way relative to revised controls of instruments and health instruments. A determination is being made with the assistance of operating personnel as to those instruments requiring individual accountability (Catalogued Plant) and those items which are recorded as a group (Uncatalogued Plant).

1201708

General Accounting Section

PLANT ACCOUNTS (CONTINUED)

Also, the instrument equipment piece number tag, which segregates instruments by type and use, will be used as means of identification instead of the HEW tag now in use.

During the month a proposed revision of depreciation rates for motor vehicles, heavy equipment, and railroad rolling stock was completed. Proposed revisions are based on average service lives, as recommended by the Greyhound Bus service, various dealers in heavy equipment, and Northern Pacific and Union Pacific railroads, and are to be revieved further next month.

1201709

General Accounting Section

	September	August -1)
Accounts Payable		
Balance at Beginning of Month	$ 348 387	$ 551 372
Vouchers Entered	2 475 280	2 652 692
Cash Disbursements	2 355 536 DR	2 862 642 DR
Cash Receipts	5 159	6 965
Balance at End of Month	$ 473 290	$ 348 387
Number of Vouchers Entered	3 312	2 935
Number of Checks Issued	1 876	1 971
Number of Freight Bills Paid	2 114	1 265
Amount of Freight Bills Paid	$ 518 673	$ 415 588
Number of Purchase Orders Received	1 357	1 367
Value of Purchase Orders Received	$ 935 737	$ 621 104

(1- August totals recast to include both General Accounting and Engineering Accounting.

Cash Disbursements		
Material and Freight	$1 434 789	$1 910 430
Payrolls (Net)	2 646 532	2 931 483
Payroll Taxes	540 521	618 430
Lump Sum and Unit Price Subcontracts	19 912	10 434
United States Savings Bonds	219 873	164 079
Pension Plan - Employee's Portion	68 878	69 287
All Other	291 436	254 062
Total	$5 221 941	$5 958 205

1201710

General Accounting Section

	September	August
Cash Receipts		
Prior Month's Expenditures Reimbursed by Atomic Energy Commission	$4 601 761	$4 167 825
Rents	90 031	93 710
Sales to AEC Cost-type Contractors	83 054	88 912
Hospital	66 077	57 967
Electricity	54 863	22 722
Telephone	19 413	18 344
Scrap Sales	18 649	5 687
Bus Fares	9 794	9 144
Miscellaneous Accounts Receivable	9 582	12 327
Refunds from Vendors	5 159	6 966
Refund of Group Insurance Premium	-0-	27 223
Other	8 158	13 452
Total	$4 966 541	$4 524 279
Bank Balances at End of Month		
Chemical Bank & Trust Company - New York Contract Account	$ 958 045	$1 558 237
Seattle - First National Bank - Richland Contract Account	2 829 564	2 435 474
United States Savings Bond Account	220 283	159 343
Salary Account No. 1	20 000	20 000
Salary Account No. 2	30 000	30 000
Travel Advance Account	79 712	91 415
Seattle - First National Bank - Seattle Escrow Account	5 875	5 875
National Bank of Commerce - Richland Contract Account	680 229	729 528
Total	$4 823 708	$5 029 872

1201711

General Accounting Section

	September	August
Accounts Receivable		
AEC Cost-type Contractors	$ 225 198	$ 232 283
Hospital	118 073	128 552
Rents	71 222	57 908
Electricity	11 885	23 674
Equipment Sales to Facilities	41 322	41 874
Miscellaneous Services	26 736	25 467
Telephone	13 401	13 008
Safety Shoes	495	254
Sub-total	508 332	523 020
Reserve for Bad Debts	40 961 CR	45 584 CR
General Ledger Balance	$ 467 371	$ 477 436
AEC Cost-type Contractors		
Number Invoices Issued	63	54
Amount of Invoices Issued	$ 75 969	$ 115 620
Cash Received	83 054	88 912
Hospital		
Number Out-Patient Invoices Issued	2 023	1 983
Charges During the Month	$ 64 641	$ 61 257
Collections - Cash	66 077	57 967
- Payroll Deductions	5 937	5 333
Rents		
Houses		
Number Houses Occupied	6 039	6 043
New Leases and Lease Modifications	155	86
Lease Cancellations	138	73
Charges During the Month	$ 222 774	$ 222 643
Collections - Cash	37 244	39 729
- Payroll Deductions	186 069	190 602
Dormitories		
Number Room Occupied	1 083	1 078
New Assignments	129	82
Removals	124	79
Charges During the Month	$ 15 181	$ 14 993
Collections - Cash	2 853	2 164
- Payroll Deductions	12 174	12 754
Facilities		
Number Facility Leases	135	135
Revenue	$ 59 210	$ 51 817

1201712

General Accounting Section

	September	August
Accounts Receivable		
Electricity		
Number of Bills Issued	6 139	6 136
Amount of Bills Issued	$ 43 360	$ 44 478
Miscellaneous Services		
Number Invoices Issued	286	338
Amount of Invoices Issued	$ 10 846	$ 9 006
Cash Received	9 582	12 173
Telephones		
Working Telephones (Excludes Official Telephones)	5 614	5 570
Telephone Work Orders Processed	309	441
Charges During the Month	$ 45 319	$ 44 347
Collections - Cash	19 413	18 344
- Payroll Deductions	24 192	25 481

	Number	Amount
Uncollectible Accounts (Total to Date)		
Accounts Forwarded to Collection Agencies	435	$ 39 866
Accounts Returned as Uncollectible	101	17 414
Collections	167 -1)	5 625 -2)
Balance at Collection Agencies September 30, 1952	200	$ 16 827

(1- Includes 134 accounts collected in full and 33 accounts partially collected.

(2- Represents total collections, half of which is remitted to General Electric.

1201713

General Accounting Section

	September	Total To Date
Scrap Sales		
Number of Sales	13	538
Revenue (Excluding Sales Tax)		
Scrap Sales	$ 18 649	$ 557 397
Tract House Sales		
Revenue to Atomic Energy Commission	953	35 101
Revenue to General Electric	238	14 911
Total	$ 19 840	$ 607 409

	September	August
Travel Advances and Expense Accounts		
Cash Advances - Beginning of Month	$ 32 168	$ 27 924
Advances During the Month	41 086	31 824
Expense Accounts Submitted	20 570 CR	19 535 CR
Cash Refunded	9 952 CR	8 045 CR
Cash Advances - End of Month	$ 42 732	$ 32 168
Outstanding Cash Advances		
Current	$ 34 578	$ 25 398
Over 30 Days	8 154	6 770
Total	$ 42 732	$ 32 168
Traveling and Living Expenses		
Paid Employees	$ 21 249	$ 20 361
Billed to Government	20 109	19 636
Balance in Variation Account at End of Month	2 556 DR	1 417 DR

1201714

PAYROLL SECTION MONTHLY REPORT
SEPTEMBER, 1952

Retroactive payments covering increased isolation pay and area differential were made in September. Payments to 4 272 weekly-paid employees, included in salary checks for the week ending September 21, grossed $191,943.29, representing the period from March 17, 1952, which was the effective date of the increase recently approved by the Wage Stabilization Board, to September 14, 1952. Payment of the new rate began currently with the week ending September 21. The gross amount of retroactive payments of area differential made to active monthly-paid employees, included in checks issued September 30, was $32,306.16. Payments to terminated monthly-paid employees will be made in October. Approximately 150 overtime hours were worked in making retroactive payments to weekly-paid employees, and 118 hours were involved in accomplishing payment to monthly-paid employees.

In connection with the off-site storage of vital payroll records, a detailed program was prepared covering the packaging and forwarding extra copies of payrolls and other confidential payroll data to Schenectady. The initial shipment of such records will be made in October. Certain payroll records will be microfilmed and the job of getting these records ready for microfilming was started in September.

Work was begun in September on the preparation of IBM deduction cards for employees authorizing payroll deductions for the new "Good Neighbor Fund." About 48 man hours were spent sorting and checking payroll deduction authorization cards preliminary to cutting IBM cards.

The compilation of a special report to show absence trends for the past twelve months was initiated in September. This report will include data on each employee with a year or more of service who has been absent more than seven days during the past year.

An analysis of benefit claims paid in July for surgical coverage under the G. E. Insurance Plan, similar to a survey on hospitalization claims made in August, was completed in September. This report, which was used to furnish management with pertinent data and to compare the claim experience of the Nucleonics Division with other divisions of the Company, included type of surgical operations, types of coverage (employee or dependent) and an individual break-down by type of coverage (male or female employee, employee's wife, son or daughter.)

There were 8 789 employees on the payroll as of September 30, 1952 as compared with 8 856 employees on August 31, 1952, a net decrease of 67. There were 215 removals from the payroll during the month, including 12 leaves of absence and 36 illness removals. A total of 148 employees were added to the payroll, including 35 employees re-engaged with continuous service.

Due to transfer or reclassification of employees, preferential rates were eliminated in 3 cases of weekly-paid employees during the month. A total of 837 weekly-paid employees were on preferential rates as of September 30, 1952.

A total of 586 weekly-paid employees were scheduled to begin their 1952 vacations in September. To date, 6 394 vacation notices covering 1952 vacations have been received for weekly-paid employees. The annual review to inform supervision of

1201715

Payroll Section (continued)

1952 vacations-not-taken was completed in September except for typing lists which will be forwarded to Department Managers. These lists will be completed in October, and will show the names of employees who have not taken all of their 1952 vacations and the number of days remaining for each employee.

Applications for 8 normal retirement pensions were prepared and forwarded to the Pension Department during the month.

At the request of the Employee Relations Section a special payroll analysis of exempt employees by classification was prepared during the month.

A total of 1 134 checks amounting to $63 197, covering 898 benefit claims, were received from Metropolitan Life Insurance Company during September 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 $1 266 838 in benefits under the health provisions of the plan.

During September, 85 suggestion award checks aggregating $1 315 were prepared and forwarded to the Secretary of the Suggestion Committee for delivery to Nucleonics Division employees.

Military duty allowances were paid to 15 employees during the month of September. As of September 30, 1952, 267 employees of the Nucleonics Division had entered military service.

Garnishments against six employees were received in September; two were released without payment to the court, and four are pending. Four garnishments were pending from August, making a total of eight garnishments not released as of September 30.

During September, 4 employees were added to the list of employees authorized to pick up salary checks, U. S. Savings Bonds and custody receipts. As of September 30, 1952, 837 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 September.

United States Savings Bonds purchased under the G. E. Savings and Stock Bonus Plan during the years 1948, 1949 and 1950 were withdrawn by 23 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.

In September three salary checks were reported lost. One of these salary checks was located by supervision during the month. As of September 30, 1952, eight lost check cases were pending.

Bank reconciliations completed in September were:

Weekly Salary through No. 307, week ended July 13, 1952.
Weekly Salary Vacation through No. 307, week ended July 13, 1952.
Bond Account - August, 1952.
Monthly Payroll No. 72, August, 1952.

Payrolls reimbursed were as follows:

Weekly Salary through September 21, 1952.
Monthly Salary through September, 1952.

Payroll Section (continued)

STATISTICS Employees and Payroll	Total	Monthly Payroll	Weekly Payroll
Employees on Payroll at beginning of month	8 856	2 225	6 631
Additions and transfers in	148	14	134
Removals and transfers out	(215)	(25)	(190)
Transfers from weekly to monthly payroll		18	(18)
Transfers from monthly to weekly payroll		(1)	1
Employees on payroll at end of month	8 789	2 231	6 658

Number of Employees	September	August
Bargaining group - HAMTC	3 479	3 501
Bargaining group - Building Services	68	68
- Two Platoon Firemen	52	52
- Hanford Guards	562	566
Other weekly - non-bargaining	2 449	2 496
Executive, administrative and operating	1 681	1 670
Professional	491	491
Other Monthly	7	12
Total	8 789	8 856

Number of Employees		
Engineering	1 499	1 537
Manufacturing	3 210	3 145
Utilities & General Services	2 235	2 288
Community	202	218
Real Estate & Services	311	306
Financial	356	356
Employee & Public Relations	105	107
Radiological Sciences	364	370
Medical	273	277
General	26	26
Law	6	6
Accountability	18	18
Technical Personnel	184	202
Total	8 789	8 856

Overtime Payments		
Weekly Paid employees	$71 247	$82 242
Monthly Paid employees	24 034 (a)	16 329(b)
Total	$95 281	$98 571

Number of Changes in Salary Rates And Job Classifications	1 390	1 170

(a) Payments cover period September 1 through September 30, 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 August 1 through August 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 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 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.

120717

Payroll Section (continued)

	September	August
Gross Amount of Payroll		
Engineering	$ 713 125	$ 739 068
Manufacturing	1 449 674	1 545 042
Utilities & General Services	857 145	987 847
Community Real Estate & Services	197 479	234 381
Other	501 499	583 714
Total	$3 718 922(a)	$4 090 052(b)
Annual Going Rate of Payroll		
Base	$40 957 724	$41 129 107
Overtime	1 355 514	1 181 013
Isolation Pay and Area Differential	1 970 695	1 516 639
Shift Differential	456 209	470 102
Other	25 220	24 400
Total	$44 765 362	$44 321 261
Average Hourly Base Rates		
Bargaining group - HAMTC	$2.130	$2.122
- Building Services	1.643	1.642
- Two Platoon Firemen	2.091	2.089
- Hanford Guards	1.862	1.859
Other weekly - non-bargaining	1.804	1.800
Executive, Administrative and operating	2.963	2.964
Professional	3.132	3.131
Other Monthly	2.254	2.225
Total	$2.233	$2.226

Average Earnings Rate Per Hour (c)	September			August		
	Weekly	Monthly	Total	Weekly	Monthly	Total
Engineering	$1.953	$3.073	$2.582	$1.927	$3.067	$2.525
Manufacturing	2.340	3.164	2.482	2.306	3.119	2.456
Utilities & General Services	2.023	2.873	2.135	1.997	2.880	2.122
Community Real Estate & Services	2.079	2.638	2.266	2.065	2.632	2.252
Other	1.878	3.243	2.182	1.858	3.242	2.158
Total	$2.124	$3.059	$2.355	$2.091	$3.042	$2.323

(a) Includes payments for four-week period ended September 21, 1952 in the case of weekly paid employees. Includes $32 306 retroactive area differential increase for the period March 15, 1952 through August 31, 1952 in the case of monthly paid employees, and $191 943 for the period March 17, 1952 through September 14, 1952 for weekly paid employees.

(b) 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.

(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.

1201718

Payroll Section (continued)

Employee Benefit Plans	September	August
Pension Plan		
Number participating at beginning of month	7 180	7 116
New participants and transfers in	119	134
Removals and transfers out	(80)	(70)
Number participating at end of month	7 219	7 180
% of eligible employees participating	93.3%	92.9%

Employees Retired	September	Total to Date
Number	8	228 (a)
Aggregate Annual Pensions Including Supplemental Payments	$1 778	$53 752 (b)
Amount contributed by employees retired	4 445	57 236

(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.

	September	August
Number who became eligible for participation	122	179
Number who applied for participation	82	127
Number who elected not to participate	26	22
Replies not received	14	30
Insurance Plan (c)		
Personal Coverage		
Number participating at beginning of month	8 989	9 024
New participants and transfers in	120	133
Cancellations	(14)	(39)
Removals and transfers out	(169)	(129)
Number participating at end of month	8 926	8 989
% of eligible employees participating	98.6%	98.4%
Dependent Coverage		
Number participating at beginning of month	5 689	5 685
Additions and transfers in	77	59
Cancellations	(6)	(6)
Removals and transfers out	(50)	(49)
Number participating at end of month	5 710	5 689
Claims - Disability Benefits (d)		
Number of claims paid by insurance company:		
Employee Benefits		
Weekly Sickness and Accident	163	159
Daily Hospital Expense Benefits	151	180
Special Hospital Services	182	210
Surgical Operations Benefits	133	152

(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.

1201719

Payroll Section (continued)

Employee Benefit Plans (continued)

Claims - Disability Benefits (continued)	September	August
Dependent Benefits		
Daily Hospital Expense Benefits	205	230
Special Hospital Services	293	310
Surgical Operations Benefits	263	295
Amount of claims paid by insurance company:		
Employee Benefits	$31 676	$37 828
Dependent Benefits	31 521	39 685
Total	$63 197	$77 513

Number of Disability Claims Forwarded to Insurance Company		
Hospital Benefits		
Kadlec Hospital	477	569
Other Hospitals	122	110
	599	679
Weekly Sickness and Accident Benefits	154	170
Total	753	849

Claims - Death Benefits (a)	September	Total to Date
Number	3	100
Amount	$22 000	$587 513

Group Life Insurance

The Group Life Insurance Plan was discontinued November 30, 1950. As of September 30, 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

	September			Total to Date		
	Weekly	Monthly	Total	Weekly	Monthly	Total
Engineering	1	3	4	46	56	102
Manufacturing	2	0	2	163	56	219
Utilities and General Services	6	1	7	165	32	197
Community Real Estate and Services	3	0	3	37	18	55
Financial	0	0	0	17	2	19
Employee and Public Relations	0	0	0	1	3	4
Radiological Sciences	0	0	0	4	7	11
Medical	0	0	0	6	1	7
General	0	0	0	0	1	1
Total	12	4	16	439	176	615

(a) Total to date includes all claims under the old and new Insurance Plans and 7 deaths on which accidental death benefits were paid.

1201720

Payroll Section (continued)

Employee Benefit Plans (continued)

U. S. Savings Bonds	September	August
Number participating at beginning of month	4 308	4 305
New authorizations	94	87
Voluntary cancellations	(55)	(53)
Removals and transfers out	(42)	(31)
Transfers in	-	-
Number participating at end of month	4 305	4 308
Percentage of Participation		
G. E. Employees Savings and Stock Bonus Plan	43.2%	43.0%
G. E. Savings Plan	10.5%	10.3%
Both Plans	49.0%	48.6%
Bonds Issued		
Maturity value	$232 475	$208 450
Number	4 214	4 107
Refunds Issued	73	116
Revisions in authorizations	80	95
Annual Going Rate of deductions		
G. E. Employees Savings and Stock Bonus Plan	$1 054 902	$1 655 914
G. E. Savings Plan	365 923	450 014
Total	$1 420 825	$2 105 928

Withdrawal of U. S. Savings Bonds from G. E. Employees Savings and Stock Bonus Plan	September	Year to Date
Number of participants withdrawing Bonds	111	1 119
Maturity value of U. S. Savings Bonds withdrawn	$43 475	$388 730

Check-off of Union Dues

Number of Payroll Deduction Authorizations in Effect	9-30-52	Cancellations And Terminations	Additions	8-31-52
Hanford Atomic Metal Trades Council	1 345	21	43	1 323
Building Service Employees International Union, Local 201 (Medical Department Employees)	25	1	-	26
Hanford Guards Union, Local 21, of the International Guards Union of America	244	2	8	238
Total	1 614	24	51	1 587

1201721

Payroll Section (continued)

Employees Who Have Entered Military Service

	Total to Date		
	Called to Duty	Volunteered for Duty	Total
Reserve Officers	32	3	35
Enlisted Reserve	52	6	58
National Guard	6	-0-	6
Selective Service	64	-0-	64
Voluntary Enlistments	-0-	104	104
Total	154	113	267

Number of Rent, Telephone and Hospital Deductions from Salaries

	September	August
House Rent	5 351	5 130
Dormitory Rent	967	894
Barracks Rent	175	195
Trailer Space Rent	152	148
Telephone	3 694	3 696
Hospital	505	577
Total	10 844	10 640

Annuity Certificates (for duPont Service)	September	Total to Date
Number Issued	0	94

Suggestion Awards		
Number of awards	85	1 707
Total amount of awards	$1 315	$33 010

Employee Sales Plan

	September		
	Major Appliances	Traffic Appliances	Total
Certificates Issued	27	285	312
Certificates Voided	0	2	2

Salary Checks Deposited

	September		August	
	Weekly	Monthly	Weekly	Monthly
Richland Branch - Seattle-First National Bank	707	888	737	879
North Richland Area Office - Seattle-First National Bank	13	6	13	6
Richland Branch - National Bank of Commerce	500	350	509	337
Out of state banks (Schenectady Staff)	-0-	1	-0-	1
Total	1 220*	1 245	1 259**	1 223

* Week ended 9-28-52
** Week ended 8-24-52

Special Absence Allowance Requests	September	August
Number submitted to Pension Board	2	7

% Absenteeism		
Weekly - Men	2.14%	2.21%
Weekly - Women	3.49%	3.42%
Total Weekly	2.48%	2.52%
Monthly	1.22%	.87%
Grand Total	2.19%	2.09%

1201722

GENERAL COST SECTION
MONTHLY REPORT

September, 1952

Operating cost reports for month of August were issued on September 12, 1952 which again reflected the continued emphasis on earlier closing dates. Supplementing these reports, analysis letters were issued to managers affording comparison of August costs with similar expenses incurred in the previous month and explaining major variations.

The Summary of Operating Costs report, including detailed schedules of Production, Research and Development and General Overhead costs, was also issued on September 12. On September 17, analysis letters were issued to the General Manager which detailed Production Costs and costs of the Community Program incurred during August and offered brief comparisons of changes in costs from the previous month. Bogey estimates of Production Costs through February, 1953 were made available to Plant Management on September 19.

Consolidated Cost and Budget

The consolidated code book based on a unified cost coding system was completed and issued in mid-September together with instructions for proper use of the system.

Preliminary work was started in connection with the Mid-Year Budget Review and manpower requirements were requested of all cost sections for consolidation prior to presentation to the Appropriations and Budget Committee on October 6.

The summary of budget information proposed for use in presentation of budget material to the Appropriations and Budget Committee was approved by plant management, and work was started in accumulating necessary data for FY 1952 Actual and Revised Budget previously submitted for FY 1953.

Certified true copies of data sheets covering construction projects approved by Congress for FY 1953 were received from the A.E.C. Budget Office, and work was started to reconcile the approved projects to those submitted in the Revised Budget for FY 1953. Work continued in connection with the study of revenue and expense of radiology and pathology work at Kadlec Hospital.

Considerable time was devoted to preliminary work in the conversion to IBM of the cost distribution of payroll which is scheduled to take effect as of October 1. Through this extensive preparatory work, it is hoped to keep to a minimum the initial confusion normally generated by a change such as this.

At the request of the General Manager, a physical inventory was made of outstanding copies of the monthly letters relative to Production Costs and the Cost Bogeys and a report was submitted to the Manager - Finance on September 25, 1952.

Utilities and General Services Cost

Considerable time has been spent in revising the Financial Statements and Unit Cost Reports issued by Utilities and General Services Cost Unit. As a result no reports were issued for July, however, these costs are included on the reports covering August expenses published and distributed on September 30, 1952.

1201723

The new cost code book to be effective October 1 was distributed to all sections in Utilities and General Services during September. A letter of instruction and detail of codes applicable to sections of the Utilities and General Services Department was distributed together with code books.

Because of the new cost codes being established, it became necessary to make minor revisions in the Monthly Operating Report. Also, in order to better accumulate costs by buildings in 700 Area, two digit codes were assigned to designate each building.

Preliminary work in anticipation of the Mid-Year Budget Review is underway and, in conjunction with the Section Managers, personnel forecasts for the balance of the fiscal year were prepared for submission to the Appropriations and Budget Committee on October 6, 1952.

Community Real Estate and Services Cost

The cost codes to be utilized by Community Real Estate and Services personnel were extracted from the new code book and distributed to all Community units. Meetings were held with various groups in this department and the proper use of the new coding system explained. The recording of the active work orders on hand was accomplished with no overtime required. The old work order forms were called in and new work order forms distributed for all work to be done after September 25, 1952.

Preliminary plans and work sheets for the Mid-Year Budget Review were prepared and schedules of manpower requirements were submitted for consolidation.

A detailed listing of all projects, for which Community was responsible, was completed. This includes all pertinent data for each project and will save considerable research time when questions arise concerning projects.

A report was made for Accounts Payable Unit covering payments made by Community Real Estate and Services Department to Subcontractors for calendar year 1951. In addition, considerable time was spent in analyzing unit cost data for the A.E.C.

Staff Departments Cost

Considerable time was spent on preparatory work in connection with the coming Mid-Year Budget Review. Letters were sent to all managers requesting personnel requirements by section for the coming year. This information is being correlated and will be used in forthcoming submissions. New forms for the budget have been prepared and reflect as nearly as possible the uniform coding system of accounts.

The new code book was issued Friday, September 19. Accompanying the code book was a letter of explanation about the new system and a conversion schedule to serve as an aid to people in changing from the old to the new system. Included in the schedule were only those accounts which we felt would be most pertinent to the respective departments.

Almost the entire week beginning Monday, September 22 was spent in making personal contacts with various managers, section heads and other supervisory per-

sonnel throughout the Staff Departments. Two members of the cost unit made trips to the 300 Area, 200-W Area, and 100-F Area on separate days to attend meetings with Radiological Sciences Department supervisors. During these meetings many individual problems were brought to light and in addition to answering specific questions, an explanation of the new policy and procedures to be followed was presented.

Medical Department Cost

During the month the Medical Department Cost Codes were revised in accordance with the new unified cost coding system to be effective October 1.

The Plant Accounting Unit was contacted regarding purchases of items of a capital nature such as dressers, overbed tables, etc., which are currently being charged to Cost. It is normal practice of hospitals not to include such items and many smaller items in their current costs and thus, when attempting to make cost comparisons, Kadlec Hospital is a disadvantage. The A.E.C. has been contacted regarding the proposed change in procedure but no definite decision has as yet been reached.

1201725

MANUFACTURING COST SECTION
SEPTEMBER, 1952

REPORTS AND RECORDS

Effective September 1 the accruals for retroactive wage adjustments will be reported by the Tabulating Unit according to appropriate labor codes instead of as a single item of indirect manufacturing expense. This charge will facilitate reporting and will result in more accurate cost statements.

To clarify and correct the status of certain items in Account #10.3 Inventories - Essential Materials, the following steps were taken:

Three items were transferred to Account #10.1 - Inventories Standby as they are for future consumption or disposal. Other items were written off to cost (Year to Date Adjustments) in September as they had become obsolete with Process changes.

A complete listing of Process Codes 600 through 699 for the Manufacturing Department was distributed. A Cost Code Conversion List for Manufacturing Department Servicing and Customer Unit Codes was also distributed.

MAINTENANCE AND PLANT IMPROVEMENT

Preparations were made for the FY 1953 Mid-Year Review of the Manufacturing Plant Improvement Budget.

A supplement to the "Work Order Authorization List" was prepared for distribution in October.

The new Work Order forms were received and distribution started. Instructions for use are to be included with each issue of the new forms. It is hoped that OPG 5.3.1 will be revised in the near future to include the distribution of copies on the new forms.

Considerable work was expended on Landlord Reports. All three sections were brought up to date with individual building cost through the month of August reported. These reports will be used as a basis for billing and were made available to Manufacturing Sections for their semi-annual landlord report.

BUDGETS & SPECIAL REQUESTS

A procedure for the return of reject essential material items to vendors was issued this month. A routine for the removal or installation of I.B.M. machines at the request of the I.B.M. Company was established.

Work sheets for the FY 1953 Mid-Year Budget Review for the Manufacturing Department were prepared and issued to area personnel on or before scheduled due dates.

Breakdown of the Second Quarter of the FY 1953 Budget was started with the hope of completing this breakdown by October 10, 1952. This is to allow full time to be devoted to the Mid-Year Review when sufficient data has been submitted for compilation.

DUCTION COST ACCOUNTING

A Production Inventories Statement was issued, as a secret document, giving details of the balance of Work In Process Inventories and a reconciliation to the general ledger book balance.

Complete data on shipments are now being received, allowing billings to be made on a current basis.

Production Unit Cost Reports for August were completed on September 26. This represents considerable improvement over previous months.

METAL PREPARATION SECTION ACCOUNTING

During the month of September the Quarterly Savings Report prepared by the Metal Preparation Section was reviewed. This resulted in some recommendations for improved presentation.

Upon receipt of a revised Production Schedule, the personnel requirements for the balance of Fiscal Year 1953 were reviewed with Section Supervision, and the final tabulation was completed on September 26. Meetings were conducted for all Metal Preparation Supervision and clerical personnel to explain the uniform cost coding system, to be effective October 1. An additional meeting was also conducted for Supervisory Personnel in the entire 300 Area to review the responsibilities of the Financial Department and to point out the relationships to the other Plant Departments.

EPARATIONS SECTION ACCOUNTING

To further decrease the number of operating statements the 221 and 224 Buildings in the B and T Plants were combined under one code. Process codes were opened to provide any detailed information which may be required.

Discussions with Manufacturing Department Personnel in the Separations Section were held to review code changes and other related cost problems. Considerable work was also done during the month in cooperation with the Section Managers toward the completion of the revised manpower requirements and allocations for the balance of Fiscal Year 1953.

REACTOR SECTION ACCOUNTING

A considerable amount of time was spent in furnishing instructions in the use of the revised cost code books.

A draft outlining a "Cost Reduction and Control" program was prepared and sent to the accountant and section staff assistants for review and comments.

Two new reports were issued for use by the Power and Maintenance Unit. One of the reports summarizes the charges made by the Power and Maintenance sub-units to the Reactor Section by Areas. The other reports the liquidations of each of the Power and Maintenance sub-units to all customers in detail for use by the general foremen. A special report of liquidations by cost elements was discontinued as the same information is available from the work order runs which are forwarded to the field.

Arrangements were made to combine the Process sub-unit codes, effective October 1st, as shown in the revised cost code book.

ENGINEERING COST SECTION
FINANCIAL DEPARTMENT MONTHLY REPORT

Project Section Cost

A transfer of thirty-two employees from Purchasing and Stores Section, Utilities and General Services Department required the opening of a new account to record the expenses of the Inspection Service Unit. Total cost of this unit will be transferred to the Atomic Energy Commission as General Electric Indirect Construction Expense.

A change was made in the recording and reporting of cost for Project Engineering Unit, Reactor Projects Unit and Separations Project Unit. This change is to record separately engineering and services performed by these units in order that the cost of engineering may be determined without the influence of cost of various services required by the Atomic Energy Commission on construction projects.

Preparation of the Mid-Year Budget Review began during the month. Personnel figures have been established and computation of salary and other expense is in progress.

Detail explanations, examples and instructions to cover the installation of the Nucleonics Division Uniform Cost Codes on October 1, 1952 as pertain to the Project Section were issued. Preliminary work for recasting of costs to new accounts has been completed.

Several man days were expended in furnishing the Atomic Energy Commission more detail for unitization of North Richland Camp and 3000 Area Steam Plant transferred during April.

Operating Expense Statements for the month of August were issued on September 9, 1952. All other Project Section reports were issued by September 15, 1952.

Design Section Cost

During the month work was started on preparing the Fiscal Year 1953 Mid-Year Budget Review. Time schedules and forms have been completed and personnel estimates received from the Design Section.

This is the first month that Engineering Cost has operated under a consolidated General Ledger. Certain problems have arisen due to the requirement that originators of charges to Engineering properly segregate charges between Costs - Current Fiscal Year and Construction Work in Progress. These problems are of a temporary nature and an educational program should eliminate them in the near future.

New procedures in processing standard rate cost liquidations and making accruals of certain assessments and charges have resulted in a reduction of overtime from 64 hours in August to 21.5 hours in September. Operating reports were issued before the tenth of the month and included graphic presentations to represent financial status of the Section.

ENGINEERING COST SECTION

Technical Section Cost

Monthly cost reports were issued to the Manager - Technical on September 10, 1952, followed by a letter analyzing fluctuations in cost on September 15, 1952.

During September a meeting was held with representatives of Technical Section to explain and discuss the application of a Standard Cost Sytem. It was decided that effective October 1, 1952 Technical Section would convert to a Standard Cost System and it was also decided to prepare a "dummy run" for September using the proposed cost system.

The time Distribution Report (used with the new system) was designed and distributed to Technical employees along with instructions necessary to complete it. Results of the dummy run will not be available until in October.

A Uniform Cost Code Book was issued to members of Technical Section along with a code conversion list designed to make easy conversion from the old to the new cost codes.

