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HANFORD WORKS MONTHLY REPORT

FOR

MAY 1952

Compiled By
Department Managers

June 20, 1952

HANFORD WORKS
RICHLAND, WASHINGTON

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

This document consists of [redacted] pages. No. [redacted] of [redacted] Series. Series [redacted]

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INV SEP 13 '88

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HW 24605
June 20, 1952

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HANFORD WORKS MONTHLY REPORT

GENERAL SUMMARY

MAY 1952

Production Operations

Production forecasts were exceeded in the Metal Preparation Plant, Reactor Plants, Redox Plant and Uranium Oxide Plant. The total reactor input represented another new record production. Production from the Bismuth Phosphate Plants was but 57% of forecast owing to diversion of feed to the more efficient Redox Plant.

Ruptured slugs continue to be handled expeditiously, although ruptured tubes continue to be sources of water leaks leading to temporary losses of reactivity.

The ruthenium particle situation at the Redox Plant remained essentially the same as reported last month.

Five Class I radiation incidents were recorded.

Engineering and Technology

An improved method of drying out a wet pile was used successfully at H Pile.

Based upon extensive experimentation, the maximum allowable temperature in moderator graphite has been increased from 380°C to 410°C.

Substantially half of design engineering effort was devoted to the "X" reactor, which is approximately 16% complete.

A firm chemical flowsheet and preliminary specification for pulse column contactors for a Purex plant were completed during the month.

Labor difficulties, including shortages of craftsmen and poor performance, continue to delay construction projects.

Personnel and Services

In spite of the nation-wide shortage of technical personnel, the acceptances of offers made to new technical graduates indicates that our quota will be achieved.

The plant roll decreased to 8,804, as did the turnover rate, to 1.52%.

There were 685 applications for housing pending.

Richland tied for first place in the International Chiefs of Police traffic law enforcement competition for cities of its class.

Kadlec Hospital's Annual Open House included the new additions. It attracted the usual large crowd.

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STAFF

General Manager	G. R. Prout
Manager, Schenectady Office	B. R. Prentice
Assistant General Manager	W. E. Johnson
Assistant to the General Manager, General Administration	G. G. Lail
Assistant to the General Manager, Technical	W. I. Patnode
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
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

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1196476

FORCE REPORT

MAY 1952

	EXEMPT		NON EXEMPT		TOTAL	
	4-30-52	5-29-52	4-30-52	5-29-52	4-30-52	5-29-52
GENERAL	24	24	37	37	61	61
LAW	2	2	4	4	6	6
ENGR. DEPT.						
General	5	5	6	7	11	12
Design	116	118	59	59	175	177
Project	174	168	347	336	521	504
Technical Section						
Administrative	6	6	4	4	10	10
Pile Tech.	174	178	133	135	307	313
Separations Tech.	116	115	62	61	178	176
Tech. Services	30	30	145	142	175	172
Applied Research	90	90	204	201	294	291
MANUFACTURING DEPT.						
General	22	22	14	14	36	36
Reactor	196	206	977	968	1173	1174
Metal Prep.	67	72	373	380	440	452
Separations	266	264	1203	1177	1469	1441
MEDICAL DEPT.	43	44	228	230	271	274
RADIOLOGICAL SCIENCES						
General	2	2	2	2	4	4
Records & Standards	25	26	140	136	165	162
Biophysics	46	48	64	68	110	116
Biology	38	39	46	44	84	83
FINANCIAL DEPT.						
General	4	4	10	8	14	12
Engr. Acctg.	13	13	58	55	71	68
Mfg. Cost	9	9	32	32	41	41
Gen. Acctg.	10	10	85	88	95	98
Payroll Section	11	12	88	80	99	92
General Cost	10	11	35	36	45	47
Internal Auditing	7	8	5	5	12	13
EMPLOYEE & PUBLIC RELATIONS	40	40	68	68	108	108
UTILITIES & GENERAL SERVICES						
General	18	18	14	14	32	32
Elect. Dist. & Telephone	32	32	147	147	179	179
Transportation	42	42	472	473	514	515
Purchasing & Stores	90	86	313	313	403	399
Statistical & Computing	21	21	47	51	68	72
Plant Sec. & Serv.						
Patrol & Sec.	58	58	590	580	648	638
Safety & Fire	41	44	105	108	146	152
Office Services	27	29	312	309	339	338
COMM. REAL ESTATE & SERVICES	184	183	351	353	535	536
TOTAL	2059	2079	6780	6725	8839	8804

1196477

PERSONNEL DISTRIBUTION - MAY 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	-	-	-	-	-	-	-	-	-	-	37	37
Total	-	-	-	-	-	-	-	-	-	-	61	61
LAW												
Exempt	-	-	-	-	-	-	-	-	-	-	2	2
Clerical	-	-	-	-	-	-	-	-	-	-	4	4
Total	-	-	-	-	-	-	-	-	-	-	6	6
ENGR. DEPT.												
GENERAL												
Supv.	-	-	-	-	-	-	-	-	-	-	5	5
Clerical	-	-	-	-	-	-	-	-	-	-	7	7
Total	-	-	-	-	-	-	-	-	-	-	12	12
DESIGN												
Supervisors	-	-	-	-	-	-	-	-	-	-	17	17
Other Exempt	-	-	-	-	-	-	-	4	-	-	97	101
Clerical	1	-	-	-	-	-	-	1	-	-	28	30
Others	-	-	-	-	-	-	-	-	-	-	29	29
Total	1	-	-	-	-	-	-	5	-	-	171	177
PROJECT												
Supervisors	28	-	-	-	2	-	1	-	-	13	31	75
Other Exempt	21	-	-	-	8	5	6	-	-	13	40	93
Draftsmen & Designers	2	9	-	-	-	3	7	8	-	1	89	119
Clerical	17	-	1	-	2	-	3	-	-	11	81	115
Others	22	-	-	-	12	-	-	-	-	22	46	102
Total	90	9	1	-	24	8	17	8	-	60	287	504
TECHNICAL SECTION												
GENERAL												
Supervisors	-	-	-	-	-	-	-	-	-	-	6	6
Clerical	-	-	-	-	-	-	-	-	-	-	4	4
Total	-	-	-	-	-	-	-	-	-	-	10	10

1196478

	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
Metallurgists & Engrs.	7	23	-	5	16	-	-	36	-	-	1	88
Physicists	-	6	-	8	-	-	-	12	-	-	-	26
Engr. Assts.	7	17	1	4	4	-	-	27	-	-	-	60
Tech. Grads.	8	21	2	3	3	-	-	13	-	-	-	50
Technologists	5	3	1	8	1	-	-	4	-	-	-	22
Lab. Assts.	4	13	2	4	1	-	-	7	-	-	-	31
Clerical	1	5	-	3	1	-	-	16	-	-	-	26
Engr. Assts.	-	4	-	1	-	-	-	1	-	-	-	6
Total	32	92	6	36	26	-	-	120	-	-	1	313
SEPARATIONS TECH.												
Supv.	-	-	-	-	-	1	10	8	-	-	-	19
Chemists & Engrs.	-	-	-	-	-	4	45	39	-	-	-	88
Other Exempt	-	-	-	-	-	2	1	5	-	-	-	8
Clerical	-	-	-	-	-	-	5	10	-	-	-	15
Engr. Assts.	-	-	-	-	-	-	-	2	-	-	-	2
Lab. Assts. & Tech.	-	-	-	-	-	-	7	8	-	-	-	15
Tech. Grads.	-	-	-	-	-	2	8	19	-	-	-	29
Total	-	-	-	-	-	9	76	91	-	-	-	176
TECH. SERVICES												
Supervisors	-	2	-	-	-	-	2	6	-	-	3	13
Other Exempt	-	5	-	-	-	-	1	7	-	3	1	17
Tech. & Tech. Grads.	-	1	-	-	-	-	5	4	-	-	-	10
Lab. Assts.	-	-	-	-	-	-	15	-	-	-	-	15
Clerical	-	3	1	-	-	-	4	31	-	1	47	87
Others	1	1	1	-	-	-	9	17	-	-	1	30
Total	1	12	2	-	-	-	36	65	-	4	52	172
ANALYTICAL TECH.												
Supervisors	2	-	-	-	-	-	22	12	-	-	-	36
Other Exempt	5	5	1	-	-	-	12	31	-	-	-	54
Tech. & Tech. Grads.	6	1	1	-	-	-	44	21	-	-	-	73
Lab. Assts.	5	2	2	-	-	-	76	30	-	-	-	115
Clerical	1	-	-	-	-	-	3	9	-	-	-	13
Total	19	8	4	-	-	-	157	103	-	-	-	291

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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 Are	Total
MANUFACTURING DEPT.												
GENERAL												
Supervisors	-	-	-	-	-	-	-	-	-	-	13	13
Other Exempt	-	-	-	-	-	-	-	-	1	-	8	9
Clerical	-	-	-	-	-	-	-	-	-	-	14	14
Total	-	-	-	-	-	-	-	-	1	-	35	36
REACTOR												
Supervisors	31	47	35	35	-	-	-	-	-	-	-	148
Other Exempt	17	10	9	17	-	-	-	-	-	2	3	58
Supv. in Trn.	4	2	1	4	-	-	-	-	-	-	-	11
Operators (Operations)	39	69	39	40	-	-	-	-	-	-	-	187
Operators (Power)	76	121	74	74	-	-	-	-	-	-	-	345
Craftsmen	63	103	100	48	-	-	-	-	-	-	-	314
Technologist	-	-	-	1	-	-	-	-	-	-	-	1
Inspectors & Lab. Assts.	7	14	7	10	-	-	-	2	-	-	-	40
Clerical	7	11	9	17	-	-	-	-	-	1	-	45
Others	3	3	1	2	-	-	-	-	-	-	-	9
Tech. Grads.	2	4	2	7	-	-	-	-	-	1	-	16
Total	249	384	277	255	-	-	-	2	-	4	3	1174
METAL PREP.												
Supv.	-	2	-	-	-	-	-	42	-	-	-	44
Other Exempt	-	1	-	-	-	-	-	27	-	-	-	28
Supv. in Trn.	-	-	-	-	-	-	-	1	-	-	-	1
Operators (Operations)	-	-	-	-	-	-	-	157	-	-	-	157
Operators (Power)	-	-	-	-	-	-	-	11	-	-	-	11
Craftsmen	-	28	-	-	-	-	-	121	-	-	-	149
Clerical	-	1	-	-	-	-	-	24	-	-	-	25
Others	-	2	-	-	-	-	-	12	-	-	-	14
Lab. Assts. & Inspectors	-	-	-	-	-	-	-	11	-	-	-	11
Tech. Grads.	-	1	-	-	-	-	-	11	-	-	-	12
Total	-	35	-	-	-	-	-	417	-	-	-	452

1196480

	100-B Area	100-D Area	100-F Area	100-[illegible] Area	101 Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Area	Total
SEPARATIONS												
Supv.	-	-	-	-	-	14	202	-	-	-	-	216
Other Exempt	-	-	-	-	-	1	47	-	-	-	-	48
Operators (Operations)	-	-	-	-	-	38	514	-	-	-	-	552
Operators (Power)	-	-	-	-	-	25	90	-	-	-	-	115
Craftsmen	-	-	-	-	-	40	288	-	-	-	-	328
Inspectors & Lab. Assts.	-	-	-	-	-	3	84	-	-	-	-	87
Clerical	-	-	-	-	-	3	49	-	-	-	-	52
Supv. In Trn.	-	-	-	-	-	-	3	-	-	-	-	3
Tech. Grads.	-	-	-	-	-	-	20	-	-	-	-	20
Others	-	-	-	-	-	7	13	-	-	-	-	20
Total	-	-	-	-	-	131	1310	-	-	-	-	1441
MEDICAL												
Supervisors	-	-	-	-	-	-	-	-	-	-	24	24
Physicians	-	-	-	-	-	-	-	-	1	3	8	12
Other Exempt	-	-	-	-	-	-	-	-	-	-	8	8
Technicians	-	-	-	-	-	-	-	-	2	2	10	14
Nurses	5	4	4	1	1	4	7	2	-	3	64	95
Clerical	1	-	-	-	-	-	-	-	2	7	38	48
Others	-	-	-	-	-	-	-	-	-	1	72	73
Total	6	4	4	1	1	4	7	2	5	16	224	274
RADIOLOGICAL SCIENCES												
STAFF												
Supv.	-	-	-	-	-	-	-	-	-	-	2	2
Clerical	-	-	-	-	-	-	-	-	-	-	2	2
Total	-	-	-	-	-	-	-	-	-	-	4	4
RECORDS & STANDARDS												
Supv.	-	-	-	-	-	-	-	10	-	-	3	13
Other Exempt	1	-	1	-	-	1	1	2	-	-	7	13
Clerical	-	-	-	-	-	-	-	2	-	-	1	3
Others	10	4	7	4	-	16	26	51	7	-	8	133
Total	11	4	8	4	-	17	27	65	7	-	19	162
BIOPHYSICS												
Supervisors	-	-	-	-	-	1	6	1	-	-	-	8
Other Exempt	-	-	-	-	-	4	20	15	-	1	-	40
Clerical	-	-	-	-	-	1	2	2	-	-	-	5
Others	-	-	-	-	-	20	39	4	-	-	-	63
Total	-	-	-	-	-	26	67	22	-	1	-	116

1196481

	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
BIOLOGY												
Supv.	-	-	3	-	-	-	-	-	-	-	-	3
Other Exempt	-	-	36	-	-	-	-	-	-	-	-	36
Clerical	-	-	5	-	-	-	-	-	-	-	-	5
Others	-	-	39	-	-	-	-	-	-	-	-	39
Total	-	-	83	-	-	-	-	-	-	-	-	83
FINANCIAL DEPT.												
Supv.	-	-	-	-	-	-	-	-	-	9	33	42
Other Exempt	-	-	-	1	-	-	1	1	-	5	17	25
Clerical	2	-	-	1	-	2	-	-	-	73	226	304
Total	2	-	-	2	-	2	1	1	-	87	276	371
EMPLOYEE & PUBLIC REL. DEPT.												
Supv.	-	-	-	-	-	-	-	-	-	-	19	19
Empl. Rel. Counselors	-	-	-	-	-	-	-	-	-	-	2	2
Other Exempt	-	-	-	-	-	-	-	-	-	-	19	19
Clerical	-	-	-	-	-	-	-	-	-	-	57	57
Others	-	-	-	-	-	-	-	-	-	-	11	11
Total	-	-	-	-	-	-	-	-	-	-	108	108
UTILITIES & GEN. SERVICES												
GENERAL												
Supv.	-	-	-	-	-	-	-	-	-	-	18	18
Clerical	-	-	-	-	-	-	-	-	-	-	14	14
Total	-	-	-	-	-	-	-	-	-	-	32	32
PLANT SEC. & SERVICES												
SEC. & PATROL												
Supv.	6	6	6	5	-	5	9	7	7	-	4	55
Other Exempt	-	-	-	-	-	-	-	-	3	-	-	3
Patrolmen	93	47	61	46	-	67	140	71	2	-	25	552
Clerical	-	-	-	-	-	-	-	-	18	4	4	26
Seamstress	-	-	-	-	-	-	-	-	2	-	-	2
Total	99	53	67	51	-	72	149	78	32	4	33	638
SAFETY & FIRE												
Supervisors	14	-	-	-	4	-	4	4	7	-	-	33
Engineers	-	2	1	-	-	2	-	2	2	-	2	11
Firemen	53	-	-	-	7	-	15	15	10	-	-	100
Clerical	-	1	1	-	-	1	-	1	-	-	4	8
Total	67	3	[illegible]		11	[illegible]	[illegible]	[illegible]	19		[illegible]	[illegible]

1190482

	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												
Supv.	-	-	1	-	-	1	3	1	1	-	18	25
Procedures Analysts	-	-	-	-	-	-	-	-	-	-	4	4
Ldry. Operators	-	-	-	-	-	-	2	-	-	-	1	3
Janitors & Servicemen	8	7	7	6	-	4	31	14	-	-	42	119
Clerical	-	-	-	-	-	-	1	-	-	1	45	47
Others	1	-	-	2	2	-	58	8	-	2	67	140
Total	9	7	8	8	2	5	95	23	1	3	177	338
PURCHASING & STORES												
Supervisors	-	1	-	-	-	-	-	-	-	4	30	35
Other Exempt	-	-	-	-	-	-	-	-	19	-	32	51
Clerical	1	-	-	-	-	-	-	-	-	37	131	169
Others	11	1	3	1	-	-	5	1	-	38	84	144
Total	12	2	3	1	-	-	5	1	19	79	277	399
ELECT. DIST. & TELEPHONE												
Supv.	-	-	-	-	-	9	-	-	3	3	10	25
Other Exempt	-	-	-	-	-	3	-	-	-	-	4	7
Craftsmen	-	-	-	-	-	25	-	-	11	14	39	89
Clerical	-	-	-	-	-	3	-	-	-	1	22	26
Operators & Dispatchers	4	4	4	4	-	-	-	-	-	14	-	30
Others	-	-	-	-	-	2	-	-	-	-	-	2
Total	4	4	4	4	-	42	-	-	14	32	75	179
TRANSPORTATION												
Supv.	2	-	3	2	-	1	1	-	3	-	26	38
Other Exempt	-	-	-	-	-	-	-	-	-	-	4	4
Bus Drivers	-	-	-	-	-	-	-	-	-	-	167	167
Journeymen	4	1	1	8	-	-	3	-	6	-	65	88
Trainmen	-	-	-	-	-	-	-	-	26	-	-	26
Servicemen	7	-	2	-	-	-	-	-	-	-	23	32
Equip. Opers.	7	-	12	-	-	1	-	-	-	-	32	52
Clerical	-	-	1	1	-	-	-	1	-	-	26	29
Others	9	-	9	9	-	10	4	-	1	-	37	79
Total	29	1	28	20	-	12	8	1	36	-	380	515

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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
STATISTICAL & COMP. SERV.												
Supv.	-	-	-	-	-	-	-	-	-	-	6	6
Other Exempt	-	-	-	-	-	-	-	8	-	-	7	15
Clerical	-	-	-	-	-	-	-	2	-	-	36	38
Technologists	-	-	-	-	-	-	-	2	-	-	-	2
Business & Tech. Grads.	-	-	-	-	-	-	-	2	-	-	9	11
Total	-	-	-	-	-	-	-	14	-	-	58	72
COMM. REAL ESTATE & SERV.												
Supervisors	-	-	-	-	-	-	-	-	-	15	105	120
Other Exempt	-	-	-	-	-	-	-	-	-	-	9	9
Firemen	-	-	-	-	-	-	-	-	-	23	31	54
Patrolmen	-	-	-	-	-	-	-	-	-	16	22	38
Journeymen	-	-	-	-	-	-	-	-	-	-	141	141
Servicemen	-	-	-	-	-	-	-	-	-	-	22	22
Truck Drivers	-	-	-	-	-	-	-	-	-	-	29	29
Power Operators	-	-	-	-	-	-	-	-	-	-	32	32
Clerical	-	-	-	-	-	-	-	-	-	-	57	57
Others	-	-	-	-	-	-	-	-	-	-	34	34
Total	-	-	-	-	-	-	-	-	-	54	482	536
GRAND TOTAL	631	618	497	382	64	331	1974	1040	134	344	2789	8804

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MANUFACTURING DEPARTMENT

MAY, 1952

METAL PREPARATION SECTION

The total production for the month was 119 tons, which included 33 tons of 4-inch material and 86 tons of 8-inch material. This production represents 101 per cent of forecast. The machining yields were 78.1 per cent and 80.6 per cent respectively, for 4-inch and 8-inch material.

The canning yield of 76.5 per cent for 4-inch material is a reduction of 6.5 per cent of the unusually high performance in April. However, this yield is an average performance based upon the past several months. The 8-inch canning yield was 73.1 per cent representing an increase of 8.9 per cent. This increase was primarily attributed to the reprocessing of stained material, and secondarily to the reduction of rejects with emphasis upon non-seat problems.

The Melt Plant produced 56 tons of billets with a billet yield of 85.0 per cent and a solid yield of 93.6 per cent.

There were two autoclave failures during this period; one 4-inch piece for a frequency of .05 per thousand one 8-inch piece for a frequency of .05 per thousand. The failures were attributed to the weld in the 4-inch piece and a side failure in the 8-inch piece.

REACTOR SECTION

The reactor input was 115.4 per cent of forecast and represents a new record of production. This also includes an increase of 44 units per diem for a new record. This record production was primarily attributed to a minimum of outage time. Reactor output production was 99.6 per cent of forecast.

There were 12 uranium slug jacket failures during May, of which nine were Group 8 and three were Group 7. Eight failures were discharged within the scram recovery time avoiding approximately 200 hours of potential outage time.

The operating efficiency for the reactors was 91.3 per cent representing an increase of 1.2 per cent over the previous month. This increase was primarily due to the high number of "fast" pushes or ruptured pieces, and the 99.8 per cent efficiency at the F Area where only 1.2 hours of outage time during the month was encountered.

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REACTOR SECTION (Continued)

There were two instances of ruptured tubes resulting in water leaks into the graphite moderator. Both were associated with ruptured pieces. On May 4, high moisture in the gas system indicated a water leak at the B reactor and was later confirmed in tube 2062-B during ruptured piece removal. A considerable loss of reactivity during a normal start-up of the 100-H reactor indicated the possibility of a water leak. This was confirmed in tube 3261-H, which also contained a ruptured piece. Water collection in both areas was approaching normal rate at month's end.

SEPARATIONS SECTION

A total of 25 runs and 2 acid washes was started in the Canyon Buildings, representing 57 per cent of forecast. Material originally scheduled for the Canyon Building was diverted to the Redox operation. One hundred and ten runs were started in Redox for 105 per cent of forecast. A total of 134 runs and two acid washes was processed in the Isolation Building and was 93.8 per cent of forecast. The average cooling time in the bismuth phosphate process was 66 days with a minimum of 60 day material used. This represents an increase from the previous months of 40 day minimum material. The average cooling time in the Redox process was 56 days with a minimum of 50 day material used.

The average purity of completed charges from the bismuth phosphate process was 98.8 per cent, and from the Redox process was 99.3 per cent.

Solid material in the aluminum nitrate that has been used directly from tank cars caused considerable trouble. Filtering of the material was ineffective, however, some effect is noticeable when the material is allowed to settle. Feed rates up to four tons per day were realized during this period with no unusual difficulties encountered at the high rates.

A total of 58.9 tons of uranium as UO_3 was produced this month which was 107 per cent of forecast. Fifty-six tons were shipped.

Sluicing operations in the 101-U tank have been erratic because of a series of mechanical failures of the equipment involved. However, was progressing normally at month end.

GENERAL

Personnel

Total on Roll April 30, 1952	3132
Accessions	36
Separations	50
Total on Roll May 31, 1952	3118

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GENERAL (Continued)

Business Trips (Manufacturing General)

W. K. MacCready spoke on "Atomic Power" before the Northwest Electric Light and Power Association on May 7, 1952, in Great Falls, Montana. He also visited Schenectady for consultation with B.R. Prentice and staff on study being made of Nuclear Electrical Power Generation on May 9, 1952.

P. E. Lowe visited the Knolls Atomic Power Laboratory for consultation on Reactor Development and Tests.

C. N. GROSS, MANAGER
MANUFACTURING DEPARTMENT

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HW-24605

MANUFACTURING DEPARTMENT

PATENT REPORT SUMMARY
FOR
MONTH OF MAY, 1952

Richland, Washington
June 9, 1952

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

INVENTOR	TITLE
Hubert Gwinn Henry Metal Preparation Section	"Bonding, Molding and Welding Polytetrafluoroethylene Resin"
J. V. Clatworthy Reactor Section	Reactor Process Tube Splitter

C. N. GROSS, MANAGER
MANUFACTURING DEPARTMENT

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Richland, Washington
June 10, 1952

MANUFACTURING DEPARTMENT
METAL PREPARATION SECTION
MAY, 1952

I. RESPONSIBILITY

There were no changes of responsibility during the month.

II. ACHIEVEMENT

A. Operating Experience

1. Statistics

	April	May	Year To Date
Bare Pieces Machined (Tons,4")	49	16	369
Machining Yield (%, 4")	78.8	78.1	79.1
Bare Pieces Machined (Tons,8")	106.7	116.	382
Machining Yield (%,8")	78.9	80.6	79.9
Acceptable Pieces Canned (Tons,4")	64	33	406
Acceptable Pieces Canned (Tons,8")	79	86	273
Canning Yield (%,4")	83.0	76.5	77.6
Canning Yield (%,8")	64.2	73.1	65.1
Acceptable Pieces Canned (% Forecast)	105.9	101.0	102.2
Autoclave Failures (No./M,4")	.06	.05	.07
Autoclave Failures (No./M,8")	.27	.05	.13
Briquettes Produced (Tons)	28	16	123
Chip Recovery Yield (%)	87.3	86.7	86.8
Billets Produced (Tons	66	56	282
Billet Yield (%)	84.6	85.0	84.7

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	April	May	Year To Date
Solid Yield (%)	94.5	93.6	93.5
Oxide Burned (Weight Out Tons)	7	8	35
Poison Canned (Pieces)	3767	366	9210
Chemical 68-56 Canned (Pieces)	0	0	296
Chemical 10-66 Canned (Pieces)	47	0	1404
Poison, Chemical 68-56, 10-66 Canning (Manhours)	556	51	1505
Special Requests (Manhours)	112	552	1570
305 Routine Tests (Manhours)	148	144	501
305 Special Tests (Manhours)	370	337	1347
Maximum Steam Generated (M lbs/hr.)	28.00	21.00	
Total Steam Generated (M. lb)	12,300	10,400	
Avg. Rate Steam Generated (M.lb/hr.)	17.00	14.00	
Coal Consumed (Tons)	876	681	
Sanitary Water from 3000 Area (Million gal.)	28.2	28.0	
Well Water Pumped (Million gal.)	12.0	15.0	
Total Water Average Rate (gpm)	653	625	
Chlorine Residual	.50	.53	

2. Activities

The eight inch canning yield increased by 8.9%. 5.2% was attributable to reprocessing stained material and 3.7% resulted from reduction in rejects.

Two pieces failed in the autoclave test during the month; one, a four inch slug, failed due to a pinhole in the weld; the second, an eight inch slug, failed at the sidewall.

Added emphasis has been placed on the reduction of non-seats. Attempts are being made to isolate each suspected variable contributing to this problem and determine its particular effect. Canning bath temperature, metal composition and slug warp appear to be the major contributors but no conclusions have been reached.

The program for improving welding quality has been further expanded. All types of welding and bonding rejects have been classified, illustrative samples prepared and training lectures presented to welding operators and inspectors. Noticeable improvement in welding quality has resulted.

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3. Special Operations

Production Test 313-105-2M - "Triple Dip Canning and Irradiation of Eight Inch Uranium Slugs Fabricated in Heavy Walled Aluminum Cans" (HW-22463). Approximately 21,500 acceptable slugs were fabricated in accordance with this test during the month. Rejects from non-seating showed an increase, whereas rejects from marred surfaces, corrosion and stains were reduced considerably. Of the total of 100,000 pieces covered by this test, approximately 100% have been machined and 70% have been canned. A supplement to this test is being written for the continuation of the eight inch program.

Production Test 313-105-3M - "Fabrication of Alpha Lead Dip Canning and Irradiation of Salt Bath Heat Treated Alpha Rolled Uranium Slugs" (HW-22770). Houghton Liquid Heat 980 was substituted for Liquid Heat 300, and 2300 four inch slugs were successfully treated in this bath. A mechanical agitator was installed in the lead-AlSi bath to provide the necessary vigorous agitation. 900 slugs were canned without difficulty.

Production Test 313-120-M - "High Amperage Welding of Triple Dipped Canned Slugs" (HW-24021 and HW-24486). This test was initiated to establish optimum procedures for welding canned slugs at high amperage. By month end 2,000 slugs had been welded in accordance with this test.

4. Schedule Variance

Machining production was 3.2% above forecast, attributable to working an overtime day.

Canning production was 1% above forecast. This is attributable to the increased yield.

B. Equipment Experience

The installation of all four 200 ampere welding transformers has been completed. The linkage and stops on the welding tables have been overhauled to eliminate backlash in this mechanism and improve quality of welds.

A shop fabricated 60 KW furnace was installed for special use in canning operations.

C. Improvement Experience

The use of aluminum process tube sections in the autoclave baskets has increased the capacity of the autoclaves and has contributed considerably to the reduction of stain rejects in eight inch material.

A method of recovering free tin from the tin dross was developed. It is estimated that this will result in an annual savings of $9,000.

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A new type of high voltage supply was developed for semi-portable "Poppies." This supply is less expensive to build and maintain, gives better regulation and will improve instrument operating efficiency.

2. Inventions and Discoveries

All people in the Metal Preparation Section engaged in work which might be expected to result in inventions or discoveries have reported that no inventions or discoveries were made during the period covered by this report other than the following: "Bonding, Molding and Welding - Polytetrafluoroethylene Resin," invented by H. Gwinn Henry of the Process Unit.

D. Events Influencing Costs

There was no labor or material variance which might be expected to significantly influence costs.

E. Plant Development and Expansion

1. Project Status

Project C-199 - 300 Area Sewage Disposal System.
Construction is about 82% complete. The septic tanks walls have been poured and reinforcing steel for roof slabs is being placed.

Project C-433 - Expansion of 300 Area Power House and Pumping Facilities.
Design is essentially complete and construction is approximately 15% complete. The wall footings and floor slab have been poured in 382 Building addition. The service pumps and underground electrical conduit have been installed. The condensate sump, wall footings and part of floor slab have been poured in 384 Building addition. Erection of steel for induced draft fan tower is complete and the tube installation in #4 boiler is in progress.

Project C-394 - Outside Facilities and Utilities for Laboratory Area.
Construction is about 51% complete. The twelve inch import water line from North Richland has been completed and is in service. Work is in progress on underground steam, condensate and air lines.

Project C-481 - Equipment for 8" Slug Manufacture.
Fabrication and installation of equipment for producing 8" slugs in the 300 Area has been completed. A revised project proposal is being prepared for extension of time, scope and allocation of funds for the installation of 100 Area unloading facilities. The entire project is about 90% complete.

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2. Plant Engineering

Labor standards for the fluoroscope, facing and welding operations were completed.

Further tests were made to determine the possible advantages of using a circular metal saw for the finishing cut on canned slugs rather than the existing facing lathe. The saw gives a superior cap finish and the welding characteristics appear to be improved. The saw is now being modified for a production run.

Work is continuing on studies of layouts for improvement of material flow and inspection methods.

Mechanical improvement studies were initiated during the month and a special group is devoting full time on the design of mechanical fixtures for application on the canning lines.

F. Significant Reports Issued

2. Non-Routine

		Author	Date
	Report on Trip to Schenectady and New York	W. A. Lewis	5-15-52
HW-24457	Material Balance Flow Charts-Metal Preparation	R. W. McCullough	5-16-52
	Improved High Voltage Supply for Semi-Portable Poppy	L. M. Palmer	5-19-52

III. PERSONNEL

A. Organization

No change

B. Force Changes

	Start of Month	End of Month
Section General	5	5
Operations Unit	183	185
Power & Maintenance Unit	218	221
Process Unit	24	25
Plant Engineering Services Unit	16	18
Radiation Monitoring	4	3
Section Total	450	457

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C. Safety Experience

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

D. Radiation Experience

Three exposures in excess of 300 mrep per week were reported for Melt Plant operators. The maximum exposure reported was 355 mrep. One exposure was attributed to inexperience and an abnormal amount of crucible charging; another to slow working habits of an operator; and the third to abnormal difficulty with the Oxide Furnace Car.

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Richland, Washington
June 10, 1952

MANUFACTURING DEPARTMENT
REACTOR SECTION
MAY, 1952

I. RESPONSIBILITY

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

II. ACHIEVEMENT

A. Operating Experience

The total reactor input production was 115.4% of forecast and 5.3% greater than for April. The month's total production and the per diem production represent new record achievements for the third and fourth consecutive months, respectively. The increase in per diem production over April of 44 units is primarily attributable to reduced outage time. Reactor output production was 99.6% of forecast. Established maximum operating levels were increased 15 MW during the month.

There were 12 uranium slug jacket failures during May, eight of which were discharged within the scram recovery time limitation. These "fast" discharges made it possible to avoid an estimated 200 hours of potential outage time.

1. Statistics

	B	D	DR	F	H	Total or Average
Reactor Time Operated Efficiency (%)	89.5	93.2	97.0	99.8	76.7	91.3
Reactor Outage Time (Hrs.)						
Plutonium Production	73.2	50.7	18.3	1.2	169.4	312.8
Production Tests	5.0	-	4.0	-	3.6	12.6
Total	78.2	50.7	22.3	1.2	173.0	325.4

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1. Statistics (Continued)

	B	D	DR	F	H	Total or Average
Reactor Unscheduled Outage Time (Hrs.)	52.0	1.3	0.3	1.2	121.7	176.5
Metal Discharged (Tons)	21.20	30.36	12.67	0.13	30.43	94.78
Water Pumped (MM gals.)						
Bldg. 190 to Reactor	1522	1603	1810	1614	1646	8195
Bldg. 181	2166	4477		2085	1915	10643
Steam Generated (MM lbs.)	121.5	211.0		128.6	83.1	544.2
Coal Consumed (Tons)	7938	14160		8575	5816	36489

2. Activities

Two reactor process tubes were found to be leaking during the month. Details regarding these tube failures are given below.

a. There was an increase observed in the moisture removal rate at B Reactor on May 3 and 4. The reactor was shut down on May 4 to remove ruptured slugs from tubes 2062-B and 2470-B. Examination of the former tube revealed a small hole in the vicinity of the stuck, ruptured slug. After operation was resumed, the rate of moisture collection returned to normal, apparently confirming this tube as the source of the additional moisture.

b. During a normal startup of 100-H Reactor on May 16, the reactor was shut down by a sudden loss of reactivity, indicating a process tube leak. Abnormally low graphite temperatures indicated that the leak was in the near, top quadrant of the reactor, and systematic hydrostatic tests identified tube 3261-H as the leaking tube. The charge was found to be stuck and, after the removal of the tube and charge intact, was found to contain a ruptured slug. The hot water recirculation system was successfully used for the first time to assist in the removal of approximately 360 gallons of water from the reactor and, after the discharge of approximately 100 inhours of permanent poison, normal operation was resumed. A total of 986 gallons of water had been removed from the reactor, and the recovery rate was approaching normal at month-end.

The residual water in F Reactor from the process tube leaks which occurred in April was removed during the first part of May, and the water collection rate was normal at month-end.

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2. Activities (Continued)

In 100-H Area, normal powerhouse operation was reduced from three to two boilers on May 14 in order to obtain more efficient boiler operation.

The installation of a loading chute from the coagulant storage silo to the railroad siding at Building 183-D now makes it possible to make inter-area shipments of bulk coagulant from this large silo and thus reduces the amount of bag material purchased.

The following breakdown indicates activities associated with special irradiations during May:

	Tubes Charged	Tubes Discharged	Casks Shipped
Chemical 10-66	0	3	0
Chemical 72-60	4	10	10
J Slugs	0	0	14
Rala	0	6	7
Other Special Requests	14	19	7
Total	18	38	38

Considerable analytical work of a special nature complemented the Analytical Laboratory's routine services. This included analyses in connection with studies of boiler efficiency, with the startup of 200-West Area demineralizers, and with the start of work on improved methods for determination of very low concentrations of iron and manganese in the process water.

B. Equipment Experience

Nine unscheduled reactor outages were caused by defective panellit equipment during the month, eight of which were caused by five different leaking gauges and one by a defective jumper wire. Two other unscheduled outages occurred - one at H Reactor due to failure of a P-13 water pump and one at B Reactor due to improper operation of a Beckman by-pass.

Repairs were made to No. 2 horizontal rod at D Reactor during the month and the rod returned to service. Thimble replacement was necessary in order to correct the severe binding previously reported.

An inspection of the east Building 107-H retention basin indicated considerable undercutting of floor slabs due to water leaking up through joints. Settling of the concrete slabs was in evidence at some locations. Temporary repairs are planned for the immediate future.

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Equipment Experience (Continued)

Process pump motor No. 9 at Building 190-B failed during an attempted startup on May 3 and was replaced with a spare motor.

C. Improvement Experience

A revised Operating Standard issued May 12 increased the maximum permissible graphite moderator temperature from 380° C to 410° C on the basis of information obtained under PT-105-435-P.

Revised process tube water temperature limits were specified by revised Operating Standards on boiling and corrosion considerations approved during the month. The Standard on boiling limits presented new curves made necessary by changes in the process tube charge make-up, and the Standard on corrosion limits increased the maximum permissible outlet water temperature from 80° C to 85° C for any individual tube.

Production tests of greatest significance are indicated below:

PT-105-1-MR (Poison Control Addition During Reactor Operations)
The first test of the addition of poison pieces during reactor operation was made at 100-B Area on May 28 during a startup following a scheduled outage. No unusual difficulties were encountered.

PT-105-313-2M (Irradiation of 8" Uranium Slugs)
An additional 339 process tubes in DR and H Reactors were charged with eight-inch slugs during May, bringing the total charged to date to 1208 tubes. Two tubes at DR Reactor were discharged for observation.

PT-105-503-E (Use of Activated Silica as a Coagulation Aid for Aluminum Sulfate)
This test was continued at 100-F Area throughout the month. During the period May 12 to 26, the number of filters in operation at the water filtration plant were increased from eight to eleven in order to evaluate the effects of change in filter flow rate on water quality and retention basin activity.

One invention was reported during May, entitled, "Reactor Process Tube Splitter." The inventor was J. V. Clatworthy of the Power and Maintenance Unit.

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C. Improvement Experience (Continued)

The adoption of the hot water recirculation system for assistance in drying out a reactor, reported under Operating Experience, will result in considerably decreasing reactor outage time when reactivity will not permit startup due to excessive water in the moderator.

D. Events Influencing Costs

Removal of one boiler from normal service on May 14 at Building 184-H is expected to save approximately $1500 per month in coal costs.

Discontinuing the use of sodium dichromate for water treatment, reported during April, made possible a reduction of 16 operators in the Power subunit standard crews. Resulting excess personnel were transferred to 100-C Area where their salaries will be charged to training prior to startup. A reduction in dichromate material cost should also result during May.

The increase in production during May will reduce unit costs by several per cent in comparison with April's experience.

Ferric sulfate feed rates were increased by a factor of approximately 2.5 above April in four reactor areas because of a change in the quality of river water.

E. Plant Development and Expansion

1. Project Status

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

CA-431 (100-C Plant)
The construction of the water plant is approximately 76% complete; the reactor is approximately 69 per cent complete. Preliminary runs on Nos. 8 and 9 process water pumps at Building 190-C indicated cavitation and excessive vibration at normal operating levels. The first stage impeller is being redesigned. Preparations for placing the aggregate in the top shield of the reactor were essentially complete at month end. Van Stoning of process tubes and adjustment of bellows were completed during the month.

CG-438 (Ball 3X Facilities for B, D, DR, F and H Piles)
A review of the problems associated with scheduling this work resulted in postponing the first installation from July until August with further postponement appearing

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Project Status (Continued)

CG-438 imminent. Details may be found in the report, "Extended outage - 100 Areas," H. D. Middel to C. N. Gross, dated May 19, 1952.

CG-461 (Maintenance Hot Machine Shop - 108-D)
Final inspection, and acceptance, of this project was made on May 29.

CG-482 (Pile and Pile Water Plant Improvements)
Over-all design is approximately 55 per cent complete. Critical items are being ordered by the Atomic Energy Commission pending approval of the Construction Rider by the Bureau of Budget. Nozzles appear to be the most critical procurement item.

RDA-DC-3 (Improved Reactor Design)
The Working Committee has approved the criteria covering the architectural and structural features of Building 105.

RDA-DC-6 (Water Plant Design Development)
Representatives from the Engineering and Manufacturing Departments visited the offices of Charles T. Main Company in Boston to discuss 100-K water plant scope. The principal purpose was to coordinate the reactor and water plant design. A restudy of the plant site in the general Coyote Rapids area was started May 21 as a result of recommendations to locate the two proposed reactors in separate areas and at a higher elevation.

2. Plant Engineering

A number of engineering and development studies were active in the Reactor Section during May. These studies are, in general, aimed at decreased costs and/or increased production. Details are given in documents HW-24647 and HW-24662. The most significant items are reported below:

Evaluation of the feasibility of conducting the reactor charge-discharge operation without crossheader valving at 2000 gpm water flow indicates approximately two hours can be saved in normal charge-discharge time. A process test is being circulated for approval.

Investigation of Reactor Section power and water plant potential improvements continued during the month.

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2. Plant Engineering (Continued)

Boiler performance tests at Building 184-H are continuing. Efforts are being concentrated on resolving measuring equipment inaccuracies in order to explain heat balance discrepancies obtained during the tests.

F. Significant Reports Issued

1. Routine

May monthly reports of Reactor Section Units will be found in the following documents: Operations Unit - HW-24667, Process Unit - HW-24662, Plant Engineering Services Unit - HW-24647, Radiation Monitoring Unit (Technical Report) - HW-24690, (Slug Jacket Failures) - HW-24645.

2. Non-Routine

"Group Numbers for Canned Slugs" - HW-24099.

"Metal Loader for 'C' Elevator" - HW-24359.

"PT-105-1-MR, Poison Control Addition During Reactor Operation" - HW-23906.

"PT-105-3-MR, Final Report, The Use of "Dicalite" Diatomaceous Earth for Purging Material in the 100 Areas" - HW-24560.

"100 Area Steam Study", A. Frew and G. W. Wells to E. E. Weyerts, dated May 7, 1952. (Unclassified.)

III. PERSONNEL

A. Organization

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

The shift crews of the Mechanical sub-unit were reorganized from three crews of eight craftsmen and one foreman to eight crews of four craftsmen and one foreman effective May 5. This will provide coverage on all shifts and reduce overtime previously necessary due to reactor difficulties.

B. Force Summary

	Beginning of Month	End of Month	Net Change
Section General	3	3	0
Operations	259	267	8
Plant Engineering Services	23	22	- 1
Power and Maintenance	805	805	0

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B. Force Summary (Continued)

	Beginning of Month	End of Month	Net Change
Process	22	23	1
Radiation Monitoring	58	61	3
Section Total	1170	1181	11

Changes during May consisted of 4 terminations, 6 new hires, 3 deactivations, 3 reactivations, 6 transfers out and 15 transfers into the Section.

C. Safety Experience

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

D. Radiation Experience

No Class I or Class II Radiation Hazards Incidents occurred at Reactor Section facilities during May. This represents a marked improvement over experience of recent months.

Filming of the education picture covering radiation hazards control, initiated in April, was essentially completed during the month. It will be available for use in June.

E. Personnel Activities

A special three-day training course in Building 105 job techniques and the use of special reactor tools was attended by eighteen Mechanical craftsmen. E. P. Skow, Maintenance Foreman, conducted this training. Cost training of supervisory personnel was continued. The cost meeting for Instrument supervision was conducted by G. T. Van De Carr of the Financial Department.