1201729

INTERNAL AUDIT SECTION
MONTHLY REPORT

SEPTEMBER 1952

The results of a review, made at the request of Technical Services Unit, were reported in a letter showing a comparison of labor costs of the Mechanical Development and Glass Shops for Fiscal Years 1951 and 1952.

A procedure was issued for receiving materials shipped in tank and bulk cars. The procedure was designed to comply with General Electric policy and to conform with desirable features of practices followed by other Divisions of the Company. For the past year, the procedure has been in effect on a trial basis and results indicate that savings are obtained by the improved receiving routines.

A letter covering the findings of a review of routines for handling cash received by mail was directed to accountants of the Financial Department, requesting their consideration of proposals which would strengthen controls over cash received by mail.

As the result of a traffic study made by Telephone Unit at the request of Internal Audit Section, the Telephone Unit has recommended to the A.E.C. that two leased lines to Pasco and one to Kennewick be discontinued. In conjunction with the traffic study, an analysis was made by Internal Audit Section of calls placed over leased lines to Kennewick and Pasco. The study indicated that, while personal calls were still being made over the leased wires, the number had declined from that shown by a previous study.

The transfer of controls for stock records from Operations Stores to General Accounts was completed and reported to the Superintendent - Stores. In connection with the report, suggestions were made for the improvement of clerical routines for maintaining stock record cards.

Recommendations were made to Stores Unit for improving the clarity and adequacy of explanations on requests for journal entries.

Four internal auditors on loan to Payroll Section continued their assignment to assist in working out payroll preparation routines.

A review was begun of the safety shoes inventory subaccount to determine if Stores Unit routines and controls over receipt and disbursement of safety shoes adhere to established procedure and to acceptable practice.

1201730

PLANT SECURITY AND SERVICES SECTION

MONTHLY REPORT - SEPTEMBER 1952

ORGANIZATION AND PERSONNEL

Number of employees on payroll:

	Beginning of Month	End of Month	Increase	Decrease
Staff	7	9	2 (a)	
Patrol and Security	618	614		4 (b)
Safety and Fire Protection	147	146		1 (c)
Office Services (Laundry and Building Services, Clerical Services, Records Control and Procedures Analysis)	330	327		3 (d)
TOTALS	1,102	1,096	2	8

NET DECREASE: 6

(a) - Staff

2 - Transferred in

(b) - Patrol and Security

2 - New Hires
2 - Reactivated
3 - Deactivated
1 - Transferred out
4 - Terminations

(c) - Safety and Fire Protection

1 - Deactivated

(d) - Laundry and Building Services

3 - Reactivated
4 - Transferred to other Departments
3 - Deactivated
1 - Termination

Clerical Services

9 - New Hires
1 - Deactivated
2 - Transferred to other Departments
4 - Terminations

1201731

SAFETY AND FIRE PROTECTION UNIT

Injury Statistics

	AUGUST	SEPTEMBER	YEAR TO DATE	COMPARATIVE PERIOD 1951
Major Injuries	3	2	13	5
Sub-Major Injuries	2	1	18	14
Minor Injuries	377	355	3,393	2,808
Exposure Hours	1,474,276	1,394,435	13,162,171	12,777,811
Major Injury F/R	2.03	1.43	0.99	0.39
Major Injury S/R	0.038	0.030	0.062	0.037
Penalty Days	0	0	375	450
Actual Days Lost	56	42	439	23
Minor Injury F/R	2.56	2.55	2.58	2.20
Estimated Medical Treatment Time Required	1,524 hours	1,428 hours	13,716 hours	11,344 hours

Industrial Fires

Department	Area	No. of Fires	Cause	Loss
Manufacturing Department	300	1	Electric	Nil
Manufacturing Department	300	1	Process	Nil
Manufacturing Department	300	1	Burning & Welding	Nil
Radiological Sciences Dept.	700	1	Electric or spontaneous combustion	$10,597.00
Utilities & Gen. Services Dept.	Outer	1	Combustibles too near heat or flame	Nil

OFFICE SERVICES

Laundry and Building Services

Plant Laundry (200-W Area)	August	September
Pounds Delivered	187,138	182,621
Pounds Rewash	9,127	5,891
Total Dry Weight	196,265	188,512

700 Laundry

Flatwork - Pounds	44,698	38,233
Rough Dry - Pounds	18,536	18,088
Finished - Pounds	2,538	2,583
Estimated Pieces	86,161	77,164
Total Dry Weight - Pounds	65,772	58,904

During the past month, a requisition was initiated to purchase two laundry tumblers. These tumblers should increase the drying capacity by approximately 10,000 pounds of clothing a week thus eliminating overtime work made necessary due to inadequate drying capacity.

Also installed in the 200-West Laundry during the past month was a large galvanized tank used for flame proofing coveralls. By soaking coveralls in this tank it will be possible to retain a large portion of the fire retardent solution that heretofore has been dumped down the drain. This manner of fire proofing coveralls will not only give more satisfactory results, but is is estimated it will save from six to eight thousand dollars a year in fire retardent compound.

Clerical Services

Central Mail

The Pitney Bowes Mailing Machine located in Kadlec Hospital was removed and given to Weekly Payroll for use as a sealer only. This will improve overall compliance with postal regulations and a program was arranged to provide adequate service to the hospital on postal mail.

The volume of mail was up slightly from the previous month as were teletype messages processed.

Types and Pieces of Mail Handled	September	August
Internal	1,194,148	1,152,632
Postal	76,510	68,811
Special	1,579	1,709
Total Mail Handled	1,272,237	1,223,152
Total Postage Used	$ 2,249.70	$ 2,175.22
Total Teletypes Handled	3,078	3,039
Total Store Orders Handled	331	318

Addressograph

The amount of addressograph work requested is slowly increasing and more applications are being planned to reduce clerical time now required in other offices to address large listings of material.

	September			August		
Type of List	Number of Runs	Total Copies	Plates Changed & Added	Number of Runs	Total Copies	Plates Changed & Added
Plant Name List	96	112,430		89	102,906	
Housing List	12	71,610		12	71,593	
Payroll List	6	25,118	5,618	6	24,967	4,867

1201733

Office Equipment

Arrangements were made to relieve the crowded condition of the warehouse at North Richland by borrowing some space in the Stores excess warehouse for storage of new crated furniture.

A large quantity of used office furniture and machines was delivered to the Kaiser Company during September and much more equipment will be required during the coming months.

Work is progressing on the new shop in Building 722-C and the furniture warehouse underwent some alterations to provide additional space for stacking furniture.

Office Machine Repair	September	August
Office Machines Repaired in Shop	162	148
Office Machine Service Calls	477	457
Machines Picked up by Survey	62	118
Total Machines Services	701	723

Central Printing

A new plant organization directory was composed, photographed, and printed during September.

The volume of printing is up again this month with no letup in sight because of increased activities. Plans are under way to increase the bindery personnel to speed up completion and delivery of orders.

Work Completed	September	August
Orders Received	438	365
Offset Orders Completed	334	332
Offset Copies	1,336,843	1,138,162
Letter Press Completed	51	62
Letter Press Copies	34,267	81,714
Orders on Hand	113	56
Negatives Masked	381	342
Negatives Processed	601	594
Zinc Plates Made	422	288
Photo Copy Prepared	213	351

Stenographic Services

The need for Stenographers is still critical. Employment is trying to overcome the shortage.

1201734

Breakdown of Hours	September	August
Dictation and Transcription	3.5	0.0
Machine Transcription	59.0	30.0
Letters	18.5	71.0
Rough Drafts	69.5	18.0
Stencils, Dittos, Duplimats	233.0	590.5
Miscellaneous	429.5	347.0
Meeting Time	3.0	5.0
Training Time	413.0	386.0
Absentee Time	0.0	12.0
Holiday & Vacation Time	104.0	80.0
Unassigned Time	16.0	48.0
Total	1,349.0	1,587.5
Employees Loaned to Other Departments	926.5	1,228.0
Total Hours Available	2,275.5	2,815.5

Area Mail & Duplicating Services

All mimeograph machines except the one in use in the 300 Area have now been excessed by Duplicating Services. A Model "80" machine was transferred to 760 Building to relieve the load there.

The 3000 Area is now duplicating the excess list for Stores on preprinted forms, resulting in a neater, more economical report.

Mail Statistics	September	August
Total Internal Mail Handled	150,000	204,477
Duplicating Statistics		
Orders Received	1,919	2,511
Orders Completed	1,948	2,441
Orders on Hand	193	153
Offset Plates	9,927	11,968
Offset Copies	650,032	685,506
Stencils	310	746
Stencil Copies	9,373	45,096
Ditto Masters	627	1,292
Ditto Copies	14,979	32,807
Xerox Plates	634	1,342

1201735

Records Control

Quantity of records received, processed and stored:

Community Real Estate and Services Department	4	Standard	Storage	Cartons
Engineering Department	44	"	"	"
Finance Department	11	"	"	"
Manufacturing Department	43	"	"	"
Radiological Sciences Department	7	"	"	"
Utilities and General Services Department	70	"	"	"
TOTAL	179	Standard	Storage	Cartons

Persons provided records service:	884
Records cartons issued:	216

Percentage of the Records Service Center Vault occupied by records is 98.4% excluding Civilian Defense portion.

Twenty-six requests for file cabinets were received, 21 requests were filled and five requests were cancelled resulting in a savings of $375.00. Six combination locked cabinets were exchanged by substituting key locked cabinets resulting in a savings of $750.00, ($200.00 cost of combination cabinet minus $75.00 cost of key locked cabinet equals $125.00 savings per cabinet exchanged). Four key locked cabinets were picked up with no exchange resulting in a savings of $300.00.

Uniform filing was established in eight offices during the month. A total of 348 offices have installed the uniform filing system to date.

Seven Evaluations of Records for disposal were completed with General Electric internal approval. Eleven Evaluation of Records for disposal were approved by the Records Committee. Eighteen additional Evaluations of Records for disposal were developed and submitted for internal departmental approval.

The Remington Rand Inc. has completed 195 reels of microfilm or 721,500 images to date. Thirty-nine reels were developed and returned as completed.

Arrangements were completed with AEC approval for the transfer of A & J Company records to General Electric at the closeout of Subcontract G-133.

Procedures Analysis

	August	September
Printing Orders Received	515	478
Printing Orders Rejected	27	24
New Form Numbers Assigned	117	121
Forms Designed	65	98
Suggestions Processed	9	11

1201736

There were 74 new permanent forms and 26 new temporary forms established during the month of September.

Suggestion No. 9329, Revision of "Don't Say It - Write It" Form G-88-DS, has been received and a reply has been prepared and returned to the Suggestion Committee.

The Procedures Analysis Group is working in cooperation with the Statistical Unit and the IBM Tabulating Unit in making a preliminary review of the present Work Order System.

A review has been made on paper consumption for the first six months of established central control of Duplicating as compared with the same six months period for the previous year. It was found that during the 1952 period, a reduction of 11,778 reams of paper was made as compared with the same period during 1951.

The analysis of Suggestion System procedures has been completed. The purpose of this analysis was to investigate the feasibility of duplicating rather than retyping suggestions and investigator's replies. The final draft of the report has been prepared and submitted. The use of duplicated suggestions and minor office procedures will save approximately 240 man days or a total of $2,888 which will be an annual recurring savings. These savings are to be included in this monthly report for September. In conjunction with this completed procedures analysis, a new procedures study has been requested by this same group. This survey will include a detailed study of the reporting system now being utilized by the Suggestion System personnel. In addition to this, any followup and installation of the completed procedures study will be carried out at this time.

Reports on the Protective Clothing Control analysis and Tools and Supplies Control analysis have been completed and distributed to all personnel on the Department Manager level. Total distribution amounts to 26 copies of each report.

Savings Realized for September	One Time	Annual Recurring
Forms Control	$ 1,175	$ 2,491
Analysis	- -	2,888
Total Savings for the Previous Month	$ 3,664	
Total Savings for September	6,554	
Accumulated Savings from 1-1-52	97,987	

SECURITY AND PATROL

Document Report

Number of technical and scientific documents classified "Confidential" or higher reported unaccounted for September 1: 314

Documents (technical and scientific) reported unaccounted for during September: 26

Documents (technical and scientific) reported found during September: 48

Number of technical and scientific documents unaccounted for September 30: 292

Number of non-technical documents unaccounted for September 1:	10
Documents (non-technical) reported unaccounted for during September:	45
Documents (non-technical) reported found during September:	6
Number of non-technical documents unaccounted for September 30:	49
Total number of non-technical and technical and scientific documents unaccounted for September 30:	341

As mentioned in the August report, the 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 Records Center where material is stored was also included in the search. The services of representatives of the Security Patrol Unit were made available in conducting the searches, and 1,019 manhours were expended in this assignment. Furthermore, the following documents were located and accounted for as a result of searching files and the Records Center during September:

HW 258T	Copy 1	Technical Notebook
HW 2971T	Copy 1A	Instrument Data
HW 3275T	Copy 1A	Pile Technology Training Course
HW 8801	Copy 4A	"P" Department Training Questions
HEW 2125T	Copy 1A	Technical Notebook
MP 235	Copy 2TE	--

There were eight security violations during September committed by General Electric personnel involving improper storage of classified material.

Security Education

There were 331 security meetings held and attended by 4,742 employees of the General Electric Company. A representative of the Security Unit showed security films at some of these meetings as shown below:

"Fitting 'U' Into Security" was shown at one meeting with 45 employees in attendance.

"Sabotage" was shown at one meeting with 45 people present.

"The Man on the Left" was shown at four meetings, each with an average attendance of 23 employees.

"Only the River" was shown at eight meetings, each with an average attendance of 32 employees.

"The Defense Rests" was shown at 29 meetings, each with an average attendance of 28 people.

GE Security Bulletin No. 67 entitled "Deception" was issued during the month.

1201738

A security poster with the slogan "Stay Aler for Them" was distributed as follows:

400 for Richland, North Richland and all the operating areas.
40 for offsite Atomic Energy Commission installations.
200 for all operations and construction busses.

One hundred copies of the pamphlet with the slogan "Report Espionage, Sabotage and Subversive Activities -- Call the Federal Bureau of Investigation", were distributed in offices.

Organization and Policy Guide No. 15.4 was issued during September.

Fifty-seven 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 five people were submitted to the Atomic Energy Commission for emergency clearance processing this month.

Statistical Report of Security Patrol Activities

	100-B	100-D	100-F	100-H	200-E	200-W	300
Pat Searches	90	90	90	90	79	140	3
Escorts	34	20	19	64	86	107.	64
Ambulance Runs	3	4	1	0	3	7	5
Passes issued:							
One day temporary	12	12	19	4	7	91	37
Travel	0	0	0	0	0	0	76
Red Tag	126	115	185	31	110	521	189
Telephonic	0	10	0	2	0	0	21
Supervisors' post contacts	467	421	499	444	402	1,342	875

Other Security Patrol Activities:

Buildings and doors opened:	202
Railroad Gates Opened:	165
Master System Keys Issued:	100
Operation Gas Pumps:	100

Arrest Report

Violation	Number of Violations	Cont. Cases from August	Cased Cleared	Pending	Fined	Jailed	Dismissed
Speeding	11	0	11	0	11	0	1
Drunken Driving	1	0	0	1	0	1	0
Void License	1	0	1	0	1	0	0
	13	0	12	1	12	1	1

Citation Tickets Issued:	5
Warning Tickets Issued:	1
Verbal Warnings:	1

1201739

The following training courses were received at the Training School during the month by 255 Security Patrolmen:

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

A new post (3000 Area Stores) was added to the 300 Area on September 15. This post requires a man on the No. 2 Shift Monday through Fridays.

On September 8, the 241-UR tank Farm Badge House was discontinued in 200-W Area. Construction has completed its work in this area, and Operations has now assumed control of this area. There was one man on this post on both the No. 2 and No. 3 shifts.

On September 15, Construction Gate No. 650 was removed. The road is not open on 4th Street through to "A" Street. By changing the fence at this post, the 277-U Building is now in 200-W Area proper.

Effective September 22, the 221-U and 202-S 'exclusion' areas were fenced inside the 200-W Area proper. To enter either of these exclusion areas, a person has to enter the 200-W Area via the Main Badge House. Badges at these areas were then replaced with the Kardex system. On September 9, Security issued an announcement to all operations personnel regarding these changes.

The east gate of the area leading to the MJ-4 Construction Area was locked at 8:00 P.M., September 30. All of MJ-4 construction is now located in the 200-W Area proper, and all construction personnel were cleared for entrance via the 200-W operations badge house.

A new construction post was activated on September 11 in the construction portion of the 105-C Building and will be known as the Tool Dolly Badge House.

Security Field Inspection Activities

Contacts made to locate unaccounted for documents:	9
Searches conducted to locate unaccounted for documents:	2
Classified documents located:	54
File combinations overdue, custodians advised to change them:	23
File combinations changed:	17

General

Beginning September 1, Security Patrol in 100-B Area is conducting both a fire and security inspection of the 100-K Construction site. As construction progresses, additional inspections are being made.

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Records of the General Electric Security Office reflect that as of September 1, there were 8,850 employees of either the General Electric Company, the Atomic Energy Commission and their consultants cleared for one or more of the plant areas.

On September 2, copies of the Atomic Energy Commission "Classification Guide for New Construction" were distributed by the Security Unit to all members of the General Electric Company Management group. Additional copies were prepared and forwarded to personnel within the several departments of the Company.

Operations Order I-2, Revision No. 5, entitled "Hanford Works Construction Identification Passes" was issued September 2. This procedure described the type of passes that will be utilized by Kaiser Engineering employees and their subcontractors.

Effective 12:00 P.M., September 4, operation of the temporary 105-C Badge House was changed over to the new 105-C Badge House.

Operations Order I-593, Revision No. 3, Supplement No. 1, entitled "First Aid Emergency Telephone" was issued September 9, providing that Patrol will listen in on all calls which are received on the extension to the First Aid Emergency telephone. In the absence of the nurse, the Patrolman on duty will answer the call. This procedure will enable the First Aid Attendant to advise Patrol if an ambulance is needed at the time the call is received.

A representative of Security and a member of the Employee and Public Relations Department assisted the Richland School District personnel in the preparation of Personnel Security Questionnaire forms and fingerprint impressions for fifty-two people of the Richland Schools.

Army training tests were conducted September 17 through 19 in the area north of the Columbia River.

In order to accommodate the increased traffic, an additional lane was established in the 200-W Main Badge House on September 18, making a total of five pedestrian lanes at this station in use at shift change time.

The Plant Master Evacuation Plan was revised and issued on September 22.

During the week of September 29, the Engineering Procurement Unit conducted a training program for off-site inspectors. A representative of Security had charge of a portion of the program relative to the subject "Security for the Field Inspector".

On September 30, 1952, twelve representatives of Security Patrol completed the special Bomb School conducted by the United States Army, and were designated as "Explosive Ordinance Reconnaissance Agents".

Linedex systems have been installed in all the main area badge houses except the 200-W Area as of the close of this reporting period.

Rephotographing of General Electric Company personnel is scheduled to begin in November, 1952, in order that identification photographs will not be in service longer than five years. The Security Patrol photographer will visit each of the plant areas beginning with the 300 Area.

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HANFORD WORKS
General Electric Company
Richland, Washington

REPORT OF VISITORS FOR PERIOD ENDING SEPTEMBER 30, 1952

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
EMPLOYEE AND COMMUNITY RELATIONS DEPARTMENT							
I. Visitors to this Works							
A. D. Marshall Corporate Services Division General Electric Company New York, New York	Discuss employee relations problems and Employee Benefit Plans	H. E. Callahan G. D. Barr	9-14-52	9-15-52	X		100-H 105 Redox
J. H. Elder Richardson, Bellows, Henry & Co. New York, New York	Conduct attitude survey	H. E. Callahan G. D. Barr	9-15-52	9-21-52		X	Richland Barricade
R. Schmidt Richardson, Bellows, Henry & Co. New York, New York	Conduct attitude survey	H. E. Callahan G. D. Barr	9-17-52	9-18-52		X	Richland Barricade
			9-11-52	9-11-52		X	300 XXX
F. Young Richardson, Bellows, Henry & Co. New York, New York	Conduct attitude survey	H. E. Callahan G. D. Barr	9-15-52	9-21-52		X	Richland Barricade
R. A. Katzell Richardson, Bellows, Henry & Co. New York, New York	Conduct attitude survey	H. E. Callahan G. D. Barr	9-11-52	9-11-52		X	300 XXX
W. C. Schwarzbek General Electric Company New York, New York	Conduct attitude survey	H. E. Callahan G. D. Barr	9-11-52	9-11-52		X	300 XXX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
ENGINEERING DEPARTMENT-ADMINISTRATIVE SECTION							
I. Visitors to this Works							
M. J. Hamner Lamp Division General Electric Company Nela Park, Cleveland, Ohio	Development consultation on G-5 contract and "canning mechanization"	A. B. Greninger	9-3-52	9-5-52	X		300 303, 313 100-H 105
J. Flaws, Jr. Lamp Division General Electric Company Nela Park, Cleveland, Ohio	Development consultation on G-5 contract and "canning mechanization"	A. B. Greninger	9-3-52	9-5-52	X		300 303, 313 100-H 105
II. Visits to other installations							
W. H. Clymer to: National Carbon Company New York, New York	Negotiate contract	W. A.Steiner	9-8-52	9-10-52		X	
M. K. Cain to: Aerojet Engineering Corp. Los Angeles, California	Negotiate contract for engineering assistance	A. Armstrong	9-24-52	9-26-52		X	
ENGINEERING DEPARTMENT - TECHNICAL SECTION							
I. Visitors to this Works							
M. R. Fenske Pennsylvania State College State College, Pennsylvania	Research and development consultation	R. B. Richards	9-24-52	9-26-52	X		300 XXX 200-W Redox, 221-U 234
J. C. Finley Aluminum Company of America Seattle, Washington	Consultation on aluminum	G. E. McCullough	9-25-52	9-25-52	X		300 XXX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass. Areas
R. D. Fletcher American Cyanamid Company Idaho Falls, Idaho	Check on mixer for corrosion study	J. F. Gifford	9-22-52	9-24-52	X	300 XXX 100-B 105 100-D XXX 200-W Redox
J. Holman West Coast Fast Freight Kennewick, Washington	Transport supplies for North American Aviation in conjunction with work at Hanford	W. K. McCarty H. F. Zuhr	9-5-52	9-5-52		X 100-D 105-DR
H. W. Huntley General Electric Company Schenectady, New York	Consultation on Hanford assistance program	E. A. Eschbach	9-16-52	9-16-52	X	300 XXX
W. E. Kingston Sylvania Electric Products Co. Bayside, New York	Discuss canning techniques	G. E. McCullough	9-29-52	10-3-52	X	100-B 105 100-D 189 100-H 105 300 303
R. G. Lorraine General Electric Company Schenectady, New York	Consultation on Hanford assistance program	E. A. Eschbach	9-16-52	9-16-52	X	300 XXX
J. R. Low Knolls Atomic Power Laboratory Schenectady, New York	Discussion on materials irradiation program	H. F. Zuhr	9-24-52	9-25-52	X	100-B 105 100-D 105-D 100-F 105 100-H 105 300 XXX
W. K. McCarty, Jr. North American Aviation Company Downey, California	Discussion on in-pile experiments	H. F. Zuhr	5-9-52	9-19-52	X	100-B 105 100-D 105 100-F 105 100-H 105 300 303

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass Areas
L. F. Wardell General Engineering Laboratory Schenectady, New York	Conference on GEL Irradiation Program	H. F. Zuhr W. E. Fry	9-15-52	9-19-52	X	100-D 105-D 100-F 105 100-H 105 300 XXX
G. W. Watt University of Texas Austin, Texas	Research and development consultation	R. B. Richards	10-13-52	10-17-52	X	200-W 221-U, Redox 300 XXX
II. Visits to other Installations						
R. W. Benoliel to: E. I. du Pont de Nemours & Co. Wilmington, Delaware	Discuss separations operations and purification and fabrication of plutonium	F. S. Chambers	9-8-52	9-12-52	X	
A. G. Blasewitz to: University of Iowa Ames, Iowa	Attend air cleaning seminar for AEC personnel	F. H. Spedding	9-14-52	9-19-52	X	
R. O. Brugge to: Oak Ridge National Lab. Oak Ridge, Tennessee	Attend nuclear and reactor physics conference	D. D. Cowen	9-10-52	9-12-52	X	
R. E. Burns to: Malta Test Station New York, New York	Technical discussion on waste disposal problems	J. C. Trosino	9-20-52	9-20-52	X	
R. E. Burns to: Knolls Atomic Power Lab. Schenectady, New York	Waste treatment and solvent extraction discussions	J. Marsden	9-19-52	9-19-52	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	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass.	Areas
D. E. Davenport to: Oak Ridge National Lab. Oak Ridge, Tennessee	Attend Nuclear and Reactor Conference	- -	9-10-52	9-12-52	X		
D. E. Davenport to: Argonne National Lab. Chicago, Illinois	Discuss reactor physics	J. M. West	9-15-52	9-19-52	X		
D. E. Davenport to: Brookhaven National Lab. Upton, Long Island New York	Discuss reactor physics	I. Kaplan	9-15-52	9-17-52	X		
G. E. Duvall to: Oak Ridge National Lab. Oak Ridge, Tennessee	Attend Nuclear and Reactor Conference	- -	9-10-52	9-12-52	X		
E. A. Eschbach to: Ames Laboratory Ames, Iowa	Consultation on fuel element development program	F. H. Spedding	9-8-52	9-8-52	X		
E. A. Eschbach to: Battelle Memorial Institute Columbus, Ohio	Consultation on fuel element development program	H. R. Nelson	9-9-52	9-9-52	X		
E. A. Eschbach to: Argonne National Lab. Chicago, Illinois	Consultation on fuel element development program	F. G. Foote	9-10-52	9-10-52	X		
E. A. Eschbach to: Sylvania Electric Products Co. Bayside, New York	Consultation on fuel element development	H. H. Hausner	9-11-52	9-12-52	X		
M. D. Fitzsimmons to: Argonne National Lab. Chicago, Illinois	Consultation concerning performance of ANL-140 experiment	A. Amorosi H. Etherington H. Monson	9-16-52	9-19-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
G. L. Flint to: Columbia University New York, New York	Attend conference on metallography	G. H. Kehl	9-24-52	9-24-52	X		
G. C. Fullmer to: Oak Ridge National Lab. Oak Ridge, Tennessee	Attend Nuclear and Reactor Physics conference	D. D. Cowen	9-10-52	9-12-52	X		
P. F. Gast to: Argonne National Lab. Chicago, Illinois	Attend meeting of Reactor Handbook Board	W. H. Zinn	9-26-52	9-27-52	X		
O. H. Greager to: Carbide and Carbon Co. Oak Ridge, Tennessee	Attend AEC technical conference	F. Hurd S. R. Sapirie	9-8-52	9-9-52	X		
C. Groot to: Carbide and Carbon Co. Oak Ridge, Tennessee	Attend meeting on dry fluorination separation	F. Hurd	9-8-52	9-9-52	X		
C. Groot to: Oak Ridge National Lab. Oak Ridge, Tennessee	Discussion on separations processes	F. Steahley	9-10-52	9-11-52	X		
H. H. Hopkins to: Knolls Atomic Power Lab. Schenectady, New York	Waste treatment and solvent extraction discussions	J. Marsden	9-19-52	9-19-52	X		
W. T. Kattner to: Simonds Saw & Steel Lockport, New York	Observation of metal fabrication	A. D. Potts C. H. Emery	6-18-52	12-31-52	X		
W. T. Kattner to: Feed Materials Production Fernald, Ohio	Consultation on metallurgy of uranium	J. Cibojski	8-1-52	1-31-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass.	Areas
W. T. Kattner to: Argonne National Lab. Chicago, Illinois	Metallurgical consultation	F. G. Foote	9-1-52	2-28-53	X		
W. T. Kattner to: Mallinckrodt Chemical Works St. Louis, Missouri	Observe and discuss uranium reduction and casting	W. H. Keller	9-25-52	3-31-53	X		
E. M. Kinderman to: Knolls Atomic Power Lab. Schenectady, New York	Discuss analytical methods for Purex	J. F. Flagg	9-22-52	9-24-52	X		
E. M. Kinderman to: Argonne National Lab. Chicago, Illinois	Discuss isotopic measurements	M. C. Inghram	9-24-52	9-26-52	X		
R. L. Knecht to: Simonds Saw & Steel Lockport, New York	Observation of 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. Cibojski	8-1-52	1-31-53	X		
J. W. Lingafelter to: Argonne National Lab. Chicago, Illinois	Consultation on welding processes being carried on	L. R. Kelmar	9-5-52	9-5-52	X		
J. W. Lingafelter to: Battelle Memorial Inst. Columbus, Ohio	Consultation on welding processes being carried on	C. D. Voldrich	9-8-52	9-8-52	X		
J. W. Lingafelter to: Savannah River Ordnance Augusta, Georgia	Consultation on welding processes being carried on	P. H. Permar	9-9-52	9-9-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass.	Areas
D. B. Lovett to: Phillips Petroleum Company Arco, Idaho	Delivery of samples for exposure in MTR and technical discussion	W. H. Pennington	9-30-52	10-3-52	X		
G. E. McCullough to: Sylvania Electric Products Bayside, New York	Consultation on graphite and fuel element problems	W. C. Kingston H. H. Hausner	9-11-52	9-12-52	X		
G. E. McCullough to: U. S. Atomic Energy Comm. New York, New York	Consultation on graphite and fuel element problems	F. C. Belmore	9-11-52	9-12-52	X		
G. E. McCullough to: National Carbon Company Cleveland, Ohio	Consultation on graphite and fuel element problems	V. C. Hamister	9-10-52	9-10-52	X		
G. E. McCullough to: National Lead Company Fernald, Ohio	Consultation on graphite and fuel element problems	G. Wunder	9-12-52	9-12-52	X		
D. K. McDaniels to: Oak Ridge National Lab. Oak Ridge, Tennessee	Attend Nuclear and Reactor Physics Conference	D. D. Cowen	9-10-52	9-12-52	X		
D. M. Newell to: Dow Chemical Company Rocky Flats Denver, Colorado	Inspection of gloved boxes	J. Epp	9-29-52	9-29-52	X		
W. J. Ozeroff to: Oak Ridge National Lab. Oak Ridge, Tennessee	Attend Nuclear and Reactor Physics Conference	D. D. Cowen	9-10-52	9-12-52	X		
W. J. Ozeroff to: Knolls Atomic Power Lab. Schenectady, New York	Conference on Reactor Physics and Uranium Crystal structure	L. Tonks	9-15-52	9-16-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
W. J. Ozeroff to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Conference on reactor physics	M. C. Leverett	9-17-52	9-17-52	X		
W. J. Ozeroff to: Argonne National Lab. Chicago, Illinois	Conference on reactor physics	J. M. West	9-18-52	9-18-52	X		
A. M. Platt to: Knolls Atomic Power Lab. Schenectady, New York	Technical consultation on Purex	J. Marsden J. F. Flagg	9-29-52	10-1-52	X		
W. H. Reas 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. B. Richards 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		
J. W. Riches to: Feed Materials Production Center Fernald, Ohio	Consultation on metallurgy of uranium	J. Cibojski	8-1-52	1-31-53	X		
R. B. Richards to: Knolls Atomic Power Lab. Schenectady, New York	Discussion on separations processes	J. Marsden	9-18-52	9-23-52	X		
A. E. Smith to: Dow Chemical Company Rocky Flats Denver, Colorado	Inspection consultation	E. J. Walko	9-28-52	10-3-52	X		
R. E. Tomlinson to: E. I. du Pont de Nemours & Co. Wilmington, Delaware	Technical consultation on Purex	F. S. Chambers	9-25-52	9-26-52	X		