The program for obtaining and training qualified engineering and supervisory personnel to meet the requirements of the Section was continued. At month end, 26 employees are receiving on-the-job training, including 10 Technical Graduates on assignment under the Rotational Pool Program.

J. H. Hoage and J. P. Langan visited the Charles T. Main Company in Boston during the week of May 4 on RDA-DC-6 design scoping. C. W. Higby observed tests on a scale model downcomer conducted by the Division of Industrial Services at Washington State College at Pullman on May 6. T. M. Clement, along with other plant personnel, discussed possibilities of employment with instrument students of the J. M. Perry Institute in Yakima on May 23.

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Richland, Washington
June 10, 1952

MANUFACTURING DEPARTMENT
SEPARATIONS SECTION
MAY, 1952

I. RESPONSIBILITY

On May 9, 1952, the Manufacturing Department accepted Part C of the UO_3 Project. Construction work on the C-361 Project was thereby completed.

All construction work on Project C-413, Expansion of 234-5 Capacity (RMB), was completed on May 17, 1952. Shakedown tests are presently in progress.

With the exception of crane overhaul, canyon deck painting and ventilation balancing, the TBP operating facilities (Phase IV, Project C-362) were accepted on May 23, 1952.

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.	7	1	18	1	25	2
Charges completed in Conc. Bldgs.	5	1	19	1	24	2
Special charges - Conc. Bldgs.	0		31		31*	
Charges completed - Isolation Bldg.	6	1	26	1	32	2

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	B Plant					
	Normal	Acid Wash	Normal	Acid Wash	Normal	Acid Wash
Average Waste Losses		3.4		3.2		3.2
Special Charges - Isolation Bldg.						34
Average purity completed charges						98.8
Material balance through Isolation						101.0
Yield through process						101.2
Average cooling time (days)						66
Minimum cooling time (days)						60

*Includes Redox material recycled.

b. Redox Operations

	April	May
Charges started	105.0	110.0
Charges shipped to Isolation	107.6	110.1
Charges completed - Isolation Bldg.	101	102
Tons Uranium delivered to storage	75.0	78.6
Maximum 1A feed rate, Tons/day	3.10	3.80
Average 1A feed rate, Tons/day	2.66	3.26
Average yield, %		
Uranium	98.81	99.50
Plutonium	99.35	99.28
Total Waste Loss, %		
Uranium	.99	1.08
Plutonium	1.26	1.58
Average cooling time, days	53	56
Minimum cooling	50	50
Average purity, through Isolation	99.6	99.3
Per cent Down Time	15.8	22.0

c. 234-5 Operations

	April	May
Batches started through Task I	301	308
Batches completed through Task II	362	328
Runs completed through Task III	214	173
Reduction yield, RG	98.1	93.2
Reduction yield, RM	86.1	93.0
Waste Disposal, units	5.0	6.4

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d. UO_3 Operations (Continued)

	May	To Date
Uranium drummed, Tons	58.96	133.45
Uranium shipped, Tons	56.12	130.07
Average cooling time, days	88	
Minimum cooling time, days	83	
Waste loss, %	.004	

e. Power

	May	April
Raw water pumped, gpm	6,630	6,379
Filtered water pumped, gpm	1,373	1,212
Steam generated, M lbs/hr	123	137
Maximum steam generated, M lbs/hr	194	243
Total steam generated, M lbs	91,708	98,695
Coal consumed, tons (est.)	5,822	6,061

f. Waste Evaporation

	May	To Date
Gallons feed processed, 200-W	297,937	6,092,510
Per cent volume reduction	68.9	73.0
Gallons feed processed, 200-E	390,500	2,286,121
Per cent volume reduction	75.5	74.0

Both evaporators processed less this month due to shutdowns to remove sludge from the vessels.

g. Waste Storage

	Batches
Metal Waste reserve storage capacity - T Plant	682
1st Cycle reserve storage capacity - T Plant	938
Metal Waste reserve storage capacity - B Plant	618
1st Cycle reserve storage capacity - B Plant	531
Redox Waste reserve storage capacity	2940

Apparent discrepancies in the number of batches from month to month is caused by reassignment of storage space, transfer of waste between areas, and waste volume changes.

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h. Analytical Control (Continued)

Laboratory	Samples	Determinations
200-W	2118	4335
Isolation	855	2266
Standards	1176	1534
Total	4149	8135

2. Activities

a. Redox Processing

Throughput rates and operating continuity were maintained at a point where Redox production commitments were met by 5-27-52.

Target 1A feed rates of 3 Tons/day through the first half of the month were increased to 3.75 Tons/day at mid-month and continued at that point until a planned building shutdown on 5-27-52. During the shutdown, the equipment was flushed in preparation for capacity tests and three experimental head end runs were conducted to further evaluate head end process modifications.

Approximately 230,000 gallons of Aluminum Nitrate, contaminated with Tricresyl Phosphate which has proven to be detrimental to the Redox process, is being stored pending decisions on purification and usage.

The problem of solid alumina in the Aluminum Nitrate has been partially rectified by allowing the new solution to settle before use. Attempts to filter the solution through a glass wool filter proved unsuccessful.

b. UO_3 Production

UO_3 production was held to the commitment for the month in order to allow usage of some of the Redox UNH for cold startup runs in the TBP Plant presently scheduled for the middle of June.

3. Special Operations

a. Acid Washes - $BiPO_4$ Plants

Data are tabulated below which indicate the percentage of product recovered from the completed acid washes in terms of a standard charge:

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a. Acid Washes - $BiPO_4$ Plants (Continued)

Plant	Extraction	Section 12 & 2nd First Cycle	Section 12 & 2nd 2nd Cycle	Total Canyon	Total Thru Plant	F Cell Flush
T	10.35	21.03	1.20	32.58	42.31	29.81
B	5.12	12.11	7.19	24.42	28.23	25.00

b. Special UO_3

Approximately 5000 pounds of uranium were received from the Mallinckrodt Chemical Works for processing in Hanford equipment at Hanford conditions to determine whether Hanford methods compare favorably with those employed at the Mallinckrodt Chemical Works. This material was processed without difficulty and the powder produced appeared to be of good quality. However, final results will not be available until after this powder has been processed through the K-25 Pilot Plant at Oak Ridge, Tennessee. This material was shipped on 5-20-52.

One lot of UO_3 powder, seven drums, consisting only of the fine material from the furnaces was produced for testing at the K-25 Pilot Plant. This powder was shipped on 5-20-52.

c. Waste Metal Removal

Sluicing operations were conducted intermittently during the month due to a series of mechanical failures. The failures included two on the 101-U Nagle pump, one electrical and one mechanical, one sluice nozzle hose rupture, and an agitator bearing seizure. Sluicing results have been erratic, with periods of both high and low efficiencies being encountered. A total of over 225,000 pounds of sludge has been removed from 101-U tank and transferred to 103-U. Tank visibility continues to be a problem, but some success has been achieved toward a possible solution. At month-end, sluicing is progressing normally.

4. Schedule Variance

Actual production of regular material processed through the Isolation Building was 93.8% of the forecasted amount. This was low because of the higher amount processed during April.

Since it was more advantageous from a cost and immediate Uranium recovery standpoint, material was diverted from the Bismuth Phosphate plants to Redox. Redox started 104.8% of the forecasted amount and the $BiPO_4$ plants started 56.8% of the forecasted amount, the latter percentage being low because the diversion to Redox represented a large portion of the $BiPO_4$ forecast.

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4. Schedule Variance (Continued

In the 234-5 operation, 100% of the May commitment and the remaining 38.8% of the March commitment were produced and turned over to the Atomic Energy Commission. Intermittent "hot" shakedown of RM equipment continued during the month of May. Accountability discrepancies in Task II and processing difficulties in all tasks prevented the following of an established production schedule for the month.

B. Equipment Experience

1. Operating Continuity

There were no major factors which appreciably affected operating continuity during the month, although difficulty was experienced in the Isolation Building in filtering Redox material.

2. Inspections, Maintenance and Replacements

a. Aluminum Nitrate Storage Tanks

The two 100,000 gallon stainless steel tanks which replaced the two Tygon lined tanks used for Aluminum Nitrate storage in Redox were placed in service during the month.

b. Bail on Pipe Assemblies - TBP

Replacement of bails on 30 jumpers was required since spring steel was used for fabrication instead of cold rolled steel

c. Collapse of Condensate Receiver Tank - TBP

On 5-26-52, the 008 condensate receiver tank in 241-WR was discovered to be partially collapsed due to an unexplained reduction of pressure within the vessel.

The exact cause of the failure has not been determined. The 2-inch vent may have been temporarily blocked causing a vacuum during pumping out operations or it may have resulted from some sudden reaction by the vapors in the tank.

d. Uranium Solution Storage

Two 50,000 gallons storage tanks were installed at Redox to provide lag storage for Redox UNH solution to permit decay of U-237.

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e. Metal Sluicing Equipment (Continued)

Several attempts have been made to reduce the fog due to sluicing action in the 241-U waste storage tanks and thus increase visibility within the tank and permit more effective use of the periscope. The best results have been obtained by heating the filters with electric strip heaters, which increases the air flow by reducing filter clogging. The higher temperature in the tank, however, has reduced the lamp life. A variac has been installed to determine the optimum operating voltage for the lamp. Prism discoloration due to radiation is under study by the optical group.

f. Boiler Inspection

On May 7, the Travelers Insurance Company inspector made the annual inspection of the No. 2 boiler in the 284-W Building, and reported it to be in good condition. The No. 3 boiler at 284-E Building was inspected on the same date, and the unit was reported to be in satisfactory condition except for slight traces of soft sludge which were removed by flushing before the unit was placed in service.

C. Improvement Experience

1. Process Tests and Revisions

a. Metal Dissolution - Redox

Three cut dissolution of a 4.4 ton dissolver charge (3.3 ton charge was standard) was successfully demonstrated early in the month and the new charge weight became standard for the building at that time. The increased charge weight aided materially in maintaining stocks of dissolved metal during increased building throughput rates.

b. Production Test 235-6, Building 234-5

During the first part of the month, all excess turnings were pressed into briquettes and processed into castings, according to Production Test 235-6. To date, a total of 24 briquettes have been made and processed into eight castings which, subsequently, were processed into acceptable pieces. Analysis of samples of the castings showed the material to be of high purity. No additional briquetting is contemplated at the present time, unless the turnings inventory increases beyond a workable backlog since the yield loss to recovery approximates 10 per cent.

2. Adoptions, Inventions and Discoveries

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

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D. Events Influencing Costs

1. Labor Variance

Separations Section forces were reduced by thirty people during May. Twenty-four of this number were Chemical Helpers from the Operations Unit who were offered transfers to the Metal Preparation Section.

Improved time cycles at the Isolation Building have minimized to a considerable degree the need for resorting to overtime operation on Saturdays despite the increased production demands placed upon this operation.

2. Material Variance

Overall essential materials costs in the Separations Section were reduced significantly as a result of the diversion of as much production to Redox as could be handled. Considerable savings were realized for similar reasons with respect to process waste storage costs.

An estimated 40,000 pounds of 50% caustic were lost as a result of a leak in a heating coil in a storage tank at B Area.

E. Plant Development and Expansion

1. Project Status

a. TBP - Project C-362

Phase IV of the project was accepted on May 23, 1952 with a few exceptions. At month end, construction forces were overhauling the crane, painting the canyon deck and balancing the ventilation.

Operability tests were conducted during the month pointing toward operation with "cold" uranium during the middle of June.

b. Remote Mechanical Line - RMB - 234-5 (Project C-413)

Construction work on Project C-413 was completed on May 17, 1952.

2. Plant Engineering

The Plant Engineering Services Unit continued its work in developing cost standards with particular emphasis upon establishing maintenance values. Labor and direct material standards were derived for the Bismuth Phosphate and Isolation operations and these have been incorporated in a standards manual. A trial preventive maintenance and maintenance cost control system was installed in the T Plant Concentration Building during the month.

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2. Plant Engineering (Continued)

Work is progressing satisfactorily with respect to the metering of steam supplied to the process buildings as well as the determination of firm water consumption data.

F. Significant Reports Issued

1. Routine

Document	Title	Author
HW-24633	Separations Section - Operations Monthly Report	V. R. Chapman
HW-24632	Separations Section - 234-5 Operations Monthly Report	V. R. Chapman
HW-24638	Separations Section - Process Unit Monthly Report	W. N. Mobley
HW-24664	Separations Section - Radiation Monitoring Monthly Report	A. R. Keene
HW-24698	Separations Section - Plant Engineering Services Monthly Report	C. P. Cabell
Unclassified	Separations Section - Power and Maintenance Monthly Report	R. T. Jessen
HW-24511	Separations Process Committee Minutes	L. M. Knights
HW-24557	Essential Materials - Operations Unit, Separations Section	W. E. Burlingame

2. Non-Routine

Document	Title	Author
HW-24543	Production Test 231-1-MS - Evaluation of Peroxide Cake Dissolution Time	L. M. Knights
HW-24589	Los Alamos Meeting on Materials Procurement	L. M. Meeker
HW-24164	Basic Information for Labor Standards 221 and 224 Buildings	B. M. Stark & J. E. Fouts
HW-24232	Labor Standards Manual	B. M. Stark & J. E. Fouts
HW-24083	Basic Information for Labor Standards 231 Building	B. M. Stark & J. E. Fouts

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2. Non-Routine (Continued)

Document	Title	Author
HW-24509	Methods and Flow Process Charts Sampling Procedure - Redox Plant	J. E. Fouts
HW-24046	Task I Activation Study RMA Line 234-5 Building	A. J. Anderson, B. M. Stark & R. Overson

III. PERSONNEL

A. Organization

The Bismuth Phosphate Plants and the Redox Plant were combined under one Chief Supervisor, E. A. Foskett, during May.

B. Force Summary

	Start of Month	End of Month	Net Change
Section General	3	3	0
Operations Unit	762	733	-29
Power and Maintenance Unit	546	544	-2
Process Unit	78	76	-2
Radiation Monitoring Unit	68	69	1
Plant Engineering Services Unit	19	21	2
Section Total	1476	1446	-30

C. Safety Experience

There were no major or sub-major injuries incurred by Separations personnel during May.

D. Radiation Experiences

There were two Class I radiation hazard incidents investigated by the Separations Section. Both occurred at the 200-W Area Waste Evaporator and resulted from (1) an employee entering a high level radiation zone under the mistaken impression that he was in a low level radiation zone and (2) a faulty dose-rate meter, which appeared to be working properly, being used by a Radiation Monitoring Inspector in a high level radiation zone. The incidents were not related.

The suspected emission of a large number of radioactive particles from the Redox stack was confirmed. The 1-A column during flushing and draining operations may be a source of these particles, the active material of which is primarily ruthenium.

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D. Radiation Experiences (Continued)

Total Iodine 131 emission rate from T and S Facilities averaged 5.6 curies/day. Reactivation of the H-5 scrubber appeared to reduce I emission at S Facility.

E. Personnel Activities

A committee, with P. E. L. Nussbaum as Chairman, is being formed to conduct a "Separations Safety Contest."

L. M. Meeker attended meetings at Los Alamos with members from the various sites for the purpose of coordinating procurement of materials and equipment for the various 234-5 operations.

A formal training program, conducted by R. E. Toczek, covering TBP operational and procedural information was essentially completed during the month.

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ENGINEERING DEPARTMENT

MAY 1952

TECHNICAL SECTION

Plans and preparations have been completed for extending the exponential pile experiments to two smaller slug diameters, 0.925" and 1.175". Reactivities will be measured in lattice spacings of 4-3/16, 5-3/16 and 6-3/16 inches. The objective is more efficient slug cooling and higher power density in new piles.

X-ray diffraction studies of six uranium rods rolled in the very high alpha phase and six rods which had been given a beta-heat treatment prior to finish rolling indicate that there is little variation in the degree of preferred orientation resulting from these two different rolling procedures. A near random orientation of the rod is obtained if the billet preheat temperature is kept above 1200° F and the transfer time of the billet from the bath to the rolls is kept to a minimum.

A new method for drying out of a pile after a water leak was tried successfully at the H Pile. Up to 182 gallons of water per day were removed by utilizing a hot water recirculation system.

The successful drilling of small thermocouple holes in uranium slugs by the Puget Sound Naval Shipyard during the past month makes possible the active prosecution of several programs which have been delayed pending the fabrication of suitable thermocouple slugs.

Aluminum coated boro-silicate glass balls were irradiated for three weeks in a dry channel. Preliminary findings indicate that these balls were damaged sufficiently to make their use in a 3X safety system undesirable in the existing piles.

Mock-up studies indicate that a fractured tube block may seriously hinder the passage of eight-inch slugs through a process tube.

Examination of data have shown no correlation between excessive warp and can wall penetration of eight-inch slugs. Although several theories for the cause of penetration and resulting autoclave failure have been advanced, results obtained to date have not established the mechanism for these failures.

On the basis of recent in-pile tests in which it was determined that graphite weight loss at 410° C is sufficiently low to cause no trouble from graphite burnout, the maximum temperature allowable in the moderator graphite has been raised from 380° C to 410° C.

The Redox plant performed satisfactorily during the month, with occasional column flushes to remove accumulated solids. Specification material was produced at a higher than expected operating efficiency.

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Significant equipment modifications are under way in the 234-5 RM Line to improve process performance and operating reliability. Because of this, the production load was diverted to the RG Line.

Start-up preparations for the TBP plant were carried forward to about 95 percent completion, and it is expected that "cold" uranium runs will be started about the middle of June.

The preparation of a firm chemical flowsheet for Purex together with preliminary specifications for pulse column contactors was carried forward during the period to permit preliminary scoping by Design personnel.

The Hot Semiworks was carried to 95 percent completion with cold shakedown runs expected during July.

An improved falling-drop sampling positioner for the Redox Analytical Laboratory has been developed in the form of an operating mockup. Its operation is extremely simple, and it is expected to be nearly maintenance free. The pipet assembly is designed for instant replacement. Valuable innovations incorporated in this unit are a method of removing hot liquid and dry wastes in sealed, all shielded packages and a method of remote disposal of the hot liquid waste "slurper" line itself.

Final arrangements were completed to permit Hanford utilization of the instrument rental service maintained by the General Engineering Laboratory at Schenectady. A list of the instruments available was received and distributed to interested Technical personnel. Laboratory Services-3706 will be responsible for procurement, control and return of all instruments rented from this source.

DESIGN SECTION

Design Section engineering effort for the month of May was distributed approximately 41% to reactor design, 35% to research and development and 24% to other design projects and orders.

Design for the "X" reactor was approximately 16% complete at the month's end, an increase of 4.5% during the month. Agreement was reached with the A.E.C. to place purchase orders for G. E. procured items of engineered equipment in two phases: Phase I - design and engineering, and Phase II - fabrication. The Phase I design portion of these orders can be placed as soon as sufficient design funds are made available to the General Electric Company (Total design costs of the Phase I portions of engineered equipment approved for G. E. procurement to date are estimated to be $150,000.). The Phase II portion of these orders would be activated when construction funds are authorized. The preparation of requisitions on this basis began during the month, and requisitions for equipment valued at $1,900,000 were transmitted to Purchasing, with purchase orders to be placed upon authorization of sufficient design funds.

The design of the 105 Building advanced approximately 4% during May to 21.5%. Work has been retarded by changes made to improve the resistance to bomb

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blast. The preparation of drawings and specifications for procurement of the C, D and F elevators is in progress.

The Water Plant design being performed by C. T. Main is approximately 7% complete. The basic design of the water plant was altered slightly; the primary sub-station is to be divided into two units in order to disperse heavy power equipment that cannot be replaced quickly in the event of damage or distribution.

A study is in progress to develop cost and schedule information relative to the construction of two single reactor areas in which the reactors are separated by a distance of two and one-half miles and erected at sites above Grand Coulee disaster flood levels.

Results of the Prepakt test program in general demonstrated that the Prepakt method is satisfactory for use in the construction of heavy aggregate shields of the Hanford Works type.

Separations plant design development included the preparation of a preliminary outline and description of scope material for the proposed Program "X" separations facility. Preliminary engineering flow diagrams were prepared for the Purex aqueous make-up section. Evaluation of alternate building arrangements for a new separations facility was continued and preliminary building arrangement drawings were prepared for a separations plant based on an average capacity of 200 tons of processed uranium per month.

PROJECT SECTION

Major projects advanced during the month and attained construction completion status as follows: CG-349, Hot Semiworks, 95%; CG-362, Waste Metal Recovery (TBP), 89.4%; CG-413, Expansion of 234-5 Facilities, 100%; CA-431-A, 100-C Waterworks Facility, 75.7%; CG-431-B, 100-C Production Facility, 69%; CG-438, Ball Third Safety System, 6%.

Continued labor difficulties, chiefly shortage of craftsmen and poor performance, have seriously delayed some major projects. The A.E.C. was advised of these critical delays and requested to hold a joint review of this situation. The National Joint Board for Settlement of Jurisdictional Disputes rendered two decisions for the Hanford Works, one regarding plumbers and teamsters, and the other for carpenters and ironworkers. Neither decision has cleared the disputes. Two work stoppages occurred during the month, though neither exceeded one day in length.

An excessive number of accidents or near-accidents which were related to the lifting of material occurred during the month. No disciplinary action has been taken by the main C.P.F.F. contractor or its subcontractors. The Minor Construction Management Unit continued its meetings to discuss special hazards and the general safety program.