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Arrival	Departure	Restricted Data Class.	Unclass.	Areas
9-29-52	10-1-52	X		
9-10-52	9-12-52	X		
9-8-52	9-9-52	X		
9-30-52	3-31-53	X		
9-10-52	9-10-52	X		
9-11-52	9-12-52	X		
9-11-52	9-12-52	X		
9-12-52	9-12-52	X		
8-26-52	9-6-52		X	
9-13-52	9-20-52		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass.	Areas
R. E. Smith to: E. I. du Pont de Nemours & Co. Wilmington, Delaware	Discussion of design and process problems relating to 234-5 Bldg.	F. S. Chambers	9-13-52	9-20-52	X		
R. Borasky to: Seattle, Washington	Technical discussion on microtone techniques	Dr. Stanley Bennett	9-9-52	9-9-52		X	
A. T. Whatley to: Seattle, Washington	Technical discussion on microtone techniques	Dr. Stanley Bennett	9-9-52	9-9-52		X	
R. H. Purcell, Jr. to: American Inst. Chem. Eng. Atlantic City, New Jersey	Attend symposium on monobed de-ionization	- -	9-9-52	9-14-52		X	
D. C. Kaulitz to: Precision Machine Works Tacoma, Washington	Inspect and accept machine work	E. J. Gazecki	9-3-52	9-3-52		X	
ENGINEERING DEPARTMENT - DESIGN SECTION							
I. Visitors to this Works							
H. Bowman Prepakt Concrete Company Seattle, Washington	Consultation on test program conducted by his firm	V. D. Nixon	9-15-52	9-24-52	X		White Bluffs
R. E. Carlson Prepakt Concrete Company Seattle, Washington	Consultation on test program conducted by his firm	V. D. Nixon	9-15-52	9-24-52		X	White Bluffs
E. L. Knoedler Sheppard T. Powell Baltimore, Maryland	Witness pumping of test well at Coyote Rapids and ground water development	J. H. Snyder M. H. Russ	9-24-52	9-29-52	X		100-H XXX Coyote Rapids
J. Flaws, Jr. Lamp Division General Electric Company Nela Park, Cleveland, Ohio	Consultation on RDS-13 Metallurgy canning problems	V. D. Nixon V. W. Wood C. W. Harrison	9-3-52	9-4-52	X		300 303, 313 100-H XXX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass. Areas
M. J. Hamner Lamp Division General Electric Company Nela Park, Cleveland, Ohio	Consultation on RDS-13 Metallurgy canning problems	V. D. Nixon V. W. Wood C. W. Harrison	9-3-52	9-4-52	X	300 303, 313 100-H XXX
M. F. Parr Foxboro Company Foxboro, Massachusetts	Calibration of Power Calculator CG-431-B in 105-C Building	O. H. Pilkey E. S. Day, Jr. B. E. Woodward	9-8-52 9-20-52	9-19-52 10-11-52	X	105-C
D. R. Combs Bumstead-Woolford Company Seattle, Washington	Calibration of Power Calculator CG-431-B in 105-C Building	O. H. Pilkey E. S. Day, Jr. B. E. Woodward	9-8-52	9-19-52	X	105-C
F. P. Robinson, Jr. General Electric Company Seattle, Washington	Inspection of instruments in 105-C	G. B. McDonald	9-3-52	9-5-52	X	105-C
S. B. Biddle, Jr. Leeds & Northrup Company Seattle, Washington	Inspection of instruments in 105-C	G. B. McDonald	9-3-52	9-5-52	X	105-C
II. Visits to other Installations						
J. M. Frame to: E. I. du Pont de Nemours & Co. Wilmington, Delaware	Discuss separations process design	J. K. Lower	9-25-52	9-26-52	X	
J. M. Frame to: Vitro Corporation of America New York, New York	Discuss and firm up design and scoping schedules for C-513	G. White, Jr.	9-27-52	9-27-52	X	
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. W. Harrison to: Lamp Division General Electric Company Nela P[illegible], Cleveland, Ohio	Consultation on slug canning machinery	J. Flaws, Jr.	9-15-52	9-17-52	X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
E. Hollister to: Argonne National Lab. Chicago, Illinois	Consultation on slug canning	F. G. Foote H. L. Hull	9-12-52	9-12-52	X		
E. Hollister to: Lamp Division General Electric Company Nela Park, Cleveland, Ohio	Consultation on slug canning machinery	J. Flaws, Jr.	9-15-52	9-17-52	X		
W. P. Ingalls to: E. I. du Pont de Nemours & Co. Wilmington, Delaware	Consultation on equipment and drawings applying to metal purification and fabrication	J. E. Cole F. S. Chambers	9-8-52	9-12-52	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		
E. P. Peabody to: Charles T. Main, Inc. Boston, Massachusetts	Confer on "K" Water Plant facilities	R. K. Patterson	9-17-52	9-19-52	X		
J. H. Snyder to: Charles T. Main, Inc. Boston, Massachusetts	Engineering consultation on "K" Water Plant design	R. K. Patterson	9-17-52	9-19-52	X		
G. R. Wilde to: General Engineering Lab. Schenectady, New York	Consultation on instrument engineering	J. G. Hutton J. E. Bigelow	9-12-52	9-15-52	X		
G. R. Wilde to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on instrument engineering	C. A. Hansen, Jr.	9-12-52	9-15-52	X		
B. E. Woodward to: General Engineering Lab. Schenectady, New York	Consultation on instrument engineering	J. G. Hutton J. E. Bigelow	9-12-52	9-15-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
B. E. Woodward to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on instrument engineering	C. A. Hansen, Jr.	9-12-52	9-15-52	X		
E. Hollister to: Inland Steel Company Indiana Harbor, Indiana	Inspection	- -	9-13-52	9-13-52		X	
W. P. Ingalls to: American Platinum Co. Newark, New Jersey	Discuss techniques of platinum working	Mr. Langhans	9-8-52	9-8-52		X	
H. F. Peterson to: Chicago Bridge & Iron Wks. San Francisco, California	Discuss storage tanks	Mr. Boberg	9-10-52	9-10-52		X	
E. F. Smith to: Chicago Bridge & Iron Wks. San Francisco, California	Discuss storage tanks	Mr. Boberg	9-10-52	9-10-52		X	
S. F. Schure to: Aerojet Engineering Corp. Los Angeles, California	Contract negotiations and personnel interviews	A. Armstrong F. Wheeler C. Ross	9-25-52	9-25-52		X	
G. R. Wilde to: Bailey Meter Company Cleveland, Ohio	Consultation on temperature monitoring and gas analysis	P. S. Dickey	9-8-52	9-9-52		X	
B. E. Woodward to: Bailey Meter Company Cleveland, Ohio	Consultation on gas ahalysis	P. S. Dickey	9-8-52	9-9-52		X	
ENGINEERING DEPARTMENT - PROJECT SECTION							
I. Visitors to this Works							
R. A. Moncrieff Charles T. Main, Inc. Boston, Massachusetts	Consultation on basin repair, project CG-506	P. J. O'Neil H. P. Shaw	9-29-52	9-30-52		X	100-F XXX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
II. Visits to other Installations							
J. W. Conley to: Knolls Atomic Power Lab. Schenectady, New York	Review of project activities, and possibility of transfer	K. R. Van Tassel W. W. Kuyper L. L. German	9-3-52	9-5-52	X		
J. W. Conley to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Possibility of transfer	J. S. Parker	9-22-52	9-23-52	X		
P. M. Murphy to: Precision Spinning Co. Seattle, Washington	Inspection of material on order HWC-19556, Project C-431-B	Mr. Stephanos Mr. Stephanos Mr. Stephanos	9-5-52 9-10-52 9-14-52	9-7-52 9-10-52 9-16-52		X X X	
D. A. Conley to: Aerojet Company Los Angeles, California	Interview designers and draftsmen to be placed under contract	A. Armstrong	9-24-52	9-26-52		X	
J. G. Carriere to: Knolls Atomic Power Lab. Schenectady, New York	Review of project activities	G. R. Prout B. R. Prentice K. L. Boring H. W. Huntley A. H. Rau	9-15-52	9-30-52		X	
G. H. Hill to: General Electric Co. Pittsfield, Massachusetts	Attend drafting supervisor's conference	A. H. Rau	9-3-52	9-4-52		X	
H. P. Shaw to: Food Machinery & Chemical Corp. San Jose, California	Consultation on Project C-438-Ball 3X	F. T. Kebely	9-11-52	9-11-52		X	
H. P. Shaw to: K-Plastix San Francisco, California	Consultation on Project C-438-Ball 3X	- -	9-12-52	9-12-52		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass. Areas
MANAGEMENT						
I. Visitors to this Works						
J. A. 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	12-5-52	X	700 200-W 234, 235
E. L. Childs Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training in analytical methods and analysis of materials	L. B. Bradley R. E. Roberts H. W. Murray	8-11-52	9-26-52	X	700 200-W 231, 234, 235
			8-11-52	9-27-52	X	300 XXX
Ja-27 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	10-24-52	X	700 300-XXX 200-W 234, 235, 231
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
R. W. Lohner Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training in analytical methods and analysis of materials	L. B. Bradley R. E. Roberts H. W. Murray	9-8-52	10-24-52	X	700 300-XXX 200-W 231, 234, 235
L. D. McIsaacs Dow Chemical Company Rocky Flats Laboratory	Training on analytical methods and analysis of materials	L. B. Bradley R. E. Roberts H. W. Murray	8-11-52	9-26-52	X	700 200-W 231, 234, 23 Redox, 221-T 300-YYX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass. Areas
J. A. Schulz Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training in statistical quality control section accountability problems and accountability measurements	L. B. Bradley A. H. Bushey	9-22-52	12-5-52	X	700 300-XXX 200-W 231, 234, 221-U
S. D. Skirvin Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training on separations and analytical methods	L. B. Bradley R. B. Richards V. R. Cooper	9-2-52	9-14-52	X	700 300-XXX 200-W 231, 234, 235
R. D. Thorne Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training in analytical methods of analysis of materials	L. B. Bradley R. E. Roberts H. W. Murray	10-6-52	11-21-52	X	700 300-XXX 200-W 231, 234, 235 221-T, Redox
R. C. Yates Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Training in analytical methods of analysis of materials	L. B. Bradley R. E. Roberts H. W. Murray	9-8-52	10-25-52	X	700 300-XXX 200-W 231, 234, 235
H. W. Huntley General Electric Company Schenectady, New York	Consultation on Hanford assistance and canning operations	W. K. MacCready	9-16-52	9-17-52	X	300-303
R. G. Lorraine General Electric Company Schenectady, New York	Consultation on Hanford assistance and canning operations	W. K. MacCready	9-16-52	9-17-52	X	300-303
II. Visits to other Installations						
D. W. McLenegan to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Discuss technical personnel needs and new developments	M. C. Leverett J. S. Parker D. R. Shoults R. C. Mark	9-29-52	9-29-52	X	
D. W. McLenegan to: Brookhaven National Lab. Upton, Long Island, New York	Discuss university relations and educational programs	R. A. Patterson	9-22-52	9-23-52	X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass.	Areas
D. W. McLenegan to: Knolls Atomic Power Lab. Schenectady, New York	Discuss technical personnel needs and new developments	L. L. German W. W. Kuyper K. R. Van Tassel	9-24-52	9-26-52	X		
T. G. Marshall to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Observe technical manpower requirements for recruiting personnel	R. C. Mark	9-19-52	9-19-52	X		
W. W. Smith to: Knolls Atomic Power Lab. Schenectady, New York	Discuss Accounting and Contract matters	G. R. Prout B. R. Prentice R. Turner L. K. Grean	9-3-52	9-10-52	X		
Ja-29 MANUFACTURING DEPARTMENT							
I. Visitors to this Works							
M. Davis Knolls Atomic Power Laboratory Schenectady, New York	Establish plans for training liaison with Hanford	J. E. Maider, Jr. K. F. Priest	9-10-52	9-11-52	X		100-H 105 105-C
H. W. Huntley General Electric Company Schenectady, New York	Development of engineering studies	F. W. Richardson	9-17-52	9-17-52	X		300 3704-B
C. G. Kruse International Business Machines Richland, Washington	Repair IBM equipment	L. T. Hagie	9-8-52	9-12-52		X	100-H 105
R. G. Lorraine General Electric Company Schenectady, New York	Development of engineering studies	F. W. Richardson	9-17-52	9-17-52	X		300 3704-B
T. D. Martin Worthington Pump & Machinery Seattle, Washington	Inspect turbine and equipment	J. C. McLaughlin	9-9-52	9-9-52		X	100-D XXX
	Inspect boilers	J. C. McLaughlin	9-29-52	9-30-52		X	100-D XXX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass. Areas
M. R. Myers International Business Machines Richland, Washington	Repair IBM equipment	L. T. Hagie	9-25-52	9-25-52		X 100-H 105
M. E. Norby International Business Machines Richland, Washington	Repair IBM equipment	L. T. Hagie	9-11-52	9-12-52		X 100-H 105
F. P. Robinson, Jr. General Electric Company Seattle, Washington	Investigate faulty performance of crane in Redox Building Check instrument supply on rack drive in 105-C	W. B. Webster R. T. Jessen L. R. Pihlfeldt	9-17-52 9-20-52 9-29-52	9-19-52 10-17-52 10-17-52	X X	200-W Redox, 221-U 105-C
Ja-30 R. H. Somers National Conveyors & Supply Co. Redwood City, California	Demonstrate loading shaker in 184-B Bldg.	E. Bailey	9-24-52	9-24-52		X 100-B 184-B
R. C. Warren International Business Machines Richland, Washington	Repair IBM equipment	L. T. Hagie	9-25-52	9-25-52		X 100-H 105
W. B. Welch National Conveyor & Supply Co. Menlo Park, California	Demonstrate loading shaker in 184-B Bldg.	E. Bailey	9-24-52	9-24-52		X 100-B 184-B
F. J. Yaggee Argonne National Laboratory Chicago, Illinois	Discuss welding in connection with canning	J. W. Lingafelter E. W. O'Rorke	9-24-52	9-26-52	X	300 303 100-D 105-D
K. A. Jones Travellers Insurance Company Seattle, Washington	Inspect boilers	N. H. Skarshaug K. W. McKay	9-16-52	9-17-52		X 100-B XXX 100-D XXX 100-F XXX 100-H XXX 101 200-E XXX 200-W XXX 300 XXX; 700

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
II. Visits to other Installations							
O. F. Beaulieu to: E. I. du Pont de Nemours Wilmington, Delaware	Consultation and inspection of AEC facilities	F. S. Chambers	9-8-52	9-12-52	X		
C. F. Falk to: E. I.du Pont de Nemours & Co. Wilmington, Delaware	Engineering consultation on design of new facilities	J. K. Lower	9-23-52	9-27-52	X		
H. G. Henry to: Argonne National Lab. Chicago, Illinois	Welding studies and investigations	F. C. Foote	9-5-52	9-5-52	X		
H. G. Henry to: Battelle Memorial Inst. Columbus,Ohio	Welding studies and investigations	C. D. Boldrich	9-8-52	9-8-52	X		
H. G. Henry to: Savannah River Ordnance Wks. Augusta, Georgia	Welding studies and investigations	P. H. Permar	9-9-52	9-9-52	X		
F. G. Tabb to: Dow Chemical Company Rocky Flats Laboratory Denver, Colorado	Attend meeting of DMA	F. H. Langell	9-11-52	9-12-52	X		
RADIOLOGICAL SCIENCES DEPARTMENT							
I. Visitors to this Works							
R. C. Gibbs RCA Services San Francisco, California	Service electron microscope	R. C. Borasky	9-22-52	9-26-52	X	100-F 108-F	
P. E. Church University of Washington Seattle, Washington	Meteorological consultation	H. M. Parker	9-28-52	9-30-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass.	Areas
II. Visits to other Installations							
F. E. Adley to: Chemical Corps Chemical & Radiological Lab. Army Chemical Center Edgewood, Maryland	Industrial hygiene	B. Siegel S. Hormats	9-23-52	9-23-52	X		
F. E. Adley to: Carbide and Carbon Oak Ridge, Tennessee	Industrial hygiene	E. J. Struxness	9-25-52	9-25-52	X		
F. E. Adley to: Institute of Atomic Research Ames, Iowa	Attend air cleaning seminar	F. H. Spedding	9-15-52	9-17-52	X		
M. L. Barad to: Argonne National Lab. Chicago, Illinois	Discuss meteorology problems	H. Moses G. R. Hilst	9-11-52	9-11-52	X		
F.P. Hungate to: Brookhaven National Lab. Upton, Long Island, New York	Consultation on radiobiology investigations	B. A. Rubin	9-11-52	9-12-52	X		
D. W. Pearce to: General Engineering Lab. Schenectady, New York	Instrumentation consultation	G. W. Dunlap	9-18-52	9-18-52	X		
J. W. Porter to: Brookhaven National Lab. Upton, Long Island, New York	Consultation on radiobiology investigations	B. A. Rubin	9-11-52	9-12-52	X		
J. M. Smith, Jr. to: Institute of Atomic Research Ames, Iowa	Attend air cleaning seminar	F. H. Spedding	9-15-52	9-17-52	X		

UTILITIES AND GENERAL SERVICES DEPARTMENT - PURCHASING AND STORES SECTION

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass.	Areas
I. Visitors to this Works							
K. A. Jones Travelers Insurance Company Seattle, Washington	Inspect boilers as on order HW 94771, HW 100897 and HWC 21905	G. J. Hayward	9-16-52	9-17-52		X	100-B 184 100-D 184 100-F 184 100-H 184 101 200-E 284 200-W 284 300 384 700; 1100
W. L. Armstrong Builders Providence Providence, Rhode Island	Supervise installation of equipment in filter plant	G. J. Hayward K. E. Harding	8-18-52 10-1-52	10-17-52 10-1-52		X X	100-C Const. 100-D XXX
L. T. Cushing Johnson Gear & Mfg. Co. Berkeley, California	Check Johnson gears on prder HWC 14038	G. J. Hayward	9-15-52	9-29-52		X	190-C Bldg
W. Frazel Builders Providence Providence, Rhode Island	Supervise installation of equipment in filter plant	G. J. Hayward	8-18-52	10-17-52		X	100-C Const.
L. E. Hughes Worthington Corporation Harrison, New Jersey	Work on pumps furnished on order HWC 14038	G. J. Hayward	9-15-52	9-22-52		X	190-C Bldg.
A. E. Hilde DeLaval Pacific Company San Francisco, California	Inspect oil filters purchased on order HWC-18212-AJ	G. J. Hayward	9-23-52	9-23-52		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	9-8-52	10-1-52		X	190-C Bldg
R. A. Perry Columbia Geneva Steel Seattle, Washington	Inspect defective material purchased on HWC 13813	G. J. Hayward L. Ferrill	9-4-52	9-4-52		X	190-C

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isit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass.	Areas
rs purchased 14038	G. J. Hayward	9-9-52	9-16-52		X	100-B 151-B
stallation in fan cooled	J. F. Spease	9-22-52	9-22-52		X	200-E 201-C
stallation in fan cooled	J. F. Spease	9-22-52	9-22-52		X	200-E 201-C
rial on nders	H. L. Morgan	9-3-52	9-3-52		X	200-W Redox 100-B 105 100-D 105
rial on nders	H. L. Morgan	9-3-52	9-3-52		X	100-B 105 100-D 105
rial on nders	H. L. Morgan	9-5-52	9-5-52		X	100-B 105 100-D 105 100-F 105
rial on nders	H. L. Morgan	9-11-52	9-11-52		X	100-D 105 100-F 105
rial on	H. L. Morgan	9-8-52	9-8-52		X	200-W 274
nders	H. L. Morgan	9-9-52	9-9-52		X	100-B 105 100-D 105
nders	H. L. Morgan	9-15-52	9-15-52		X	100-B 105 100-F 105
nders	H. L. Morgan	9-17-52	9-17-52		X	100-B 105 100-D 105
nders	H. L. Morgan	9-20-52	9-20-52		X	100-B 105 100-D 105
nders	H. L. Morgan	9-26-52	9-26-52		X	100-B 105 100-D 105

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
R. Bagby West Coast Fast Freight Kennewick, Washington	Deliver cylinders	H. L. Morgan	9-30-52	9-30-52		X	100-B 105 100-D 105
II. Visits to other Installations							
H. A. Hauser to: Knolls Atomic Power Lab. Schenectady, New York	Discuss procurement policies and problems	H. E. Scott	9-2-52 9-8-52	9-4-52 9-9-52	X X		
H. J. Wolte to: Knolls Atomic Power Lab. Schenectady, New York	Discuss procurement policies and problems	H. E.Scott	9-2-52 9-8-52	9-4-52 9-9-52	X X		
H. A. Hauser to: Atlantic Metal Hose New York, New York	Procurement of critical material	M..Ruben	9-10-52	9-10-52		X	
H. A. Hauser to: G. O. Carlson, Coatesville, Pennsylvania	Procurement of critical material	Mr. Gerseel	9-11-52	9-11-52		X	
H. A. Hauser to: Babcock & Wilcox Beaver Falls, Pennsylvania	Procurement of critical material	W. Buley	9-12-52	9-12-52		X	
H. A. Hauser to: Industrial Tectonics Ann Arbor, Michigan	Expedite material on order	H. F. Stern	9-16-52	9-16-52		X	
H. A. Hauser to: Hoover Ball & Bearing Co. Ann Arbor, Michigan	Expedite material on order	Mr. Lennox	9-17-52	9-17-52		X	

UTILITIES AND GENERAL SERVICES DEPARTMENT- STATISTICAL AND COMPUTING SERVICES

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
I. Visitors to this Works							
D. F. Crumb International Bus. Machines Richland, Washington	Service IBM equipment	P. M. Thompson	9-1-52	9-30-52			X 700 722-A
F. Corazza International Bus. Machines Richland, Washington	Service IBM equipment	P. M. Thompson	9-1-52	9-30-52			X 700 722-A
C. G. Kruse International Bus. Machines Richland, Washington	Service IBM equipment	P. M. Thompson	9-1-52	9-30-52			X 700 722-A
M. R. Meyers International Bus. Machines Richland, Washington	Service IBM equipment	P. M. Thompson	9-1-52	9-30-52			X 700 722-A
M. E. Norby International Bus. Machines Richland, Washington	Service IBM equipment	P. M. Thompson	9-1-52	9-30-52			X 700 722-A
R. C. Warren International Bus. Machines Richland, Washington	Service IBM equipment	P. M. Thompson	9-1-52	9-30-52			X 700 722-A
J. R. Whitman International Bus. Machines Richland, Washington	Service IBM equipment	P. M. Thompson	9-1-52	9-1-52			X 700 722-A
LAW DEPARTMENT							
I. Visits to other Installations							
B. F. Butler to: Knolls Atomic Power Lab. Schenectady, New York	Prime contract consultation	H. E. Scott L. K. Grean R. Turner	9-2-52	9-12-52	X		

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PURCHASING AND STORES SECTION
UTILITIES AND GENERAL SERVICES DEPARTMENT
SUMMARY - SEPTEMBER 1952

Forty-five bid openings were handled and 16 Government orders were placed of the 56 requisitions being handled for the Atomic Energy Commission on the new construction program.

Emergency purchases were executed for replacement Rod Liner Cans and Shock Absorber Sleeves required for start up of Project C-431-B. Both orders were placed and the material was received within the required time.

Power shortage in the Northwest has cost the aluminum producers a tremendous amount of metalic aluminum. This has helped cause delivery dates to slip as much as 90 days.

As our coal contracts contain escalation clauses keyed to the labor contract it is almost certain that the cost of coal will increase. We have no information as to the amount since no contract has yet been signed by the western producers.

The second request for special assistance in the procurement of materials for the National Carbon Company expansion program to provide additional graphite production facilities was forwarded to National Production Authority.

As a result of rate reductions obtained from carriers savings in freight charges for September amounted to $2767.03. The total savings from September 1, 1946 to date amounts to $1,727.745.60.

At the request of AEC a monthly Procurement Action report was initiated effective July 1, 1952. This report covers such items as number of actions and dollar value by type of vendor, purpose of service or material procured and basis for award.

Of the net value of purchase orders and alterations submitted to AEC during August 1952, $274,883 (43.5%) was placed with Small Business; Big Business - $355,783 (56.3%); Government Agencies and Educational and Other type vendors - $884 (.2%). During September 1952 $404,550 (31.3%) was placed with Small Business; Big Business - $888,275 (68.6%); Government Agencies and Educational and Other type vendors - $851 (.1%).

Preliminary discussions were held with Commission personnel during the month, concerning the screening of Kaiser Engineers' material requirements. Bills of materials prepared by Kaiser Engineers will be screened by Stores Unit personnel to determine availability of required materials, from plant sources, prior to purchase.

Materials and equipment valued at $30,883.09 were withdrawn from Account 10.10 (Excess) for use on the project. Excess materials and equipment valued at $507,167.02 were shipped from the project as directed by the Commission. The total value of excess materials disposed of this month was $538,050.11.

During the month 70 formal excess lists with a total value of $880,866.97 were submitted to the Commission for disposition.

Informal advice indicates that the covered storage building at the New Central Stores Warehouse will be made available for occupancy during October.

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PURCHASING AND STORES SECTION
SUMMARY

Stores has been requested to take over the operation of the Technical Stores in the 300 Area and in the 222-S Building.

Organization and Personnel:

	8-31-52	9-30-52	Change
Employees on Roll	378	335	-43

Transfer of the Inspection Unit (30 employees) to the Engineering Department was effective September 1, 1952.

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PURCHASING AND STORES SECTION
GENERAL

Statistical and General

The second request for special assistance in the procurement of materials for the National Carbon Company expansion program to provide additional graphite production facilities, was received and forwarded to the National Production Authority. Assistance was requested in obtaining delivery of 2050 tons of structural steel in the fourth quarter 1952. E-3 Controlled Material allotments have now been forwarded to National Carbon for their use on both G-5 and G-12 contract expansions.

The Commission requested that we set up a procedure for compliance with the terms of the Office of Price Stabilization, General Overriding Regulation 2, and Revision 1, effective October 15, 1952. This regulation requires the submission of ceiling prices as well as bid prices with all quotations and places equal responsibility for purchasing within ceiling prices on the purchaser. Our objections were forwarded to Washington, D.C. and indications are that due to the many objections from Industry throughout the country, the requirements will be reduced by OPS to a statement from the supplier that his prices are not above the prescribed ceiling.

Instructions requiring application to NPA for allocation of scrap steel in lots of 100 tons or more are no longer applicable. Disposition of scrap carbon steel reverts to the procedure effective prior to priorities and controlled material plan.

7 Requests for NPA Directive or DX action were received.

6 Cases were submitted to the Atomic Energy Commission for directive or DX action.

Erection Engineers were brought in from eight companies to supervise inspection and installation of equipment in the areas.

At the request of AEC a monthly procurement action report was initiated effective July 1, 1952. This report covers such items as number of actions and dollar value by type of vendor, purpose of service or material procured, and basis for award.

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PURCHASING AND STORES SECTION
GENERAL

The schedules below show the dollar value of business placed by cost category with different types of vendors. These schedules are for August and September 1952 and based on the net value of purchase orders and alterations as transmitted to A.E.C. during those months.

August 1952

Cost Category	Vendor Type: Government Agency	Small Business	Big Business	Educational and Other
$0 - $ 9.99	$ 7.80	$ 696.11	$ 323.39	$ 45.61
$10 - $ 499.99	556.46	60,651.17	38,529.44	274.10
$500 - $ 9,999.99		108,734.48	56,805.99	
$10,000 - Up		104,800.75	260,124.19	
TOTAL	$ 564.26	$274,882.51	$355,783.01	$ 319.71

September 1952

Cost Category	Vendor Type: Government Agency	Small Business	Big Business	Educational and Other
$0 - $ 9.99	$ 27.25	$ 839.89	$ 561.33	$ 68.75
$10 - $ 499.99	220.80	89,144.66	50,611.44	534.22
$500 - $ 9,999.99		164,743.62	111,362.82	
$10,000 - Up		149,821.35	725,739.89	
TOTAL	$ 248.05	$404,549.52	$888,275.48	$ 602.97

Vendor Contacts	257
Claims Processed	8
Damage Reports Processed	17
Over & Short Reports Processed	10
Accounts Payable Requests Handled	127
Difference Slips Processed	54
Alterations	161
Clearance Slips and Purchase Order Change Approvals	157
Material Exception Reports	111
Return Orders Issued	110

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PURCHASING AND STORES SECTION
GENERAL

Requisitions on hand 9-1-52	G	D	Total
Operations Procurement	749	203	952
Construction Procurement	0	145	145
A.E.C. Procurement	71	23	94
Total	820	371	1191
Requisitions Assigned during September			
Operations Procurement	1813	326	2139
Construction Procurement	0	216	216
A.E.C. Procurement	217	36	253
Total	2030	578	2608
Requisitions Placed during September			
Operations Procurement	1788	374	2162
Construction Procurement	0	263	263
A.E.C. Procurement	184	38	222
Total	1792	675	2647
Requisitions on hand 9-30-52			
Operations Procurement	774	155	929
Construction Procurement	0	98	98
A.E.C. Procurement	104	21	125
Total	878	274	1152

Purchase Orders Placed	HW	HWC	By A.E.C.
Operations Procurement	1340	331	
Construction Procurement		169	
A.E.C. Procurement			172 *
Total	1340	500	172

Value Purchase Orders Placed			
Operations Procurement	$884,959.32	$97,586.20	
Construction Procurement		101,316.98	
A.E.C. Procurement			$213,536.18 *
Total	$884,959.32	$198,903.18	$213,536.18

* Includes 16 "DP" purchase orders totaling $26,513.09 processed for A.E.C. by the Construction Procurement Unit.

Alterations Issued	Increase	Decrease	No Change	Total
HW Operations	48	31	13	92
HWC Operations	21	14	5	40
HWC Construction	22	20	3	45
Total	91	65	21	177

Value Alterations Issued	Increase	Decrease	Total
HW Operations	$ 38,947.80	$ 50,528.68	$ 89,476.48
HWC Operations	1,047.79	1,673.93	2,721.72
HWC Construction	138,810.12	30,290.97	169,101.09
Total	$178,805.71	$ 82,493.58	$261,299.29

Government Transfers	OR	ORC
	0	0

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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 September. 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 53	2 Q 53
Carbon Steel Plate	Short Tons	39.00 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 .94	250.00 .06	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	Lbs.	12,000 2,948	100,000 0	1,000 0	None
Copper & Copper Base Alloy Brass Mill Products	Lbs.	2,313 1,618	23,000 0	10,000 0	9,000 0
Copper Wire Mill Products	Lbs.	2,500 1,223	5,000 473	2,000 0	2,000 0
Copper & Copper Base Alloy Foundry Products & Powder	Lbs.	None	None	None	None
Aluminum	Lbs.	11,750 7,609	15,000 14,841	5,000 0	5,000 0

OPERATIONS

CONTROLLED MATERIAL	UNIT MEASURE	3 Q 52	4 Q 52	1 Q 53	2 Q 53
Carbon Steel (including wrought iron)	Short Tons	36.00 33.80	110.00 0	80.00 0	30.00 0
Alloy Steel (excluding stainless steel)	Short Tons	2.00 1.06	3.00 0	2.00 0	1.00 0
Stainless Steel	Lbs.	5,000 2,848	20,000 4,851	10,000 947	5,000 0
Copper & Copper Base Alloy Brass Mill Products	Lbs.	4,700 4,577	5,000 576	3,000 0	1,000 0
Copper Wire Mill Products	Lbs.	4,000 1,031	6,000 931	5,000 475	3,000 0
Copper & Copper Base Alloy Foundry Products & Powder	Lbs.	None	None	None	None
Aluminum	Lbs.	191,342 160,666	292,000 291,756	180,000 9,600	145,000 0

Organization and Personnel

	8-31-52	9-30-52	Change
Employees on Roll	56	48	-8

1201772

PURCHASING AND STORES SECTION
CONSTRUCTION PROCUREMENT UNIT
SEPTEMBER 1952

The Unit work load increased slightly over the previous month. 216 new purchase requisitions were received and 263 orders placed. In addition the Unit handled 45 bid openings and placed 16 Government orders on the 56 requisitions being handled for the Atomic Energy Commission on the new construction program.