Minor Construction completed three work orders and its assigned portions of four projects: CG-412, CG-461, CG-463, and CG-468. New work authorized to

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the Unit consisted of five jobs estimated at $11,495. The Unit is now operating with 66% of the pipefitters and welders authorized. The A.E.C. signed new twelve-months labor service contracts and subcontracts with its construction contractors for work to be managed by Minor Construction.

Project Engineering worked on 65 projects items and 12 informal requests, totaling $18,060,900. Six project proposals were transmitted to sponsoring organizations. Four project items were completed, and nine engineering requests were either completed or cancelled.

Semi-annual reports were prepared covering the properties for which the Engineering Department has landlord responsibility: The Hanford Area, and the North Richland Construction Camp from July 1947 through March 1952. Work on Project AEC-117 (Survey of Richland) was completed and accepted during the month.

All phases of construction on 100-C Waterworks are progressing, although slowly. The first stage impellers for pumps in 190-C Pump House are being redesigned. Building 105-C is substantially complete. In the 105-C Process Unit, work is proceeding on items which must be placed before the heavy aggregate concrete is poured. In the 115-B Facility, pipe work is about 75% complete. Equipment installation is better than 80% complete.

With the exception of about $20,000 in work orders for design and start-up modifications, Project CG-431, Expansion of 234-5 Facilities, was completed during the month. About half (1928) of the required 4000 "as-built" drawings have been issued for the RMA Line, RMB Line, and Building Modifications. This project was completed more than a month ahead of schedule and with an estimated underrun of approximately $1,000,000.

CG-362, Waste Metal Recovery (TBP) is about 10% behind schedule. The C.P.F.F. contractor has submitted a revised construction schedule which changes the completion date of Phase II from September 1, 1952, to December 1, 1952.

GENERAL

Organization & Personnel

Total on Roll May 1, 1952	1,571*
Accessions	27
Separations	29
Total on Roll May 31, 1952	1,569*

* Excludes Rotational Trainees.

A. B. GRENINGER, MANAGER
ENGINEERING DEPARTMENT

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HW-24605

June 10, 1952

PILE TECHNOLOGY UNIT

MAY, 1952

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VISITORS AND BUSINESS TRIPS

Visitor	Date	Address	Purpose
R. M. Edwards J. E. Brown, Jr.	5-1/2-52	General Engr. Laboratory	Consultation on C Basin viewing facility design
S. Siegel W. Browning, Jr.	5-1/2-52	California Research and Development Co.	Discussion of radiation and irradiation
W. K. McCarty A. N. Steele D. Howard	5-9/31-52	North American Aviation Company	Discussion of in-pile experiments
A. U. Seybolt D. W. White	5-21/22-52	Knolls Atomic Power Laboratory	Consultations on fuel element development program

Name	Date	Place Visited	Purpose
John W. Riches	5-12-52	Battelle Memorial Institute	Metallurgical consultation
	5-13/15-52	Simonds Saw and Steel Company	Discussions on experimental rolling
	5-13/15-52	National Lead Company	Consultations on rolling
E. A. Eschbach	5-1-52	Massachusetts Institute of Technology	Consultations on canning problems
	5-2-52	Sylvania Electric Products Company	Consultations on canning problems
R. S. Paul	5-15/21-52	Argonne National Laboratory	Observe and assist in slug rupture detection
R. B. Socky	5-13/15-52	Argonne National Laboratory	Conferences on leak tests, consultations on radiography, attend Non-Destructive Meeting
J. J. Cadwell	5-20/21-52	Argonne National Laboratory	Meeting on corrosion

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Name	Date	Place Visited	Purpose
J. J. Cadwell	5-22-52	General Electric Laboratory	Meeting on corrosion
R. S. Dalrymple	5-20/21-52	Argonne National Laboratory	Meeting on corrosion
Milton Lewis	5-20/21-52	Argonne National Laboratory	Meeting on corrosion
J. P. Cooke	5-9-52	Industrial X-Ray Company	Receive a X-Ray machine
E. C. Pitzer	5-4/9-52	Philadelphia	Electrochemical Society Convention
S. S. Jones	5-1/2-52	Bremerton Navy Yard	Machining consultation
	5-19/23-52	Puget Sound Naval Shipyard	Follow machine work on bare, unirradiated, natural uranium slugs
H. A. Johnson	5-1/8-52	Ritz-Carlton Hotel, Atlantic City, New Jersey	Attend American Foundrymen's Convention
W. L. Schalliol	5-8/10-52	Spokane, Wash.	Attend Pacific Northwest Conference of Mining and Metallurgical Engineers
J. A. O'Rourke	5-8/10-52	Spokane, Wash.	Attend Pacific Northwest Conference of Mining and Metallurgical Engineers
W. R. DeHollander	5-19-52	Seattle, Wash.	Attend symposium on colloidal electrolytes

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SHIELDING STUDIES

Attenuation Studies

Data have been obtained which describe the spatial distributions of five ev and thermal neutrons in Brookhaven type concrete and iron-masonite shield sections under test at DR Pile. These data are undergoing analysis. Data have been obtained also from sulfur detectors ($S^{32}(n,p)P^{32}$ reaction) which describe the distribution of high energy neutrons in Brookhaven type concrete.

Radiation Damage Studies

Additional masonite samples have been exposed to pile radiations in an attempt to obtain data over a wide range of exposures. The effect of temperature upon the physical characteristics of masonite is being determined. Positive decreases in the strength and elasticity parameters have been observed for temperatures in the range of 100°C.

Laboratory measurements of the changes in the physical properties of concretes induced by pile radiations are continuing.

Shielding Effectiveness on Gun Barrels

Measurements to determine the shielding effectiveness of the taper bore type of gun barrel assembly are progressing slowly because of the high radiation backgrounds surrounding the facility. In addition, a tendency for gas formation in the water filled process tube also biases measurements at present. Design changes in the assembly have been made to alleviate these difficulties.

Shielding Effectiveness of Dummy Slugs in Nozzles

Work directed at determining the leakage of radiation through front face nozzles under several operating and shutdown conditions essentially has been completed. Radiation levels were determined in these various cases for a range of dummy slug dimensions.

OPERTIONAL PILE PHYSICS

Pile Enrichment Studies

A report discussing the increase in number of units of plutonium which can be produced at C Pile per unit of U^{235} invested in the form of enrichment as well as per unit depleted has been completed in the rough draft form. The effects of specific power, total U^{235} investment and C Pile reactivity status upon the expected gains in plutonium production have been considered.

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Enrichment Experiment - Single Channel - PT-105-502-A

The pilot channel for the C Pile enrichment program -0674-H was discharged during the month to observe the effects of exposure upon the unbonded enriched alloy pieces prior to the selection of a canning process for the 10 kilograms of enrichment procured for C Pile. At the time of discharge a verification of the earlier data establishing the reactivity value of such a column in a 105 Pile was obtained.

Variation of Uranium Heat Generation With Exposure

The increase in the rate of heat generation of a natural uranium column which has received a 600 MWD/AT exposure as compared with a column of very low exposure has been determined experimentally. The data have been fit by a semi-empirical relationship which utilizes the local neutron flux as determined from the power output of adjacent columns and the currently accepted macroscopic fission cross-sections. Measurements will be continued on columns of varying exposures.

Yield-Bismuth Irradiation

A study currently is under way to evaluate the polonium production gains resulting from a suggestion to charge "B" tubes in clusters rather than as individual tubes. Recent data supplied by the customer, in which absolute product yields were determined by calorimetric measurements, were found to agree very well with calculated yields.

Physics Aspects - Future Piles

Considerable progress during the month was made in collecting the available information to present in a unified report to serve as a basis for pile design.

Neutron Diffusion Length Measurement - C Pile

The data obtained from the measurement of the neutron diffusion length in the C Pile graphite have been programed and turned over to Statistical and Computing Services Section personnel for an extensive least squares analysis to determine the "best value" for the diffusion length and to evaluate the error of measurement. Calculations of these values from a simplified model have been completed and yield a value of diffusion length slightly longer than the value tentatively reported on the basis of graphical analysis. A more complete calculation is now in progress.

Measurement of Fluxes in Hanford Piles

Efforts on the program to determine the neutron fluxes in the Hanford Piles were resumed this month as the neutron diffusion length measurements at C Pile were completed. The major accomplishments were on the instrumentation aspects of the problem where all the equipment for the initial measurements is assembled and operating properly. An active experimental investigation of foil detectors is under way. A facility which will permit a precise, reproducible standardization of the Test Pile neutron flux has been designed and is being fabricated. The standardized flux in the Test Pile will serve as the standard for detector calibration in the 105 Pile measurements.

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Ruptured Slug Detection

The main direction of effort during the month was along lines of improving the sensitivities of the projected detection systems. Previous experimental work has demonstrated the feasibility and practicality of each of the proposed systems in this application, ie: improved beta monitor; delayed neutron monitor; and scintillating crystal gamma ray spectrometer.

A second direct water line to the near water sample room was installed at H Pile to make sensitivity determinations possible through the subtraction or "balancing out" of the normal water activities from adjacent crossheaders. This method of operation is expected to make possible substantial increases in the sensitivities of both the delayed neutron detector and improved beta monitor. The approach being taken to improve the spectrometer sensitivity is that of balancing the radiations from an isotope normally present in the effluent water, eg, O^{19} or N^{16}, against the particular energy band, yet to be selected, which demonstrates the largest increase in intensity in the presence of fission products.

The balancing circuitry has been designed and is being fabricated. The uranyl nitrate injection equipment has been redesigned to eliminate corrosion of the system. Miscellaneous auxiliary equipment has been designed and fabricated in support of extensive tests to be initiated in the near future.

Gamma Ray Spectrometer - Miscellaneous Measurements

The scintillating crystal gamma ray spectrometer, with differential pulse height analysis, was investigated as a possible tool to be used in improving counting statistics on low activity foils. The signal to background ratio was improved two-fold over a mica window beta counter in the case of thin gold foil. Further increases in sensitivity would be expected in the case of thicker foils.

The gamma spectrum of Mo^{99} was determined as part of a study to establish the feasibility of using this isotope for neutron flux measurements.

The gamma ray spectrum emitted from boron glass balls, which are under consideration for possible ball 3X applications, was determined as an aid in identifying the isotopes responsible for the radioactivities observed upon exposure to pile neutrons.

Automatic Tube Temperature Recording Facilities

The DR Pile automatic process tube outlet water temperature recording IBM equipment operated without difficulty during the month. Good data coverage was maintained.

The Flexowriter tube outlet water recording equipment is now complete. Preliminary tests of this equipment have been made under simulated pile conditions and the required circuit adjustments made. Installation of this equipment at B Pile is under way.

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Test Pile - Physics Studies

Measurements of the temperature coefficient of reactivity in the Test Pile are continuing. The remainder of the pile calibration data has been placed in rough draft report form prior to publication.

A detailed study of the uranium egg test has been initiated in an attempt to develop testing procedures to the point where significant data can be obtained from a single egg test. A report discussing the technical considerations and the required precision of measurement has been prepared.

Test Pile - Routine Tests

Nineteen lots of Mallinckrodt eggs were tested during the month and yielded "as received" TDS values ranging from 14 to 17. Regular slug testing proceeded routinely during the month.

Test Pile - Special Tests

Eleven eggs were received from Mallinckrodt, each cast with different refractory liner materials, for the purpose of establishing reactivity dependence upon the refractory material. A program has been formulated for evaluating this effect through single egg tests, if possible, and the work is in progress.

Test bars from five experimental graphite heats were evaluated reactivity-wise during the month and the data reported to the interested groups.

HEAT STUDIES

Boiling Studies

Removal of the downstream, solid dummy slugs from process tubes will permit the boiling limits to be raised about 3 per cent. Since these dummy slugs are being removed as tubes are recharged, a document giving new Δt limits for this case has been issued.

The study of the other possible methods of raising the boiling limits at the piles is continuing. It is believed that the limits could be raised in three different ways without sacrificing operational safety. These are: (1) by increasing the crossheader pressure, (2) by enlarging the tube outlet fittings, and (3) by relying upon suitable tube instrumentation. The results obtained from the study indicate that the use of tube instrumentation might provide greater safety at lower cost than either of the other methods.

The use of larger fittings on process tubes permits higher boiling limits due to decreased flow resistance. It would appear possible that similar results could be obtained by connecting pairs of outlet nozzles by means of, perhaps, 3/4" tubes. Therefore, preliminary calculations are being made to determine the feasibility of increasing the limits by this method.

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Local boiling may occur in process tubes at high power levels if the slug jacket or end-cap temperatures go above the local saturation temperature of the water. Although it is believed that this type of boiling would have no significant effect on the boiling limits, experimental studies are in progress to determine the effects of such boiling.

The Δt's which would be allowable for header pressures equal to the lower Panellit trip pressures were calculated for all the orifice zones of the piles. It is planned that these Δt's will be permitted if the piles are purged during operation.

Calculations and experiments were made to determine the orifice sizes, Panellit ranges and Panellit trip settings which are needed at the C Pile.

Time Delay Relays

The time delay relays continued to operate satisfactorily in the Panellit Systems at all the piles. At the B Pile, where the recording test relay is installed, Panellit operating data were recorded for a period of 20 days. During this period no shutdown resulted from the use of the relays; however, it was observed that one shutdown would have resulted if the alarm system had been on an instantaneous scram basis. A momentary trip occurred during routine maintenance of one of the gages. In the other piles, a total of eight shutdowns resulted from Panellit alarms during the month. These resulted in a total loss of about 81 minutes of production. Six of the shutdowns were caused by Panellit gages which developed small leaks. The seventh scram resulted from a high pressure trip, due probably to film build-up in the tube. The eighth occurred when the Panellit circuit was inadvertantly opened as maintenance work was being performed.

Pile Power Level

A detailed summary has been prepared of the conditions which are expected to place an upper limit on pile power levels for the next eight months. The data were collected with the cooperation of the Process Control and Analysis Group and are reported in "Survey of Conditions Limiting Pile Operating Levels", W. D. Gilbert, HW-24493, May 20, 1952. The data indicate that corrosion limits will restrict power levels at the old piles until minor changes are made in the flow conditions. It is anticipated that boiling will be the limiting condition until the downstream, solid dummy slugs are replaced by perfs. After that time boiling and/or graphite temperatures will be limiting. At the DR and H Piles, boiling considerations restrict the levels at present and will continue to do so even after the downstream, solid dummy slugs are replaced. These estimates are based on a 410°C graphite limit and a corrosion limit as given in "Corrosion Limits on Pile Power Levels", R. J. Shields, HW-24429, May 16, 1952.

Calculations were made to estimate the amount of helium which must be added to the H Pile atmosphere so that various power levels could be reached. It was estimated that 10 per cent helium in the atmosphere would permit levels up to about 775 MW before the 410°C graphite limit is reached. A more detailed account of the work may be found in "Addition of Helium to H Pile", M. Altman and S. R. Fields, HW-24395, May 8, 1952.

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Emergency Cooling

The investigation to determine the temperatures which various pile components would reach following a loss of water from the entire pile, is continuing. The loss of water will be assumed to occur during equilibrium operation in one case, and at various times after shutdown in other cases.

Consideration is being given to the feasibility of duplicating experimentally the loss of water from a single tube during operation. Since temperatures as high as 2000° to 3000°C might be reached in the worst actual case, experimental duplication is difficult.

New Pile Considerations

As an aid in scoping new piles, a summary of the variables which have an effect on tube length and annulus size was prepared. A second summary was prepared of those which affect the process water requirements.

Potential power levels for the C Pile were calculated as a function of slug axial temperatures and the number of effective tubes. The values, which are not considered to be conservative, indicated that approximately 1250 MW could be attained from 1400 effective power tubes operating with a uranium axial temperature of 550°C. The assumptions and further data are given in "Technical Activities Report - Heat Studies, May, 1952", M. W. Carbon, HW-24598, June 2, 1952.

Measurement of Slug Operating Temperatures

Work is continuing on the preparation of thermocouple slugs for insertion in the pile. Several slugs were taken to the Puget Sound Naval Shipyard by the Pile Services Group where successful attempts were made to drill small holes at the axes of the slugs. The Instrument Application and Design Group has continued the investigation of methods to mount an insulated thermocouple on the surface of the uranium in a bonded slug.

A study is being made to determine means for calculating the temperature at any point in an unbonded slug. Conditions of unbonding will be assumed at the slug end-cap interface as well as the slug-jacket interface.

Slug Stress

The installation of equipment to permit an experimental study of slug stresses has been completed. Preliminary tests are being conducted to determine the adequacy of the equipment. Specially canned slugs have been prepared for testing.

The conductivity apparatus for measuring the thermal resistance of the uranium - Al-Si interface of a slug is being constructed. Samples of the bond made under pressure at a temperature of about 500°C are being prepared by the Pile Fuels Sub-Unit for testing.

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The investigation of the heat transfer aspects of slugs cooled both internally and externally is being continued. The results indicate that the maximum uranium temperature in such a slug might be less by a factor of two than the corresponding temperature in a normal slug. These lower temperatures may contribute to an appreciable reduction in the slug thermal stresses.

Pile Temperatures

Plans have been made to install thermocouples in process tube channels to determine how the readings of these will compare with those of couples mounted in the filler blocks. Many channel thermocouples are to be installed in the old piles and it is known that the couple will indicate temperatures higher than the nominal limits. A production test has been written and is being circulated for approval.

The equipment to permit experimental studies of the temperatures in the pile shields has been assembled and prepared for use. It will be installed under PT-105-515-A at the F Pile as soon as a shutdown occurs and elevator time becomes available.

A detailed investigation of the cooling problems associated with the horizontal rods has been started. It is planned that more precise values on rod water flows, water pressure drops and rod heat generation rates will be secured.

An analysis was made of the temperatures to be expected in the proposed pile control mechanism using a 10 per cent borax solution. It is not anticipated that excessive temperatures will exist with the proposed design.

GRAPHITE STUDIES

Pile Graphite - Distortion

Compilation of tube bowing data from the various piles has begun as part of the program for the definition of the status of pile expansion and its correlation to graphite damage.

Pile Graphite - Thermal Conductivity

A report summarizing presently available data on the thermal conductivity of pile graphite has been issued as document HW-24174. Interim reports on production tests PT-105-1-P and PT-105-269-P are being prepared. The thermal conductivities of core samples from the B, D, and F Piles are being measured on a modified and recalibrated disc sample apparatus.

Graphite - Exposures

Samples of WSF, CSF, and experimental graphite have been prepared and pre-irradiation measurements have been made on these prior to charging in the B test hole of the B Pile.

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Document HW-24325, "Process Tube and Graphite Bore Measurements of F Pile", has been prepared.

Controlled Temperature Exposures of Graphite

Samples of graphite continue to be exposed in process tube 1684-B under production test 105-403-P.

Graphite-Gas - Reaction Kinetics

The present series of measurements of the reaction kinetics of graphite-carbon dioxide, and graphite-carbon dioxide-carbon monoxide systems has been completed. The reaction rate data for the reaction of pure carbon dioxide with graphite fits the Arrhenius equation and yields an activation energy of 87 kilocalories per gram mole. It was found that small amounts of carbon monoxide inhibit the reaction of carbon monoxide with graphite in the temperature range 850 - 1025°C and that the rate data does not satisfy the Arrhenius equation.

Graphite-Gas - Radiation-Induced Reactions

Seventeen samples have been charged successfully in process tube 0776-H under production test 105-504-E.

X-Ray Diffraction Studies

Two formal reports have been prepared in rough draft form. The first of these summarizes data on the physical properties of various carbons and indicates that the result of long neutron irradiation upon graphite is the breakdown of crystallites to microcrystallites. The second report presents the results of studies of the shape of the 00.2 diffraction peak for graphites irradiated under various test conditions and pile conditions.

Surface Studies

Comparison of samples which were oxidized in the laboratory with those exposed in an in-pile controlled oxygen atmosphere experiment, has shown that the surface area of the graphite which was oxidized in the pile is increased more than is the surface area of a graphite which was oxidized to a comparable extent in the laboratory.

Samples have been prepared for further study of this effect.

Thermal Annealing Studies

The initial phase of an extensive oven annealing program for CSF graphite previously exposed in cold test holes has been completed. Annealing regions and the shapes of annealing curves have been determined for the properties of electrical resistivity, thermal conductivity, and physical length for various exposures.

A faulty thermocouple arrangement in the interferometric annealing equipment has been modified and certain previously obtained results are being checked.

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Special Graphites

As part of a program of studying the usefulness to pile construction of nonimpregnated graphite, two bars of graphite, differing only in that one was pitch impregnated and one was not, have been compared as to electrical resistivity, thermal conductivity and density. Samples from these bars will be charged into a test hole for a determination of radiation stability.

Damage Mechanism Studies

A satisfactory heater has been constructed and tested. The tubing and a corrosion-resistant container to accommodate the apparatus in a water cooler process tube are being prepared. Controlling and recording instrumentation has been completed.

Interlamellar Compounds of Graphite

Preliminary study of interlamellar compounds of graphite has been completed. It has been demonstrated that the stored energy spectrum and stored energy annealing characteristics of graphite oxides are strikingly similar to graphite damaged by irradiation. Interlamellar compounds with bromine were too unstable at room temperature to permit study. An apparatus has been constructed for measurement of the quantity and composition of gases released from graphite oxides and irradiated graphite.

Pile Annealing

Final discharge of two casings from the hot B test hole at F Pile completed the exposures for the pile annealing studies called for in Production Test 105-279-P.

WATER STUDIES

105-D Flow Laboratory

Tests to evaluate the effects of water temperature and heating methods on aluminum corrosion rates have operated throughout the month. Discharge and examination of several test slugs indicate that corrosion rates are appreciably higher in water heated directly to the test temperature than in water heated to a higher temperature and mixed with cold water.