Sufficient Hoppers and Step-Plugs were received on the Plantsite and enough boron steel balls forwarded to Electroplating Company to take care of the first pile shut down. The present rate of production on these items will meet subsequent shutdown schedules.

Emergency purchases were executed for replacement Rod Liner Cans and Shock Absorber Sleeves required for start up of Project 431-B. Both orders were placed and material received during the month.

A recommended procedure for the procurement of stainless steel required for vessel and equipment fabrication for the new separations facilities was submitted to the Atomic Energy Commission for approval. The procedure involved General Electric Company furnishing the stainless steel thru a single supplier with the fabricators specifying sizes and quantity required.

279 new orders were entered on the expediting records and 300 orders were completed during the month. Approximately 200 orders were being actively expedited at the end of the month.

Organization and Personnel

	8-31-52	9-30-52	Net Change
Employees on Payroll	23	21	-2

1201773

PURCHASING AND STORES SECTION
OPERATIONS PROCUREMENT UNIT
SEPTEMBER - 1952

Statistical and General

The workload of the unit has held fairly constant during the month. Orders placed totaled 1671, including 1340 HW orders and 331 HWC orders.

Orders completed by the Expediting group during the month include 255 HWC and 1229 HW orders, a total of 1484. There are presently 2298 open orders.

Continuing difficulty has been experienced in maintaining the flow of aluminum products for process. Power shortage in the Northwest has cost the aluminum producers a tremendous amount of basic aluminum. This and other factors have caused delivery dates to slip, in some cases as much as 90 days. This problem is being closely followed and everything possible is being done to assure the continuing receipt of caps, cans, dummies, etc.

Agreement was finally reached with Finance and Technical on the question of the use of "G" requisitions instead of the "D Operations" requisitions. Effective October 1, Technical will use the "G" requisitions and after the present workload of "D Operations" requisitions is worked out and completed, no further HWC orders will be placed by this unit. This will simplify the work to some extent and will result in increased efficiency.

The threat of a nation-wide coal strike was averted but, as of this date, no contract has been signed by the western producers. It is anticipated that they will sign a contract very similar to that which the United Mine Workers have negotiated with the Bituminous Coal Operators Association, but nothing firm has been accomplished thus far. Our coal contracts contain escalation clauses keyed to the labor contract and while we are certain that costs will increase, we have no information as to the exact amount.

Organization and Personnel

	8-31-52	9-30-52	Changes
Employees on roll	32	34	+ 2

1201774

PURCHASING AND STORES SECTION
STORES UNIT
SEPTEMBER, 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 $185,920.22, $45,069.86, and $25,876.17 respectively for a total valuation of $256,866.25.

Purchase requisitions processed through screening totaled 2945 with 401 items furnished from Stores Unit Inventories.

Preliminary discussions were held with Commission personnel during the month concerning the screening of Kaiser Engineers material requirements. Bills of material prepared by Kaiser Engineers will be screened by Stores Unit personnel to determine availability of required materials from plant sources prior to purchase.

Materials and equipment disbursed from Account 10.20 (Construction Materials Held for Future Use) for use on the project were valued at $17,237.61. Materials valued at $7,101.14 were shipped from the project as directed by the Commission. Materials declared excess from this account totaled $730,109.72. The total value of material disposed of during the month was $754,448.47.

Materials and equipment valued at $30,883.09 were withdrawn from Account 10.10 (Excess) for use on the project. Excess materials and equipment valued at $507,167.02 were shipped from the project as directed by the Commission. The total value of excess materials disposed of this month was $538,050.11.

During the month 70 formal excess lists with a total value of $880,866.97 were submitted to the Commission for disposition.

One hundred and fifty 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. Eight scrap sales were completed this month for a revenue of $18,060.11.

Two A.E.C. Surplus Salvage Sales conducted by Stores Unit personnel during September resulted in a total revenue of $94,904.78.

Definite steps have been taken to speed up the close-out of the Construction Material (Account 10.20) at White Bluffs. Our objective is to complete the physical and financial movement of this material off-site or to North Richland during the month of October.

Informal advice indicates that the covered storage building at the New Central Stores Warehouse will be made available for occupancy during October.

1201775

PURCHASING AND STORES SECTION
STORES UNIT

The Stores Unit has been requested to take over the operation of the Technical Stores in the 300 Area and in the 222-S Building.

Stores Unit Yard No. 2 at North Richland has been made a controlled area effective September 15, 1952 and a patrolman is now stationed at the central gate.

Organization and Personnel

	8-31-52	9-30-52	Change
Employees on Roll	224	221	-3

1201776

PURCHASING & STORES SECTION
TRAFFIC UNIT
September 1952

STATISTICAL AND GENERAL:

On September 1st the Empire Airlines and West Coast Airlines merged their companies and are now known as the West Coast Empire Airlines. Through this merger direct service between Pasco and Seattle and Pasco and Portland via Yakima was established on September 28. Their new schedules to Pendleton, Oregon and Spokane, Washington afford good connections with the eastbound Transcontinental Airlines.

As a result of rate reductions obtained from the carriers, there was a total savings in freight charges for the month of September amounting to $2,767.03. This makes a total savings from September 1, 1946 to date of $1,727,745.60.

Savings Report

1. Rate reductions obtained from carriers:

Commodity	Origin	Savings for September 1952	Savings from 9-1-46 thru August 1952	Savings from 9-1-46 to date
Nitric Acid	Hedges, Wash.	$ 670.43		
Coal	Roslyn, Wash.	1,757.75		
Compressed Gases	Yakima, Wash.	200.85		
Rail	Various	132.53		
Carloading	Various	5.47		

PURCHASING & STORES SECTION
TRAFFIC UNIT
September 1952

Work Volume Report

Reservations Made	Rail	114
	Air	176
	Hotel	230
Expense Accounts checked		142
Household Goods & Automobiles	Movements Arranged Inbound	13
	Movements Arranged Outbound	4
	Shipments Traced	2
	Insurance Riders Issued	6
	Insurance Bills Approved	10
	Furniture Repair Orders	2
	Claims Filed	2
Ticket Refund Claims	Filed	19
	Collected - Number	19
	Collected - Amount	$769.51
Freight Claims	Filed	10
	Collected - Number	13
	Collected - Amount	$768.36
	Over and Shorts Processed	11
	Damage Reports Processed	16
Freight Bill Audit Savings		$1,241.16
Freight Shipments Traced		94
Quotations	Freight Rates	125
	Routes	152
Bills Approved	Air Freight	1
	Air Express	29
	Carloading	54
	Express	235
	Rail	1,222
	Truck	296
Carload Shipments	Inbound	1,450
	Outbound	17

1201778

PURCHASING & STORES SECTION
TRAFFIC UNIT
September 1952

Report of Carloads Received

General Electric Company	CMSTP&P	NP	UP	Total
Aluminum Ingots		1		1
Aluminum Sulphate	2		1	3
Ammonium Silicofluoride			1	1
Asphalt	2	1		3
Caustic Soda	5	14	7	26
Chlorine	5	1	2	8
Coal	181	94	1,088	1,363
Diatomaceous Earth		1		1
Ferric Sulphate	1	1	1	3
Hydroflouric Acid	1			1
Hydrogen Peroxide			1	1
Lime	2		1	3
Methyl Isobutyl Ketone		1		1
Nitric Acid		3	10	13
Nitrate of Soda	2	1	3	6
Oil		1		1
Potash			1	1
Salt		1	1	2
Soda Ash	1	1	1	3
Sodium Bichromate		1		1
Steel			1	1
Steel Desks		1		1
Steel Partitions			1	1
Sulphuric Acid			1	1
Merchandise		2	2	4
Total	202	125	1,123	1,450

Organization and Personnel

	8-31-52	9-30-52	Change
Employees on Roll	12	11	-1

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TRANSPORTATION SECTION
MONTHLY REPORT
September 1952

GENERAL

Transportation Section personnel forces decreased from 541 to 536 employees during the month by 3 new hires, 9 transfers in, 2 reactivations - personal illness, 7 terminations, 9 transfers out and 3 deactivations - personal illness.

RAILROAD ACTIVITIES

Commercial cars handled during September increased 16.5% over August as coal receipts continued at a high seasonal level.

Process service continued at a normal level although decreasing 19.3% over August; however, scheduling was such that the maximum possible to handle with the available cars was reached during the latter part of the month.

Car movements including process service totaled 3,560 in September compared to 3,177 in August: 1,433 in July; 2,141 in June; 2,272 in May; 2,639 in April; 3,282 in March; 2,803 in February and 2,909 in January.

Special switching service was provided to the U.S. Army at North Richland on September 17 to expedite the unloading of eleven cars of classified material.

Ballast service and special work train service was provided for track maintenance forces on September 3, 4, 5, 10, 11 and 18. This included the cleanup of used materials following the 200-East lead relay program.

The following recapitulation indicates the number of commercial cars handled:

Carload Movements -	Loads In	Empties In	Loads Out	Empties Out
General Electric Company	1465	23	28	1446
Atkinson & Jones	9	-	-	9
Bryan W. Burtch	1	-	-	-
W. G. Clark	1	-	-	1
Emery & Bohm	1	-	-	1
Kaiser Eng.	4	-	-	4
P. S. Lord	-	-	-	1
Northwest Eng. Co.	1	-	-	1
Royal Co.	1	-	-	-
J. G. Shotwell	5	-	-	5
Sound Construction Co.	4	-	-	4
L. W. Vail	2	-	-	3
U. S. Army	33	4	3	27
	1527	27	31	1502

Transportation Section

Completed annual inspection and service on 120-ton diesel electric locomotive 39-3730. Replaced main bearings 1, 2, 4 and 5. Replaced connecting rod bearings 1, 2, 3 and 4.

Completed annual inspection and service on 120-ton diesel electric locomotive 39-3731. Replaced both halves of the center main bearing.

Completed necessary repairs and service following a field inspection of all Plant owned hopper cars.

Completed the winterizing of all 80-ton diesel electric locomotives which included servicing with antifreeze.

Beginning September 12, the 120-ton diesel electric locomotives stationed at Riverland were placed in the roundhouse for overnight storage and heaters were placed in operation for the 80-ton diesel electric locomotives remaining outside due to the lack of space. Locomotives left in the 700 Area were placed on the steam line.

Fabricated and installed new bolts from high grade steel to hold the female center casting to the truck bolster "A" end of the U.S. Army car operated off-plant by the Atomic Energy Commission.

Railroad track maintenance and rehabilitation work continued on a routine basis. Lining, surfacing and dressing of track required 5,199 man-hours. Installation of ties, rail and other track materials required 392 man-hours. Distribution and handling of track materials required 831 man-hours. Repair of road crossings required 1,359 man-hours.

AUTOMOTIVE ACTIVITIES

The Plant Bus System transported only four less passengers in September than in August even though it was a 30-day month which included a holiday. The following statistics indicate the magnitude of service rendered:

Passenger volume	143,044
Revenue - bus fares	$ 7,152.20
Earnings - transit advertising (August)	382.43
Bus trips	6,792
Bus miles - passenger carrying	178,760
Passenger miles	4,338,601

Transportation Section

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
Passenger buses - Riverland	2
Passenger buses - Pistol Range	2
Passenger buses - North Richland	7
Passenger buses - White Bluffs	3
700-300 Area Shuttle	16
Inter-Area Passenger Shuttle & Express	2

Effective September 15, the departure time of the North Richland to 700 Area bus service was advanced five minutes and now leaves the North Richland Trailer Camp Office at 7:30 a.m. This permits personnel utilizing this service to reach the 703 Building, 1125 Warehouse and Dormitory W-10 by 8:00 a.m.

Effective September 22, direct bus service from the Richland Bus Terminal to Redox was discontinued because of the inclusion of the TBP and Redox facilities within the confines of 200-West Area. TBP and Redox personnel are now served by the area shuttle service from the 200-West Badge House to their respective work locations.

Effective September 15, a revised schedule was established for the 700 Area-300 Area Shuttle Service. The new schedule provides service every thirty minutes (noon hour excepted) with departure times from both the 700 and 300 Areas on the hour and half hour. This new schedule will realize an annual savings of approximately $2,500 and is proving quite satisfactory to both passengers and drivers.

The Richland Bus System transported 7% fewer passengers in September than in August. The following statistics indicate the volume of service rendered:

Total psssengers including transfers	30,430
Revenue - bus fares	$ 2,169.70
Earnings - transit advertising (August)	61.36
Bus trips	3,480
Bus miles - passenger carrying	19,140
Passenger miles	104,400

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Transportation Section

Arrangements have been completed for the Richland Bus System to begin operating on a revised schedule effective October 6. The number of routes will be reduced from five to three and service will be provided during peak periods only, which is expected to reduce the annual operating deficit to approximately $15,000.

Off-Plant chauffeured automobile trips (Company business and/or official visitors totaled 179 and were rendered as indicated to the following locations:

Benton City, Washington	2
Hinkle, Oregon	21
Kennewick, Washington	4
McNary Dam, Washington	2
Othello Washington	1
Pasco, Washington	96
Pendleton, Oregon	36
Prosser, Washington	1
Pullman, Washington	2
Sunnyside, Washington	7
Spokane, Washington	2
Toppenish, Washington	1
Walla Walla, Washington	3
Yakima, Washington	1

The following tabulation indicates the volume of Drivers Test Service rendered:

Applicants:	Male	110	Number tests given		124
	Female	14	Number rejected		0
Permits Issued:	Limited to driving with glasses			33	
	Unlimited			91	
Permits Reissued:	Routine		28		
	New AEC		0		
	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	24,589	9,206	14,061	715	153
Received during month	115,600	25,339	30,500	3,054	0
Dispensed during month	106,465	18,909	24,654	1,971	88
Stock at end of month	33,724	15,636	19,907	1,798	65

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Transportation Section

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	41
Class A Inspections and Repairs	111
Class B Inspections and Lubrications	1127
Other routine maintenance repairs and service calls	2559
Tire repairs	501
Wash jobs	564

The following tabulation indicates the Plantwide usage of automotive equipment:

Code	Type	No. of Units	Total Mileage
1A	Sedans	343	549,247
1B	Buses	100	235,587
1C	Pickup trucks	462	262,939
1D	Panel, Carryall, Sta. Wagon	129	136,502
1E	Armored Cars	1	105
1G	Jeeps	2	831
68 Series	Trucks	210	82,378
		1,247	1,267,589

Winterizing of Hanford Works automotive and heavy equipment was begun on September 22. Servicing of water cooled equipment with antifreeze is approximately 65% complete.

Effective September 22, the interval between changing oil and replacing filter elements was extended from 2,000 miles or every three months to 4,000 miles or every six months, whichever occurs first. This revised schedule only applies to light automotive vehicles such as sedans, pickups, station wagons, carryalls, panels, jeeps and power wagons. This schedule of servicing is consistent with manufacturers' recommendations for operating conditions similar to those at Hanford Works and will result in an annual savings of approximately $8,000.

General Motors coach 1B 5117 which incurred major accident damage on June 17 has been repaired by an off-plant contractor and returned to Plant Area passenger service.

Received and placed in service the trash collection and disposal equipment for the 300 Area. The new system consists of a Brooks "Load Lugger" truck-mounted hoist (HO 34-5471) and approximately 35 trash containers of up to 12 cubic yards capacity. Use of the new system is expected to realize an estimated savings of $10,112 for the Metal Preparation Section.

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Transportation Section

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	9,031	0	0
Received during month	0	9,452	0	0
Dispensed during month	0	14,421	0	0
Stock at end of month	0	4,062	0	0

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	100	27	1,672	6,390
Made during month	900	0	0	0
Used during month	277	8	0	5
Stock at end of month	723	19	1,672	6,385

Maintenance of primary roads required 780 man-hours; secondary roads 8 man-hours; patrol roads and trails 151 man-hours and fire breaks 24 man-hours.

Manufactured 900 tons of 3/4" pre-mix material requiring 600 cubic yards of 3/4" crushed rock, 8,286 gallons of MC 3 oil and 233 man-hours.

Sweeping of recently completed seal coated roads required 135 man-hours.

Repair of two 1100 Area parking lots required 274 man-hours.

Handling of materials and equipment for the Stores Unit at White Bluffs, Hanford, 700, 1100 and 3000 Areas included 42 carloads, 280 truckloads and required 5,830 man-hours.

Area deliveries of operational supplies required 1,467 man-hours: office furniture, equipment and records 1,605 man-hours; vegetation control 177 man-hours; mosquito control 210 man-hours and ice deliveries 48 man-hours.

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#20-H.A. Carlberg

ELECTRICAL DISTRIBUTION AND TELEPHONE SECTION

SEPTEMBER 1952

October 6, 1952

GENERAL

The Section work backlog, as of September 30, totaled 4,187 man days distributed as follows:

	Days Per Craftsman	Total Man Days	Net Change Man Days
Line Maintenance	40.0	1,264	65 Decrease
Substation Maintenance	22.4	382	39 Decrease
Telephone Unit	63.5	2,541	21 Increase

Section total work force increased from 183 to 185. The current difficulty of procuring and training substation operators may be relieved by the recently approved Trainee Grade for this classification.

Electrical power peak demands for September were:

Date	September KW Demand	Comparative August KW Demand
Process Load 9-25-52 (3:00 p.m. - 3:30 p.m.)	87,230	95,100
Richland Load 9-8-52 (6:30 p.m. - 7:00 p.m.)	14,720	13,760

Process area peak demand, created by 100-C Area equipment testing in August, will not be exceeded before 100-C Area is in production.

Lack of rainfall in the entire Pacific Northwest has created an acute water shortage. The pending need for BPA system load control was further discussed at Walla Walla with representatives of BPA and the AEC. A 400,000 KW reduction has been made in BPA system load by curtailing all "interruptable" power loads. Water storage is being lowered and a 150,000 KW firm power load reduction must be made by October 15, unless there is substantial rainfall. This will be accomplished by a DEPA order establishing quotas for non-defense industrial consumers of more than 300 KW peak demand. The order will request substantial reduction in outdoor lighting but will not affect Hanford Works industrial load.

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A rate review every five years is required by the law which established the B.P.A. Studies are now being made and an increase of five to twenty per cent is certain to follow the 1954 review.

An AEC-Electrical Distribution and Telephone Section division of responsibility procedure was developed as related to new construction. Following approval by the Work Review Committee this was forwarded to the AEC for transmittal to Kaiser Engineering.

ELECTRICAL DISTRIBUTION UNIT

Maintenance and Operation

The 3000 Area building occupied temporarily by the Richland Village line maintenance crew has proven satisfactory as a permanent headquarters. Suitable alterations will be made at a considerable saving compared to moving into Building 744, which has been released for other use.

200-E Area future construction plans conflict with the present site of the Electrical Distribution Unit's process area pole and material storage yard. This material is being re-stored at the future proposed area Electrical Distribution Unit Headquarters in the 200 North Area.

A construction workman, operating an air hammer, drove a tool through a concrete envelope and conduit carrying a 13.8 KV feeder supplying Building 105-C, Saturday September 20. One conductor was grounded without injury to the workman. The alternate feeder was "tagged out" by a construction Foreman who was unavailable. A one hour and thirty-two minute delay resulted before permission was received to remove the tag, permitting restoration of service.

Two minor localized power outages during the month at Building 221-U and at North Richland did not affect production.

System Expansion and Planning

Substation 151-B additions, constructed to supply power to 100-C Area were inspected and accepted September 8, 1952. A phase check disclosed that the secondary phasing of the new 230 KV/13.8 KV transformer was reversed and this was corrected by construction forces. The transformer is now in service.

The major portion of the old 66 KV line to the 200 N Area was dismantled. A portion of this material, and all 66 KV material held in excess by the Electrical Distribution Unit, was released to Kaiser Engineering for constructing power supply to 100-K construction.

B.P.A. has requested operation of the 115 KV system with the line closed between Richland Village and the Benton Switching Station. This would relieve the overloaded condition of the Midway-Grandview-Kennewick line during the coming winter season. They have tentatively agreed to provide relays and motor operated mechanisms for two sectionalizing disconnecting switches at the 300 Area. This will increase reliability of service while operating with the tie line closed.

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It has been agreed to provide a double bus section for Building 165 (K Program). Initial operation will be with essential pumps connected to an isolated bus section supplied by the emergency turbogenerators. It may be advisable to synchronize these generators with the rest of the system after gaining sufficient operating experience.

A considerable number of suggestions were made for revisions in the electrical utility plans and specifications for the Fifth Housing Addition. Suggestions included elimination of the third phase conductor and a number of down guys, reduction in size of conductors etc. Revisions should result in a reduction of construction costs conservatively estimated at eight per cent.

TELEPHONE UNIT

Operation and Maintenance

A summary of telephone subscriber service is as follows:

	Subsriber Stations in Service	Lines Available for Service	Sides Available for Service	Exchange Lines in Service
Richland	5071 Residence 1018 Official 428 Misc.	54	367	3909
North Richland	503	164	31	436
Process Areas	1300	665	—	1287
TOTAL	8320	883	398	5632

Richland Exchange four-party service:

	September 30, 1952	August 31, 1952
Number of lines, complete fill	41	38
Partial fill with three subscribers	23	14
Subscribers	356	293

System Expansion and Planning

A recommendation was made to the AEC to discontinue leasing of one Richland-Kennewick, and two Richland-Pasco, telephone trunks. Discontinuing use of these trunks will result in a yearly saving of $850.00. A television signal distribution system proposed by Radio Station KALE is under consideration for installation on existing Richland Village electrical distribution system poles.

It has become obvious with development of Program X that it will be logical to combine dial telephone exchange facilities for 100-B, 100-C and K Areas. Consequently Project CA-473 (B-C exchange) is being cancelled and preliminary studies are being made for a combined KBC exchange to be located in a bomb-proof structure in K Area.

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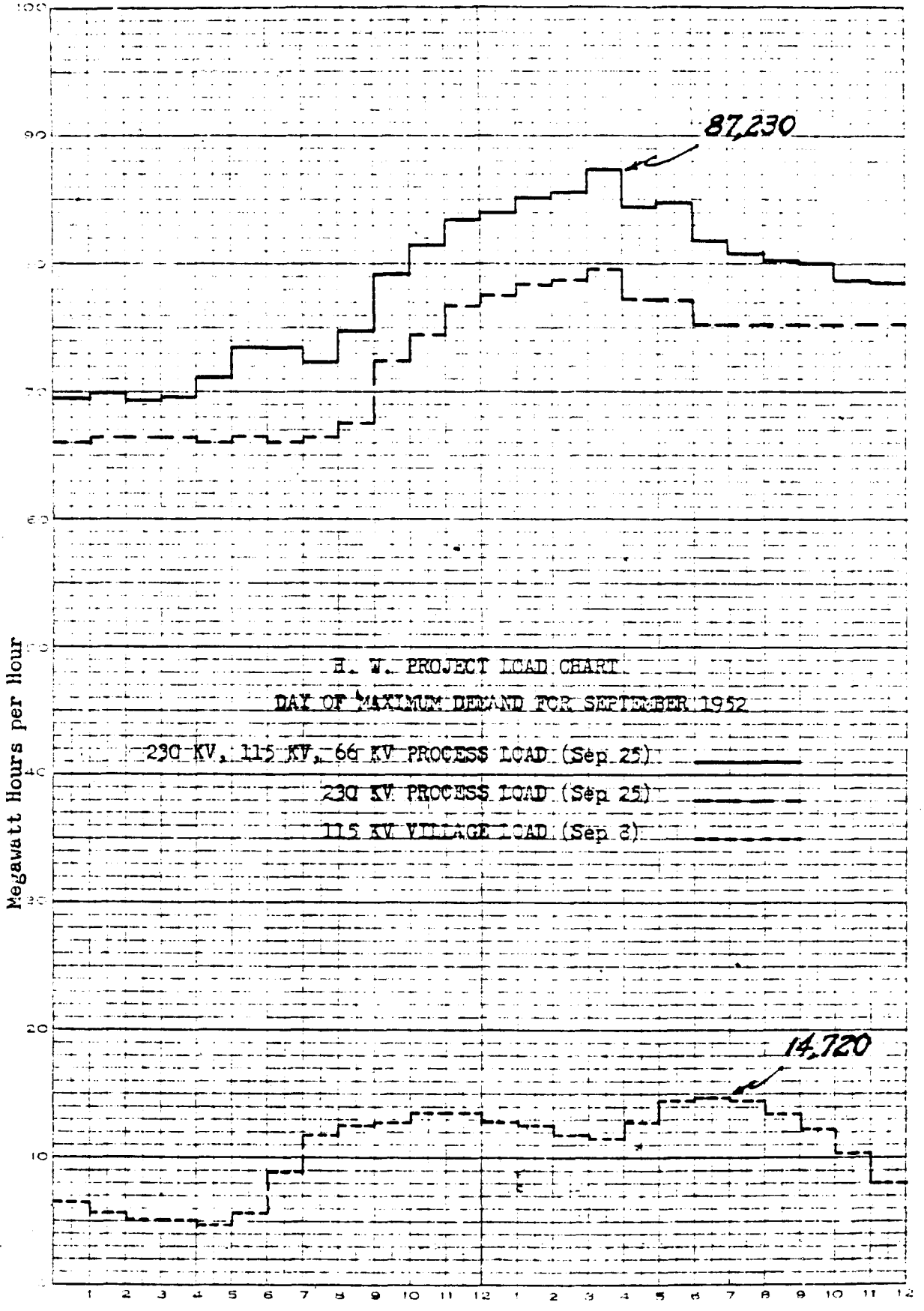
POWER STATISTICS
ELECTRICAL DISTRIBUTION AND TELEPHONE SECTION
FOR MONTH ENDING SEPTEMBER 30, 1952

	ENERGY - MW HRS.		MAX DEMAND - KW		LOAD FACTOR - %	
	August	Sept.	August	Sept.	August	Sept.
230 KV System						
A-2 Out (100-B)	10,895	10,325	33,900	24,700	43.2	58.1
A-4 Out (100-D)	14,365	14,800	23,700	22,700	81.5	90.6
A-5 Out (100-H)	9,144	9,072	14,500	13,800	84.8	91.3
A-6 Out (100-F)	7,075	7,405	11,600	11,700	82.0	87.9
A-8 Out (200 Area)	4,932	4,788	8,640	8,280	76.7	80.3
TOTAL OUT	46,400	46,390	92,340**	81,180**	67.6	79.4
MIDWAY IN	47,257	47,063	88,800*	79,600*	71.5	82.1
Transm. Loss	846	673				
Per cent Loss	1.8	1.4				
115-KV System						
B1-S5	50	86	-	432	-	27.5
B1-S4 Out (N. Rich.)	1 757	1,517	3,053	2,822	77.3	74.7
Richland	6 800	6,814	12,800*	14,720*	71.4	64.3
BB3-S4 Out (300 Area)	952	952	2,000	2,160	64.0	61.2
TOTAL OUT	,559	9,369	17,853**	20,134**	72.0	64.6
Benton In	,260	1,640	29,600*	24,800*	5.7	9.2
So. Richland In	,260	7,840	16,800*	18,000*	66.1	60.5
TOTAL IN	,520	9,480	46,400**	42,800**	27.6	30.8
Transm. Loss	+39	111				
Per cent Loss	+.4	1.2				
66-KV System						
B9-S11 Out (100-C)	223	130	900	300	33.3	60.3
B7-S10 Out (W.Bluffs)	315	315	990	1,530	42.7	28.6
Hanford Out	277	232	600**	600**	62.0	53.7
TOTAL OUT	815	677	2,490**	2,430**	44.0	38.7
HANFORD IN	771	623	2,150*	1,600*	48.2	54.1
Transm. Loss	+44	+54				
Per cent Loss	+5.7	+8.7				
Project Total						
230 KV Out	46,411	46,390	92,340**	81,180**	67.6	79.4
115 KV Out	9,559	9,369	17,853**	20,134**	72.0	64.6
66 KV Out	815	677	2,490**	2,430**	44.0	38.7
TOTAL OUT	56,785	56,436	112,683**	103,744**	67.7	75.6
230 KV In	47,257	47,063	88,800*	79,600*	71.5	82.1
115 KV In	9,520	9,480	46,400**	42,800**	27.6	30.8
66 KV In	771	623	2,150**	1,600**	48.2	54.1
TOTAL IN	57,548	57,166				
Transm. Loss	763	730				
Per cent Loss	1.3	1.3				

*Denotes Coincidental Demand
** Denotes Non-Coincidental Demand

Average Power Factor - 230 KV System 97.9
Average Power Factor - 115 KV System 87.7
Average Power Factor - 66 KV System 91.6

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87,230
14,720
H. W. PROJECT LOAD CHART
DAY OF MAXIMUM DEMAND FOR SEPTEMBER 1952
230 KV, 115 KV, 66 KV PROCESS LOAD (Sep 25)
230 KV PROCESS LOAD (Sep 25)
115 KV VILLAGE LOAD (Sep 2)
Megawatt Hours per Hour
90
70
60
50
40
30
20
10
1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12

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UTILITIES AND GENERAL SERVICES DEPARTMENT

STATISTICS UNIT

MONTHLY REPORT - SEPTEMBER 1952

GENERAL - C. A. Bennett

Organization and personnel are summarized as follows:

	As of 9-30-52			As of 8-31-52			Net Change		
	Ex	Non-Ex	Total	Ex	Non-Ex	Total	Ex	Non-Ex	Total
Business Statistics	3	0	3	3	0	3	0	0	0
Precision & Quality Control	1	3	4	2	3	5	-1	0	-1
Research & Development Statistics	2	3	5	2	3	5	0	0	0
Staff	1	1	2	2	1	3	-1	0	-1
TOTAL	7	7	14	9	7	16	-2	0	-2

Two mathematicians terminated during the month. W. C. Healy, Jr., is beginning studies for the Ph.D. degree at the University of Illinois, and H. E. Reinhardt is teaching at Washington State College preparatory to beginning work toward a Ph.D.

Mr. Verald L. Easterly of the Dow Chemical Company, Rocky Flats plant, is continuing his training with the Unit.

Dr. F. H. Tingey attended the fifty-third meeting of the Institute of Mathematical Statistics at East Lansing, Michigan, September 2 through 5. This was a joint meeting with the American Mathematical Society and the Econometric Society.

BUSINESS STATISTICS - L. G. Waters

The final curves for Salary Administration were fitted to data from the National Salary Survey. A curve of the type $y = \frac{1}{a+bx}$ was hypothesized as expressing the relationship between monthly salary (y) and job grade (x). This curve was explainable in terms of salary administration practices, allowed comparison to other similar curves, and produced a good fit (letter from G. P. Ruderman to W. P. McCue, "E. A. and O. Curve Fitting").

A sampling procedure was established for the Education Committee in connection with a survey being conducted by the Committee. This survey is to ascertain opinions of persons who have recently participated in the training programs. The survey is part of a study to appraise the current training programs with the objective of preparing recommendations for action by management (letter from L. G. Waters to Dr. W. I. Patnode, "Sample Sizes for Training Program Survey").

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The Hanford Works News survey, conducted to determine readership opinion, was completed this month. Over 60 percent of the sample group returned questionnaires in response to the original appeal, a follow-up letter, and publicity. For general questions, estimates were made of the opinions held by all employees based upon the survey results. For example, it was calculated, with 95 percent confidence, that between 7992 and 8568 employees regard the newspaper as a reliable source of information. Similar techniques were used to analyze questions on distribution and on the extent to which the Hanford Works News is read by employees and their families. Distributions of the numbers of respondents who asked for "more" or "less" of the various types of articles were analyzed to find if any types were significantly "more" or "less" desired. The same tests were made for the types of articles "most liked" or "disliked" by the respondents. Separate results and analyses for males, females, and exempt and non-exempt employees were also reported (letter from G. P. Ruderman to R. B. Harris, "Hanford Works News Readership Survey").

The experience derived from conducting the above mentioned survey allowed the Statistics Unit to assist the consulting firm that is making a study of employee attitudes at Hanford Works. A stratified random sampling plan, similar to the one used in making the survey for the Works News, was established. Samples were randomly selected from the personnel files, and from the files of the Salary Administrator. Further help will be rendered in this study as the work progresses (memorandum from G. P. Ruderman to G. D. Barr). A sampling procedure is also being established for the Procedures Analysis Unit in connection with a study on classified documents.