Tests to evaluate the effects of chloride ion concentration on corrosion continued during the month. No significant data have been obtained to date.

Construction of in-pile flow laboratory facilities proceeded slowly during the month. Lack of shutdown time has seriously hampered the installation.

Film Formation Studies

Operational runs using the film formation equipment were completed during the month. The results of these tests showed that film formation rates increase with an increase in water velocity and temperature.

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An apparatus for studying the effects of chemical film inhibitors has been completed and put into operation. The apparatus utilizes two glass capillary tubes to evaluate film inhibition and removal tendencies of various complexing agents.

Further improvements have been made in the technique of studying film forming particles by means of the electron microscope. An apparatus in which the mounting screens are placed in a stream process water was developed. The apparatus enables a direct observation of the initial phases of film deposition.

A program is being outlined for the study of film formation by means of comparison of ferric sulfate and alum treated water. It is hoped to gain an understanding of the properties of particle causing film formation in order to afford better control of the water treatment process.

Alum-Activated Silica Test

Operation of this test continued satisfactorily during the month. Film formation rates were negligible for extended periods of time. Irregular periods of Panellit pressure increases occurred, however, all attributable to an increase in iron concentration above 0.005 ppm. A procedure was developed to detect film formation in the pile by means of a statistical test of Panellit pressure increases. In addition, better methods of controlling coagulation by observing the quality of the flocculation process have been evolved.

Results of air-weighing one tube of slugs showed that corrosion rates in alum-treated water with sodium dichromate are lower than in ferric sulfate treated water either with or without sodium dichromate. Further information will be obtained from six tubes containing weighed slugs now in F Pile, and scheduled for discharge at one month intervals.

The high filter rate tests were interrupted for a period of two weeks from May 12 - 26, 1952, in order to establish the effects of operating the filter plant at filtering rates which would normally be encountered with present process water demand. It was found that pile operation was unaffected if chemical rates were maintained at the same values which were required with the high filter rates. It is concluded that for the present type filter bed the quality of process water is determined by the alum and silica feed rates and the prevailing river water conditions.

The results of the test filter apparatus have shown that filtering rates of at least 5.0 gpm/sq. ft. may be possible with a filter bed consisting of 27 inches of Anthrafilt and 3 inches of sand. In order to establish the performance of this new type of filter bed under plant operating conditions, one filter in the 183-F Filter Plant will be converted to the new type of bed. It is expected that the filter will be ready for testing by the middle of June, 1952, allowing its performance to be established under conditions of high river water turbidity.

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The extremely low iron residuals obtained by the use of alum and activated silica and the effects of small changes in iron concentration on film formation rates have resulted in a need for more accurate iron analyses. A request for development of better analytical procedures has been submitted to the Technical Services Unit.

Effluent Activity Studies

A program has been undertaken to evaluate the effects of water quality changes on effluent activity. Preliminary information will be obtained in the form of a total decay curve of alum-treated effluent water using a Schonka counter. More extensive studies will be undertaken when man power permits.

Water Plant Flow Improvement Study

The possibility of utilizing the pressure head of the 183 pumps to reduce steam consumption of the 190 pumps is being investigated. It appears that an annual savings of $120,000 could be realized at each of the B, D, and F Areas by by-passing the 190 tanks and installing check valves in the discharge line from each of the four tanks. Estimated cost of the check valve installation is $30,000 - $40,000 per area. An analysis of the effects of pump failures is being made to evaluate the proposal on the bases of pile safety and 190 primary pump safety.

Slug Corrosion

A flow laboratory test of dichromate-free, alum-coagulated water was begun on May 12, 1952. The test will determine the corrosion rate of 2-S aluminum slugs as a function of temperature in this water. The corrosion rate versus time relationship up to a total exposure of three months will also be determined.

The final report on "Production Test 105-450-P, Effects of In-Pile Conditions on Dri-Film Coatings Applied to Slug Surfaces", is being published as HW-24573. The results of this test show no difference in the corrosion rate of coated or uncoated slugs when they are exposed in the pile.

A final report on the flow laboratory corrosion test at elevated temperatures is being published as HW-24584. Data over the temperature range 80°C to 135°C are reported. Preliminary designs are being made for a proposed production test for the in-pile study of corrosion rates at elevated temperatures.

The first high temperature induction heater test was completed on May 23, 1952, after a two week run. Bulk water temperature entering the test section was maintained at 50°C, and the slug surfaces were kept at 75 to 80°C. Weight loss measurements are now being made.

The high temperature apparatus is now being used to determine the effect of water velocity on the corrosion rate of 2-S slugs at 95°C. Four tubes at flow rates of 5, 10, 15, and 20 ft/sec. are now operating. Slugs will be removed and weighed at 240, 480, and 720 hours.

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Tube Corrosion

The front tube corrosion mock-up has been operating during the month with 20°C water at flow rates of 40, 20, 11, 6, and 3 gpm. Because of unforeseen pumping difficulties neither acid nor sodium silicate have been added to the water yet.

The final inspection of the tubes from the weighed tube apparatus was made this month, and the results agree closely with those reported in HW-23919 for the first three months of operation. A new run, using fresh tubes, has been started in dichromate-free water.

A 10 per cent solution of potassium tetraborate in steam condensate is being recirculated through 2-S aluminum tubes at 40°C. Data on the corrosiveness of this solution will be furnished the Process Engineering Unit on Design Test Number 12.

Recirculation

The third flow laboratory recirculation test, at 16 ppm total solids, was ended May 23, 1952, after one months' operation. Weight data are now being obtained. A fourth run has been started with pile cooling water at approximately 100 ppm total solids. Data will then be on hand for 4, 8, 16, and 100 ppm total solids.

The in-pile recirculation equipment at H Area is now ready to go into operation at the next shutdown. Flushing of the system has been completed, and it was tested successfully by recirculating water through the "V" test hole.

Correlation Studies

A cell to measure the electrical conductivity of water in a radiation field has been constructed and tested in the laboratory. Changes in the conductivity of water in the vicinity of exposed slugs will be noted with this apparatus.

Another cell has been constructed and used to measure the electrical resistance of the film that forms on slugs. Correlation of the resistance with the impervious nature of the film, and therefore, its effect on corrosion will be attempted. Preliminary tests show a wide range in the values of the resistance for different slugs with the measurements being reproducible.

In order to correlate in-pile corrosion experiments with flow laboratory tests, a test to determine the effect of radiation on the corrosion of aluminum is being designed. Two identical test systems will be used, one of which will be placed in a pile test hole where the flux is known.

MECHANICAL DEVELOPMENT STUDIES

Charging and Discharging Programs

A portable x-ray machine has been secured on a rental basis for continuation of the investigation of the slug cocking phenomenon. No x-ray studies were made during the month but all preliminary preparations have been completed for an extensive

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study in the 108-) Building of tubes charged with a standard charging machine. The machine was calibrated to determine proper exposures and to evaluate the radiation hazards involved.

Contacts were made with fabricators of both plastic and glass tubing to determine if it will be possible to secure transparent tubing which would permit visual observation of slug action during charging. Indications are that it will be possible to secure such tubing in six-foot lengths. Several lengths of transparent tubing could be coupled together to simulate a process tube for the study.

Horizontal Control Rods

The original design for the C Pile horizontal rod gas seal has been rejected because of the aluminum-graphite electrolytic couple which results in excessive rod corrosion. An intensified effort is being made to develop an alternative seal which can be procured by the time C Pile is ready to start. Possibilities being investigated are: Teflon Chevron rings, rubber sphincter seal, rubber washers, and graphite rings. The most critical part of the sealing problem is lubrication of the rod.

The design of a modified experimental rod for the old piles is progressing satisfactorily. When the design is complete such a rod will be fabricated and tested in the full-scale mock-up.

Vertical Safety Rod and Third Safety Systems

The final tests of the C Pile shock struts with an actual C rod have been completed. The final recommendations for the dimension of the variable orifice to be used in the shock struts have been made.

The final tests on the C Pile ball third safety hopper have not been completed yet because certain components of the assembly have not been received.

Tests have continued on the operating characteristics of the sphincter seals when lubricated with molybdenum sulfide. The results indicate that this dry lubricant will be satisfactory. An applicator, consisting of a lambs wool gland around the rod, has been developed which will maintain an adequate film on the rod at all times. Rod drop times are increased by less than 1/2 second by the seal. This will result in drop times well within the specifications.

Testing is in progress on the aluminum coated boro-silicate glass balls which are being considered as an alternative to the steel balls. Momentary irradiations, which simulated a fifty ih ball scram from 700 MW, resulted in induced radioactivity of 2.5 R/hr./ball at one foot in air. This was mostly aluminum activity and decayed rapidly to approximately 5 mr/hr./ball at one foot in air after 1/2 hour. Six of these balls were irradiated for three weeks in a dry tube channel. Inspection after discharge showed the glass had softened enough to flow and the aluminum coating was completely transformed to a brittle scale which chipped off easily. This melting might make them unsuitable for use in the old piles where the possibility exists that a few balls would remain in the pile after use.

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Process Tube Distortion Tests

Studies being conducted at the 305-A nine tube mock-up indicate that a fractured tube block may seriously hinder the passage of eight-inch slugs. In a recent test, where the distortion of process tube 4674-F was duplicated, the junction of a fractured tube block crimped the tube so badly that an eight-inch slug would barely pass. It is evident that the tube was crimped from the diameter traverse data which showed an 11 mil constriction 3/8 of an inch long. The force required to remove this process tube was excessive but as soon as the tube passed the fractured block junction, the force dropped to the nominal value.

METALLURGY OF URANIUM

Fabrication

Production Test 313-105-9-M was written requesting permission to triple-dip can and to irradiate slugs from rods rolled by the simulated Fernald process. These rods were rolled in a two-high reversing mill at Watervliet, New York, and finish-rolled in a six-stand continuous mill at Lackawanna, New York. A lithium and potassium carbonate salt was used for preheating.

Additional tests were performed to determine the alpha canning characteristics of slugs hot-pressed from uranium powder. A suitable short nitric acid pickling time was established, and satisfactory slug-to-can bonds were obtained. The forty-eight powder uranium compacts for Production Test 313-105-4-M were alpha dip canned. In view of the fact that there was a high percentage of canning rejects, not attributable to the nature of the compacts, it is planned to make a partial pile charge of the slugs in this test at 100-H Area on June 12.

Heat Treatment

The slugs machined from salt-bath beta heat-treated rolled rods from Simonds production are ready for alpha dip canning. These slugs will be irradiated upon approval of Production Test 313-105-6-M.

Samples of beta heat-treated uranium and of uranium rolled in the high alpha-phase have been held at 350°C for forty-eight hours with no apparent change in grain size. Tests are in progress in which the samples will be held at temperature for a period of five weeks.

Uranium Rod Quality

A program was initiated to determine the effect of eccentric removal of metal during machining on the warp of eight-inch slugs. Samples of oval and round rods were obtained and slugs are being machined from these rods. The slugs will be triple-dip canned, stripped, and measured for warp.

Measurements made by the Applied Research Unit upon samples provided from the March Simonds production rolling indicate that variations in structure still exist

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among the rods. This variation is illustrated by the range from about zero to 100 per cent recrystallization in the as-rolled grain structure of the four rods tested. This difference in structure is usually an indication of variations in the finish rolling temperature.

METALLURGY OF HANFORD STRUCTURAL MATERIALS

Roll Forming Van Stone Flanges

The investigation into the possibility of roll-forming Van Stone flanges on process tubes was completed. A test model of the roll forming tool, designed in Design Engineering, was built in the 300 Area Instruments Shop. Though not capable of making a full-sized flange, the tests proved conclusively that the principle of roll-forming flanges on process tubes is feasible.

Annealing of Process Tubes

At the request of the Process Engineering Unit, a preliminary examination was made of Van Stone flanges made with standard tools on fifty-foot process tubes in the annealed and unannealed states. The unannealed flange exhibited numerous gouges, cracks, and fold-overs while the annealed flange was relatively free from these defects.

100 Area Survey

A survey of corrosion on accessible surfaces in the 100-B Area has been completed. Evidence of severe corrosion was found on piping in the 107 Retention Basin and on equipment in the 183 Building.

F Pile Corrosion

A preliminary report on the corrosion caused by leaks in F Pile is in preparation. Recommendations are included for a development and maintenance program.

Apparatus has been assembled for a systematic study of the galvanic couple comprising an aluminum process tube and a graphite block. A correlation is being sought among such variables as open circuit potentials, closed circuit potentials, current flow, temperature, corrosion rate, nature of corrosion products, cementation of graphite and aluminum by corrosion products, the probability of mechanical stresses introduced by accumulation of corrosion products leading to the collapse of process tubes, etc. Tubes untreated as well as surface treated, as for example by anodizing, will be used.

On the justifiable assumption that corrosion rate is proportional to current flow, it was concluded that an unsealed anodized film 1 mil thick reduced the corrosion rate by a factor of twenty or better. Films 0.25 or 0.50 mil thick were roughly half as effective. Films sealed in boiling $K_2Cr_2O_7$ solution were improved by a factor of two to five, depending upon the age of the film.

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Canned Slug Inspection

Occasional surveys for mercury have been made in the welding booths in the canning area. Positive indications persist, both visually and by response of the G. E. mercury vapor detector.

The examination of autoclaved canned slugs for surface defects that might lead to enhanced corrosion has continued. Groups of cans having readily classifiable blemishes have been exposed to flowing process water in order to determine their corrosion pattern.

100 Area Laboratory Studies

A preliminary evaluation has been begun on the significance of pulse polarization measurements as a technique in corrosion research.

Work has continued on the solution potentials of aluminum samples in pile process water. Unexpectedly great differences in potentials were noted among samples of different surface areas, and among samples that had undergone different surface preparation. These differences are the subject of further investigation.

It was noted that long exposure of a sample of aluminum to water containing a conventional electrode comprising calomel or silver chloride led to the formation of brown stains or spots of a presumably foreign bright material upon the aluminum. This observation suggested that deliberate differential staining might be produced by immersion of a canned slug in dilute silver nitrate solution. In preliminary experiments, a non-uniform brown coating containing dendrites of silver was obtained. Pits, scratches, and chatter marks stood out in strong contrast to undamaged portions of the slug jacket. This procedure will be further investigated in the hope that a rapid inspection tool may be developed, amenable to photography or other permanent recording methods, based upon the detection of electromotive inhomogeneity of the surface of the can.

200 Area Corrosion Studies

Laboratory work on the corrosion of mild steel in simulated bismuth phosphate waste has been completed, and a final report is in preparation.

Experiments are under way to determine the corrosion rate of mild steel in simulated Redox waste solutions of various degrees of alkalinity at 200° and 220°F.

The corrosion of stainless steel T 309 X Cb and Pyrex glass in 70 per cent nitric acid containing 0.04 molar hydrofluoric acid is under investigation.

The effect of chloride ion concentrations of 5000 ppm in several Purex process streams (1 AW, 1 CU, 1 AP, 2 AW, and 2 DF) on austenitic stainless steel is being studied.

An experiment has been begun to determine the rate of corrosion of several stainless steels in 0.3 M nitric acid containing sulfurous acid.

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Slug Examination

Four tubes of PT-105-450-P, "Effects of In-Pile Conditions on Dri-Film Coatings Applied to Slug Surfaces", were examined for surface defects and weight loss. The slug jacket surfaces appeared to be essentially in the same condition as slug jackets which were not coated with Dri-film. The maximum weight loss, calculated as the average of the slugs with the greatest weight loss in each of four tubes, is 0.144 $mg/cm^2/day$.

Fifteen pieces from PT-105-502-A, "Fringe Tube Enrichment", which were canned unbonded, were given a cursory examination after discharge, but before cleaning. Patches of apparent corrosion were visible and the corrosion product was distributed unevenly over the surface of the slugs. Dimensional changes of these pieces, measured as discharged without prior cleaning, indicate an average length increase of about 0.06 inches, and a very slight increase (.001 to .002 inches) in diameter.

Fabrication has started on slug air-weighing equipment which will enable slugs to be weighed more rapidly than with the present equipment. It is planned to install this new equipment in an unused row in the northeast corner of the 105-B slug storage area.

100-C Slug Examination Facility

The underwater examination facility, now being constructed at 100-C, is intended to furnish engineering data relating to fuel element quality, and to aid in determining operating limits and the efficacy of process improvements, by permitting thorough examination of large numbers of irradiated slugs. It is expected that information describing approximately 120 slugs per day will be made available principally by means of photographs and recorder charts.

Results of preliminary development work and equipment design proposals are expected by June 15, 1952. Construction of the building and underwater structure is scheduled for completion by September 1, 1952.

100-B Irradiated Materials Examination Facility

Work has started on the fabrication of equipment to be used in the handling of process tubes in the 108-B Cave. Work has also started on a cutter to be used in slitting tubes lengthwise as well as cutting off metallographic specimens. Tube examination at this facility will include visual and photographic examination of the inner and outer surfaces, weaseling, weight traverse determinations, hardness tests, chemical cleaning, metallographic polishing and macro examination, pit depth measurements, and examination and removal of corrosion product.

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CANNING DEVELOPMENT

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

Four hundred eight-inch triple-dipped slugs were canned one at a time for penetration tests after classification on the hot warp gage. The pieces, which included 200 virgin slugs and 200 slugs which had been recovered once, were measured for warp before canning and after recovery. The following conclusions were derived from statistical evaluation of the data:

(a) There is no correlation between warp and thin can walls.

(b) Previously canned slugs which are badly warped entering the canning process will, in general, remain badly warped; previously canned unwarped slugs will, in general, remain unwarped.

(c) Most of the badly warped slugs did not seat on canning, but some unwarped slugs also became non-seats.

Salt Bath Heat-Treatment and Alpha-Phase Dip Canning, Production Test 313-105-3-M

Houghton's "Liquid Heat 980" was tested and found to be satisfactory as a salt-bath heat-treating material. This salt will be used in heat-treating slugs for Production Test 313-105-3-M. A mechanical agitator for the alpha-dip furnace was completed and tested. Canned slug quality, resulting from heat-treatment in the "980" salt and mechanical agitation in the lead preheat pot, is good with very uniform wetting of the uranium. Some alpha-dipped slugs were produced between May 27 and 29.

High Amperage Welding, Production Test 313-120-M

The first 2000 of the 6000 slugs called for on this production test were welded this month. Weldments were obtained equal to or better than those produced in present production. A process change is being prepared to permit the production use of either of the two satisfactory experimental procedures evaluated so far.

Sleeveless Canning

An initial trial showed that a one-half mil thickness of anodized coating is sufficient to prevent wetting of the base of cans held at the bottom during canning in molten Al-Si. A more extensive test will be made when improvements in the can-holder and in operating technique have been made.

Pre-Wet Caps

Pre-wet caps prepared by preheating in flux, dipping in Al-Si, centrifuging, and quenching in water have been used in canning on a Metal Fabrication Request. Braze lines narrower than normal, together with improved bonding between cap and slug, were obtained with these caps.

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Non- Destructive Testing - Transformation Test

Ultrasonic absorption tests have been run on untransformed slugs and slugs transformed to varying extents. Although a definite correlation has not yet been established by destructive inspection, the results to date may be summarized as follows:

(a) Slugs known to be fully transformed had a very high attenuation factor.

(b) Slugs known to be wholly untransformed had a very low attenuation.

(c) Partially transformed slugs in the range from about 80 per cent transformation upwards had an attenuation which appeared to correspond with the length of heat-treatment. The attenuation, however, appears to be controlled by grain size rather than by orientation, because uranium with small grains prepared by rolling in the high alpha range and which is believed to have a very nearly random orientation also had a very low attenuation.

Canning Mechanization

The RDA-DC-5 Working Committee decided not to recommend the adoption of the design for a slug component assembly machine proposed by the General Engineering Laboratory. This decision placed increased emphasis on the development and testing of mechanized canning equipment at Hanford. November 1, 1952, was set as the target date for freezing the design principles to be incorporated in the prototype machines to be built to production scale. The fabrication of mock-up equipment and design verification is proceeding according to schedule.

Canning Scheme Evaluations - Destructive Testing

Equipment for the destructive testing program is being secured and evaluated using selected marred surface reject, triple-dipped Hanford slugs.

The fast thermal cycling equipment designed by Technical Services was completed in the Technical Shops and was sent into the 300 Area for initial operational checks and final acceptance. Some modifications may be required.

Marred surface reject, triple-dipped slugs all failed the frost test after fifty cycles in the slow thermal cycling equipment, heating to 500°C in a furnace and cooling with a still air quench to room temperature. Tabulated results after completion of twenty-five cycles indicated no frost test rejects and no significant warp or diameter changes.

A test to simulate maximum internal slug temperatures during pile operation was initiated. At present the test includes twenty-five four-inch triple-dipped marred surface rejects to be held at 350°C, oscillating within 10°C, without cooling to room temperature.

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To date, the pieces held at temperature for 25, 100, and 250 hours have been removed, dimensionally checked, frost-tested, and submitted to Applied Research to determine whether any changes occurred with regard to certain physical properties. No frost test rejects have shown up after 100 hours. Dimensional checks show that elongation occurs after 25 hours, continues to 100 hours, but diminishes after 250 hours.

Bonding Layers

Physical shock testing to date shows that the triple-dip canned pieces exhibit a more durable bond than previously supposed by many. Although the slugs appear mutilated, no frost test rejects have resulted from dropping the pieces from six foot elevations on concrete floors. These pieces are now being heated at 350°C to see if such treatment affects the temperature stability.

The literature survey to determine the properties of the bonding layers that would exist in several suggested canning schemes was completed.

Warm Pressed Slug Program

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Various warm pressing techniques were utilized to produce Hanford-size fuel elements for slug stress measurements and sandwich specimens of Al-U for heat transfer studies to be made by the Pile Engineering Sub-Unit.

The relatively long, internally-ground, hardened dies utilized in warm press canning are now being fabricated in the Technical Shops as well as by off-site vendors who previously were the sole source. The construction of additional improvised slow-acting presses, ovens, and associated equipment is making possible the determinations of some of the data needed for the warm pressing program. Design work of split dies providing rapid assembly, disassembly, and heating to facilitate component loading and finished piece ejection is continuing.

Uniscan Cladding

A number of experiments were run to determine the feasibility of room temperature cladding of uranium with aluminum by the Uniscan technique. Intimate contact was established between the aluminum and the uranium.

Cold Canning of "J" Slugs

The fabrication of dies, punches, and a hydraulic ram for cold "J" slug canning is near completion. These tools will be used for production work, for existing

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production equipment will not turn out a uniform product. Results from inspection of thirteen cold-canned "J" slugs discharged from H Pile after about 12 per cent burnout indicated that cold canning was satisfactory for canning "J" pieces to withstand such exposures. A detailed evaluation will be necessary before further conclusions can be made regarding the ultimate possibilities of this canning method.

New Slug Designs

1. Scoping: For scoping future slug designs literature sources and various Hanford specialists are being consulted regarding the promise and disadvantages of various types of slugs. Thick and thin, bonded and unbonded end caps; bonded and unbonded slugs; hollow slugs internally and externally cooled simultaneously; and hollow slugs internally cooled, only, are being considered.

2. Heat Transfer: The heat transfer data, requested for preliminary evaluation of new slug design, for a bonded four-inch aluminum-jacketed uranium slug as calculated under the direction of the Heat Transfer Group are being prepared for review by interested Hanford personnel.

3. Reactivity: Document number HW-24456 was issued presenting a compilation of approximate reactivity calculations of the three jacketed-uranium slug assemblies proposed in HW-23147 for the present Hanford piles. These slug types are: (a) a natural uranium slug with a "jacket", (b) a natural uranium slug with a "sweater" layer and an exterior "jacket", and (c) an uranium alloy slug with a "jacket". An experimental program is under way to check the calculations and to determine the reactivity characteristics of alloy bonding layers, uranium layers, and uranium alloy layers which cannot be readily calculated. Elemental materials in sheet form have been ordered for this program while the necessary uranium alloy slugs and sleeves are now arriving from the Battelle Memorial Institute. The alloy pieces will be machined as soon as work loads burdening the limited 3730 Building facilities permit. Five nickel-plated slugs were checked for reactivity in the 305 Test Pile, and a preliminary reactivity loss estimate of 110 in-hours per 105 Pile per mil of nickel plating was obtained.

IRRADIATION ENGINEERING

High Pressure Water Channel - ANL-M-140

The behavior of water, prototype fuel, and structural materials is being determined under conditions simulating those of the STR as nearly as is possible in the Hanford Piles. Operation during May was on process water. During this time modifications to the equipment were completed.

An attempted start-up on May 15, 1952, failed when water in the pump cooling oil caused the pump windings to burn out after thirty-three hours of pump operation and

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twelve hours of pile operation. The pile was scrammed automatically and remained down for approximately one-half hour for the ANL-140 switchover to process water.

Gamma Irradiation of Non-Metallic Materials - PT-104-246-P

Non-metallic materials are being irradiated in special underwater baskets and in racks on slug storage buckets by the fission product gammas from pile irradiated uranium pieces. The facilities were recharged with recently pushed uranium pieces on May 1 and 2. No samples completed the scheduled exposure during the month.

Plant Assistance Gamma Irradiation Experiments

Assistance was given Separations Technology personnel in running an experiment to determine the rate of breakdown of carbon tetrachloride in intense gamma irradiation.

Preliminary arrangements have been made for Pile Materials Sub-Unit personnel who plan to determine the conductivity of water in high gamma.

Fission Chamber Life Test - DPW-M-101 - PT-105-528-SR

Neutron flux monitoring chambers designed for the Savannah River Works are being life-tested under pile irradiation.

Operation of the remaining chamber in tube 1972-D has been routine during the month. No change in performance has been apparent. A brief report on operation to date is being issued.

HW-24531, "Interim Report No. 1 PT-105-528-SR", J. C. Fox, May 20, 1952.

Creep Rate of Fuel Pins, KAPL-M-105 - PT-105-400-P

The creep rate of small diameter type 347 stainless steel pins with high internal pressure in a neutron field was measured. The test was terminated May 23, at which time no creep had taken place since charging of the experiment on January 19, 1952. All circuitry functioned during the course of the irradiation. The NAK resistometers responded favorably to the temperature decrease which took place when the test was shut down.

Thermal Conductivity of U-Zr Alloys, ANL-172 - PT-105-432-P

A continuous measurement of the thermal conductivity of uranium-zirconium alloy is being made under pile irradiation. No significant changes in thermal conductivity have taken place since charging on March 21, 1952.

Electrical Resistivity Measurement of Cu_3Au, WAPD-M-112 - PT-105-513-SR

The electrical resistivity of ordered and disordered copper-gold specimens is being investigated as a measure of the effects of pile radiation on lattice structures.

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This test is still yielding data although some of the circuitry has become grounded. Thus far, these grounds have not interfered with obtaining a continuing measurement on at least two good readings on each specimen.

Creep Rate of Zirconium WAPD-M-111 - PT-105-529-SR

The object of the Westinghouse creep test is to determine the effect of neutron flux on the creep rate of zirconium. The specimen, which had been stressed to 26,000 psi, was reduced to 0 psi and an attempt was made to run a stress-strain curve. However, during this attempt the bellows ruptured making further operation impossible. From the conditions under which rupture occurred it is believed that the bellows was previously deformed, and it is doubtful that the stress ever reached 26,000 psi.

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

The KAPL-M-109 test is designed to determine the life and in-pile variation of thermal and electrical conductivity of silica and alumina heater cements. The assembly was charged on April 1. The silica heater developed an open circuit within a week after charging, and the second heater is performing satisfactorily.

The electrical resistance of the silica cement has increased at a rate of approximately 6×10^3 ohms per day. The alumina cement was found to be sensitive to reactor power varying from 20 megohms during shutdowns to one megohm at full level. This effect appears to be in addition to a gradual decrease with total exposure.

Irradiation Studies for KAPL-Fuel Research and Development Program - KAPL-M-111

This test is an experimental investigation of the influence of Hanford Pile flux on the behavior of fuel elements in contact with sodium. It continues the former beta slug program (KAPL-M-079).

Final drawings for an annulus tube facility for the in-pile experiment have been completed and a work order for the tube construction has been given to Technical Shops.

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

This experiment is being conducted to measure, during exposure, the effect of pile irradiation on the thermal conductivity of U^{235} impregnated graphite. The tentative charging date for the experiment is June 11.

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

This test is to determine the gas pressures to be developed by radiation outgassing in the fuel core for the North American Aviation, Low Power Research Reactor. The slug which is essentially a miniature fuel core of graphite impregnated with U^{235}, was charged into a process tube on May 16. Pressure will be continuously recorded and the central temperature will be determined once each shift. The experiment is performing satisfactorily. The pressure essentially has leveled off and the central temperature is increasing as predicted.

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Controlled Gas Atmosphere Experiment, Project C-410

The installation of the equipment for measuring the reaction equilibrium and rates between graphite and various gas atmospheres under the influence of pile radiation is about 90 per cent complete. Essentially all of the gas equipment apparatus has been installed on the test level except for the water vapor analyzer which was rejected for failure to meet specifications.

The heater elements are being rewound and work on this heater is the delaying factor at present. When this assembly is completed it will be charged into the C test hole at the DR Pile and used for the irradiation of graphite-gas containers at constant temperature.

Measurement of Slug Operating Temperatures - PT-105-411-A

The construction of the equipment for measuring the central temperature of a uranium slug in the pile is 95 per cent complete. Difficulty has been encountered in obtaining small holes in the slugs. Ten slugs were machined successfully at the Puget Sound Naval Shipyard during the month.

A mock-up of the whole in-pile assembly is ready for testing in the flow laboratory.

An assembly has been prepared for measuring the effect of irradiation on thermocouples while they are in the pile.

Measurement of Xenon Cross Section

Equipment for the xenon generator system will be designed and constructed under a project proposal. This group will advise on design to facilitate charging and discharging of the generator slug. Sketches will be prepared for an inlet nozzle and gas circulating system shielded with 3/4" lead. More experiments by the Experimental Physics Group will be necessary to verify this shielding requirement.

Electrical Resistivity of Graphite

An experiment is being designed to measure continuously the electrical resistivity of graphite during pile irradiation. A nozzle and auxiliary fittings are being constructed for the test slug being assembled by the Graphite Development group. Present plans are for a pressurized specimen to be exposed in a wet process tube.

Gas-Graphite Reaction Studies - PT-105-504-E

The dry, water-cooled test channel was installed successfully in tube 0776-H on May 13. Seventeen capsules were charged at that time. These contain carbon monoxide, carbon dioxide and graphite. A considerable amount of water in H Pile has limited operation and lowered the exposure rate of the samples to date. During operation, water temperatures have been: inlet, 14°C, outlet, 24°C.

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Controlled Temperature Exposure of Graphite - PT-105-403-P

The previously observed sample temperature drift was found to be an accumulation of instrument errors. Shielding difficulties at B Pile prohibited access to the zero far level for some time because of neutron hazard, but this month the instruments have been repaired and recalibrated. Present operating temperatures agree with those observed shortly after charging of the samples.

Date	Sample 1	Sample 2	Sample 3	Sample 4
Feb. 7	135°C	98°C	98°C	115°C
March 10	135	106	114	120
April 21	135	135 *	140	160 *
May 2	135	107	110	122
May 20	135	103	105	118

* Instrument Error

Charging of another set of samples awaits receipt of additional controllers, and will probably be done at the Ball 3X Shutdown at B Pile.

SPECIAL IRRADIATIONS

Status of Special Requests

P-10-A pieces charged	20
P-10-A pieces recharged	78
P-10-A pieces discharged	155
P-10-A pieces reaching scheduled exposure	0
P-10-A pieces under irradiation	287
P-10-A pieces in storage basin	368
Thorium pieces charged	1
Thorium pieces discharged	85
Thorium pieces being irradiated	771
Special Request samples charged	14
Special Request samples discharged	12
Samples being irradiated	379
Samples shipped during May	15
Samples awaiting charging	199
Samples awaiting shipping	0

PROCESS CONTROL AND ANALYSIS

Operating Limits

Pile power levels were governed primarily by the following limits during May, 1952:

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Pile	Limits Controlling Pile Power Level
B	Corrosion limit on outlet water temperature.
D	Corrosion limit on outlet water temperature.
DR	Vapor binding
F	Corrosion limit on outlet water temperature and vapor binding.
H	Vapor binding

Process Changes

The maximum allowable graphite temperature was increased from 380°C to 410°C on May 21. The increased graphite temperature limit had little effect on pile power levels as the B, D, and F Piles were restricted by the corrosion limit of 80°C on the outlet water temperature throughout the month prior to May 29. Effect May 29, 1952, maximum allowable tube cooling water outlet temperature was increased from 80°C to 85°C. As a result of this change, current maximum attainable equilibrium power levels at B, D, and F Piles have been increased approximately 10 to 15 MW. DR and H Piles power levels are restricted by vapor binding limits and are not affected by this process change.

Reactivity Status

A representative summary of the reactivity status of each of the operating piles during the last equilibrium period of May is given below:

Pile	B*	D	DR	F	H**	Totals
Date	5-23	5-21	5-26	5-25	5-11	
Excess in Rods (inhours)	172	169	170	175	235	
Xenon	674	703	703	674	710	
Dummies	5	45	30	141	15	236
Hot Reactivity	1337	1373	1175	1373	1329	
C_o Allowance	-350	-455	-250#	-414	-356	
Cold Reactivity	987	918	925	959	973	

*Near equilibrium

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**Data from H Pile was taken on May 11, 1952, since there was no equilibrium period following this time because of the reactivity loss occurring after a process tube water leak on May 16.

#The observed C_o contribution has decreased.

The above balances have been corrected to consistent xenon and overall coefficient bases to obtain the reactivity changes:

B Pile	Gained 19 ih
D Pile	Lost 13 ih
DR Pile	Gained 45 ih
F Pile	Gained 35 ih
H Pile	Gained 46 ih

A portion of the gain at H Pile was due to continued water removal from the water leaks of March 27, 1952 and April 12, 1952. All other gains and losses are attributable to reactivity changes associated with the metal discharge cycle.

Thorium Program

The in-pile inventory of 10-66 averaged approximately 850 pieces until May 24, 1952. On this date it was found necessary to discharge 85 pieces of 10-66 from H Pile to facilitate water removal following the leak of May 16, 1952.

Process Specifications

A rough draft of proposed process specifications for pile cooling water treatment was issued as HW-24505, "Process Specifications, Reactor Cooling Water Treatment", and circulated to members of both the Engineering and Manufacturing Departments for comment. Work is continuing on compiling process specifications for the Pile Process.

Pile Water Flow Tests at D Pile

Flow rate tests utilizing the volumetric displacement of the 190-D storage tanks as a standard indicated that D Pile flow meters agreed to within less than one per cent of the measured flow from the storage tanks.

Production Test 105-435-P - Graphite Burnout at High Temperatures

Preliminary analysis of graphite temperature data obtained since March, 1951 at F Pile indicated the graphite lattice conductance has increased 15 per cent since that time. Since May 1951, the F Pile operated according to the provisions of PT-105-435-P with a maximum graphite temperature limit in excess of 380°C.

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

A total of 440 tubes at DR Pile and 754 tubes at H Pile have been charged with the heavy-walled eight-inch slugs.

Production Test 105-506-A - Pile Atmosphere Leak Detection

The helium leak detector, being tested to determine its usefulness in locating pile gas leaks, will be used in an attempt to locate current gas leaks at F Pile.

Water Leak at H Pile

On May 16, 1952, H Pile suffered a large process tube leak as a result of a ruptured slug in tube 3261-H. The hot water recirculation system was used for the first time to aid in drying the pile and to lessen process tube corrosion. Water removal rates during hot water recirculation were as high as 182 gallons per day, as compared to removal rates of about 75 gallons per day after approximately 24 hours of pile operation with a similar amount of water in the pile. During hot water recirculation periods it was found that gas drying capacity was the limiting factor in water removal. The hot water recirculation system appears to function satisfactorily, but some revisions may be required to make the operation safer and more dependable. It does appear that the use of the hot water recirculation system in this case reduced the time the process tubes were in contact with cold, wet graphite. In addition to a probable net production gain, the extent of process tube corrosion should have been lessened.

By May 28, approximately 930 gallons of water had been removed and the pile graphite in the region of the leak had reached temperatures of approximately 250°C indicating that most of the water has been removed from the graphite.

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 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	Subject
D. E. Stephens	Analogue to Digit Converting Coding Switch

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

GEMcC:mvo

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June 4, 1952

SEPARATIONS TECHNOLOGY UNIT

MONTHLY REPORT
MAY, 1952

VISITORS AND BUSINESS TRIPS

R. C. Feber, Knolls Atomic Power Laboratory, visited Hanford May 5-17 for Redox consultations.

D. C. Overholt, Oak Ridge National Laboratory, visited here May 22-23 for Isolation Development Process consultations.

F. W. Wynn, J. Delaplane and J. T. Pinkston, Catalytic Construction Company and S. H. Brown, New York AEC Operations Office, visited here May 15-16 for consultations on pulse column design and operation.

A. M. Platt and R. E. Tomlinson visited Oak Ridge National Laboratory May 1-2 for Purex consultations.

R. J. Anicetti visited the Norton Company, Worcester, Mass. May 1-2 for consultations on ceramic manufacture.

L. L. Burger attended a Symposium on Colloidal Electrolytes May 19-20 at the University of Washington, Seattle.

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Separations Technology Unit

E. F. Kurtz visited Los Alamos Scientific Laboratory May 1-28 for training in and observation of solid waste recovery operations.

A. G. Blasewitz visited Oak Ridge National Laboratory May 1, to discuss product recovery from process wastes. On May 7 he visited the Visual Planning Equipment Company, Oakmont, Pennsylvania for discussion of applicability of visual equipment to Recuplex design study. He also visited the Naval Research Laboratory, Washington, D.C. May 2, Hurlburt Paper Company, South Lee, Mass., May 5, Arthur D. Little Inc., Cambridge, Mass., May 6, and Mine Safety Appliances Company, Pittsburgh, Pennsylvania May 8, to discuss air filtration media.

ORGANIZATION AND PERSONNEL

Personnel totals are as follows:

	April	May
Administration	5	5
Research	42	42
Chemical Development	87	88
Process	42	42
	176	177

Development: One Tech. Grad. was transferred from Pile Technology and one Engineering Assistant was transferred from Manufacturing-Operations. One Tech. Grad. was transferred from weekly to monthly roll and one Chemical Engineer was terminated.

$BiPO_4$ PLANT ASSISTANCE

Canyon Buildings

Decontamination of Sections 16 and 17 - B Plant - The first phase of testing decontamination methods in Section 16 and 17 at B Plant was the processing of a nitric acid wash to recover product from these sections. Acid Wash B-12-05-AW-1 followed Run B-12-05-B-2 through Section 8. The acid wash was started in cell drainage tank (5-6). Approximately 0.60 per cent of a run was recovered from the 5-6 and 5-9 tanks, 7 per cent in extraction and 4 per cent in the first cycle.

Concentration Buildings

Master Recycle Runs - T Plant - Twenty-six master recycle runs were started during the month at T Plant. The average total waste loss was 0.40 per cent

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of a standard run. Two runs, T-12-05-MRC-7 and MRC-25 contained one batch each of 234 Building oxalate supernatants which were 10 and 7 grams iodine per liter, respectively. The total waste loss for MRC-7 was 0.61 per cent and for MRC-25 was 1.06 per cent.

Four master recycle runs, MRC-15, 16, 17 and 18 were made up of Redox PR batches S-2-5-L-10, 9, 8, and 6 respectively. These batches were recycled to the Concentration Building because of difficulty in filtering batch S-2-5-L-7 in the Isolation Building. No processing difficulties were experienced with the master recycle runs of this material in the Concentration Building.

Waste Evaporators - B and T Plants - The first cycle waste evaporators operated routinely at B and T Plant. Due to very high radiation readings of 20,000 mr/hr at 1 inch from the evaporator vessel the West Area evaporator was cleaned with a series of acid flushes. The heel was reduced from 2458 gallons to 185 gallons and the radiation readings from 6000 mr/hr at 24 inches to 2500 mr/hr at 24 inches.

A water flush of about 3500 gallons of water sparged alternately with steam and air to maintain a temperature of 85 to 95°C was made at B Plant. The heel was reduced from 1750 gallons to 1646 gallons and the instantaneous evaporation rate rose from 553 gallons per hour to 701 gallons per hour.

The average lbs. steam/lb. of condensate in East Area was 1.13 for Runs B-12-05-E-1 through E-26 and 1.08 for Runs T-12-05-W-1 through W-19 in West Area. These evaporation ratios are better than the value of approximately 1.5 predicted for a single effect evaporator in "Final Report of Evaluation of Process Designs for BNL Waste Concentration Plant", BNL 112 (T-23).

Isolation Building

Batch Size Variation - Plutonium(IV) Oxalate Transfer to 234 Building - There has been an undesirable variation between the amount of product transferred to the 234 Building from the 231 Building as plutonium(IV) oxalate in RM Line type filter boats as determined from weights of the plutonium oxide or fluoride in the 234 Building vs. the calculated amount based on the difference between product solution (P-1) and supernate plus washes (CT-1) recycled to the 224 Building. This situation has resulted in the performance of special run conditions designed to measure the variation.

S Plant Runs - Eighty-nine S Plant runs were processed in the Isolation Building during the period covered by this report. The following processes were used:

Cell 2:	Single oxalate cycle, filter boat,	25 runs
	Two peroxide cycles, sample can,	13 runs
Cell 3:	Two peroxide cycles, sample can,	51 runs
	Total	89 runs

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All B and T Plant runs were processed through Cell 4.

Except for some difficulty in filtering S Plant runs which were high in nitric acid concentration, all processing was performed without unusual incident. Near the last of the S-2-4-L series adjustments were made in the S Plant flowsheet which resulted in greater nitric acid concentrations in the PR solutions. Coincident with high acid (8 to 13 M HNO_3) PR solutions, solids occurred which seriously plugged the N-1 Nutche filter blocks. Two runs filtered in Cell 2, S-2-4-L-108 and S-2-5-L-7, required over 10 hours to filter. The normal filtering period is approximately 45 minutes. Cleanouts made after these runs reduced the filter times to normal values. PR solutions of Runs S-2-5-L-6, 8, 9, and 10 were abnormal in nitric acid content and shipped to the 224 Building for intermediate processing as MRC (master recycle) runs. A sample of the PR solution of S-2-5-L-6 was assayed to determine the nature of the solids present. Significant amounts of silicon were found.

In Cell 3, runs S-2-5-L-2, 4 and 13 were difficult to filter, requiring 2 to 4 hours.

Runs S-2-5-L-11 and 12 are still in the Isolation Building vault pending processing in this building. Attempts to pre-filter these runs using a "filter stick" device in Cell 1 are contemplated.

After these difficulties were observed adjustments were made at S Plant which eliminated further troubles with N-1 filtering.