A study was made of major injuries at Hanford Works since 1947. The purpose of the study was to determine if the increased number of injuries during the last few months indicates a higher injury rate for the Plant or whether the rise was a chance variation. Results showed that the increase in frequency to date is still within the range of chance variation. However, if the injury rate that has existed since July continues for three more months, it will definitely indicate that a higher rate exists (letter from L. W. Smith to F. J. McKinnon, "Major Injury Occurrence Study").

The accident cost study begun last month for the Safety and Fire Protection Unit has been brought up to the point of data collection. The preliminary work that has been completed includes: devising procedures for obtaining and analyzing the data, preparation of codes and coding and punching sheets for I.B.M. tabulation, discussions with the various departments that will supply the data and preparation of average cost estimates for uncomplicated minor injuries. Start of work on data collection has been scheduled for October 13.

A study has been started on unit costs of work done by the Computing Unit. It is contemplated that a cost control system for the I.B.M. operations will be devised. At present the tentative standards determined by the Computing Unit are being checked against historical cost records. From these analyses, the standards will be re-evaluated and re-adjusted.

Trends and seasonal factors in the Plant absenteeism rate are being studied for the Medical Department. It has been found that there is a definite seasonal pattern in absenteeism, high in the winter months and low in the summer months. Nominal estimates of these are being prepared. These will result in a "control chart" for absenteeism rates which is adjusted for seasonal differences. No appreciable upward

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trend has been found in absenteeism during the last four years. A letter stating the findings and recommendation for a control will be issued in the near future.

Absenteeism studies comparable to that made on Medical Department weekly employees (reported in the August Monthly Report) have also been made on Applied Research Unit and Housing and Maintenance Unit weekly employees. The studies were made at the request of the Public Health and Welfare Section to determine if the same general absenteeism pattern exists for these groups as was found in the Medical Department. Results showed that the same general absenteeism pattern exists for the three groups of employees except for frequency of absences (letter from L. G. Waters to Dr. R. R. Sachs, "Absenteeism Study").

Assistance was given to Plant Engineering in fitting a curve of the form $\frac{W_a}{D_o} = \frac{(115^\circ - 75^\circ)}{(115^\circ - x_o)}\alpha + \beta$ to data on power consumption in the various areas ($\frac{W_a}{D_o}$ = the ratio of the actual consumption of water to the designed consumption compensated for rate, x_o = the temperature). From the data, the best estimates of α and β were computed, and an estimate of the efficiency of the power machinery was obtained.

PRECISION AND QUALITY CONTROL - R. F. Cell

The first report was received from the Computing Unit in connection with the Mallinckrodt lot system. This procedure was established to follow uranium metal through all phases of processing, both off-site and at Hanford Works. The report covers Mallinckrodt lots manufactured from January 2, 1952 through May 16, 1952, and lists TDS, dih, chemical impurities, machining and canning yields, UM and TX scrap, and autoclave failures. A statistical analysis is being made of these data, and a formal report will be presented when the analysis is completed.

A sampling plan was prepared for the Process Unit of the Metal Preparation Section to aid in the study of dimensional changes of slugs after salt bath heat treatment. The plan indicated the minimum sample size necessary to determine given changes in the slugs at the required confidence level. An analysis of the results of the sample will be made when the data become available.

An experiment was designed for the Process Unit of the Metal Preparation Section to determine the causes of non-wetting in the canning process. Data are now being collected for a final analysis.

An experiment was designed for the Process Unit of the Metal Preparation Section to examine the accuracy and precision of the wet method of iron and silica determinations as compared to the spectroscopic method. The experiment is being performed and a statistical analysis of the results will be made in the near future.

A meeting was held with representatives of the Metal Preparation Section to discuss the applications of statistical quality control to manufacturing operations in the 300 Area. A film entitled "Process Control", which illustrates possible applications, was shown to the group.

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A procedure was formulated to aid the Metal Preparation Section in sampling from a lot of 190 rods of recast material from the Fernald Works. The problem was to determine the number of slugs to machine and test in the 305 Test Pile in order to compare the quality of this material to that of present material. A graph was prepared showing the confidence limits which would be placed on the quality of this material according to the sample size used.

At the request of the Accountability Section, a document was issued covering the statistical work that had been done on the determination of factor weights of 8-inch M and Z slugs. (Document No. HW-25664, D. O. Richards to V. D. Donihee, "Factor Weights of Eight-Inch M and Z Slugs".)

A statistical analysis of receiver-shipper weight differences by bundles of uranium rods was completed for the Operations Unit of the Metal Preparation Section. A letter was written postulating the possible reasons for the findings of the analysis. (Memorandum from D. O. Richards to J. S. Shipp, "Receiver-Shipper Weight Differences by Bundles".)

With the cooperation of the Computing Unit, laboratory rerun limits for radio assays at the 234-5 Building were determined. Results of approximately 4,000 laboratory assays were analyzed and rerun limits were set so as to be consistent with laboratory precision.

Results of experiments to determine errors in measurements at accountability points in the TBP process were analyzed. These show precisions (at the 95 percent level) of $\pm$ 3.44 percent for WR-002 and WR-004 determinations and $\pm$ 2.06 percent for 15-1 and 15-6 determinations.

From shipper-receiver differences, precisions of gross weights of drums of UO_3 were estimated. These indicate that the scales in the 224-U Building check themselves to one-half pound over the range of weights found.

The results of synthetic solutions submitted to the 222-S and 222-T laboratories have been statistically analyzed to determine precision, accuracy and sources of variation. The errors were of the same magnitude as obtained in a previous study. In all cases, differences between two discs for the same dilution and between two dilutions prepared by the same chemists are small compared to the overall variations. Rank correlations between chemists in each laboratory on both samples showed that chemists tend to maintain errors of the same relative magnitude on different samples.

Further conferences were held with SF Accountability representatives concerning the status of the program to establish statistical limits on all accountability check points. A procedure is being established whereby precision values will be carried on all check points and reviewed at periods consistent with the process.

A statistical study was begun on the calculation of U_{235} and U_{238} burnout. The purpose of the study is to determine reliability figures for the U_{235} and U_{238} in the 241-WR tanks.

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Least squares methods were employed to determine the relationship between manometer readings and kilograms of water in 231 Building tank calibrations. Confidence limits about the fitted straight line were calculated showing the limits within which 95 percent and 99 percent of future observations would be expected to fall if the conditions of the experiment were maintained. (Memorandum from R. F. Cell to George Packer, "Confidence Limits on Tank Calibration Data".)

A statistical report was issued on Metal Preparation Section results from machining, pickling, canning, autoclave, test pile, melt plant, and oxides. (Document No. HW-25606, "Statistical Quality Report - 300 Area, August, 1952", R. F. Cell to W. W. Windsheimer.) In addition, a metal quality report representing material produced by the Hanford Works and Mallinckrodt Chemical Works was issued which graphically presented the average analytical results up to July, 1952. (Document No. HW-25641, "Statistical Quality Report - Uranium Metal - 1952", R. F. Cell to W. T. Kattner.)

RESEARCH AND DEVELOPMENT STATISTICS - F. H. Tingey

Consultation was provided and preliminary planning made on an in-pile experiment to determine whether a chromium alloy slug is better than a standard slug with respect to blistering, warp, length change, diameter change, etc. Sample sizes necessary to detect a prescribed difference were determined.

Continuing the analysis of the slug rupture data, a non-orthogonal analysis of the variation in tube exposure between tube zones and canning dates on which a considerable number of failures occurred was completed. Significant differences were found between dates and between tube zones, and estimates were made of the tube exposure rates of each group in order to observe the overall picture. Graphs were drawn relating tube exposure to tube zone and reactor time to tube zone for the failed slugs.

A series of problems have been started concerning minimum residual can wall thickness on various size slugs that were canned at different periods of time. A comparison of the "tails" of the individual distributions is of paramount interest since minimum values of residual can wall are extremely important in the slug rupture studies.

Following the method described in the Monthly Report for August, the probability of a minimum residual can wall thickness coinciding with a gouge caused by the ribs of the process tube so that the resulting can wall thickness will be six mils or less was computed. This probability was almost completely dominated by the probability of getting a minimum can wall thickness of six mils or less anywhere on the slug. Present methods of measuring can wall thickness fail to disclose these exceptionally thin can wall areas.

The numerical solution of a fourth order differential equation for the flux in a cylindrical absorber was computed. This involved the evaluation of four linearly independent Bessel functions. The object of this study was the establishment of correct boundary conditions so that the flux in a uranium rod may be determined.

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Numerical analysis of a formula involving Bessel and exponential functions for thermal utilization in an infinite P-10 lattice was made. The results of this study are to be used to determine diffusion lengths.

Additional computations were made on the problem dealing with the determination of diffusion length as reported last month. For various new sets of conditions, constants occurring in the flux formulas for a uranium lattice were calculated.

Further study and computations were made to determine the functional relationship of the magnitude of fast and slow neutron transients to the reflector thickness. One result of the study is the determination of the effect of changing reflector thickness on the flattening of the flux.

An analysis of the data collected from Production Test 105-303-A has started. The objective of this test is to determine the exposure behavior of completely transformed uranium which has been fabricated by various mechanical working processes and finish-worked by continuous rolling. One of the fundamental questions to be answered is whether the canned slugs of the different metal types differ significantly with respect to the changes in length, diameter and warp that are caused by exposure.

Consultations were held for the purpose of determining the effects of temperature and time on autoclave failures. The advantages and disadvantages of using "weighting" systems for ascertaining quantitatively the degree of slug rupturing for a given batch of canned slugs was discussed. It is believed that applications of the analysis of variance or of non-parametric techniques to statistically designed tests will yield the desired information in the future.

An investigation of the lengths of ruptured and non-ruptured 4-inch slugs was made to ascertain the relationship between length of slugs and type of failure. The mean length of slugs for small samples of various type failures was compared statistically with the mean of a group of 100 non-irradiated 4-inch slugs. The tests indicate that cap failures are inclined to be longer, while cleavage failures and irradiated non-ruptures tend to be smaller in length. Definite conclusions cannot be made in view of the small amount of data available.

With additional data made available by slug failures during the last two months, the various types of failures were again analyzed with regard to the day of the week which they were canned. A study on type failure by truck number was also made.

Additional data were received dealing with the precision of the calibration-fission count method for determining the percent Pu_{240} in a given sample. All previous results were recalculated using the new data and the results were forwarded to the Applied Research Unit. (Document No. HW-25743, "Precision of Calibration-Fission Count Method for Determining Pu_{240}", from R. H. Titman and F. H. Tingey to E. Kinderman, September 25, 1952.)

Further assistance was given relative to the determination of the precision that could be associated with Poisson's ratio.

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Data on monthly tin consumption for the first eight months of this year have been analyzed for the primary purpose of determining the underlying functional relationship between monthly tin consumption and monthly 4-inch and 3-inch canned slug production. Preliminary work has resulted in estimates for the unit tin consumption for each size can. These estimates will be improved as more experience data is obtained and better accounting is made of the total amount of tin used. A similar study has begun on determining the unit consumption of Al-Si for each size can as well as the relationship of Al-Si consumption to the number of each size can produced. (Memorandum, "Relationship of Tin Consumption and Number of Slugs Canned", from F. H. Tingey to H. L. Brandt, September 17, 1952.)

The precision study on certain sampling statistics is continuing. Empirical determinations of a number of parameters under various sets of conditions have been made. For a given sampling technique and the parent population of a known type, the precision to be associated with a given determination for various degrees and amounts of contamination of the parent has been analytically derived and tabulated.

Tabulation, for selected values of the parameters involved, of the function expressing the probability 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, is nearing completion. It is anticipated that the result of the study will be submitted to the G. E. Review for publication.

The survey paper of the different types of sampling techniques as mentioned in last month's report has been received from duplicating and is being disseminated to the interested parties. The summary of the various methods of determining the size of a sample required when designing experiments has also been received from duplicating and will be placed in the hands of all members of the Statistics Unit in the near future. Further abstracting and cataloging of current statistical research literature was made so as to keep the research file in a current state.

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UTILITIES AND GENERAL SERVICES DEPARTMENT
COMPUTING UNIT

MONTHLY REPORT-SEPTEMBER. 1952

Following is the month end summary of personnal:

	As of 8-31-52			As of 9-30-52			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	4	12	12	7	19	+4	+3	+7
Operations	8	33	41	7	28	34	-2	-5	-7
Rot. Training	0	5	5	0	4	4	0	-1	-1
TOTAL	18	44	62	20	41	61	+2	-3	-1

Three machine operators terminated, and a business graduate on rotational training transferred out of the Unit. A physicist and a machine operator trainee were hired and another operator trainee transferred into the Unit. The group of employees responsible for audit, accuracy control and preparation of outgoing reports was transferred from the operations sub-unit to the accounting procedures sub-unit. Two production floor supervisors were transferred to the accounting procedures sub-unit and were replaced by promoting two machine operators.

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, General Payroll Distribution, Community Work Order Cost, General Work Order Cost, and General Motorized Equipment Cost.

A major revision was made on the two payroll distribution jobs. Heretofore each employee's gross pay, total hours worked, and the amount to be charged to such overhead accounts as overtime premium, area allowance, and shift differential were written on the trailer card carrying his salary distribution. These amounts were key punched from the trailer card. This information, however, is calculated in the process of weekly payroll preparation and is punched into IBM cards as part of that procedure. In order to eliminate the hand transcribing and key punching of this data a machine procedure was developed to utilize the payroll information directly for the liquidation reports. The problems encountered in this change centered around accuracy control.

Control of the payroll preparation was adjusted to assist, and special control tabulations were introduced into the liquidation procedure to provide the necessary accuracy control.

The retroactive payment of the recently approved increase in area allowance was calculated and included in weekly payroll of September 26.

The following non-routine work was completed:

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1. List of the monthly payroll standard rent deduction file.
2. Quarterly wage and salary report.
3. Special pay number list of the payroll master file.
4. Special alphabetic list of the payroll master file.
5. Tabulation of number of employees on each shift for each section of the Nucleonics Division.
6. Social Security number was deleted from the payroll master file and added to the personnel master file.

NUCLEONICS DIVISION STAFF:

Routine monthly reports were prepared for the Salary Administration Staff.

UTILITIES AND GENERAL SERVICES DEPARTMENT:

The first reports on the summarization of procurement activities for the Stores and Purchasing Section were prepared this month. These reports cover both fixed price and cost-type actions and give the number and amounts of purchases from various types of vendors, the method of acquisition, and a frequency distribution of purchase actions according to the amount of money involved.

Routine reports were prepared on vehicle operating statistics for the Transportation Section; electricity billing for residential and commercial accounts was prepared; and a special listing of personnel holding "A" badge area clearance was made.

EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT:

Address stickers were prepared for a mailing to weekly members of the Good Neighbor Fund. These were sorted in order of payroll number within each Unit.

ENGINEERING DEPARTMENT:

Considerable work was done this month in assistance to the problem of pile poison analysis. Power and poison factors for each tube of a symmetrical pile were calculated for the case of a cosine flux distribution with no flattening, and again for 4 degrees of central flattening. A complete reference table for routine calculation of iodine and xenon poison equations was completed covering a power range from zero to 995 magawatts, a flattening range from zero to 600 inhours, and a range of time from 0.1 to 100.0 hours. The table was prepared in seven volumns of 170 pages each. Approximately 270 machine hours were used for the complete preparation. It is estimated that 5000 man hours would be required to make the calculations manually with a desk computer. This does not include time for rest periods, accuracy checking and re-calculation, or typing and proof reading the 1190 pages (270 entries per page).

The automatic recording of tube temperatures at B-Pile has been greatly facilitated by the installation of a Flexiwriter connected to a high speed Brown recorder. This device automatically scans each tube, prints the temperature on a standard map by means of a typewriter, and punches the temperature in a teletype tape. The punched tape is converted to punched cards with an IBM tape to card converter and the data is then available for calculation. Additional pile temperature maps can be prepared on IBM equipment to reflect the results of calculation.

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Assistance is being given to the theoretical physicists on two fundamental problems. Preliminary results have been obtained in developing a mathematical theory of the phenomenon of resonance capture of neutrons. The theory, as presently developed, has been applied to the case of an infinite pile and to a typical Hanford pile. The results are very encouraging and further refinements of the theory are being undertaken.

An attempt is being made to solve the Boltzman Equation as applied to the neutron flux distribution problem. Such a solution would increase the accuracy of flux distribution calculations and would be a valuable tool in the design of new piles. The problem is being re-formulated in terms of infinite series in an attempt to obtain an analytical solution. It appears that numerical methods may be applied to obtain solutions to individual problems in the event that analytical solution cannot be found. An extensive effort will be made to derive an analytical solution, however, as subsequent usage would be much more efficient and yield greater information regarding inter-relationships of the parameters involved.

The Group 9 metal study now includes considerably more than half of all metal charged in the piles. The report has been revised to improve its utility to the customer. Orifice zone, charge data, tube power and exposure, and pile symbol are included in the report.

A major reduction in the time necessary to prepare the report on graphite lattice heat conductance for 100-B was obtained by improved machine control circuits and by a change of recording form for the source data. The report formerly required five days for completion. It is now completed in four hours elapsed time from the receipt of the data.

Pile reactivity was calculated for nine patterns of central loading of enriched fuel. This solution involves a set of linear homogeneous equations with constants containing trignometric and Bessel functions. The resulting determinants of the coefficients were solved by iteration.

An additional 319 calculations of slug end cap temperatures were made. Of these, 259 were made using a simplified equation. Assistance was given Heat Transfer personnel in determining the operating specifications for C Pile. Calculations were made of the temperature rise in a slug and tube when water is shut off in a single tube or in a crossheader. 210 cases were calculated.

Two of three desired cases of the neutron flux study have been completed. The third will not be completed until the customer analyzes the first two, as the results deviated from the expected values.

The calculation of Special Request Exposures has been revised. More efficient machine control circuits have been developed. A saving of 20% in calculation cost and reduced IBM card storage will result.

RADIOLOGICAL SCIENCES DEPARTMENT:

Routine work during September covered the following items: wind and weather calculations, sheep thyroid count, sheep radioanalysis, and aquatic biology

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data.

MANUFACTURING DEPARTMENT:

Routine work during September included metal quality, metal preparation data reduction for machining, canning, and inspection and autoclave, and separations sampling data.

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EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

SUMMARY -- SEPTEMBER, 1952

The number of applicants interviewed in September was 1,531 as compared with 1,488 in August. Of these applicants, 385 were individuals who applied for employment with General Electric for the first time. In addition, 114 new applicants applied by mail. Open, nonexempt, nontechnical requisitions increased from 173 at the beginning of the month to 221 at month end. Total Plant roll decreased from 8,885 to 8,802. Turnover rate increased from 2.01% in August to 2.60% in September. During September, 60 new requests for transfer to other type work were received by Employment and 17 transfers were effected. Attendance recognition awards were distributed for 47 employees who qualified for one-year awards during August, and for 26 employees who qualified for two-year awards during August.

A validation study of several aptitude tests for use in recruitment and placement of instrument personnel was commenced during September.

The Employment Supervisor was in Denver, Colorado, on September 15, 16, and 17 to recruit Stenographers, IBM Operators, Plumber Steamfitter Journeymen, Instrument Mechanics, Design Draftsmen and Painter Journeymen. Although only 40 people were interviewed, a total of 8 employment offers were made, and at month end active consideration was being given to 13 others.

Three employees died during the month, and nine employees retired. Ninety-one visits were made to employees confined at Kadlec Hospital and 44 checks were delivered to employees confined at Kadlec Hospital or at home. At month end, participation in the Pension Plan was 93.3%, in the Insurance Plan 98.6%, and in the Employee Savings and Stock Bonus Plan 43.2%. At month end there were 930 registered under Selective Service, and 754 military reservists were on the roll. Since August 1, 1950, 245 employees have terminated to enter military service, of which 33 have returned, leaving 212 still in military leave status.

Orientation of new employees was presented daily throughout the report month. A total of 119 new employees attended this program. Of this number, 96.6% have signed up to participate in the Pension Plan, 97.4% in the Insurance Plan, and 53.7% in the Good Neighbor Fund.

An announcement was made through the Hanford Works News that payroll deductions for contributions to the Nucleonics Employees Good Neighbor Fund would commence effective October 1, 1952. The nominating committee, a sub-committee of the Steering Committee, has selected candidates for filling positions as Trustees and the Election Committee, another sub-committee of the Steering Committee, were at month end going forward with plans for an election scheduled to be held commencing October 31.

Following interviews with a random sample of about 160 employees, it was determined that a full scale Employee Attitude Survey should be undertaken. At month end detailed procedures for administering questionnaires to all employees on October 9 and 10 were completed.

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Employee and Public Relations
Summary

Training Services Section objectives scheduled for September, 1952, and other training activities were completed as follows: Management Orientation was presented on Monday, September 8, and attended by 34 new exempt personnel. Basic Economics was presented on Wednesday and Thursday, September 10 and 11, and was attended by 20 exempt personnel. Supervisor's 40-Hour Training program was presented the week of September 15-19 with 15 new supervisors in attendance. You and Labor Law was presented on Thursday, September 25, with 33 exempt personnel in attendance. Principles and Methods of Supervision was presented during four hours a day for a two week period of September 8 through 19. Group #30 was attended by 24 supervisors and Group #31 by 20 supervisors. These two groups together with #28 and 29 having completed PMS in August met together for a dinner meeting on Wednesday, September 24. PMS conference Groups #32 and 33 were started on a two weeks basis on September 22. Project Section Vendor Inspector Special Program was presented at the request of Project Section of the Engineering Department to include the highlights of management training on a three day basis. The program was attended by 12 vendor inspectors at this time. Nucleonics Education Committee prepared an anonymous questionnaire forwarded to a representative percentage of all Hanford Works supervisors and professional exempt personnel who have participated in training activities during the past 12 months. Supervisor's Handbooks were issued to new supervisory personnel as requested by senior management. Depth interviews conducted during September in conjunction with preparation for an attitude survey at Hanford Works were scheduled by members of Training Services Section.

A notice of hearing in conjunction with the R. E. Mercer Appeal for Unemployment Compensation was received on September 26. Mercer is the Community Fireman recently discharged for fighting on the job. On September 8 at the request of the General Manager, this office prepared a statement of its views with respect to a Government document pertaining to the control of Communism on Atomic Energy Projects. A Supplemental Agreement formalizing the Company's wage offer and increase in insurance benefits was executed on Friday, September 19. An incident involving a physical encounter between two Metal Workers in 300 Area occurred on September 26. An investigation is currently in progress to determine the proper disposition of the case.

Negotiations looking toward a uniform Project Agreement continued during the month. Agreement appears to have been reached with two of the basic crafts. Negotiations are continuing with the shop crafts. On September 11, Newbery-Neon Electric won an arbitration award involving a question as to whether the Employer was contractually required to provide exclusive bus transportation for the Electricians. The Local Carpenter Union has reaffiliated with the Pasco-Kennewick Building Trades Council after approximately two years of being outside the organization. A work stoppage involving approximately 176 Carpenters occurred on October 1. A dispute over contract validity precipitated the strike. A Hanford strike threat involving Boilermakers and Boilermaker-Welders in the Seven Western States on October 1 appears to have been averted. Indications are that a settlement in San Francisco negotiations is imminent.

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Employee and Public Relations
Summary

Official Wage Stabilization Board approval was received on the petitions for an increase in isolation pay, and the petition for a revision of the holiday pay policy for Community Firemen. A request for reimbursement authorization was submitted to the AEC for the establishment of a new classification entitled "Assistant to the Editor".

A total of 54 releases were distributed during the month. Of these, 19 were sent to the "local list", nine to the "daily list", and 26 received special distribution.

Sue Goodstein, Public Relations Services Division at San Francisco, was furnished considerable background information. Interviews were arranged with W. E. Johnson, L. F. Huck, and N. G. Fuller (AEC). The results were three feature stories concerning Richland and Hanford Works. The stories will be submitted with photographs to the San Francisco NEWS and will be considered for syndication to all Scripps - Howard newspapers.

The civil defense air raid sirens were the topic of a feature story sent to seven Northwest newspapers along with photographs.

Hanford Works Industrial Medical Program was the topic for another feature story sent with pictures to TODAY'S HEALTH magazine.

The Community NEWSLETTER was written and mailed to community leaders in Pasco, Kennewick, and Richland.

The plant-community relations activities of the Nucleonics Division were reviewed via a form questionnaire. Results showed that most of the community relations activities recommended on a Company-wide basis are being conducted at Hanford Works.

Eight Hanford Works authors submitted papers for approval.

A civil defense publicity program was conducted, which was aimed at acquainting residents with monthly test of air raid sirens.

A total of 10,081 prints were produced during the month. One hundred and ninety-five assignments were covered.

Twenty-one programs of the Hanford Works Science Forum have been broadcast over KWIE, at 9:30 P.M. on Sunday.

The filming of "Operation...Sample", a 16mm. sound motion picture has been completed and a work print is now being processed.

New employee information racks were installed in nine new locations, and an additional two were placed in 300 Area.

Safety topic for October, "Fire Prevention" was written and is being produced.

EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

SEPTEMBER, 1952

ORGANIZATION AND PERSONNEL

General

There were no organizational changes during September.

Employee Relations

To the end of more appropriately grouping Employee Relations functions, effective September 1, the Suggestions and Insurance Unit was transferred from the Union Relations Section to the Employment and Employee Services Section, and on the same date the latter Section became identified as the Employee Relations Section. Also concurrently three exempt and five nonexempt employees assigned to this Unit were transferred from Union Relations to Employee Relations.

Effective September 5, 1952, Lavonne Brogan, General Clerk C, terminated voluntarily.

Effective September 11, 1952, Donna A. Vandergriff, General Clerk C, was assigned to the Suggestion System to replace Patricia Madaia, General Clerk C, who terminated September 12, 1952.

Effective September 11, 1952, Judith A. Porter, Messenger was added to Investigations and Personnel Records.

Effective September 25, 1952, Sheila Kernan, Steno Typist B, was added to Employment.

Effective September 26, 1952, Diane C. Rotellini, Motor Messenger, terminated voluntarily.

Effective September 26, 1952, Joyce Fisher, General Clerk D, terminated voluntarily.

Effective September 29, 1952, Mary Charvet, Steno Typist B, transferred to Public Relations.

Effective September 29, 1952, Shirley N. Ostby, Messenger, was upgraded to Motor Messenger to replace Motor Messenger who resigned.

Training Services

There were no organizational changes during September.

Public Relations

Effective September 9, 1952, Robert A. Clemensen, Reproduction Photographic D, was added to Public Relations.

Effective September 19, 1952, Dorothy Riley, General Clerk A, and Marilyn Dunn, Steno Typist A, were deactivated due to personal illness.

Employee and Public Relations
Organization and Personnel

Public Relations

Effective September 22, 1952, Harold B. Lindberg, acting as Assistant to the Editor was added to Public Relations.

Effective September 29, 1952, Mary Charvet, Steno Typist A, transferred from Employment to Public Relations.

Union Relations

Effective September 1, 1952, C. J. Sheeran, Assistant to Manager, Union Relations, transferred to Separations Section, Manufacturing Department.

Effective September 1, 1952, J. R. Fine, Staff Assistant, transferred from Separations Section, Manufacturing Department, to Union Relations.

Effective September 1, 1952, five nonexempt and three exempt employees of the Suggestions and Insurance Unit transferred to Employee Relations from Union Relations.

Effective September 26, 1952, Bonniebelle B. Marsh, General Clerk C, went on leave of absence.

Number of Employees on Roll	September, 1952
Beginning of Month	108
End of Month	106
Net Change	-2

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Employee and Public Relations

ACTIVITIES

Employee Relations

Employment	August, 1952	September, 1952
Applicants interviewed	1,488	1,531

385 of the applicants interviewed during September were individuals who applied for employment with the Company for the first time. In addition, 114 applications were received through the mail.

Open Requisitions	August, 1952	September, 1952
Exempt	0	0
Nonexempt	173	221

Of the 173 open, nonexempt, nontechnical requisitions at the beginning of the month, 100 were covered by interim commitments. Of the 221 open, nonexempt, non-technical requisitions at month end, 116 were covered by interim commitments. During September, 111 new requisitions were received requesting the employment of 152 nonexempt, non-technial employees.

	August, 1952	September, 1952
Employees added to the rolls	166	176
Employees removed from the rolls	182	259
NET GAIN OR LOSS	-16	-83

Of the 83 employees removed from the rolls, none were removed due to lack of work.

Turnover:

	August, 1952		September, 1952	
	Male	Female	Male	Female
Including employees who were laid off for lack of work	1.22%	5.24%	1.90%	5.53%
Excluding employees who were laid off for lack of work	1.20%	5.19%	1.90%	5.53%

Over-all Turnover:

	August, 1952	September, 1952
Including employees who were laid off for lack of work	2.01%	2.60%
Excluding employees who were laid off for lack of work	1.99%	2.60%

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Employee and Public Relations

During September, 36 employees left voluntarily to accept other employment, 7 left to enter military service, and 3 left to enter business for self.

Transfer Data

Accumulative total of requests for transfer received since 1-1-52	498
Number of requests for transfer received during September	60
Number interviewed in September, including promotional transfers	105
Transfers effected in September, including promotional transfers	17
Transfers effected since 1-1-52, including promotional transfers	229
Transfers effected in September for employees being laid off	30
Number of stenographers transferred out of steno pool in September	3
Transfer requests active at month end	156

During September, 32 people whose continuity of service was broken while in an inactive status were so informed by letter.

Advertisements for IBM Operators, Plumber Steamfitter Journeymen, Instrument Mechanics, Design Draftsmen, Painter Journeymen, and Stenographers were placed in the Rocky Mountain News and Denver Post, September 14, 15, and 16. The Employment Supervisor interviewed respondents to this ad in Denver on September 15, 16, and 17, utilizing the facilities of the Employment Security Department. A total of 40 applicants were interviewed, offers were made to 2 Stenographers, 1 Plumber Steamfitter Journeymen, 3 Painter Journeymen, one of which is a former employee, and to 1 Instrument Technician, also a former employee. In addition, at month end active consideration was being given to 6 Design Draftsmen and 5 Instrument Mechanics who had either been interviewed in Denver or who had responded to the advertisements.

During September discussions were undertaken with various Manufacturing Department members of management responsible for instrument maintenance with the view to exploring the possibility of administering aptitude tests for use in recruitment and placement of Instrument Mechanics. Following these discussion it was agreed to use the Wonderlic Personnel Test, the DAT Numerical Ability Test, Mechanical Comprehension Test, and the Minnesota Rate of Manipulation Test in the study for validation purposes. It was agreed that due to the fact that instrument personnel will probably be hired at a rather slow pace for quite some time that the preliminary validation study should be made by utilizing trainees presently employed with a more comprehensive study to be made at a later date. During the month 11 new Instrument Trainees were administered the four previously listed tests.