S Plant Single Peroxide Cycle Operation - Five S Plant runs (S-2-4-L-60, 62, 63, 64 and 65), all of relatively low acidity were processed through a single peroxide cycle and loaded into sample cans. Spectrochemical assays of the AT solutions of two runs showed no significant difference in impurities from runs processed with two peroxide cycles. A sludge formation with the appearance and solubility characteristics of plutonium sulfate appeared in the AT solutions. It is concluded that further investigation of single peroxide cycle processing is desirable.

Spectrochemical assays of two runs from the test group compared to the range observed for runs processed with two peroxide cycles indicated aluminum to be the only impurity to be present in abnormal amounts. Aluminum was present in amounts ten to twenty times higher (400 to 800 PPM) than previously observed.

PURIFICATION AND FABRICATION BUILDING PLANT ASSISTANCE

RG Line

Task I (Purification) - Preliminary designs have been completed for filtering equipment for use in the purifications hoods. These filters will be used

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to separate precipitates from slurries of plutonium(IV) oxalate. Elimination of time consuming settling and decantation procedures will accrue from the use of the filters when the plutonium(IV) oxalate precipitation process is adopted for the RG Line.

Task III (Reduction) - Several poorly formed buttons (rough surfaces and layers of plutonium separated by slag) resulted from reductions during May. Concurrently large pickling losses and/or large skulls during the casting operation occurred.

Yields from iodine boosted reactions calculated from

$$\frac{\text{Weight of plutonium in casting X 100}}{\text{Weight of plutonium in plutonium tetrafluoride,}}$$

have been tabulated and are as follows:

Yield (%)	No. of Castings	Reduction Process Conditions
96.2	--	(Long time average as reported in flowsheet, HW-22252.)
96.4	12	Single gasketed bomb, A-331 crucible, no recycled turnings,
95.4	29	Double gasketed bomb, A-331 crucible, recycled turnings in bottom of crucible,
91.9	15	Double gasketed bomb, S-1 crucible, recycled turnings in bottom of crucible.

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RM Line

Task II (Dry Chemistry) - Equipment difficulties precluded continuous operation of dry chemistry operations during May. Major difficulties were:

1. Erratic functioning of the water-trap alarms and automatic shut-down equipment located in the furnace exhaust lines,

2. Leaking solenoid valves in the exhaust lines which should prohibit aspirator water from backing into furnaces, and

3. Leaks in the furnace and exhaust systems that prohibited evacuating furnaces.

Heated electrodes have been installed in the conductivity equipment in the water traps to eliminate accumulation of a conducting film of hydrofluoric acid. At month's end these trap alarms were operating satisfactorily although the quantity of heat supplied to the electrodes required adjustment to reach an optimum.

A redesigned and shop-fabricated solenoid valve has been installed in one furnace exhaust line and functioned properly without leaking.

The air leakage around the doors believed largely responsible for difficulties in maintaining a vacuum in the furnaces had not been positively eliminated. An active design and/or experimental program was being initiated at month's end to overcome this difficulty.

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Miscellaneous

Production Test 235-5 (Reduction of PuF_4 with Ca and S) - Eighty-six reductions had been made using sulfur as one of the heat-booster chemicals by the end of May. Average reduction yield was ca. 89 per cent.

Experimental reductions have been made to evaluate the contribution to low yields by:

1. Degree of mixing of chemicals,
2. Degree of packing or tamping into crucibles,
3. Variations in quantities of calcium and sulfur,
4. Speed of evacuation of bomb assemblies - (rapid evacuations loosen the tamped charge),
5. Source of the tetrafluoride, and
6. Furnaces and piping systems.

Results have been erratic on all tests to date. None of the variables checked above can be the sole contributing cause for the lower than normal (iodine) reduction yields. Data from reductions made to date indicate that PuF_4 reduces but the plutonium metal frequently fails to coalesce or collect into a single regulus.

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REDOX PLANT ASSISTANCE

Plant Performance

The Redox Plant operated at a 77.4 per cent time efficiency during May, and averaged 3.43 tons of uranium per operating day. Production quotas were fulfilled on May 27, after 26.5 days of operation during which period an accumulated 3.5 days of down-time were sustained on IA Column feed. Operations were normal, with adequate decontamination of both the uranium and plutonium product streams. An overall summary of plant production performance is as follows:

	Approximate
Tons of Uranium processed	79.0
Plutonium produced (batch equiv.)	109.0
Per cent Uranium to waste	0.97
Per cent Plutonium to waste	1.54

Operating Performance

Performance of the solvent extraction equipment was, in general, satisfactory during the month, with steady-state decontamination factors being maintained across each extraction cycle. Periodic flushes were required in the first extraction cycle and both uranium and plutonium decontamination cycles to remove solid impurities (alumina) introduced to the system via the aluminum nitrate scrub streams. Several flowsheet modifications were maintained and several were made for the first time in order to minimize waste losses, or improve column operation. One batch of salt waste containing excessive plutonium and one batch of uranium product solution were reworked successfully with good recovery and decontamination.

Agitator A-F-4 (3D Column feed tank) developed excessive gland seal water leakage during the month, with water in-leakage rates averaging 200 cc/min at month end. This agitator is being replaced by a spare after about five months of continuous operation. The cause of failure has not been determined, but is believed to have been aggravated by shaft whip during periods of low liquid level in the feed tank. The activity level under which this agitator operates should permit easy decontamination for repairs to be made.

Activity released to the atmosphere through the ventilation stack reached an average peak period of 8 curies of I_{131} per day from April 16 through May 5. The release of this activity was coincident with the ruthenium scrubber recirculation pump failure, but data which would define the ruthenium scrubber as a possible source are not available. The stack activity emission of I_{131} after the ruthenium scrubber was restored to service on May 5, has averaged less than 2 curies per day through May 21. The ruthenium contribution to the stack activity has been determined to be an average of 0.005 curie per day

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for the period April 28 through May 17. Stack and process vent system monitoring is continuing in an attempt to define the source or sources of the high stack activity release encountered during the latter half of April.

Process Performance

The following table summarizes average steady-state decontamination and waste loss values by solvent extraction cycle. Waste losses do not reflect periods of known off-standard operation, and hence do not check with the overall waste losses listed above under "Plant Performance".

	Decontamination Factors (dF)				Per Cent Waste Losses	
	Uranium		Plutonium			
Cycle	Beta	Gamma	Beta	Gamma	Uranium	Plutonium
1st U	4.5	4.1	4.4	4.0	0.4	0.6
2nd U	1.8	1.9	--	--	0.2	--
3rd U	0.2	0.4	--	--	0.1	--
2nd Pu	--	--	1.8	2.0	--	0.5
3rd Pu	--	--	1.0	1.3	--	0.03
Overall	6.5	6.4	7.2	7.3	0.7	1.13

Feed Preparation - The 21 batches of uranium processed in the Redox Plant during the month received an average of 600 MWD/T pile exposure with an average age ("cooling" period) of 55 days. All feed batches prepared for solvent extraction were carried through the oxidation step without ruthenium volatilization or zirconium-niobium scavenging.

Uranium Extraction and Decontamination - Nominal conditions of the ORNL June, 1949 acid-deficient Flowsheet (Document HW-22834) were maintained on all three uranium solvent-extraction cycles during the month. IA Column scrub and extractant flow rates have been maintained 20 to 10 per cent higher than the flowsheet values in order to minimize waste losses. Plutonium waste losses from IA Column have averaged 0.6 per cent of the feed plutonium. Transient periods of higher than average waste losses were experienced on five different occasions during the month when IA Column extraction efficiency was impaired. A low effective extractant flow rate due to hexone entrainment in the IAW was the contributing cause for the periods of high losses. The appearance of excessive quantities of hexone in the waste system concurrent with IA Column mal-performance confirms this conclusion. The undissolved alumina in the vendor's aluminum nitrate solution being introduced to the process without the benefit of settling or clarification is believed to be the basic cause for the periods of high waste losses from IA Column. In all cases, whenever column instrumentation indicated high losses were being sustained, the IA Column was shut down and flushed with dilute nitric acid to remove impurities affecting extraction performance. Waste losses returned to normal after each

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2. Non-Routine (Continued)

Document	Title	Author
HW-24509	Methods and Flow Process Charts Sampling Procedure - Redox Plant	J. E. Fouts
HW-24046	Task I Activation Study RMA Line 234-5 Building	A. J. Anderson, B. M. Stark & R. Overson

III. PERSONNEL

A. Organization

The Bismuth Phosphate Plants and the Redox Plant were combined under one Chief Supervisor, E. A. Foskett, during May.

B. Force Summary

	Start of Month	End of Month	Net Change
Section General	3	3	0
Operations Unit	762	733	-29
Power and Maintenance Unit	546	544	-2
Process Unit	78	76	-2
Radiation Monitoring Unit	68	69	1
Plant Engineering Services Unit	19	21	2
Section Total	1476	1446	-30

C. Safety Experience

There were no major or sub-major injuries incurred by Separations personnel during May.

D. Radiation Experiences

There were two Class I radiation hazard incidents investigated by the Separations Section. Both occurred at the 200-W Area Waste Evaporator and resulted from (1) an employee entering a high level radiation zone under the mistaken impression that he was in a low level radiation zone and (2) a faulty dose-rate meter, which appeared to be working properly, being used by a Radiation Monitoring Inspector in a high level radiation zone. The incidents were not related.

The suspected emission of a large number of radioactive particles from the Redox stack was confirmed. The 1-A column during flushing and draining operations may be a source of these particles, the active material of which is primarily ruthenium.

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D. Radiation Experiences (Continued)

Total Iodine 131 emission rate from T and S Facilities averaged 5.6 curies/day. Reactivation of the H-5 scrubber appeared to reduce I emission at S Facility.

E. Personnel Activities

A committee, with P. E. L. Nussbaum as Chairman, is being formed to conduct a "Separations Safety Contest."

L. M. Meeker attended meetings at Los Alamos with members from the various sites for the purpose of coordinating procurement of materials and equipment for the various 234-5 operations.

A formal training program, conducted by R. E. Toczek, covering TBP operational and procedural information was essentially completed during the month.

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flush, but the benefits derived from flushing were of 4 to 8 days duration depending on operating rate and thoroughness of the flush.

Several flowsheet chemical changes, aimed toward minimizing the amount of solids introduced to the extraction system and ultimate improvement of the uranium product purity, were made during the month. The first of these occurred on May 10 when the 3DS was made neutral (vice 0.2 M HNO_3-deficient), and iron was omitted (formerly 0.05 M $Fe(NH_2SO_3)_2$). Immediate benefits were realized in the uranium product purity with respect to sodium content as a result of this flowsheet change. Sodium content, which formerly averaged 3000 ppm (parts per million parts of uranium), has steadily decreased to 250 ppm at month end.

Fission product activity in the Redox uranium product ranged between 2.0 and 3.8 times natural uranium gamma and averaged 0.2 times natural uranium beta. The U-237 gamma activity ranged between 35 and 45 times natural uranium gamma. The average plutonium content in the recovered uranium was less than 1 ppb (part per billion parts of uranium). The tentative specification for uranium product gamma activity determined with a scintillation counter employing an 8.9 g/sq.cm. lead absorber was increased during the month for a 30-day trial period from a ratio of 3.0 to 4.0 times natural uranium gamma.

Plutonium Extraction and Decontamination - An attempt was made early in the month to reduce the plutonium extraction column scrub ratios to nominal flowsheet values. Restoration of the flowsheet scrub rates resulted in erratic column operation with a build-up of liquid level above the hexone overflows. Current with the plutonium extraction column operation at flowsheet scrub rates an increase in the 231 Building filtration time cycle for the Redox product became apparent. These circumstances indicated excessive solids carry-over from the extraction column disengagement sections. Double scrub ratios were re-established on May 4 and column operation as well as 231 Building filtration times returned to normal.

Ferrous ammonium sulfate plus sulfamic acid were introduced with IBX vice ferrous sulfamate on May 20. No significant change as a result of the increased sulphate content has been noted in the 2A Column waste losses.

The uranium content of the plutonium product averaged less than 0.1 per cent by weight. Five plutonium product cans from Redox May production required recycle to 224-U Building due to the presence of excessive solids.

Solvent Recycle - The use of water scrubs on IO Column and the Hexone Distillation Column (G-3) was continued during the month. Nitric acid (1 per cent solution) additions were made to G-3 approximately every 3 days in order to control symptoms of foaming and maintain pot vacuum. By-passing of the hexone still was not necessary on any occasion during the month.

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Process Chemistry

Studies have been continued using the 3/8-inch, 12-stage Mini mixer-settler as a 2D (or 3D) Column, testing modifications to the Redox flowsheet intended to reduce the Na, Al, and Fe content of the recovered uranium. In addition to the runs reported last month showing the effect of changing both the influent stream composition and point of entry into the column, six runs have been completed using plant 2DF, the purpose of which was to show the effect of these same two variables on the Beta, Gamma, and Pu decontamination. The analytical data are not yet completely available, but average D.F.'s for B and G were approximately 600 and 1200, respectively.

ANN Clarification - General Chemical Company 72 per cent ANN, after dilution to 62 wt. per cent, contains 0.05 to 0.25 vol. per cent alumina solids. Filtration, settling, and centrifugation, have been employed in the laboratory in a search for the most practical means of clarification. Work is continuing on this problem, but on the basis of experience to date, centrifugation is the most rapid and most positive of the three. Settling will give good results if allowed enough time (92 per cent light transmittance after 90 hours in a solution depth of 12 inches).

Behavior of Unclarified ANN - When the laboratory "crud" columns were used to study the behavior of the ANN which contained Al_2O_3, the solids were found to accumulate at the interface when the column was operated with the organic phase stagnant (interface below the packing at the bottom). When the column was operated with the phases flowing countercurrently (interface at the top) with the hexone being recycled while the ANN was given one pass through, a small amount of stable emulsion formed at the interface with a correspondingly large collection of solids. This was repeated with a filtered ANN solution (95.5 per cent light transmittance vs. 49 per cent unfiltered) and the results followed the same pattern, but to a lesser degree due to the reduced solids content. Two additional runs of a similar nature are planned for comparison, using 1) centrifuged ANN and, 2) settled ANN, in an attempt to determine the efficacy of solids removal by the two methods.

Clean-Up of Tygon-Contaminated ANN - Several methods have been found for the removal of the emulsifying agent from the Tygon-contaminated ANN, and were reported in a recent informal memorandum. Scavenging agents such as fluorothene, polythene and activated carbon black were among the most successful and their further evaluation is currently under study. Additional current tests are directed along two main approaches, viz., (1) the use of a scavenging agent that can be used on a batch basis and removed by centrifugation; (2) an adsorbent that can be used as a filter bed or preferably in a packed adsorbent column. A number of materials including some anion and cation exchange resins are under investigation.

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Head-End Treatment - A full four-inch "hot" slug will be obtained from the Radio-Metallurgy group, and will be dissolved to prepare solution for use in Head-End development runs in laboratory cubicle equipment. A program for both laboratory bench studies and cubicle runs has been formulated, and the former have been started. These are primarily directed toward improving the $KMnO_4$ Ru volatilization performance in the Redox Plant, with alternate head-end studies scheduled for longer range consideration.

URANIUM RECOVERY PLANT ASSISTANCE

241-U Tank Farm Operation

Sluicing operations were carried on throughout the month and approximately 55 to 60 tons of sludge (equivalent to approximately 25 tons of uranium) have been moved from Tank 101-U to Tank 103-U. No further blending operations were attempted nor can be started until after the present blend tank solutions are transferred to 241-WR Process Vault. This will not be possible until the 221-U canyon ventilation system has been balanced.

221-U Plant

Construction forces are working on the completion of the final items in the 211-U canyon, namely: (a) balancing of the canyon ventilation system, (b) overhauling the 75 ton crane and replacing the rails, and (c) painting the canyon deck. The calibration and testing of the graphic panel instruments has been completed. Major instrument work yet to be completed includes adjusting the gang valves and balancing the process flow instrumentation.

Tank calibrations are 98 per cent complete with 54 per cent of the process vessel coils and jackets and 43 per cent of the jets having been tested. The sampler operability tests are essentially complete.

The present anticipated date for the introduction of cold uranium into the 221-U Building is June 15, 1952 with cold runs scheduled to begin shortly after that time.

A manual entitled Off Standard Conditions, Diagnosis and Remedy, 221-U Building Main Production Lines has been prepared and issued to Manufacturing by the Uranium Recovery Plant Assistance group.

224-U Plant - UO_3 Conversion

Twenty-three lots (181 drums) of UO_3 were calcined in the pots of the 224-U Building during the period. This represented a production rate of 3 to 3-1/2 tons/day uranium during periods of continuous operation. Twelve lots of this material (94 drums) including one test lot (lot 005T, 7 drums) of UO_3 made from

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Mallinckrodt UNH solution and one test lot (Lot 006T, 7 drums) of "fines" calcined from Redox UNH solution were shipped to K-25 on May 20. Although the Redox 3EU (approximately 66 days cooling after pile exposure) averaged only a 15 to 20 day additional cooling period prior to calcination, all gamma radiation readings on the UO_3 powder were within specifications (300% of natural uranium gamma) upon completion of calcination.

Operating conditions for all UO_3 production except for the Mallinckrodt test lot was at a final temperature of 280° or 270°C. No noticeable increase in the per cent of HNO_3 and H_2O has been detected. It appears that operation at this temperature assures the required 8-hour or less pot time cycle.

Additional gamma radiation analyses on UO_3 powder indicate that all samples tested (Lots 020 through 025) contained approximately 50% natural uranium gamma activity approximately one month after the counting of the original UO_3 samples which had ranged from 330 to 970 per cent natural uranium gamma.

Process Chemistry

UNH Calcination - Four more laboratory calcination runs were made during the month. The purpose of the runs was to continue breaking in the equipment (after minor modifications) and to check the effect of sodium addition. Analyses of the UO_3 samples produced by the several runs are summarized in the following table. The first two runs used Mallinckrodt UNH solution from 224-U Building, while the remainder used solution prepared from pure Mallinckrodt UO_3.

Run	UO_3, %	U_3O_8, %	HNO_3, %	H_2O, %	Bulk Dens. Grams/cc.	Na^+, ppm.
52-1	97.3	0.04	0.47	0.42	2.57	None added
52-2	96.8	0.01	0.79	0.58	2.30	"
52-3	98.7	0.03	0.82	0.43	2.35	"
52-4	98.5	0.04	0.77	0.36	2.30	2210
52-5	98.6	0.04	0.56	0.33	2.18	--

No detectable change in power consumption was noted during the runs containing Na.

UO_3 Reactivity Test - Laboratory equipment is being procured, fabricated, installed, and calibrated to carry out the UO_3 reactivity test which has been developed at K-25. The test involves reduction of the UO_3 sample to UO_3 employing a stream of H_2 gas in an electrically-heated tube-furnace, followed by hydrofluorination to UF_4 by passing HF gas through the furnace. It is expected that trial runs will be conducted approximately the middle of June.

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REDOX AND METAL RECOVERY DEVELOPMENT

Process Studies

Two members of the Process Studies group visited KAPL and ORNL during the month for discussions of latest Purex process developments. Since most of the activities of the Process Studies group during May have been on alternate separations processes, these items appear later in this report.

Chemical Engineering Development

Purex Solvent-Extraction Studies with CCl_4 Diluent - During the month twenty-eight Purex-process solvent-extraction studies with CCl_4 as the diluent and with "cold" (unirradiated) uranium were carried out in 321 Building. These comprised IA, IB Extraction, IC, and 2D Column HTU and flooding determinations in a 3-inch-diameter glass pulse column. The approximate conditions of the Purex flowsheet presented in Document HW-22888 were employed. The highlights of the new findings are as follows:

1. The IA and 2D Column extraction sections employing a "standard" perforated-plate cartridge (stainless-steel plates with 0.125-inch-diameter holes, 23 per cent free area, spaced 2 inches apart) gave essentially unimpaired HTU values and uranium losses at volume velocities as low as 250 gal/(hour)(sq. feet), sum of both phases.

2. In the IC Column employing stainless steel plates with 0.06-inch-diameter holes, 21 per cent free area, spaced 2 inches apart, the optimum HTU values at 0.5-inch pulse amplitude were about 30 per cent higher than the optimum HTU's at 1.0-inch amplitude; and were about the same as those obtained at 0.5-inch amplitude with a "standard cartridge" (reported previously).

Purex Solvent-Extraction Studies with Hydrocarbon Diluent - During the month sixty Purex-process solvent-extraction studies with Shell Deodorized Spray Base as the diluent and with "cold" (unirradiated) uranium were carried out in 321 Building. These comprised IA, IB Extraction, IC and 2A Column HTU and flooding determinations in a 3-inch-diameter glass pulse column. These runs supplement earlier hydrocarbon-diluent Purex studies, reported on in Documents HW-20964 and HW-21624. The approximate conditions of the Purex flowsheet presented in Document HW-22888 were employed. In the 2A Column runs uranium was used as a stand-in for plutonium. The highlights of the new findings are as follows:

1. In a IA Column extraction section employing a "standard cartridge" (stainless steel plates with 0.125-inch-diameter holes, 23 per cent free area, spaced 2-in. apart) HTU values of 1.1 to 1.2 feet (0.03 to 0.06 per cent uranium loss from a 9.1-foot-high plate section) were determined at

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volume velocities of 400 to 900 gal/(hr)(sq ft), sum of both phases. These HTU values are about 20 per cent higher than those determined previously under comparable conditions. (CF, HW-20964)

2. Reduction of the stainless-steel plate hole size from 0.125 inch to 0.06-inch resulted in only a slight (10 to 20 per cent) improvement in IA Column extraction section HTU values. The capacity was not significantly reduced: the flooding capacity was in excess of about 2500 gal/(hr)(sq ft), sum of both phases, with both hole sizes (at 2-inch plate spacing, 22 ± 1 per cent free area).