Employment Statistics

Number of employees on rolls	8-29-52	9-30-52
Exempt - Male	2,104	2,114
Female	58	58
	2,162	2,172
Nonexempt - Male	4,985	4,922
Female	1,686	1,656
	6,671	6,578
Community Firemen	52	52
TOTAL	8,885	8,802

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Employee and Public Relations

ADDITIONS TO THE ROLLS

	Exempt	Nonexempt	Community Firemen	Total
New Hires	11	104	--	115
Re-engaged	--	--	--	--
Reactivations	3	32	--	35
Transfers (from other Divisions)	--	--	--	--
Actual additions	14	136	--	150
Payroll exchanges	24[a]	2	--	26
GROSS ADDITIONS	38	138	--	176

TERMINATIONS FROM THE ROLLS

Actual Terminations	21	159	--	180
Removals from rolls (deactivations)	2	48	--	50
Payroll exchanges	2	24[b]	--	26
Transfers (from other Divisions)	3	--	--	3
GROSS TERMINATIONS	28	231	--	259

GENERAL

	8-1952	9-1952
Photographs taken	213	223
Fingerprint impressions (taken in duplicate)	248	223

PERSONNEL SECURITY QUESTIONNAIRES PROCESSED

	8-1952	9-1952
General Electric cases	138	100
Facility cases	29	69
TOTAL	167	169

INVESTIGATION STATISTICS

	8-1952	9-1952
Cases received during the month	180	178
Cases closed	216	655
Cases found satisfactory for employment	182	119
Cases found unsatisfactory for employment	4	11
Cases closed before investigation completed	18	5
Special investigations conducted	1	2

[a]Transferred from Weekly Payroll

[b]Transferred to Monthly Payroll

Employee and Public Relations

PERFECT ATTENDANCE RECOGNITION AWARDS

Total one-year awards to date	3,269
One-year awards made in September for those qualifying in August	47
Total two-year awards to date	881
Two-year awards made in September for those qualifying in August	26

Employee Services

The following visits were made with employees during the month:

Employee contacts made at Kadlec Hospital	91
Salary checks delivered to employees at Kadlec Hospital	36
Salary checks delivered to employees at home	8

At month end participation in Benefit Plans was as follows:

	August	September
Pension Plan	92.9%	93.3%
Insurance Plan	98.1%	98.6%
Employee Savings and Stock Bonus Plan	43.0%	43.2%

Three employees died during September, namely:

, Manufacturing
, Manufacturing
, Manufacturing

Twenty-three letters were written to deceased employees' families during September, concerning payment of monies due them from the Company, and also to answer their questions.

Since September 1, 1946, 98 life insurance claims have been paid totaling $573,000.

Nine employees retired during September, namely:

Cleve W. Franks, W-6541-SS, Normal Retirement
Zachary T. Calhoun, Jr., W-6404-SS, Normal Retirement
Ray Smith, W-4867-SJ, Normal Retirement
James T. Armstrong, W-6025-YW, Normal Retirement
Francis M. Rumley, W-5204-XW, Normal Retirement
Bert Adkins, W-7644-XW, Normal Retirement
Lea C. Burlingame, W-4010-B, Normal Retirement
Lola H. Gordon, W-5943-ST, Normal Retirement
Arthur L. Goddard, W-4639-922, Optional Retirement

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Employee and Public Relations

During September, 34 letters were written to retired employees providing them with information of general interest. To date 219 employees have retired at Hanford Works, of which 109 are continuing their residence in the vicinity.

Orientation of new employees was presented daily throughout the report month. A total of 119 new employees attended this program. Of this number, 96.6% have signed up to participate in the Pension Plan, 97.4% in the Insurance Plan, and 53.7% in the Good Neighbor Fund.

Mr. A. D. Marshall, Manager, Employee Benefit Plans Services Department, together with RussellHubbard, one of his associates, visited the Hanford Works September 14 and 15, and spent some time with several members of the Employee Relations staff discussing matters of mutual interest, particularly with respect to Employee Benefit Plans.

Tentative arrangements having already been made to undertake an Employee-Attitude Survey at the Hanford Works, representatives of Richardson, Bellows, Henry and Company, a firm of consultants engaged to conduct the survey, together with Dr. Schwarzbek of the New York Office, arrived at Hanford Works September 8 to undertake the survey. Preliminary interviews with a random sample of Hanford Works personnel were conducted during the week of September 15-19. These interviews were held without incident and the results as well as the manner in which the interviews were arranged met with the complete satisfaction of the RBH staff people. The results of the depth interviews were reviewed with the General Manager at which time it was concluded that plans for the full scale survey should be carried forward.

With the assistance of staff personnel in the Training Services Section and the Public Relations Section, the many details connected with the survey, such as scheduling interviews, preparation and dissemination of information type data, placement and return of questionnaire collection boxes throughout Hanford Works, and stuffing of envelopes with the appropriate type questionnaire together with instruction sheets, has progressed very well. By month end the detailed procedures for administering the questionnaires to all employees on October 9 and 10 had been completed.

An announcement was made through the Hanford Works News that payroll deduction for contributions to the Nucleonics Employees Good Neighbor Fund would commence effective October 1, 1952. The nominating committee, a sub-committee of the Steering Committee, has selected candidates for filling positions as Trustees and the Election Committee, another sub-committee of the Steering Committee, were at month end going forward with plans for an election scheduled to be held commencing October 31.

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	754
Number of reservists classified in Category A	119
Number of reservists classified in Category B	56
Number of reservists classified in Category C	74
Number of reservists classified in Category D	505

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Employee and Public Relations

Number who returned to active duty to date	115
Number who returned to active duty in September	2
Number of reservists for which delays have been requested	51
Number of reservists classified in Category B	3
Number of reservists classified in Category C	3
Number of reservists classified in Category D	45
Delays requested (including renewals)	112
Delays granted	102
Delays pending	2
Delays denied	5
Delay requests recalled	3

The statistics with respect to employees registered under Selective Service are as follows:

Employees registered	930
Employees registered who are veterans	370
Employees registered who are non-veterans	560
Deferments requested to date (including renewals)	736
Deferments granted	526
Number of employees for which deferments have been requested	274
Number of employees classified in Category B	6
Number of employees classified in Category C	12
Number of employees classified in Category D	256
Deferments denied and appealed at state levels	13
Deferments denied and appealed at local levels	3
Deferments denied and pending at national level	4
Deferments denied by local board and not appealed	2
Deferments denied by state board and not appealed	13
Deferments denied at national level (by Gen. Hershey's office)	1
Deferments denied at national level (by President)	3
Deferments denied by local and state board and pending for review	0
Deferments requested, employees later reclassified	63
Deferments requested, later withdrawn	54
Deferments pending	53

Military terminations since 8-1-1950 are as follows:

Reservists recalled	115
Selective Service	126
Female employees enlisted	4
TOTAL	245

Employees returned from military service:	
Reservists	24
Selective Service	9
TOTAL	33

Number of employees still in military leave status 212

Employee and Public Relations

Suggestions and Insurance

Suggestion System:

	August, 1952	September, 1952	Total Since 7-15-47
Suggestions Received	170	276	9733
Investigation Reports Completed	213	285	
Awards granted by Suggestion Committee	39	54	
Cash Awards	$ 1,450.00	$ 745.00	
Estimated Net Savings	$1,041.26	$5,978.16	

The highest award of $100 was made to an employee in the Separations Section for his suggestion to reduce the number of coveralls and lab coats worn in the 231 Building by changing weekly instead of daily. Savings were based on laundry costs and purchases of new articles of clothing.

An employee in the Reactor Section received the second highest award of $60 for his suggestion concerning the replacement of microphones in the 105 Buildings with microphones having a special moisture seal. This suggestion resulted in labor and material savings.

Workmen's Compensation

One case under litigation was closed during the month of September.

Life Insurance

Code information which is known only to Home Office Life Underwriters Association has been furnished 38 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

	Long Forms	Short Forms
	August, 1952	
Claims reported to the Department of Labor and Industries	100	872
	September, 1952	
	114	684

Total since Sept., 1946 - 10,773

Claims Reported to Travelers Insurance Co.	August, 1952	September, 1952
	8	* 12

Total since Sept., 1946 - 657

* Of the claims reported to Travelers Insurance Company during the month, ten were property damage claims and two were bodily injury claims.

Employee and Public Relations

TRAINING SERVICES SECTION

Training Services Section objectives scheduled for September 1952 and other training activities were completed as follows:

MANAGEMENT AIDS:

MANAGEMENT ORIENTATION was presented on Monday, September 8, and attended by 34 new exempt personnel. Mr. H. E. Callahan, Manager, Employee and Public Relations Department gave a short talk of welcome at this program to formally welcome these new exempt employees to the management team. An informal luncheon was held in conjunction with this program.

BASIC ECONOMICS was presented on Wednesday and Thursday, September 10 and 11, and was attended by 20 exempt personnel. This program stresses the basic needs of all people, and that economics is always concerned with living human beings whose desires and costs change and develop, with discussion on how productivity effects standard of living and how we can have more in a free enterprise system. Included in this two day program is a four hour session of "In Our Hands".

SUPERVISOR'S 40-HOUR TRAINING program was presented the week of September 15-19 with 15 new supervisors in attendance. On Friday of the program week an informal luncheon was held with H. D. Middel, Manager of Utilities and General Services Department, as guest with the program participants.

YOU AND LABOR LAW was presented on Thursday, September 25, with 33 exempt personnel in attendance. This Management Aid acquaints new exempt people with the principles and content of basic labor laws, and points out the individual responsibilities in accordance with current laws. This program is always well received.

MANAGEMENT SKILLS:

PRINCIPLES AND METHODS OF SUPERVISION was presented during four hours a day for a two week period of September 8 through 19. Group #30 was attended by 24 supervisors and Group#31 by 20 supervisors, presented at both the Hanford High School and Dorm W-10 conference rooms. These two groups together with Groups #28 and 29 having completed PMS in August met together for a dinner meeting on Wednesday, September 24. Twelve members of the Advisory Committee were guests. The program included comments by Mr. W. E. Johnson, General Manager; the presentation of certificates was made by Dr. W. I. Patnode, Chairman, Nucleonics Education Committee. This dinner meeting was the largest to date with approximately 90 supervisors receiving completion certificates. This dinner meeting with this number of supervisors completing PMS conferences also marks the approximate half way milestone towards our goal of having all our supervisors trained in this art of persuasion.

PMS conference Groups #32 and 33 were started on a two weeks basis on September 22. These groups will complete their study of PMS on October 3, then additional groups will be started in October.

Employee and Public Relations

TRAINING SERVICES SECTION

PROJECT SECTION VENDOR INSPECTOR SPECIAL PROGRAM was presented at the request of Project Engineering Section to include the highlights of management training on a three day basis during this special program. These vendor inspectors are exempt personnel assigned to accept materials being used at Hanford Works from industry organizations all over the nation. The purpose of this special program was to assist these vendor inspectors to better understand the training activities that are progressing at Hanford Works and to gain a desirable attitude to properly represent our Company and to basically understand our plans, policies and procedures as they effect them. The program was attended by 12 vendor inspectors at this time. The balance of these inspectors will be brought in from the field and participate in a like program to be presented during October.

OTHER TRAINING AND PRODUCTION:

NUCLEONICS EDUCATION COMMITTEE prepared an anonymous questionnaire forwarded to a representative percentage of all Hanford Works supervisors and professional exempt personnel who have participated in training activities during the past 12 months. The names of persons participating in these activities were furnished to the Chairman of the Education Committee and the questionnaires were addressed by his office. The results of this questionnaire should determine the effectiveness of current training activities in the Hanford Works and a compilation of comments should assist in learning future needs.

SUPERVISOR'S HANDBOOKS were issued to new supervisory personnel as requested by senior management. Summary of handbook distribution to date includes:

Number of handbooks issued prior to September 1, 1952	- 1333
Number of handbooks issued during September	- 13
Number of handbooks returned during September	- 8
Number of handbooks issued to date	- 1338
Number of handbooks on hand	- 162
Total number of handbooks	1500

Approximately 34 handbooks have been returned from supervisors terminating or transferring from Hanford Works which have been found to lack so many pages that they are considered unusable. However, the balance on hand are usable and ready for issuance upon request of senior management.

DEPTH INTERVIEWS conducted during September in conjunction with preparation for an attitude survey at Hanford Works were scheduled by members of Training Services Section in accordance with names selected by representatives of Richardson, Bellows, Henry & Company. Office space and escorting interviewers to outer area locations was also arranged by Training Section.

A total of seven copies of "Men and Volts" were sold by Training Section during September and the cash paid to Hanford Works Cashier.

MATERIAL REQUESTED: During September accounted for a total of 65 copies of 9 different items. Requests for transcripts of exempt personnel attending training activities during the past 3½ years were answered for Security and Patrol Section.

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Employee and Public Relations

TRAINING SERVICES SECTION

ORIENTATION was presented one day only by a member of Training Section at the request of Employee Relations Section. Eleven new employees were in attendance at this daily orientation.

Duplicate copies of Composite Ratings of Form B for exempt personnel for the past three years were prepared for presentation to Salary Administration.

Charles T. Estes of the Federal Mediation and Conciliation Service of Washington, D. C., visited H. E. Callahan, Manager of Employee and Public Relations Department on Friday, September 19, and discussed the need for industry to tie in more closely with academic institutions and to further utilize their training services personnel to forward retentive maintenance over constant fire fighting in personnel relationships within industry. Mr. Estes also visited the Washington State Training Directors Society's monthly meeting with a member of Training Services Section on Friday evening, September 19, in Seattle.

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Employee and Public Relations

Union Relations

UNION RELATIONS - OPERATIONS PERSONNEL

No further action has developed on the matter of the discharge of R. E. Mercer, Community Fireman recently discharged for fighting on the job. There remains some indication, however, that the Council may seek a court order to force arbitration on this matter. On September 26, a notice of a hearing in conjunction with the R. E. Mercer appeal for Unemployment Compensation was received. The Company will be represented by a member of the Law Department at the hearing which is set for October 1. An employee discharged for cause is denied unemployment compensation for a period of six weeks. Our interest in the case is solely to endeavor to avoid a decision being handed down by the appeal tribunal to the effect that Mercer was improperly discharged.

On September 8, at the request of the General Manger, this office prepared a statement of its views with respect to a Government directive pertaining to the control of Communism on Atomic Energy Projects.

A supplemental agreement formalizing the Company's wage offer and increased insurance benefits was executed on Friday, September 19, and an endorsement of a Joint Application to the Wage Stabilization Board has been signed by each of the unions involved. Notice of ratification by the members has not been received but we have oral confirmation that a letter to that effect will be forthcoming.

An incident involving a physical encounter between two Metal Workers in the 300 Area occurred on September 26. An investigation is currently in progress to determine the proper disposition of the case.

Grievance Statistics:

Status of Grievances

	1952 Unit	1952 Nonunit
Received this month	30	0
Received this year	234	9
Settled at Step I this month	8	0
Settled at Step I this year	88	6
Pending settlement at Step I at end of month	4	2
Settled at Step II this month	4	0
Settled at Step II this year	45	0
Pending settlement at Step II at end of month	173*	1
Brought to arbitration during the month	0	0
Pending settlement by arbitration	7**	0
Total number pending settlement	184	3

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*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 the 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	4	0
Separations Section	11	0
Metal Preparation Section	5	0
Total for Department	20	0
Utilities and General Services Department		
Plant Security and Services Section	5	0
Transportation Section	2	0
Total for Department	7	0
Community Real Estate and Services Department		
Community Real Estate Section	2	0
700-1100-3000 Area Services Section	1	0
Total for Department	3	0
Medical Department	0	0
Engineering Department	0	0
Law Department	0	0
Financial Department	0	0
Employee and Public Relations Department	0	0
Radiological Sciences Department	0	0
GRAND TOTAL	30	0

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Employee and Public Relations

Subject Unit Grievances		Subject Nonunit Grievances
Holidays	2	None
Seniority	2	
Jurisdiction	11	
Sick Leave	1	
Hours of Work	6	
Vacation	1	
Wage Rates	2	
Health, Safety, Sanitation	2	
Subject not covered by Contract	3	
TOTAL	30	

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 Agreement continued during the month. It now appears that the desired uniformity for all crafts is not attainable but that an Agreement uniform in basic provisions with certain monetary concessions to shop crafts is possible. Verbal concurrence with the proposed Agreement has been obtained from ten of the basic crafts, several of which have executed the Agreement. The chairmen of the respective negotiating committees have signed and no trouble is anticipated in obtaining the signatures of the remaining basic crafts or the president of the Building Trades Council. Negotiations are continuing with the shop crafts.

On September 11, Newbery-Neon Electric won an arbitration award involving a question as to whether the employer was contractually required to provide exclusive bus transportation to the Electricians. The arbiter held that the Agreement between the parties did not require the employer to supply exclusive craft transportation to the electrical workers and that the bus transportation being provided was in compliance with both the letter and the spirit of the Agreement.

The local Carpenters' Union has reaffiliated with the Pasco-Kennewick Building Trades Council after approximately two years of being outside the organization. This action paves the way for Carpenters to become signatory to a Building Trades type of Project Agreement.

Work Stoppages - Actual or Threatened:

By letter of September 16, 1952, the International Representative of the International Brotherhood of Electrical Workers notified the Project Manager for

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Newbery-Neon Electric that the Local Union would no longer be bound by the present Agreement and served notice that the Employer would be expected to become signatory to the IBEW Area Agreement by September 30. On the following day the Employer replied that the Project Agreement had not been terminated and accordingly was in effect until August 1, 1953. Further exchanges of correspondence occurred on September 22, 24, 26 and 30, with neither party altering its position in the matter. As of October 1, the Union refused to man the job and approximately 176 Electricians were out on strike.

The strike threat involving Boilermakers and Boilermaker-Welders in the Seven Western States on October 1 appears to have been averted. San Francisco negotiations have been resumed and there are indications that a settlement is imminent.

WAGE RATES

Official Wage Stabilization Board approval was received on Cases N-17444, N-17447 and N-17448 (isolation pay increase), and N-17446 (revision of the holiday pay policy for Community Firemen).

The Atomic Energy Commission approved our request for increased isolation pay and area differential.

Reimbursement authorization was received from the Atomic Energy Commission for the establishment of the following new classifications:

Graphic Designer 1
Graphic Designer 2
Graphic Illustrator A
Graphic Illustrator B
Graphic Illustrator C
Graphic Illustrator D
Sub-Station Trainee
X-Ray Technician

A request for reimbursement authorization was submitted to the Atomic Energy Commission for the establishment of a new classification entitled "Assistant to the Editor".

The Wage Rates Unit, in conjunction with engineers in the Transportation Section, completed a study to determine the rated capacity of four-wheeled trailers used on the Project (manufacturers' rated capacities were not available on all makes of trailers in use). The study revealed that the capacities of these trailers fell within the Truck Driver, Light, classification as set forth in the job definition. The study resulted from the contention of the Union that Truck Drivers, Heavy, should be assigned to operate this equipment.

Wage Rates Unit personnel participated in the Supervisors' 40-Hour Training Program.

1201820

Employee and Public Relations

One member of the Wage Rates Unit attended the PMS training course.

Three hundred and eighty (380) automatic and 8 merit increases were processed during September. Requisitions for 169 people were processed. One hundred and nine (109) new hires and 30 reactivations were investigated concerning replacement, job, pay grade and qualifications. A review was made of 118 temporary reclassifications, 225 reclassifications and 81 transfers before approval was given.

1201821

PUBLIC RELATIONS

PUBLIC INFORMATION

A total of 54 releases were distributed during the month. Of these, 19 were sent to the "local list", nine to the "daily list", and 26 received special distribution.

The News Bureau Supervisor attended a Richland Community Council meeting and recommended that some one attend all future meetings, preferably the publicity writer whose beat includes the community.

Vance Orchard, Walla Walla Union-BULLETIN writer, was given general information on patrolmen marksmanship for future use by this paper.

Ted Palmer, Public Relations representative for Kaiser Engineers, talked with Public Relations personnel about future public relations activities of Kaiser and the relationship between Kaiser and General Electric, as far as public relations is concerned.

Sue Goodstein, Public Relations Services Division at San Francisco, was furnished considerable background information. Interviews were arranged with W. E. Johnson, L. F. Huck, and N. G. Fuller (AEC). The results of information gathered by her, and information furnished Miss Goodstein by the News Bureau were three feature stories concerning Richland and Hanford Works. The stories will be submitted with photographs to the San Francisco NEWS, and will be considered for syndication to all Scripps - Howard newspapers.

The civil defense air raid sirens were the topic of a feature story sent to seven Northwest newspapers. The story describes the characteristics of the sirens and was accompanied by photographs to show the size of them, and how they are mounted on towers.

Hanford Works Industrial Medical Program was the topic for another feature story sent to TODAY'S HEALTH magazine. It was a comprehensive review of the industrial medical organization and was also illustrated by photographs.

The Community NEWSLETTER was written and mailed to community leaders in Pasco, Kennewick, and Richland. Subjects discussed were the recent wage increases and the unions' acceptance; monthly tests of air raid sirens; and the anniversaries of the Company's insurance and pension programs.

The plant-community relations activities of the Nucleonics Division were reviewed via a form questionnaire furnished by the Employee and Plant-community Relations Services Division. Completion of the questionnaire showed that the majority of those plant community relations activities recommended on a Company-wide basis are being conducted at Hanford Works.

National Kid's Day was publicized through news stories, pictures and radio spot announcements, at the request of the local Kiwanis Club.

1201822

The annual Kiwanis and School District Employee Banquet was planned by the Community Information Supervisor with local superintendent of schools and community leaders.

Eight Hanford Works authors submitted papers for approval:

"A Radio-ecological Survey of the Columbia River", by J. J. Davis and C. L. Cooper of Radiological Sciences Department for presentation to the Annual Meeting of the American Society of Limnology and Oceanography at Ithaca, New York, September 8, and for publication at a later date in the Annual Journal of the Society.

"The Growth of Chlorella Pyrnoidosa in the Presence of Various Radioactive Elements", by J. W. Porter and H. Knauss, for presentation at the Institute of Biological Sciences meeting in Ithaca, New York, September 8.

"Incorporation of Tritium Oxide into Growing Chlorella Pyrenoidosa Cells", by D. Weinberger and J. W. Porter, given at the A.I.B.A. meeting in Ithaca, New York, September 8.

"Metallurgy in Nucleonics", by Ray Ward of the Engineering Department for presentation to the American Society for Metals in Spokane, September 9; Seattle, September 10; Vancouver, September 11; and Portland, September 12.

"Radioactive Tracers for Diagnosis", by H. A. Kornberg of Radiological Sciences for presentation to the Seventh Annual Post-Graduate Cancer Course, University of Oregon Medical School, Portland, Oregon, September 15.

"Physics of Metals," a talk by A. B. Greninger was presented at the American Society of Mechanical Engineers meeting in Richland on September 18.

"The Civil Defense Program" was the subject of a panel discussion at the 6617th Replacement Depot Group of Reservists in Pasco, September 17. The panel members included Ted Galbraith, J. J. Davis, W. C. Berlin, and C. L. Cooper, all of Hanford Works.

"Determination of Resistance to Ground of Grounding Grids", by A. J. McCracklin, Jr. and C. W. Wendlanet, for presentation at the fall General Meeting of the A.I.E.E. in New Orleans, La. October 13-17 and for publication at a later date in the A.I.E.E. Transactions.

"Engineering Education and Entropy", to be presented on October 3, to the Engineering Societies Technical meeting in Spokane, by Dr. W. I. Patnode.

The American Pulp and Paper Mills Association requested a copy of Dr. J. M. Rediske's paper on "Radioactive Isotopes in Industry" for publication in the paper industry's trade journals.

A civil defense publicity program was conducted, which was aimed at acquainting residents with monthly test of air raid sirens. News stories were published in the Works NEWS and local newspapers; spot announcements were broadcast by local

radio stations; informative letters were mailed to plant supervisors and community clubs and organizations; posters for business firms were distributed through the Chamber of Commerce; a movie trailer was produced for use in local theaters; posters were placed in local dormitories; and arrangements were made to have a message printed on paycheck envelopes of Hanford Works employees.

CD movies were shown to 22 members of community organizations and 178 Hanford Works employees during the month.

No decision was reached to determine the course which the Warden Service is to take. Consequently, no recruiting was done to increase the number of volunteers. As a further result, the training program has remained unchanged to date.

The Chief Warden talked to the Reserve Officers group at Pasco on September 3 and to the Richland Lions Club on September 2. Movies were shown at both meetings.

The Chief Warden completed 8 hours of instruction at the Army Ordnance Instruction school.

Reprinting of material during September included: 1000 copies of the Kadlec Hospital open house bulletin; 3000 copies of "Atomic Test"; 2000 copies of "What are General Electric Company's Fields?"; 500 copies of Civil Defense Bulletin No. 5. The open house booklet was modified slightly to make it suitable for distribution to new families in Richland.

The 1952 annual report of Community Services Section was produced. Seven thousand copies of this four-page, two-color photo report have been received from the printer. Envelopes for mailing these reports to residences were obtained, distribution to be made early in October.

A two-column x 8½" display type recruiting advertisement was placed in the Denver Post and Rocky Mountain News during September. It netted 40 personal interviews and 3 written inquiries; 9 offers were made. Most of the interviews

requests. A method to produce slides on a production basis has been worked out. Originals are delivered to Reproduction where a negative is produced. The negatives are delivered to Photographic Services and are reproduced on slide material and bound.

see attached statistical report

PROGRAM DEVELOPMENT

"Family Album" and "Meter with a Memory", two 16mm. films produced by General Electric on the subject of photography were shown to several plant groups between September 9 and 11.

A group of 22 members of the Basic Economics Training class reviewed the film "What Makes Us Tick?", which was procured at the request of the Training Services Section.

"Mobile Records Unit" and "Motion Studies Principles...Phase III" which were procured from USAF at the request of the Procedures Analysis Section were reviewed by supervisory personnel of that section.

Forty members of the General Cost Section, Financial Department, saw the slide-film "What's the Idea?", produced recently for the Suggestion System Committee.

Twenty-one programs of the Hanford Works Science Forum have been broadcast over station KWIE at 9:30 p.m., Sunday evenings. This month's guest speakers have included Col. Lester R. Moffett, Commanding Officer of Camp Hanford, who spoke on "The Advancement of Military Science", Dr. John W. Porter, whose subject was "Plant Biochemistry", and experimental programs featuring the regular panelists in a half-hour question and answer program. Plans have been drawn up to revise the Science Forum to bring it more closely to the specific needs of area listeners. These plans have been accepted by Dr. W. I. Patnode, one of the original panel members of the Schenectady Science Forum and advisor on the Hanford Works Science Forum program.

Plans for the "Family Night" broadcasts in connection with General Electric's 75th Anniversary have been drawn up.

All tape recording receiving equipment was checked and calibrated by a recording engineer who contracted to do this precision work. The equipment, found to be out of phase, is now back in operating order. Besides the repair work, complete operating instructions were given by the engineer that should save expense in the long-range operation.

The public address system was loaned to the Supervisor's Association for one of their regular monthly meetings.

Portable recording equipment was loaned to the Security Unit for use in meetings conducted by G.E. Safety and Security.

The filming of "Operation...Sample", a 16mm. sound motion picture being produced for Redox Unit, Separations Section, has been completed and a work print is now being processed.

EMPLOYEE INFORMATION

The start of the Separations Safety Stampede was attended by the Works NEWS editor; information gathered was published in the plant newspaper as a feature story with photographs. Space was devoted to this safety promotion throughout the month, and continuing publicity has been planned during the entire course of the Stampede.

Graduate school of Nuclear Engineering promotion activities included news stories giving registration details and publication of application blanks in two Works NEWS issues.

Adult education classes offered by the Richland school system were published in two successive Works NEWS issues; registration information and details of the courses offered were included.

Results of the Works NEWS Readership Opinion Survey were publicized. A complete report was prepared in booklet form for distribution to Management. It contained evaluation of survey results by the Statistical Unit, and reproductions of all publicity material. Copies are being sent to the New York Office.

The Works NEWS "Register to Vote" campaign was promoted in conjunction with the League of Women Voters in Richland. Publicity included news stories, box notices of registrations and the times and places, and a full-page message.

Complete information on the revised Richland bus schedules were published, including a map of the routes, and departure times.

Suggestion System publicity included a full-page feature with photographs.

A full-page photo feature on the Red Cross blood donation program was prepared for the Works NEWS.

Three letters to management were written for the signature of the Employee and Public Relations Department Manager. Subjects of the letters were: announcement of acceptance of the recent wage offers, and when payment of the new isolation pay and area differential rates would be made, and approvals of the new isolation pay and area differential rates.

The second annual dinner for Hanford retired employees to be held October 9 was aided through preparation and production of a letter of invitation, self-addressed return postal cards, and a printed program.

Good Neighbor Fund information activities included the Works NEWS story, and preparation of a letter to accompany the emblems. A report showing the part played by Employee Information in promoting the Good Neighbor Fund was produced.

1201026

Safety topic for October, "Fire Prevention" was written and is being produced by Central Printing.

Work on the Employee Attitude survey involved production of 200 copies of a 12-page preliminary questionnaire; preparation and production of an Employee News Letter from the General Manager, letter to supervisors from the Employee and Public Relations Department Manager, and a two-page instruction sheet. These three items were distributed to supervisors as a unit. A news story and photographs concerning the survey were prepared for publication in the October 3 issue of the Works NEWS. Distribution and pick-up of survey collection boxes is being coordinated by the Employee Information Supervisors.

New employee information racks were installed in nine new locations, and an additional two were placed in the 300 Area. In addition to the regular Sheldon-Claire poster, pension plan, Security, A.E.C. property management, and health posters also were placed throughout the plant.

Material on Hanford Works to be included in the January, 1953 GE REVIEW magazine was completed and sent to Dr. W. I. Patnode for transmittal to the magazine editor. This material included a general statement, and specific write-ups on 11 unclassified engineering accomplishments completed during 1952. Photographs with captions and one diagram also were included.

A letter to all Department Managers requesting assistance and cooperation in gathering material for the 1952 annual report of Hanford accomplishments was prepared for the General Manager's signature.

Artist services supplied to the Works NEWS during September included two editorial cartoons, and layout for a full-page "Register to Vote" message. In addition, layouts for three full pages in the Works NEWS concerning "What General Electric Company is Aiming For?", were developed in rough form.

1201827

Hanford Works Photo House
Month of September, 1952

	2" X 2"	2" X 4"	5" X 7"	8" X 10"	Negs.	3¼" X 4" SLIDE	4" X 5"	3¼" X 4" COLOR SLIDE	11" X 14"	EKTACHROME	16 MM	MOVIE	35MM	COLOR SLIDE
COMMUNITY REAL ESTATE & SERVICES														
Commercial Services					5		50							
Fire			77	7	18									
Housing				8	2									
Police		15	144	15	78									
Library				5										
Community Services			17	1	11									
EMPLOYMENT & PUBLIC RELATIONS DEPT.														
Employment	756				223									
News Bureau		2	199	68	93		26							
Special Programs			14	100	71		22		4					
Radio & Special Events			55	3	20		7				700'			
Training				6	5									
Works News		4	292		111		18							
Public Relations			4	8	2									
ENGINEERING DEPT.														
Design & Construction				33	4									
Technical				84	17					17				
Rotational Training			80	16	2									
Technical Information				5	2									
Pile Technology			4	22	21	70			8					
Project Services			19	43	25		210							
MEDICAL			6		8	19	8	5					17	
MANUFACTURING DEPT.														
Separation Section				39	11									
RADIOLOGICAL SCIENCES DEPT.														
Staff							297							
Survey				14	30	8		18						
Biology				11	2	33	376							
Biophysics		4	2		8	4								
UTILITIES & GENERAL SERVICES DEPT.				260	13									
Electrical Distribution (Telephone)					2	1								
Security	5,821	859												
Fire & Safety			24	2										
MISCELLANEOUS														
A.E.C. Safety			33	122	77		53							
F. B. I.			4				6							
TOTALS	6,577	884	974	872	861	135	1075	23	12	17	700'		17	

1201828

COMMUNITY REAL ESTATE AND
SERVICES DEPARTMENT
SEPTEMBER - 1952

ORGANIZATION AND PERSONNEL

Number of employees on roll:

	Suffix	Beg. of Month	End of Month
General Administration	310	7	7
Community Services Section			
Administration	320	5	5
Public Works	321	101	80
Engineering	326	9	9
Recreation & Civic Affairs	327	6½	5½
Library	327	10½	10½
Fire (Richland)	328	46	49
Police (Richland)	329	42	41
Sub-Total		220	200
Community Real Estate Section			
Administration	330	3	3
Housing Rental	331	26	26
Maintenance	333	135	143
Engineering	335	4	4
Commercial Property	337	12	12
Sub-Total		180	188
700-1100-3000 Area Services Section			
Administration	340	2	2
Fire (North Richland)	341	31	28
Patrol (North Richland)	342	20	20
Commercial Facilities (North Richland)	343	2	2
Maintenance	344	56	56
1131 Boiler Plant	346	0	2
Sub-Total		111	110
Civil Defense Program	360	2	2
GRAND TOTALS		520	507

There was a decrease of thirteen employees in the Department during the month of September, 1952.

GENERAL

The Regional Meeting of the Association of Washington Cities was held in Richland, on September 17, 1952.

1201829

The Community Services Section received a sound, slide-film, produced by the Employee and Public Relations Department, entitled "Home Town Richland". This film will be used to illustrate the functions of the Community Services Section to interested groups.

Safeway Stores, Inc., signed a ground lease for the operation and construction of a food store on the northwest corner of Cullum Avenue and Harding Street.

During September the Housing Unit informed the tenants, by letter, of a petition filed with the Pasco Office of Rental Stabilization for permission to increase the shelter rent on all Richland dwellings and dormitory units.

The Free Methodist Church signed a ground lease for the construction, operation and maintenance of a privately-owned church at Wright Avenue and Symons Street.

Total housing applications pending - 726.

1201830

CONTRACT SECTION

Contract No.	Contractor	Title and Status	Project No.
AT-(45-1)-608	Associated Engineers, Inc.	Site Grading Irrigation Landscaping, Construction of Rest Room, Sewer Lines, Water Lines and Shelterbelt. Contract modified to include landscaping at Central Fire Station	CG-425 C-408 L-262 K-562
AT-(45-1)-619	Royal Company, Inc.	Elimination of Odors at Sewage Lift Station. Bid opening August 7, 1952, contract awarded August 4, 1952. Contract approximately 10% complete.	L-608
AT-(45-1)-635	L. H. Hoffman	Street Improvements, Parking Lots and Related Work. Contract approximately 42% complete.	CG-499 CG-486 L-911 L-662
--	--	Change Heating System at Bus Depot - Contract Services requested September 30, 1952.	L-939

1201831

COMMUNITY SERVICES SECTION

SUMMARY

SEPTEMBER, 1952

ORGANIZATION & PERSONNEL:

	BEGINNING OF MONTH		END OF MONTH	
	Exempt	Non-Exempt	Exempt	Non-Exempt
ENGINEERING	6	3	6	3
FIRE	46	0	49	0
LIBRARY	4	6½	4	6½
POLICE	16	26	16	25
PUBLIC WORKS	15	86	15	65
RECREATION & CIVIC AFFAIRS	4	2½	3	2½
	91	124	93	102

The Regional Meeting of the Association of Washington Cities was held in Richland, September 17, 1952. City officials from Kennewick and Pasco attended and heard discussions on city problems such as traffic, the merits of one-way streets, city financing, the advisability of supporting nursery operations, and other subjects relative to city government. The Association's staff of consultants and representatives of the State of Washington Departments such as Public Health, Pollution Control and State Patrol were on hand to aid in the answering of local problems. The State Legislators from this district were guests of the meeting.

The Community Services Section received in September a sound, slide-film produced by the Employees and Public Relations Department entitled "Home Town Richland". The film has been shown at a supervisors' training course in Building W-10 and to the Regional Meeting of the Association of Washingtor Cities where it was well received.

1201832

COMMUNITY REAL ESTATE AND SERVICES DEPARTMENT
PUBLIC WORKS UNIT
September 30, 1952

ORGANIZATION AND PERSONNEL

	Exempt	Non-Exempt
Employees Beginning of Month	15	86
Transfers In	--	1
Transfers Out	--	13
New Employees	--	2
Terminations	--	11
Total - End of Month	15	65

SANITATION

Total weight of garbage and trash collected and disposed of during September was 1445 tons. The seasonal change from twice weekly residential collection to once weekly collection was effected on 9-29-52. Concurrent with this schedule change, the assignment of manpower to residential collections was also altered, in that whereas formerly three crews, each crew composed of one driver and two helpers, were assigned to the once weekly schedule, this same work is now being performed by four crews, each crew composed of one driver and one helper.

ROADS AND STREETS

Construction work on Project CG 486 continued during September; installation of curb and gutter and sidewalk is approximately complete and excavation for base course is in progress.

Considerable time has been required to correct damage to street signs caused by vandalism. Many signs have been moved so that the street names do not coincide with the streets, several have been bent, and in some instances additional letters have been painted on the signs. Police Unit has been notified and are cooperating in an attempt to eliminate this problem.

Routine seasonal maintenance of streets, street drainage systems, street signs and public parking lots was continued.

1201833

GROUNDS MAINTENANCE

Frequency of irrigation on all grassed areas was reduced to once weekly during the latter part of September, and mowing was reduced to once each two weeks.

All seasonal employees have been terminated, and personnel of this group will total 11 employees as of 10-6-52, this being a reduction of 22 employees from the summertime peak.

Seasonal 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 carried out. Average daily water consumption for September was 14.33 million gallons, and the peak daily consumption during the month was 20.55 million gallons on 9-4-52.

The decrease in water consumption and resultant increase in pressure in the distribution system has allowed the elimination of 4 operators (one to each shift) formerly assigned to operation of the North Richland Pump house. In order to provide for trapping of sand, the line into the North Richland reservoir and the booster pumps are arranged to provide a supply of water into the North Richland distribution grid which is slightly in excess of North Richland consumption, and the by-pass line between the Richland system and North Richland system is left fully open. Thus under normal consumption the water flowing to North Richland has had the sand removed by passing through the reservoir and excess water flows back into the Richland system, whereas, should the North Richland demand suddenly increase, water will flow from the Richland system through the by-pass into the North Richland system, and pressure may be increased from the 1182 pump station.

The 10" main in the 700 Area running south from Mansfield Street to Knight Street ruptured directly under building 713-A on 9-27-52. It was determined impractical to repair the existing line, and a new section of line is now being installed around the outside of the building.

Drilling operations on the inverted well at 3000 recharge basin have been completed, and gravel packing of the 20" casing, and installation of tile field is now in process. Drilling operations have commenced on well 3000-G (with 20" casing) and an 8" test hole at Duke Field. Pouring of the deck on the 5 million gallon reservoir across the Yakima River has been completed and the concrete is in process of curing. Placing of one foot of earth cover over the new roofs at 1182 reservoirs is also in process at this time.

DOMESTIC WATER (Cont.)

Production and consumption records for September are as follows:

DOMESTIC WATER

	Well Production Million Gallons	Avg. Daily Production	Total Consumption Million Gallons	Avg. Daily Consumption
Richland	167.8094	5.5936	321.8022	10.7267
North Richland	137.7950	4.5932	71.2382	2.3746
Columbia Field	124.4810	4.1494		
300 Area			37.118	1.2373
TOTAL	430.0854	14.3362	430.1592	14.3386

SEWERAGE

The sewer main from the manhole directly east of the Lewis and Clark School to the manhole on Goethals Drive collapsed near the Goethals Drive manhole on 9-29-52. The break was caused by washing out of the earth where two joints were not cemented during the original installation.

Approximately 42 million gallons of sludge were pumped from the treatment plant digestor to the drying beds on 9-25-52.

Routine operation and maintenance of the collection system, lift station and treatment plant were continued, and daily flow through the treatment plant averaged 3.7 million gallons during the month.

Flow records for September are as follows:

SEWERAGE

	Total Sewage Flow Million Gallons	Average Daily Flow Million G. P. D.	Average Rate of Flow Gals. Per Minute
Plant No. 1	32.560	1.085	754
Plant No. 2	78.668	2.622	1821
TOTAL	111.228	3.707	2575

IRRIGATION SYSTEM

Operation of irrigation stations, which had been on a 24 hour basis, was placed on a 6:00 AM to 9:00 PM basis on 9-8-52.

The old 8" wooden line running east on Lee Blvd. from #1 Irrigation Station to a point east of George Washington Way ruptured again

IRRIGATION SYSTEM (Cont.)

during September and a decision to abandon this line has been reached. Since the major part of the lawn grass in the Greenway (which was served by this line) has been eliminated, the few remaining areas will be tied to domestic water.

Routine operation and maintenance of irrigation water canals and gravity lines, irrigation pumps and distribution grids were continued.

RECREATION AND CIVIC AFFAIRS UNIT

MONTHLY REPORT

SEPTEMBER, 1952

ORGANIZATION AND PERSONNEL

	Exempt	Non-Exempt
Beginning of Month	4	2-1/2
New Hires	0	1/4
Terminations	0	1/4
Transfers - In	0	0
Out	1	0
	3	2-1/2

SCHOOLS

The following is a tabulation of full-time paid School District #400 personnel as of September 30, 1952:-

Administration	7
Principals & Supervisors	14
Clerical	24
Teachers	285
Health Audiometer	1
Cooks	44
Nursery School & Extended Day Care	0
Bus Drivers	1
Maintenance	17
Operations	41
	434

CLUBS AND ORGANIZATIONS

As of September 30, 1952, the employees of the listed organizations, exclusive of those 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 September 1, 1952, the Hanford Atomic Metal Trades Council sponsored a Labor Day Picnic at Riverside Park with approximately 2,000 persons attending.

Recreation and Civic Affairs Unit (Continued)

On September 4, 1952, the regular monthly meeting of the Parks and Recreation Board was held at the Community House. Youth activities for the coming fall and winter were presented to the Board. The next regular meeting of the Board is to be held on October 9, 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 tennis court lights at Columbia Playfield were turned off on the last Friday of September for the fall and winter seasons.

The Football Clinic for the Elementary School Boys of the City was held at Memorial Softball Field, Saturday, September 20, with 90 boys in attendance. Valuable assistance was given by seven varsity football players from the Richland High School Team.

The Physical Activities Program for adults will again start at Spalding Gymnasium the first week of October. This program will operate on a three night a week basis until April 1, 1953.

Arrangements have been made with School District #400 to hold Youth Archery classes at the Girls' Gymnasium of Richland High School on Thursday Evenings from 7:00 P.M. - 10:00 P.M. Youth archery is co-sponsored by the Roving Bowmen and the Recreation and Civic Affairs Unit.

1201838

Recreation and Civic Affairs Unit (Continued)

Below is an accumulative attendance record of the Athletic and Recreation Program being sponsored by the Unit:-

	Children	Adults	Totals
General Attendance	800	214	1,014
Special Events - Participants	90	5	95
Spectators			
Assisted Activities	1,900	1,600	3,500
Totals for Month	2,790	1,819	4,609
At End of Previous Month	38,385	36,598	74,983
Fiscal Yr. Total To Date	41,175	38,417	79,592

Organized groups and classes conducted or assisted by the Recreation and Civic Affairs Unit during September, 1952, are as follows:-

Organized Groups or Classes	Children	Adults	Totals
Ball Fields (2 Bookings)		44	44
Burlin Camp (3 Bookings)		170	170
Picnics (3 Bookings)	1,900	1,600	3,500
Wellsian Lake (Closed Area)			
Football Clinic	90	5	95
	1,990	1,819	3,809

COMMUNITY HOUSE

Two staff members of the Recreation and Civic Affairs Unit attended the National Recreation Association Meeting in Seattle, the week of September 27 - October 3.

The monthly meeting of the Youth Council Board was held in the Community House Games Room on Tuesday, September 9.

The Fall and Winter Program Schedules for Youth Activities, Adult Activities and Bookings were distributed through the schools, the last week of September.

Attendance - Community House

	Children	Adults	Totals
General Attendance	2,494	2,582	5,076
Special Events - Participants			
Spectators			
Assisted Activities		468	468
Totals for Month	2,494	3,050	5,544
At End of Previous Month	4,472	5,384	9,856
Fiscal Year To Date	6,966	8,434	15,400

Organized Groups and Classes - Community House

Hi Spot (8)	2,340	23	2,363
Rec-A-Teers (6)		910	910
Senior Citizens (2)		63	63
Permit Groups (28)	39	1,310	1,349
TOTALS -	2,379	2,306	4,685

1201839

RICHLAND PUBLIC LIBRARY

SEPTEMBER 1952

ORGANIZATION AND PERSONNEL	Exempt	Non-Exempt
Employees - Beginning of Month	4	6½
Transfers In	0	0
Transfers Out	0	0
New Hires	0	0
Terminations	0	0
End of Month	4	6½

GENERAL

Circulation

Books	14,390	(Adult - 9,042; Juvenile - 5,348)
Magazines	338	
Pamphlets	64	
Records	947	
Interlibrary Loans	28	
Grand Total	15,767	

Current Book Stock

Books added this month	284	(Adult - 252; Juvenile - 32)
Books dropped this month	0	
Grand Total	21,191	
Phonograph Records added	32	

Registration

Adult	231	
Juvenile	54	
Total	285	
Total Registered Borrowers	11,139	
Children's Story Hour Attendance	137	(Pre-School - 123; Saturday Story Hours - (2) 14

1201340

The World Politics Discussion Group Program, which the Library is co-sponsoring with the American Foundation for Political Education, held its first meeting in North Hall, September 29, 1952. Thirty-three people have enrolled for participation in this program. The leaders of the discussions are Mr. H. C. Harlan, Assistant Director of the Foundation, and Miss Lucile Lomen.

Nineteen other meetings were held in North Hall this month.

The Richland Public Library Board held its September meeting on Wednesday, September 3, 1952.

1201841

RICHLAND POLICE DEPARTMENT

SEPTEMBER 1952

ORGANIZATION AND PERSONNEL	Exempt	Non-Exempt
Employees - Beginning of Month	16	26
Transfers In	0	0
Transfers Out	0	1
New Hires	0	0
Terminations	0	0
Total - End of Month	16	25

GENERAL

Upon request of the Junior Chamber of Commerce, Capt. J. S. Johnson of the Crime Prevention and Investigation Division spoke to their gathering on the subject of Juvenile Delinquency and the youth problems in Richland.

On September 25, the Police Athletic League held its annual banquet for members of the Little League team, parents and other Little League sponsors, at which time trophies and special awards were presented to members of the team.

Several members of the Police Department attended the meeting of the Yakima River Peace Officers Association held in Ellensburg on the 16th.

Police Chief H. W. Strock attended a Conference of the International Association of Chiefs of Police held in Los Angeles.

Capt. C. F. Klepper attended the Quarterly Meeting of the Washington Police Officers Associatic at Bellingham, Washington this month.

A group of Camp Fire Girls and sponsors were escorted through Headquarters on the 23rd of the month.

Beginning the 29th of this month an officer was assigned to patrol Richland streets in a pick-up truck and impound any bicycles being ridden after the hours of darkness without proper headlights. Five bicycles were impounded for defective equipment and there were 7 other bicycle violations.

Twenty prisoners were processed through the Richland Jail during the month of September, eight of which were from North Richland.

During the month of September, 115 letters of inquiry were received.

Twenty-six guns were registered during the month, along with 53 bicycle registrations.

A total of 341 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.

1201842

Richland Police Department

TRAFFIC

There were 23 reportable accidents for this month as compared to 11 last month and 17 for the same period last year. Weather conditions were ideal throughout the month and it is not possible to justify this increase. The total accidents this year to date are 202 as compared to only 169 for the same period last year.

There were 3 persons injured in automobile accidents this month as compared to 2 last month and 4 for the month of September last year. The total persons injured in accidents this year is 35 as compared to 45 for the same period last year. It is encouraging to see this reduction in injuries and to note that there have been no reportable pedestrian accidents and only 2 bicycle accidents. The present program, which was put into effect September 29 against bicycles with defective lights, may aid greatly in keeping this figure down for the balance of the year.

Six of the above accidents occurred in the business district, 12 were in the residential district and 5 were on open roadways where there were no adjacent buildings.

Property damage this month, as a result of automobile accidents, was $4,630.17, or an average of $201.31 per accident. This is the lowest average for any month this year. The average for last month was $271.44 and for September of 1951 it was $354.79.

The members of the Richland Police Department investigated 18 of the above accidents and as result Criminal Complaints were signed against 15 of the drivers for traffic violations.

Traffic violations which contributed to the above accidents were:

Failure to yield right-of-way	7	Improper backing	2
Negligent driving	6	Failure to signal	1
Following too closely	3	High speed	1
Disregarding stop sign or light	2	Inattention to driving	1

The School Boy Patrol groups have been organized at the six grade schools in Richland and the two junior high schools. They have all been outfitted and seem to be operating very efficiently. The Police Department has received reports of two vehicles which violated patrol signals during September.

Construction has progressed quite rapidly on Thayer Drive and on the new parking area in downtown Richland. It is expected that traffic will be returned to normal along Thayer Drive during October, and that the parking lot will be put into operation near the middle of the month.

The Circus which performed at the Bomber Bowl for three days and the starting of the football games at this location have caused some heavy concentrations of traffic this month, but they were all dispersed with a minimum of delay and no accidents were reported.

1201843

TRAINING

Advance Training for Richland Police members at the Small Arms Range for the period in Field Instruction was as follows:

Pistol - - - - - - - - - - - 1 hour
Machine Gun - - - - - - - - 1 hour

Total number of men reporting at the Range - - - - - - - 9
Total number of men instructed in Field - - - - - - - - 9
Number of men fired over the Machine Gun Course - - - 6
Number of men fired over the Army-L Course - - - - - - 9

Qualifications on the Army-L Course were as follows:

Expert - - - - - - -	7	78%
Sharpshooter - - -	1	11%
Marksman - - - - -	1	11%

Qualifications on the Machine Gun Course:

Expert - - - - - - -	6	100%

ACTIVITIES AND SERVICES	July	August	September
Doors and windows found open in facilities	77	82	48
Children lost or found	15	21	26
Dogs, cats reported lost or found	56	33	28
Dog, cat, loose stock complaints	28	22	15
Persons injured by dogs	4	6	1
Bank escorts and details	0	0	0
Fires investigated	17	9	8
Miscellaneous escorts	9	14	6
Complaints investigated (no enforcement action)	30	12	29
Deaths reported	0	1	0
Property lost or found	29	20	21
Records inquiries	103	95	98
Law enforcement agencies assisted	2	2	2
Private individuals assisted	40	40	17
Plant departments assisted	16	15	20
Emergency messages delivered	27	18	19
Street lights out reported to Electrical	81	91	89
Totals	534	481	427

1201844

MONTHLY REPORT
RICHLAND POLICE DEPARTMENT
SEPTEMBER 1952

OFFENSES	KNOWN	UNFOUNDED	CLEARED OTHER*	CLEARED ARREST
PART I				
1. Murder				
2. Rape				
3. Robbery				
4. Aggravated Assault				
5. Burglary - Break & Ent.	1	-	-	-
6. Larceny - Over $50.00	3	1**	-	-
Under $50.00	17	2	-	4
Bicycle Theft	42		39	
7. Auto Theft				
TOTAL PART I CASES	63	3	39	4
PART II				
8. Other Assaults	1			1
9. Forgery & Counterfeit	1			
10. Embezzlement & Fraud	1			
11. Stolen Prop:Buy:Rec:Poss.				
12. Weapons:Carrying:Poss.				
13. Prostitution				
14. Sex Offenses	1	-	-	1
15. Offense Ag.Fam.& Child	1	-	1	
16. Narcotics-Drug Laws				
17. Liquor Laws				
18. Drunkenness	10	-	-	10
19. Disorderly Conduct				
20. Vagrancy				
21. Gambling				
22. Driving while Intox.	3	-	-	3
23. Violation Rd.&Dr.Laws:				
Speeding	30	-	-	30
Stop Sign	30	-	-	30
Reckless Driving	3	-	-	3
Right of Way	4	-	-	4
Negligent Driving	20	-	-	20
Defective Equipment	9	-	-	9
24. Parking	45	-	-	45
25. All Other Traffic Viol.	13	-	-	13
Carried forward Page 2.	172	-	1	169

( )

120185

OFFENSES	KNOWN	UNFOUNDED	CLEARED OTHER*	CLEARED ARREST
Brought forward from page 1.	172		1	169
26. All Other Offenses:				
Malicious Mischief	7	-	6	-
Pick up for outside agency	1	-	-	1
Runaway juveniles	2	-	2	-
Dog Violation	2	-	1	-
Shoplifting	2	-	2	-
Vandalism	6	-	3	-
Dest. of Pers.Prop.	2	-	-	-
Juvenile Invest.	4	-	4	-
Investigation	3	-	2	-
Public Nuisance	2	-	-	2
Prowler	3	-	2	1
Ill. Shooting	2	-	2	-
Neighborhood Nuis.	1	-	1	-
Disturbance	6	1	2	-
27. Suspicion	1			
TOTAL PART II CASES	216	1	28	173
PART III				
28. Missing Persons	2	-	2	
Lost persons	16	-	16	
Lost animals	7	-	1	
Found Persons				
Found animals	7	-	2	
Found Property				
TOTAL PART III CASES	32	-	21	
PART IV				
30. Fatal Mot. Veh.Traf.Acc.				
31. Pers.Inj.Mot.Veh.Traf.Acc.	3			
32. Prop.Dam.Mot.Veh.Acc.	20			
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.				
42. Sick Cared For				
43. Mental Cases				
TOTAL PART IV CASES	23			
COMPOSITE TOTALS				
PART I,II,III,IV CASES	334	4	88	177

* 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 column only in that there was no arrests. ** 1 Grand Larceny case cleared unfounded from previous month. Property reported stolen $2,147.45 (including 42 bikes)
Property recovered $ 993.05 (including 39 bikes)

120186

MONTHLY REPORT — RICHLAND POLICE DEPARTMENT — JUVENILES INVOLVED — SEPTEMBER, 1952

OFFENSE	NO. CASES	JUVENILES	SEX	4	7	8	9	10	11	12	13	14	15	16	17	TOTAL
Prowler	1	1	M										1			1
Public Intoxication	1	1	M												1	1
Ill. Shooting	1	2	M				1		1							2
Shoplifting	2	2	F													
		1	M							1				2		3
Malicious Mischief	5	18	M					1		3	6	2	4	2		18
Juvenile Investigation	4	5	M					1	1	1	3					6
		1	F													
Disturbance	2	2	F													
		4	M		1	1				1					3	6
Vandalism	3	6	M					2	1	2			1			6
Petit Larceny	4	5	M					1						2	2	5
Runaway Juveniles	2	1	F													
		1	M										1	1		2
Public Nuisance	1	2	M										1		1	2
Sex Offense	1	1	F									1				1
Neighborhood Nuis.	1	4	M			1				2	1					4
Deliquency	1	1	F												1	1
TOTALS	29	58			1	2	1	5	3	10	10	3	8	7	8	58

RICHLAND POLICE DEPARTMENT

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 August – Sept. 1952	
Murder	.34	.056	-	-	-
Robbery	9.35	1.56	-	-	-
Agg.Assault	6.65	1.10	1	-	-
Burglary	64.87	10.81	17	-	1
Larceny	205.90	34.30	141	17	19
Auto Theft	32.12	5.35	8	-	-
Bicycle Theft			158	15	42

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 August – Sept. 1952	
rder	.31	.051	-	-	-
Robbery	6.85	1.140	-	-	-
Agg.Assault	2.45	.410	1	-	-
Burglary	56.50	9.400	17	-	1
Larceny	196.10	32.700	141	17	19
Auto Theft	32.5	5.400	8	-	-
Bicycle Theft			158	15	42

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

National Average Percentage of cases January – June 1951		Richland January–June 1951	Richland August – Sept. 1952	
Robbery	53.6	-	-	-
Burglary	61.7	4	-	-
Larceny	45.2	25	4	5
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 practice of some jurisdictions not to fingerprint youthful offenders."

1201848

1201849

RICHLAND POLICE DEPARTMENT
RICHLAND JUSTICE COURT CASES
SEPTEMBER 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.			
DEFECTIVE EQUIPMENT	19	9	3	5	2				1	1	6	$ 15.00	$ 17.00	$ 10.00
DRIVERS LICENSE	36	15	12	6	2	1				4	16	42.50	49.50	35.00
DRIVING WHILE LIC. SUSP. OR REV.	5			4		1								
DRUNKEN DRIVING	2	1		1					1				52.50	
FAILURE TO DIM LIGHTS	1	1											5.00	
F.T.Y.R.O.W.	12	5	5	1	1					2		75.00	50.00	
FOLLOWING TOO CLOSELY	2			1	1					1				
HIT & RUN	1			1										
ILLEGAL PARKING	75	18	41	15	1					2		143.50	64.50	52.50
ILLEGAL PASSING	2	1	1									7.50	5.00	
IMPROPER PLATES	8	3	1	4					1		3	5.00	17.00	10.00
NEGLIGENT DRIVING	29	15	9	4		1			1	7		232.50	217.50	
NO REGISTRATION	3	2		1							3			
PERMITTING CHILD TO OPERATE VEHICLE	2	2											13.50	
RECKLESS DRIVING	5	1		4					1	2			25.00	
SPEEDING	44	11	26	4	2	1				7		256.00	164.00	15.00
STOP SIGN	44	10	28	5	1					2	2	157.50	48.00	8.50
ABANDONMENT & NON-SUPPORT	2			2						1				
INJURY TO ANOTHER'S PROPERTY	1			1										
PUBLIC INTOXICATION	8	1	7									87.50	12.50	
PUBLIC NUISANCE	6	3	3									70.00	75.00	25.00
TOTAL	307	98	136	59	10	4			5	29	30	$1092.00	$816.00	$156.00

FOUR RECKLESS DRIVING CASES AMENDED TO NEGLIGENT DRIVING.
THREE DRIVING WHILE LICENSE SUSPENDED OR REVOKED CASES TAKEN TO THE SUPERIOR COURT.

LF-8

1201850

POLICE DIVISION - TRAFFIC CONTROL STATISTICS
SEPTEMBER, 1952

MOTOR VEHICLE ACCIDENTS:

	Total Number		Fatilities		Major Injuries		Minor Injuries	
	Aug.	Sept.	Aug.	Sept	Aug.	Sept.	Aug.	Sept.
Richland	11	23	0	0	0	1	2	2

ACCIDENT CAUSES:

	Negligent Driving		Failure to Yield Right of Way		Reckless & Drunken Driving		Other Cases	
	Aug.	Sept.	Aug.	Sept.	Aug.	Sept.	Aug.	Sept.
Richland	3	6	4	7	0	0	4	10

PLANT WARNING TRAFFIC TICKETS ISSUED:

Richland: NO WARNING TICKETS ISSUED FOR AUGUST AND SEPTEMBER, 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	
	Aug	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug.	Sept	Aug	Sept	Aug	Sept
Richland	35	37	13	42	3	2	5	3	4	10	16	22	21	73	29	73	126	262

TRAFFIC VOLUME: Average 24-Hour Traffic Volume Count for week ending September 27, 1952, Swift east of Stevens - 5471 cars.

NOTE: TRAFFIC CONTROL STATISTICS SHOW ORIGINAL CHARGES ONLY.

E-6

COMMUNITY SERVICES

RICHLAND FIRE DEPARTMENT

SEPTEMBER 1952

Organization and Personnel	Exempt	Non-Exempt
Employees - Beginning of Month	46	0
Transfers In	3	0
Transfers Out	0	0
New Hires	0	0
Terminations	0	0
End of Month	49	0

Fire Protection

		This Month	Year To Date
Fire Loss (Estimated):	Government	$10,674.70*	$11,357.20
	Personal	102.50	5,650.50**
	Total	$10,777.20	$17,007.70

* Includes $10,597.70 loss on 706 Bldg., recorded as Industrial Area Fire.

** Includes estimated $5,146.00 loss on the 6-20-52 Masonic Temple fire.

Response to Fire Alarms	15	140
Investigation of Minor Fires and Incidents	12	107
Ambulance Responses	40	371
Inside Schools or Drills	31	329
Outside Drills	10	184
Safety Meetings	8	72
Security Meetings	4	37
Fire Alarm Boxes Tested	186	1690
Airport Standby	0	12
Fire Hydrants Tested	0	35
Burning Permits	18	594

Engine 1 was received from the paint shop and returned to service on September 4th.

Messrs. W. E. Johnson, L. F. Huck and R. H. Hopkins made a conducted tour of No. 1 Fire Station on September 11th.

The hose hoisting and drying gear was removed from the tower at No. 1 Fire Station on September 28th to permit the contractor to install this equipment in the New Central Fire Station.

Engine Co. 4 was detailed to the Marcus Whitman School on September 26th to give a demonstration on fire alarm and fire fighting for students and teachers.

A total of 3,250 feet of regular fire hose and 6,000 feet of Civil Defense fire hose was pressure-tested during the month.

1201851

RICHLAND FIRE DEPARTMENT September 1952

Fire Prevention

One hundred and twenty hazard inspections, 192 fire extinguisher inspections and 22 inspections of fire hose standpipes were made in September. These inspections resulted in 14 written hazard reports.

With the issuance of requisitions by all departments, arrangements were completed for replacing all CTC fire extinguishers in Richland with dry chemical type.

An investigation was made of a September 11th residential fire at 2210 Humphries where a bed lamp cord ignited a bed in which a 10-year-old boy was sleeping.

On September 17th the Assistant Fire Marshal gave a fire prevention talk to 21 Public Works employees.

On the invitation of AEC Engineering, the Fire Marshal attended a September 18th meeting with the architect, contractor, school officials and AEC engineers to discuss additional fire protection devices for the Jason Lee School. This meeting resulted in approval of the Fire Marshal's recommendations and plans for installation.

A recommendation was made September 22nd to Real Estate that non-tamper covers be installed over fuses controlling fire alarm evacuation signals in dormitories to prevent tenants from exchanging them for blown fuses in house circuits.

Following the Fire Marshal's September 24th recommendation, the 700 Area custodian agreed to have hazardous weed condition corrected around the 722 Hutments.

Request for approval of an attic paint shop in the 722 Hangar was rejected by the Fire Marshal's office because of the hazards that would result from such an installation.

Preparations for Richland's observance of Fire Prevention Week included numerous meetings with Chamber of Commerce membership, committees and other groups, ordering over 60,000 pieces of promotional literature and 16 special signs, preparation of news articles and news photos, arranging for local and out-of-town fire prevention speakers, in addition to planning special stunts and contests for the campaign.

1201852

COMMUNITY REAL ESTATE AND SERVICES DEPARTMENT
ENGINEERING UNIT

SEPTEMBER 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:

L-608 - Odors Emanating from Sewage Lift Station - Project 20% complete. Delivery date on Blower is October 17, 1952.

L-662 - Mansfield Street Improvement - 34% complete.

C-425 - 1951 Park Development Program - Work is complete. Physical Completion Notice to be prepared.

C-486 - 1952 Street Improvement Program - 31% complete.

C-488 - Additional Erosion Control and Development, Public Areas, F.Y. 1952 - Design work is in progress.

-499 - Alteration of Greenway for Parking Area - 50% complete.

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 - Work suspended until fall planting season.

547-MD - Fixed Irrigation System - Preliminary estimates completed.

565-RC - Site South of Tract House 0-1224 - Deferred for other work.

570-M - All Saints Episcopal Church - Work Progressing 80% Complete.

571-M - Free Methodist Church - Work Progressing, 80% complete.

572-M - First Baptist Church - Work progressing slowly, 62% complete.

574-M - Assembly of God Church - Work Progressing slowly, 30% complete.

579-MS - Goethals Drive to Williams, Study of Intersection - Deferred for other work.

581-RC - "As Built" Plans for LDS Church - Plans returned to Building Committee.

88-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 - 100% Complete. Final Inspection Complete.

1201653

Engineering Unit

609-M - Plan Checking, Store #4, C. D. Joseph Building - 100% Complete. Final Inspection completed.

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 in progress.

628-M - Prepare "As Built Plans" for Richland Fire 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.

646-M - Engineer Liaison, Central Fire Station - Following construction of building, which is materially complete. Final inspection to be made.

651-M - Estimate for Dog Pound - Estimates prepared and submitted.

653-M - Willard Parker Building Addition - 100% Complete. Final Inspection completed.

654-M - Elmer J. Hansen Building Addition - 100% Complete. Final Inspection completed.

656-M - Plan Checking, Kidwell-Gerdes Service Station - Awaiting receipt of plans.

657-M - Review Richland Fire Station - To be developed as time permits.

660-RC - Legal Description, Rex L. Jensen Proposed Site - 100% complete.

661-RC - Legal Description, Richland Development Co. Site, Block 5, Uptown Area - 100% complete.

663-M - Richland Development Co. Block 5, North Commercial Area, Plan Checking - Work progressing. 65% complete. Plans completed and full permit issued.

665-RC - Richland Labor Temple, Site for Labor Hall - Legal Description complete. Plans received for checking.

668-RC - Legal Description - American Legion Post No. 71 - 100% complete.

669-M - Alterations for Frank Berry Sporting Goods Store - Construction complete. Final inspection to be made.

1201854

Engineering Unit

674-RC - Uptown Parking Lot Study - Delayed for other work.

676-M - Sidewalks, Aprons, and Drives in Vicinity of Swimming Pool and Bathhouse - Additional drive and walk proposed, otherwise design complete.

677-M - Addition to Ernie's Restaurant, Dine and Dance - Work progressing slowly.

678-RC - Legal Description and Extend Utility Lines, Drive-In Theater Site - 100% complete.

682-M - Alterations to Joseph-Cannon Building - As Built plans received for checking.

683-RC - Legal Description - Tri-City Herald - 100% complete.

686-RC - Utility Lines, Vacant Commercial Sites - Information submitted on the following:(1.) Site east of liquor store. (2) Site west of Laundry (3) Site north of Bus lot. (4) Site between Newton Street and Desert Inn. (5) Site north and south of the end of the Public Health Building. (6) Site on Duportail, west of Diettrich's Market. (7) Site on Wright Avenue, north of Diettrich's Market. (8) Site on Stevens Drive, north of Auto Supply and machine.

689-RC - "As Builts" C. D. Joseph Building #2 - Plan received for checking, except plans for plumbing.

93-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 progressing. 55% complete.

697-M - Plans, Specifications, and Inspections, Drive-In Theater - Awaiting submission of plans.

698-M - Plans, Specifications, and Inspections, Rug Cleaning Plant - Plans checked and accepted.

699-M - Tastee-Freeze Drive-In, Plans, Specifications, and Inspections - Construction progressing. 70% complete.

700-RC - Legal Description, Grace Bacon Site - 25% complete.

701-RC - Legal Description - Geo. Wash. Way to dike between Newton Street and Desert Inn Service Road - 50% complete.

703-RC - Plat of Storage and Construction Areas for M-1 and K-4 Housing Areas - Bauer-Day - 100% complete.

704-RC - Extend Water & Sewer Facilities, Medical-Dental Properties, Inc. - 100% complete.

705-RC - Field Supervision - Parking Lots, Chief Joseph Jr. High School - 10% complete.

706-RC - Plans, Specifications, and Inspections, Medical-Dental Properties, Inc. - Construction progressing. 15% complete.

Engineering Unit

707-RC - Study, Baptist Church, Richland Heights - 75% complete.

708-M - Route Survey for Telephone Underground Multiple Duct System - 95% complete.

709-RC - Legal Description, Stevens Drive between Grace Bacon and Parker Hanson Sites - 25% complete.

710-RC - Remaining Frontage on Stevens Drive, Anderson Motors - Work progressing.

711-MPW- Study and Estimate, Sewer Main, Swift Boulevard - Deferred for other work.

712-M - Survey of Richland Washington, Liaison and Assistance - Work progressing.

713-M - Installation of Vehicle actuated traffic light, George Washington Way and Van Giesen - ESR closed. Transferred to Project K-713.

1201856

COMMUNITY REAL ESTATE SECTION

SUMMARY

SEPTEMBER
1 9 5 2

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	122	13	130
335	2	2	2	2
Community Real Estate Sect. 330	2	1	2	1
	29	151	29	159

Increase in Employees for month of September 8

GENERAL

Safeway Stores, Inc. signed a ground lease for the northwest corner of Cullum Avenue and Harding Street, on which they will construct and operate a new super-market food store.

During the month of September the Housing Unit informed the tenants by letter of a petition filed with the Pasco Office of Rental Stabilization for permission to increase the shelter rent on all Richland dwelling and dormitory units.

1201857

HOUSING & MAINTENANCE UNIT

September, 1952

ORGANIZATION AND PERSONNEL

Number of employees on payroll:

Beginning of month:	20 Exempt	
	145 Non-Exempt	
	165	165
End of month:	20 Exempt	
	153 Non-Exempt	
	173	173

The increase of personnel is in the Painting Craft.

1201858

RICHLAND HOUSING

Housing utilization as of Month Ending September 30, 1952
Houses occupied by Family Groups

	Conventional	A&J	T	Precut	Ranch	Prefab	Dorm Apts	A&J Apts	2BR Apts	Fourth Housing	Tract	Total
G.E.Employees	2212	258	9	377	813	1158	10	46	61	197	36	5177
Commercial Facilities	96	13	1	38	82	56		7	3	8	5	309
Community Activities	9				7	5					1	22
Medical Facilities	3	17			2	1				3		26
Post Office	5				3	12				1	3	24
A.E.C.	89	26		20	56	18		4	2	16	3	234
Other government	10	2			4	3			1		1	21
Schools	52	1		6	10	55		1	1	1		127
Atkinson Jones	7	12		2	7	4		4				36
Charles T. Main	1			3	4	10				1		19
Vitro Corporation	5	2		2	4	2						15
P.S.Lord	3				3					2		8
Newberry Neon	2	1		1				1		1		6
Vernita Orchards					2				1		5	5
Urban-Smythe-Warren							3					3
Universal Foods					1							3
Kaiser Engineers	1				1							2
V. C. Jenkins												1
rt's Filter	1											1
Total	2496	332	10	449	999	1327	10	63	69	230	54	6039
Houses assigned, Leases written.						2						2
Houses assigned, Leases not written	1	1			1	6		1	1			11
Available for assignment	3			1		7						11
Total	2500	333	10	450	1000	1342	10	64	70	230	54	6063

	BEGIN MONTH	MOVED IN	MOVED OUT	MONTH END	DIFF.
Conventional Type	2493	26	23	2496	+3
Atkinson Jones	331	5	4	332	+1
"T" Type	10	--	--	10	--
Precut Type	448	7	6	449	+1
Ranch Type	997	8	6	999	+2
Prefab Type	1332	36	41	1327	-5
Dorm Apts	9	1	--	10	+1
A&J Apartments	64	4	5	63	-1
2BR Apartments	70	--	1	69	-1
Fourth Housing	230	2	2	230	--
Tract	54	1	1	54	--
	6038	90	89	6039	+1

1201859

DORMITORY STATISTICS

Dormitories:

	Occupants	Vacancies	Total Beds
Men Occupied 15	616	0	616
Women Occupied 12	481	6	475*
	1097	6	1091*

Women's Dormitories occupied by:

G. E. Offices 2
Education 1
Apartments 1

* This includes space of 2 beds in W-9 used for supply rooms and dormitory offices.

There are 96 Men waiting for rooms in Richland
There are 0 Women waiting for rooms in Richland
There are 39 Men waiting for single rooms
There are 70 Women waiting for single rooms

STRAIGHT CANCELLATIONS

Voluntary Terminations	26
R. O. F.	5
Discharge	1
Transfers	2
Retirement-Divorce-Misc.	12
Move off Project	6
Deaths	1
Total	53

ALLOCATION STATISTICS

Houses Allocated to new tenants	50
Exchanged Houses	4
Moves (Within the Village)	17
Turnovers	9
Total leases signed	90
Total cancellations	87
Houses Assigned "As Is"	50
Houses sent to Renovation	26
Applications pending	726

1201860

TENANT RELATIONS WORK ORDER AND PROGRESS REPORT MONTH OF SEPTEMBER, 1952

Processing of Service Orders, Work Orders and Service Charges

	Orders Incomplete as of August 30	Orders Issued 8-30 to 9-30	Total Orders Incomplete as of September, 1952
Service Orders	83	1970	304
Work Orders	469	469	381
Service Charges		275	

Principal Work Order Loads

	Incomplete as of August 30, 1952	Incomplete as of September 30, 1952
Laundry tub replacement	46	42
Bathroom Reno's (tub, tile, lino.)	43	43
Tileboard Only (bathroom)	1	0
Kitchen cabinet lino.	40	51
Kitchen floor lino.	27	13
Shower stall	19	14

Alteration permits issued during the month of September totaled 104 compared to 75 issued in August.

Convert to oil	18	Move water heater	2
Install auto. washer	31	Additional electric outlets	2
Install dryer	8	Remove laundry trays	2
Convert to gas heat	3	Remove broom closet	1

I. REAL ESTATE MAINT. WORKS SUMMARY

JOB TYPE	OLDEST ISS. DATE	BACKLOG	COMP. JOBS	FY TO DATE COMPLETIONS
BATHTUBS	8/28/52	41	8	84
KITCHEN FLOOR TILE	8/26/52	4	14	137
BATHROOM TILE	5/21/52	40	24	95
KITCHEN SINK TOP	7/21/52	24	13	122
PREFAB FLOOR LINOLEUM	9/18/52	2	34	137
SHOWER STALLS	4/1/51	68	17	17
LAUNDRY TUBS	6/11/52	13	2	89
MAJOR SEWER STOPPAGES	8/6/52	4	5	80
ROOF COATING	12/4/51	64	17	69
REMOVE TREES	7/22/52	28	None	20
RENOVATION	9/19/52	28	4	60
WATER HEATERS	10/1/52	1	3	41
REBUILD PORCHES	10/1/52	2	24	96
ASPHALT SERVICE WALKS	6/24/52	35	None	20
ASPHALT STEPS	7/15/52	4	10	49

1201862

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 Pickups		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 Flatbed		1	Renovation
1½ ton Panel		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 September twenty-two (22) units of housing had carpenter repairs made and were completely painted on the interior.

B. EXTERIOR PAINT PROGRAM:

This group, painting on A & J house exteriors, have 300 houses primed (1st coat), and have completely painted 220 of the 334 houses that are to be done.

It is expected that all priming will be completed October 10, 1952. After this work is completed all forces will then be applied to finish coat work. Weather permitting, the A & J houses will be completed about October 24, 1952.

C. FIELD CARPENTRY - LINOLEUM & TILE:

The following units of work were completed by this group during the month of September.

Replaced bath lino:	55	Raised rear slabs:	4
Replaced sink lino:	52	Replaced rear threshold:	1
Replaced Kitchen floor lino:	55	Repaired roofs:	8
Applied roof coating:	22	Replaced bedroom lino:	2
Installed tile board:	12	Reset clothes poles:	2
Installed plastic tile:	23	Replaced sash balances:	4
Repaired porches:	41	Jack and Shim:	4
Replaced shelves in Ranch Houses:	3	Repaired doors	2
Installed door:	1	Installed metal edging:	6
Replaced work bench lino:	5	Chempoint jobs:	124
Repaired tile in Ranch houses:	4	Miscellaneous:	16

D. CARPENTER SHOP:

This group accomplished the following units of work during the month of September.

Painted cabinet doors:	13	Repaired screen doors:	32
Painted cabinet drawers:	8	Repaired window screens:	32
Painted window screens	16	Repaired exterior doors:	6
Painted window sashes:	17	Repaired window sashes:	20
Painted screen doors:	16	Repaired cabinet drawers:	8
Painted exterior doors:	9	Made new cabinet doors:	23
Painted electric heater shells	27	Made & installed street step forms:	10
Touchup painting: (porches, baths and kitchens):	139	Prime coated house roofs:	26
		Finish coated house roofs:	7

Painted shower stall panels:	18 hrs.
Painted moulding materials:	30 hrs.
Painted materials for porch repairs:	23 hrs.
Painted office equipment. (Desks, chairs):	34 hrs.

(Carpenter Shop, Cont'd)

Repaired and refinished F.I.R.O. furniture:	11 hrs.
Miscellaneous carpenter work for Exterior Paint:	39 hrs.
Made "Mockups" for Design Department:	7 hrs.
Time used for shop equipment maintenance:	36 hrs.
Moved carpenter inventory material:	101 hrs.

E. PLUMBING:

The Plumbing group accomplished the following units of work during the month of September.

Installed bathtubs:	44	Installed water heaters:	15
Installed Laundry tubs:	32	Installed shower stalls:	5

1. Cleaned 31 sewer laterals clogged with tree roots.
2. Completed 48 plumbing Work Orders consisting of repairing broken water lines, valves and plumbing fixtures.
3. Completed 21 steam Work Orders consisting of replacing rusted out piping, steam valves, traps and PRV stations.
4. Completed 53 linoleum Work Orders consisting of removing and replacing toilet bowls so tile can be replaced.
5. Turned on heat to all Dorms, Geo. Wash. Apts. and Gilmore Apts.
6. This group is presently replacing 500 feet of 10" storm sewer in 700 AREA.

F. MILLWRIGHTS:

The Millwrights have done routine lubrication and maintenance on oil and coal burning furnaces throughout the village during the month of September.

G. SHEETMETAL:

The long awaited material for shower stalls has been received and since its receipt this group has installed seventeen (17) shower stalls.

H. RENOVATION:

During the month of September, twenty-six (26) units of housing were processed by the Renovation crew. Four (4) of these houses were completely painted, and all 26 units were completely cleaned on the interior and received necessary carpenter repairs.

1201865

I. SERVICE ORDERS:

The following is a status report of Service Orders:

A.	On hand at the beginning of the month:	336
B.	Received during the month:	1921
C.	Completed during the month:	1953
D.	On hand at the end of the month:	304

NOTE: 44 of the incomplete count is on electrical inspection Service calls that must be made up in advance.

BACKLOGS:

1.	Plumbing:	Approximately 250 man hours.
2.	Locksmith:	Approximately 196 man hours.

SPECIAL WORK:

1. Campbell's No. 5: Changed service drop and balanced load.
2. Thrifty & Pennywise Drug: Installed three (3) large plate glass windows.

E. Total number of hours spent on Work Orders:--------605 hours, an increase of 142 hours over the month of August.

J. LABOR:

The Labor crew performed the following units of work during the month of September.

1. Repaired walks: 1
2. Dig and backfill work: 17
3. Removed trees: 2
4. Refinished ballroom floor at Community House.
5. Removed weeds from Uptown parking lot.
6. Hauled sawdust: 2
7. Sprayed for roaches: 3
8. Cleaned out under Coal Company's scale.
9. Repairing compound driveways in Div. IV & V - 90% complete.

1201866

REAL ESTATE ENGINEERING UNIT

September, 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

Bumper logs replaced. Paving not started.

L-939 Change Heating System in Bus Depot

Plans and specifications completed. Bids to be invited during October.

C-930 Concrete Walks and Steps - 552 Houses

Held up pending further developments.

Following is the status of active ESRs 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

Shower stall installations progressing satisfactorily.

933-RH Alterations to Building 1116

Revised plans and estimate being prepared.

938-RH Study of Oil Heat in Prefab Houses

Study in progress.

941-RH Study of TV Antennas for Richland Houses

Study in progress.

1201867

COMMERCIAL PROPERTY - REAL ESTATE SECTION

September, 1952

PERSONNEL - COMMERCIAL PROPERTY:

	September
Beginning of month	12
End of month	12
Net difference	0

PERSONNEL - COMMERCIAL AND NONCOMMERCIAL FACILITIES:

	Commercial	Noncommercial	Total
August	1,375	124	1,499
September	1,453	114	1,567
Net difference	78	-10	66

SUMMARY OR ROUTINE ITEMS PROCESSED:

Work Orders	41	2
Back Charges	2	1

CONTRACTS AND NEGOTIATIONS:

A. Commercial:

1. Leases:

   a. Safeway Stores, Inc.--covering the construction and operation of a super-market food store to be located at the northwest corner of Cullum Avenue and Harding Street.

   b. Bauer-Day, Inc.--lease of land for purposes of storage and prefabrication, a maximum term of three years.

   c. Bauer-Day, Inc.--Grant of Easement and Right-of-Way, to provide for right of ingress and egress to and from the premises leased.

2. Supplemental Agreement:

   a. Bauer-Day, Inc.--Modification No. I to revise the description of Area M-1 and to adjust the rental thereof.

3. Letter of Authorization:

   a. Virgil O. McVicker--sublease of space for a delicatessen to John Napoli in Building No. 4, Uptown Business District.

1201868

B. Noncommercial

1. Leases:

Free Methodist Church - covering the construction, operation and maintenance of a privately-owned church at Wright Avenue and Symons Street.

2. Letters of Authorization:

a. Richland Council No. 3307, Knights of Columbus - to lease the former Co-Ordinate Club building.

b. Richland Post No. 71, The American Legion - to enter into a ground lease for the construction, operation and maintenance of a Legion Hall.

c. Richland Masonic Lodge No. 283 - to purchase the Government's right, title and interest in and to the Masonic Temple building and to enter into a long-term ground lease.

SUMMARY OF OCCUPANCY AND EXPANSION STATUS:

A. Commercial	August	September
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	46
a. Number of businesses operated by prime lessees	38	38
b. Number of businesses operated by sublessees	53	53
c. Total businesses operating in privately-owned buildings	91	91
4. Privately-owned buildings under construction	7	5
5. Total number of businesses in operation	149	149

B. Noncommercial:

1. Government-owned buildings

*Increase of 1 to include M. L. Kirkpatrick Building

1201869

COMMERCIAL PROPERTY - REAL ESTATE SECTION — September, 1952

	August	September
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	85	78

GENERAL:

A. Commercial:

1. Final Inspection Reports were received on the Bailey Building #2 Addition, Parker Hardware addition, C. D. Joseph Building #1, and #2.

2. Construction was commenced on the Greenway in converting it into a parking area to be known as "The Parkway".

B. Noncommercial:

1. Eight existing pasture permits were cancelled as a preliminary to site development for the construction of housing by Guthrie Brothers, and one new permit was issued.

COMMERCIAL PROSPECTS:

Inquiries were received during the month concerning the establishment of the following types of commercial enterprises:

Drive-in Restaurant
Motel
Marine Service
Service Station
Investment Building
Gift Shop
Free Taxi Service

NONCOMMERCIAL PROSPECTS:

Inquiries were received during the month concerning the establishment of the following types of non-commercial enterprises:

1. The Richland Junior Chamber of Commerce renewed its interest in obtaining a building site for the purpose of erecting a club house.

2. Baptist Church - Interested in leasing building 137-X.

1201870

700-1100-3000 AREA SERVICES SECTION
MONTHLY REPORT
SEPTEMBER 1952

STEAM AND GENERAL MAINTENANCE UNIT:

General Maintenance:

"Dustop" air filters were installed in both air intakes of Air Conditioning system for the 5th wing of the 703 Building. The unit may now be operated without the use of the spray chamber to wash the dust from the air.

An exhaust fan was installed in the south vault of 760 Building.

The six generator units for Civil Defense field stations have been received, site locations at the schools established, and installation started.

Extensive repair was required on Photo-stat and Ozalid equipment in the Reproduction Unit.

Twenty-three sections of metal shelving were assembled for A.E.C. at the Records Center.

Installation of fuse clips on electrical panels of 700 Area office buildings is 50% complete.

Exit lights have been installed for rear doors of the 5th wing of 703 Building, to meet safety code.

electrical equipment for the 706 Laboratory which was damaged by fire is being re-conditioned. Hood hot plates are being replaced by a new type plate which was designed and developed by our Electrical Shop and which has proven to be more durable and more satisfactory for laboratory use.

Additional foundation vents were installed in several 700 Area buildings to provide better ventilation and prevent sweating during cold weather.

Floor joists were repaired or replaced where damaged by rot or overload in the 770-A & B and 761 Buildings.

Preparation of Excess Materials for shipment required the services of two carpenters for the month.

Considerable work was performed on the roofs, docks, steps and handrails of Stores Warehouses in 3000 Area. A portion of Warehouse 73 was renovated to provide rest room facilities and revised office space.

Gate posts of the North Richland Stores area fence were re-installed in concrete. Originally the posts were set in gravel and had sagged until gates were not usable.

Approximately 150 feet of Hauserman partitioning was installed in office buildings during the month.

Shower facilities are completed in the 784 Building for heating plant personnel. The 707 Building shower room is to be renovated for office space.

Heating steam was turned on to all 700 Area buildings during the month and heating systems were checked after summer overhaul

Inspection and overhaul of the two hand-fired heating boilers in 1131 Area was completed and one boiler placed in service.

720671

1100-3000 AREA SERVICES SECTION

Overhaul of the No. 1 boiler at the 784 Heating Plant is 70% complete and No. 2 boiler is 50% complete.

The servicemen performed general clean-up work for the 700 Area and assisted craftsmen with labor work. Assistance also was given Transportation Section in weed clean-up for the 700 Area and to Real Estate Section in the Uptown parking area.

Steam Operation:

No. 3 boiler was placed in service on September 10 to assist No. 4 boiler, which was in service, carry the additional heating load. Both boilers remained on the line for the balance of the month. Two-boiler operation was required 17 days earlier than last year.

Substantially all of the main steam lines were in service at the close of the month.

The quantity of steam generated at 784 Heating Plant was 26.9% greater than that for September of last year. Heating steam remained in service for the balance of the month on most of the 700 Area buildings, after initial turn-on earlier in the month.

The first month of operation of the steam meter at Kadlec Hospital revealed a considerably higher consumption than the calculated figure previously used.

kpiling of coal at the 784 Heating Plant, which was started last month, was continued ing September.

When the replacement of the storm sewer line west of the 5th wing of the 703 Building began, it was necessary to route the cooling water from the Heating Plant to the sanitary sewer.

At the request of the Transportation Section, night firing of the 1131 Bus Terminal area commenced on September 9 and was continued for the balance of the month. This operation was performed on a loaned labor basis with operators from the Public Works Unit. Two of their operators were then transferred to this Unit on September 29.

The soft water usage at Kadlec Hospital decreased to an average consumption of approximately 58,000 gallons per day.

Steam Statistics:

Coal Consumed	922.10	Net Tons
Steam Generated	11,821.4	M. Lbs.
Steam Leaving Plant	10,048.2	M. Lbs.
Steam Delivered	7,942.2	M. Lbs.
Total Water Softened	3,348,100	Gallons
Soft Water Sent to Kadlec Hospital	1,753,100	Gallons
Soft Water Sent to 784 Heating Plant	1,595,000	Gallons
Soft Water Served to Kadlec Hospital	719	Hours

1201872

700-1100-3000 AREA SERVICES SECTION

Maintenance Backlog:

Foreman	Type of Work	Manhours	No. of Crew Days	Men on Routine	Total
Bennett	Electrical	1064	33	3	7
McCartney	Machinist	11	3	.5	1
	Welder	54	13	.5	1
	Sheetmetal	64	5	.5	2
	Millwright	74	5	.3	5
Vaught	Painters	440	28		2
	Sign Painter	175	22		1
	Carpenters	325*	9	4.5	9
Marzyck	Pipefitters	1100	45	1	4**
	Servicemen			2	2

* Excludes the 5th wing Hauserman job which is all Saturday work.
** One pipefitter journeyman removed from roll due to illness. Not presently replaced.

NORTH RICHLAND FIRE UNIT

Alarm No.	Response to Alarms	Cause for Alarms	How Received
185	Burning Ground, Horn Rapids Road	Probably, Hot ashes in truck	Verbal
186	Burlin Recreation Camp	Improperly Supervised Burning	Phone
187	Barracks #2204	Accidental Alarm	Box
188	Between Barracks #2355 and 2356	Accidental Alarm	Box
189	Barracks #2308	Short in Electrical Washing Machine	Phone
190	North of Trailer Compound, along Columbia River	Unnecessary Alarm	Phone
191	Building #89, Room 120	Electrical Appliance Unattended	Phone
192	"W" Ave. between 1st and 3rd St.	Accidental Alarm	Box
193	Barracks #218, Room 2	Defective Electrical Wire	Box
194	Barracks #177	Short in Protecto Wire	Box
195	Barracks #3104	Malfunction of Protecto Wire	Box

Investigations:

Alarm No.		Personal Loss	H.W. Loss	Total Loss
193		$ 10.00	$ 15.45	$ 25.45
	Total	$ 10.00	$ 15.45	$ 25.45
1/52	Automobile in front of Barracks 246-D. Car fire.	$ 15.00		$ 15.00
	Total Losses	$ 25.00	$ 15.45	$ 40.45

1201873

700-1100-3000 AREA SERVICES SECTION

Miscellaneous Activities:

There were 3 safety and security meetings; 4 inside drills; and 1 outside drill during the month of September.

Eighty fire alarm boxes were tested during the month.

Tanker to 8th and "M" Avenue to settle dust around Church Tent.

Fireman Milliron conducted a class in First Aid at Telephone Exchange Building.

Fireman Van Loan to WAC Dormitory to assist with an evacuation drill.

Eight area inspections were made by firemen.

All apparatus has been filled with Anti-freeze.

Successful artificial respiration given to Baby De Ford (1112 "D" Avenue) by Lt. Wagster.

No. 3 Company to 13th and "N" Avenue to put out a trailer fire for Army Demonstration and Fire Prevention Pictures.

Fireman Guerrant gave a blood transfusion at hospital.

) Company laid 500 ft. of 2½ in. hose at John Ball School to wet down grounds.

NORTH RICHLAND PATROL UNIT

General:

During the month of September 39 Traffic Warning tickets were issued. These tickets were issued mainly for illegal parking or minor traffic violations.

Nine Traffic Citations Tickets were issued; 6 for "Failure to Observe Stop Signs", 2 for "No Drivers License" and 1 for "Speeding".

A total of 6 permits were issued by this office to "Carry a Concealed Weapon".

Fifty inquiries regarding formerly employed personnel of General Electric and Construction Companies were answered by this office. These inquiries came from the Civil Service Commission, the U. S. Navy, the U. S. Army and the duPont Company.

All fire, safety and traffic hazards observed during the month were reported to the proper authorities.

All facilities, warehouses, buildings and the John Ball School were checked daily on the number one and the number three shifts and on all shifts on Sundays and Holidays.

F firearms were registered with North Richland Patrol during the month.

The following time was spent on bank money escort from Pasco in September: Weekly Payroll - 24 Hours, Monthly Payroll - 8 Hours.

Every Thursday at 7:00 p.m. an Appearance Officer was assigned to Judge E. W. Brown's Court in Richland to act against persons cited into court by North Richland Patrol.

1 2 0 1 8 7 4

NORTH RICHLAND COURT CASES

SEPTEMBER 1952

VIOLATION	NO. OF CASES	NO. OF CONV.	NO. OF FORF.	CASES CONT'D.	CASES DISM.	LIC. RVKD.	TOTAL FINES	TOTAL BAIL FORFEITED
Speeding	7	1	6				$ 7.50	$ 56.50
Stop Sign	3		3					15.00
Negligent Driving Liquor Involved	2	1			1			25.00
Negligent Driving			1					17.50
Negligent Driving No Operator's License	1	1					7.50	
Illegal Parking	3		3					10.50
No Driver's License (Valid)	1		1					7.50
No Driver's License	2		1	1				5.00
Public Intoxication	6		6					85.00
Drunken Driving	3	1	1	1		2	100.00	75.00
Reckless Driving	1	1					15.00	
Fail to Yield Right of Way	1	1					15.00	
TOTALS	30	6	22	1	1	2	$145.00	$ 297.00

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.

Population and retail sales and service volume in North Richland remained approximately the same.

Twenty routine Work Order requests were issued during the month.

1201876

700-1100-3000 AREA SERVICES SECTION

Security Incident Reports:

Public Intoxication	3
Driving While Under the Influence	3
Driving While Under the Influence and While License Revoked	1
Negligent Driving	2
Negligent Driving, No Operator's License	1
Negligent Driving, Liquor Involved	3
Reckless Driving	2
Third Degree Assault	1
Vandalism	1
Runaway girls	1
Accident (Government Equipment and Private Car)	2
Accident (2 Private Cars)	1

Special Services Performed:

Emergency Long Distance Telephone Calls	104
Emergency Messages Delivered	68
Western Union Telegrams	11
Fires (Signal 12)	7
False Fire Alarms	3
Unusual Conditions Reported to Maintenance	9
Persons Detained for Questioning	9
Escorts for Wide or High Loads	3
Escorts to First Aid	3
Children Lost	3
Children Returned to Parents	3
Pick Up of Juvenile for Richland Police Department	1
Persons Locked Out of Rooms	1

Complaints:

Miscellaneous----------2; Petit Larceny----------5; Grand Larceny----------1

ORGANIZATION AND PERSONNEL

	Beginning of Month			End of Month		
Number of Employees on Roll	Exempt	Non-Exempt	Total	Exempt	Non-Exempt	Total
Maintenance & Steam	8	48	56	8	50	58
North Richland Fire	* 31	—	31	28	—	28
North Richland Patrol	6	14	20	6	14	20
North Richland Commercial Facilities	1	1	2	1	1	2
Total Employees	46	63	109	43	65	108

Personnel Changes During Month:

	Non-Exempt	Exempt
nsfers Out		* 3
ansfers In	2	

* Includes all firemen on monthly roll.

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PROJECT & RELATED PERSONNEL
SEPTEMBER 1952

	8-29-52	9-30-52
GOVERNMENT EMPLOYEES		
Civilian Personnel-Atomic Energy Comm.	443	444
RICHLAND VILLAGE PERSONNEL		
Comm. Facilities (Inc. No. Richland Facilities)	1567	1631
Govn. Agencies, Churches, Clubs, Etc.	124	114
Schools	96	434
Organizations	11	11
Total	1798	2190
CONSTRUCTION SUB CONTRACTORS		
Atkinson & Jones	2811	2248
Newberry Neon	344	275
Urban Smyth Warren Co.	811	610
Vitro Corp. of America	48	73
V. S. Jenkins	48	45
J. G. Shotwell	5	15
Elect. Smith Inc.	0	24
L. H. Hoffman	2	75
Charles T. Main	21	111
Anderson Decorating Co.	0	4
Pittsburg Des Moine Steel Co.	37	0
Associated Engrs.	12	5
Haughton Elevator Co.	36	36
Bumstead-Woolford	32	30
Arthur Forsyth Co. (Thermostatic Installation Co.)	19	0
Coates Electric Co.	2	5
Minnis & Schilling	9	2
W. G. Clark Co.	1	7
West Coast Heating & Plumbing	*	9
Chas. R. Brower	*	1
Minneapolis Honeywell Reg. Co.	*	1
J. P. Head Plbg. & Heating Co.	*	2
Sound Const. & Engr. Co.	*	126
Head Mech. & Const. CO.	*	30
Day Brothers, Lathing & Plastering Co.	*	2
Noise Control Co. of Seattle	*	6
A. H. Barbour & Son	*	8
Fox-Smith Sheetmetal Co.	*	13
Artcraft Linoleum & Shade Co.	*	2
Buchanan Co. Inc.	*	38
Jack Aylwards Sheet Metal Co.	*	3
E. F. Hauserman	*	5
Jaggar-Sroufe Co.-McCoy Elect. Co.	*	5
Johnson-Sorenson & Co.	*	5
Thermostatic Installation Co.	*	18
Royal Co. Inc.	*	18
Emory & Bohm Electric Co.	*	17
L. D. Reeder Co.	*	8
Strum Elevator Co.	*	2

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(Cont.)

Project & Related Personnel Cont.

	8-29-52	9-30-52
Valley Roofing Co.	*	5
W. F. Fuller & Co.	*	2
Murphy Brothers	*	9
Associated Wood Products	*	8
Automatic Sprinkler Co.	*	7
Soule Steel Co.	*	10
Tice Electric Co.	*	3
L. W. Vail Co.	*	5
Erwen Const. Co.	*	7
Selden's Inc.	*	1
Weston Plumbing Co.	*	1
George Lewis	*	3
Steelform Contracting Co.	*	4
A. R. Nieman Const. Co.	*	11
Royal Co. Inc.	*	2
Dukes Elect. Co.	*	2
Northwest Engrs. Elect. Co.	*	6
D-H Paving Co.	*	12
American Engr. Co.	*	10
R. J. Strosser Drilling Co.	*	5
Starbird Const. Co.	*	11
Henry J. Kaiser Co. (Kaiser Engr. Div.)	*	242
Foot Hill Electric	*	24
Leland S. Rosener	*	6
Moffett, Nichol & Taylor	*	5
Isacson Iron Works	*	10
Roy E. Anderson	*	3
Alvard, Burdick & Howson	*	3
Trail B. C.	*	45
Total	4238	4346
GENERAL ELECTRIC TOTAL	8885	8802
GRAND TOTAL	15,364	15,782

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* A. E. C. Sub Contractors that have not been included previously.

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