3. The flooding capacities of the IA scrub and IB extraction sections were found to be highly sensitive to the uranium concentration (and, hence, specific gravity) of the organic phase. For example, in the IA scrub section the flooding capacity in gal/(hr)(sq ft), sum of both phases, decreased from 1400 to 400 as the concentration of UNH in the organic feed increased from 160 g/l to the flowsheet value of approximately 200 g/l.

4. (a) In IC Column runs, rendering the bottom face of the stainless-steel plates preferentially organic-phase wetted (by coating with Kel-F NW-25, a fluorothene dispersion) resulted in much more favorable HTU's and capacities than had been previously obtained with all-aqueous-wetted or all-organic-wetted plates. The following uranium losses and HTU values were determined with such dual-face plates, with 0.125-inch-diameter holes, 23 per cent free area, spaced 2-inches apart, with the organic as the continuous phase, at a 1-inch pulse amplitude, with 0.03 M HNO_3 as the aqueous extractant (ICX), and an aqueous-to-organic volume flow ratio between 1.6 and 1.7:

Volume Velocity, Gal/(Hr)(Sq Ft), Sum of Both Phases	Ampl. x Freq., In/Min	% U Loss from 9.1-Ft. Plate Section	H.T.U., Ft.*
900	70	0.004	0.7
900	55	0.04	0.9
1800	55	1.5	1.4

*All these runs operated predominantly in the "emulsion" rather than the "mixer-settler" region.

(b) The dual-face-plate HTU values with the aqueous as the continuous phase were approximately twice those determined with the organic phase continuous.

(c) Limited IC Column studies with dual-face plates with 0.06-inch and 0.1875-inch-diameter holes indicated the absence of any marked effect

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of hole size on capacity. There was, however, a slight but definite trend toward higher HTU values with increasing hole size. With 0.06-inch-diameter holes an HTU 20 per cent lower than the best 0.125-inch hole HTU was determined, under comparable conditions. With 0.1875-inch holes the HTU's were about 0 to 20 per cent higher than those measured under comparable conditions with 0.125-inch holes.

5. The 2A Column extraction section employing dual-face plates with 0.06-inch-diameter holes, 21 per cent free area, spaced 2-inches apart exhibited a flooding capacity in excess of 1600 gal/(hr)(sq ft), sum of both phases. HTU values of 2.0 to 2.2 feet (uranium losses of 1.5 to 2.3 per cent with an 8.8-feet plate section) were determined with the organic phase continuous, at volume velocities of 800 to 1500 gal/(hr)(sq ft), sum of both phases, with a 1-inch pulse amplitude, at frequencies of 70 to 85 cycles/min. With the aqueous phase continuous the HTU's were about 20 to 50 per cent higher than with the organic phase continuous.

Mechanical Development

Purex Corrosion Studies - Concurrent with the specification of hydrocarbon as the diluent for the extraction stream in the Purex flowsheet, investigations of the corrosion resistance of materials of construction exposed to Purex process streams spiked with chloride ion to simulate the concentration of chloride ion which might have occurred as a result of CCl_4 decomposition (based on a flowsheet using CCl_4 as a diluent instead of hydrocarbon) are being continued on a reduced scale. Studies carried out in batch and semiworks equipment simulating the IAW concentrator and acid recovery fractionator have been terminated while static corrosion tests on metallurgical samples exposed to various Purex streams are being concluded following completion of the present series of tests.

A final run was made in the continuous IAW concentrator and acid fractionator. This run, using a simulated IAW concentrator feed spiked with 1 g/l Cl^- ran continuously for 59 hours before the run was terminated because of failure by corrosion of a weld in the acid fractionator. Liquid samples drawn from the acid fractionator showed a Cl^- concentration of 15 to 18 g/l at the level of 10 per cent HNO_3, and 10 to 17 g/l Cl^- at the 30 per cent HNO_3 level. Maximum chloride ion concentration probably occurred at an intermediate point between the two sample locations. Corrosion of the Type 304 stainless steel packing (1/2 inch Raschig rings) by the liquid phase in the acid fractionator was excessive throughout the column, the rate being greater than 0.2 inch penetration per month in the zones of greatest attack. The upper six feet of the fractionator constituted an unexpected zone of excessive corrosion. In this region severe pitting occurred at 5 g/l HNO_3 and 0.2 g/l Cl^-, and a rusty deposit was found on the packing exposed to 5 g/l HNO_3 and 0.03 g/l Cl^-.

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Corrosion studies in which metallurgical samples of Type 309 SCb, 304 ELC, 316, and Carpenter 20 stainless steels have been exposed to various Purex process streams at both room temperature and the boiling point, and spiked with NaCl to give concentrations of chloride ion up to 5 g/l have resulted in negligible (less than 0.0005 in/month) corrosion rates for all samples exposed.

Pump Development

Small Pump Development - A Vanton flexiliner rotary pump constructed with a polyethylene body and a vinyl plastic diaphragm-like rotor has been repaired and evaluation of the unit is underway. A Model PP-1 Eco Chemical Company pump is being tested. The unit consists of a Type 316 stainless-steel housing, and double-acting eccentric rotors which rub against the housing, rolling the solution through the pump. Rotors and bearings are filled (material unknown) Teflon. A Milton-Roy reciprocating piston pump driven by an air actuated piston has operated for 200 hours pumping a 15 per cent TBP in CCl_4 solution at a rate of 800 ml/min against a head of 12 ft. The pump is reciprocating at a frequency of 75 strokes per minute with an amplitude of 1-1/4-inch. Leakage past the mica filled Teflon packing has been negligible. The pump will be dismantled after 250 hours for inspection.

Submerged Pump No. 1, a regenerative turbine pump equipped with a 2-foot-long drive shaft guided by a Graphitar No. 2 sleeve bearing operated for 312 hours pumping CCl_4 at 0.5 gal/min against a 3-foot head. Measurement of the bearing at the end of 312 hours operation revealed wear of less than 1 mil. No scoring or eccentric wear of the bearing or journal was evident. Testing has been discontinued. There is no strong evidence that CCl_4 is a worse lubricant for process solution lubricated bearings than other Redox or TBP process solutions.

Instrument Development - One of the low flow (nominal range 6 to 60 cc/min) all stainless steel transmitting rotameters for the Hot Semiworks has been installed in a test stand and operated using water as a test fluid. A linear calibration curve over the range of 5 to 60 ml/min was obtained but flows as low as 1.5 ml/min and as high as 71.4 ml/min were measured. The reproducibility of the flow rate is being determined.

Recuplex Development - A preliminary layout showing overall dimensions and sizes of a proposed submerged regenerative turbine pump for pumping the product-bearing streams in the Recuplex Plant is being prepared. Three proposals for a pulse generator for the Recuplex pulse columns have been prepared for comment. One proposal utilizes a plunger type reciprocating piston driven either mechanically or hydraulically; another utilizes a Teflon bellows actuated through an extension rod by means of an external electro-magnet, and the third utilizes a hydraulically actuated reciprocating cylinder.

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Materials Testing

Abrasion and Shear Hardness Testing - Four samples each of Amercoat 23, 33, and 55 were coated with Amercoat 1574 Tie-Coat followed by five coats of Amercoat 1574. Average Taber Wear Index numbers obtained using the Taber Abraser for 1000 cycles using the CS-17 wheel and a 1000 gram weight are as follows (lower index numbers indicate greater resistance):

Amercoat 1574 over Amercoat 23 - - - - - 46.5

Amercoat 1574 over Amercoat 33 - - - - - 53.0

Amercoat 1574 over Amercoat 55 - - - - - 63.3

The Taber Index agrees with previous results obtained on Amercoat 1574.

A series of Shear Hardness tests using Amercoat 1574 gives an average Shear Hardness Number of 500.

Decontamination Studies - Operability runs using water and nitric acid have been conducted in junior cave remote control decontamination equipment in 222-S Building. Shakedown runs and equipment repairs will be completed the first week of June, at which time Redox 2nd and 3rd cycle streams will be introduced to the system for the first "hot" studies.

Corrosion Studies - HW-24407 and HW-24442, outlining a proposed corrosion testing program for SAE 1010 mild steel in Redox Waste Storage solutions at elevated temperatures have been issued. The program is designed to investigate corrosion at temperatures between 160 and 220°F, and pH ranges between 11 and 13, in order to determine the maximum temperature and the minimum pH above which corrosion becomes excessive. Coupons will be immersed in the liquid and vapor phase and at the liquid vapor interface.

The studies have been underway six days but no data are available at this time.

Alternate Separations Processes

Purex Contactor Choice - The working committee of RDA-DC4 concluded an evaluation of the relative merits of solvent-extraction contactors with a recommendation (HW-24475) that pulse columns be used in any Purex production plant built at Hanford Works in the future. Packed columns were excluded by the excessive heights which would have been required to meet process specifications. The choice between pump-mixer-settlers and pulse columns was based primarily on three factors. (1) A definite degradation of solvent adversely affecting product recovery and decontamination is observed when solvent is placed in a radiation field comparable to that in the IA extraction section.

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Since the degree of solvent damage was shown to be a direct function of time, and since the time holdup of solvent in a pump-mixer-settler IA extraction section is estimated to be about ten times the time hold-up in a pulse column IA extraction section, pulse columns are favored for this process. (2) The concentrations of plutonium possible in the 2A and 2B contactors are such that nuclear safety must be assured by safe geometry or poisoning techniques. It is believed that the modifications required to make a pulse column geometrically safe are few and relatively simple, while the mixer-settler design would require extensive modification and the revised unit would have to be demonstrated to meet hydraulic and process specifications. (3) Pulse column specifications could be written within a month and would require little additional development work at this time. Conversely, the proposed pump-mixer-settlers would have to be constructed and demonstrated (the scale-up factors are as yet unpredictable), requiring up to 12 to 18 months and an expenditure of development funds of $150,000 to $500,000.

Purex Diluent Choice - An aliphatic hydrocarbon was chosen over carbon tetrachloride as the diluent for TBP for the projected Purex production plant. This choice was made on the basis that the use of a carbon tetrachloride diluent is as yet insufficiently demonstrated to permit its choice in a production plant. Extensive comparative tests revealed no conditions which would preclude the use of a CCl_4 diluent, although a chloride corrosion problem is created by its radiation induced decomposition, and the degradation of TBP under irradiation is apparently catalyzed by the presence of CCl_4. These studies are being drawn to a logical termination, and a separate report will be issued covering these investigations.

Purex HW-#1 Chemical Flowsheet is nearly ready for publication as HW-23529. This flowsheet is based on development work done at KAPL, ORNL, ANL, and Hanford Works and is intended to serve as a basis for the design of the projected Purex production plant. It incorporates ruthenium volatilization, zirconium-niobium scavenging, two cycles of solvent extraction for uranium and for plutonium, and a silica gel treatment for the concentrated uranium product. Space is to be allocated for an ion-exchange cycle for plutonium clean-up. The second plutonium cycle will employ either a conventional solvent-extraction flowsheet or a "reflux" flowsheet. In the "reflux" flowsheet, most of the aqueous effluent from the 2B Column is returned to the 2A Column as reflux, allowing the plutonium concentration at that point to build up to the desired concentration, say 50 g/l.

Purex Process Chemistry

Purex solvent damage by radiation - As part of a program to evaluate any adverse damage to tributyl phosphate solvent by exposure to radiation, a number of TBP samples have been exposed to gamma radiation levels on the order of 2×10^5 roentgens/hour by immersing the samples (contained in stainless-steel containers) in one of the pile cooling basins in close proximity to one or

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more buckets of irradiated slugs. The various samples exposed as above have included TBP (a) by itself, (b) diluted with CCl_4, (c) diluted with hydrocarbon and (d) diluted with CCl_4 or hydrocarbon and in contact with unirradiated Purex IAF (aqueous phase). Aliquots of the samples were removed after irradiation exposure times of 1, 2, 4, 24, 72, and 168 hours (and in some cases, 22 days). Uranium phase-distribution ratio values measured under conditions at the dilute end of the Purex IC Column (1.0 g UNH/l), designated the "C" contact, have been employed as a measure of damage to the various solvent samples by the intense gamma radiation field. The following tentative conclusions have been drawn from these tests:

1. The solvent 30 per cent TBP-CCl_4 may produce enough complexing agent(s) during IA Column irradiation to have a significant effect upon the ultimate decontamination obtainable. The effect of the complexing agent(s) on Pu(III) has not been determined.

2. Washing the irradiated solvent with 5 per cent Na_2CO_3 solution effectively removes the complexing agent(s).

3. The amount of complexing is significantly less when TBP is irradiated alone or in the presence of hydrocarbon diluent in place of CCl_4.

4. No significant complexing may be attributed to the decomposition of diluent alone, whether CCl_4 or hydrocarbon.

321 Building Operations

Operations continued during the month on a standard rotating shift. All of the extraction equipment was converted to operate on a Purex flowsheet using hydrocarbon as the solvent diluent instead of CCl_4. Details of the Purex process solvent-extraction runs and the results are reported elsewhere in this report. Approximately 800 pounds of unirradiated, reject uranium slugs were dissolved in four cuts in the 321 Building dissolver to maintain an adequate inventory for the solvent-extraction runs.

Hot Semiworks

Construction of the Hot Semiworks is 95.5 per cent complete. All equipment except agitators and jets has been received and installed. All piping has been completed. Cleaning and testing of pipe is approximately 50 per cent complete.

The Hot Semiworks Manual is 98 per cent complete in rough draft and 35 per cent complete in final copy.

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SEPARATIONS PROCESS RESEARCH

Resin Column Studies

Plutonium from a Redox IIBP solution was adsorbed onto a Dowex-50W resin column and then eluted with 6 M HNO_3, 0.4 M NH_4SO_3H. Decontamination factors for zirconium, niobium and ruthenium were found to be ca. 10, 15 and 8, respectively.

The use of sulfurous acid for valence state adjustment prior to adsorbing the plutonium on Dowex-50W has been found to be highly satisfactory. The reduction of Pu(VI) and Pu(IV) to Pu(III) appears to be complete in less than one-half hour at room temperature. No corrosion of stainless steels 347, 304 ELC and 309 SCb by solutions of 0.3 M HNO_3, 0.1 M H_2SO_3 at room temperature has been found over a period of two weeks. These tests are being continued to give a total exposure time of 4 weeks. The replacement of hydroxylamine sulfate by sulfurous acid is desirable since the use of the former results in plutonium feeds saturated (or supersaturated) with gaseous reduction products which interfere with column operation.

The use of 6 M HNO_3, 0.4 M NH_2SO_3H or 4 M HNO_3, 0.3 M NH_2SO_3H as the elutriant for removing plutonium from Dowex-50W results in the collection of gas in the column. The amount of gas collected varies from run to run and often interferes with column operation.

A series of resin column runs is being performed to evaluate the use of 3 M H_2SO_4 as the plutonium elutriant. The use of sulfuric acid avoids all the gassing problems associated with the nitric acid system. Approximately 85-90 per cent of the plutonium may be removed from the resin at a concentration of 65 g/l and having a sulfuric acid concentration of ca. 2M. It has been observed, however, that the last 10-15 per cent of the plutonium removed from the resin column requires an abnormally large volume of the 3M H_2SO_4. The use of this elutriant may, however, be used to advantage if ca. 15 per cent of the plutonium is routinely left on the resin bed. In this fashion, the arduous task of removing the last traces of plutonium from the resin bed is avoided.

Redox Head-End

The statements made last month relative to a urea pretreatment of dissolver solutions to destroy nitrites have been substantiated with further experiments and complete analytical data. Sulfamic acid cannot be substituted for the urea since under Redox Head-End conditions it reduces permanganate.

Equations describing the effect on ruthenium volatilization of various methods of addition of permanganate during Redox Head-End operation have been derived and are discussed in HW-24496.

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Redox Emulsion Studies

The standard hexone pretreatment does not remove the absorption peak at 231 mu, which is due to an impurity and is present in all the plant hexone samples, and in some cases the pretreatment increased the peak. The peak at 231 corresponds to the peak of mesityl oxide and qualitatively the non-volatile portion of plant hexone streams has the same spectral characteristics in the ultra violet as mesityl oxide. This indicates that this non-volatile material may be a polymer having the same functional groups as mesityl oxide. A second pretreatment of freshly pretreated hexone gave a heavy precipitation of chromium(III) oxide on neutralization showing that the hexone may be partially decomposed by the pretreatment process.

Plant IBX and IIDS streams were dialyzed and the solids remaining after the removal of the salts were examined with the electron microscope. Both crystalline and amorphous solids were found. The crystals were approximately 8 by 12 microns and thin enough to be transluscent to the electron beam. The amorphous material appeared as clusters, about 6 microns in diameter, of individual particles averaging less than one micron in diameter.

Tests have been continued to determine which phase was continuous in the disengaging tests. Methods investigated were visual observation with and without dyes present, conductivity, and adding a drop of aqueous containing a dye to the dispersion and observing at which apparent interface the drop coalesced.

For the conventional disengaging test using a 25 ml graduated cylinder and a 1 to 1 phase ratio, it was found that an aqueous in organic dispersion was formed. This is consistent with the observation that in general the presence of solids decreases the disengaging time in this test.

An alternate method for forming dispersions has been devised which is capable of producing either organic-in-aqueous or aqueous-in-organic dispersions depending on the wetting characteristics of the agitator. The apparatus consists of a stainless steel screen attached by means of a rod to a reciprocating air motor such that the screen is moved rapidly up and down through the interface. When a clean, preferentially aqueous wet, stainless steel screen is used the organic phase is dispersed, while with a "dry-filmed" or otherwise treated screen such that it is preferentially organic wet the aqueous phase is dispersed. With this apparatus used to disperse the organic phase a number of comparisons have been made.

In contrast to the older, conventional disengaging test the presence of solids, in most cases, increased the disengaging time. Taken in conjunction with the results of the standard test, this indicates that the solids affecting the emulsifying tendency of the system are water wet. Tests with IAS gave considerably longer disengaging times with 100 hexone, irradiated hexone, and

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hexone waste streams than were obtained with distilled hexone. Although a complete study of the process streams has not been made, the results so far obtained indicate that this test for disengaging may be of considerable value in gaining an understanding of column behavior. An observation that may have some significance in column behavior is that the wetting characteristics of an initially water-wet screen may change over a period of time so that a reversal of the dispersion occurs.

Uranium Recovery - Current Metal Waste

Batch studies were conducted to test the improvement of decontamination by the use of complexing agents for the fission products. Phenylarsonic acid (PAA) increases the distribution of zirconium into the organic phase. When PAA was introduced to about 0.5 g/l in the strip RCX the distribution of zirconium in stripping stages increased from $E_a^o = 0.08$ to $E_a^o = 13$. The product of these batch studies contained only 10 per cent of the zirconium activity usually found. Countercurrent tests are in progress.

Re-evaluation of the data of CMW (current $BiPO_4$ waste) Run #2 (low activity feed, two cycles, each with two scrub stages, 0.05 M HF in second cycle scrub) shows that specifications were met on the product. The fission product activity amounted to 77 per cent of the beta tolerance and 55 per cent of the gamma tolerance (23 per cent and 165 per cent of the beta and gamma activity, respectively, of natural uranium).

Uranium Recovery - Aged Metal Waste

Batch countercurrent runs on AMW (aged metal waste) show that gamma specifications will be easily met with one scrub stage (gamma 20 per cent of specification). Beta tolerances were met with a lower margin of safety (80 per cent of specification).

Uranium Recovery - Mini Investigations

A series of experiments have been performed simulating the RA column of Metal Recovery by means of a 3/8 inch "Mini" mixer-settler, using six year aged metal waste and operating in accord with the HW #4 (concentrated) flowsheet.

The decontamination effected in the scrub section was found to be beta controlling, and a function of the contacting time although one scrub stage was sufficient to meet specifications in batch contactings.

A correlation between the beta activity present in the product stream and the scrub residence time was obtained by two methods: 1) by varying the number of scrub stages and 2) by varying the flow rates. Both methods showed that a minimum scrub residence time of approximately 12 minutes (mixing and

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settling time) was necessary to meet specifications, suggesting that the operation is diffusion controlled. Examination of the plant columns and process is being made in the light of these observations.

The Mini is now in the process of being set up behind four-inch lead shielding for full level current metal waste and Purex runs and should be available for this purpose in a few weeks.

Adsorption of Fission Products From Organic Media

Several column studies were carried out with a KAPL Purex IBU solution from SPRU operations. A zeolite bed exhibited break-through of beta activity after about 50 bed volumes, possibly because of a low capacity for ruthenium. Alumina failed in batch experiments designed to determine the effect of acidity on decontamination. The effluent from a column packed with granular lead (50-70 mesh) met specifications for 90 bed volumes and then plugged. A larger column packed with 35-50 mesh lead gave an initial gross beta decontamination factor of 2.4 (effluent beta activity 60% of natural U). This dropped to 1.3 at 112 bed volumes at which time the flow had decreased markedly and the experiment was discontinued. Passage of the effluent from the lead column through a zeolite column of about the same volume gave an initial additional decontamination factor of 4, however this dropped to 1.3 at the end.

Studies with cold solutions indicated that plugging of lead columns is worse at higher acidities and that it is also dependent on flow rate, suggesting that it may be partially due to gas evolution. It was found that a partially plugged lead column could be regenerated by passage of a solution containing ammonium acetate and ammonium citrate. However this has not been demonstrated in hot experiments.

Batch experiments with Redox plant hexone solutions gave poorer results than previously obtained, suggesting that several days aging has a detrimental effect on the adsorption of activity.

Tail-End Scavenging of Uranium Streams

Work has continued on the development of a versatile Tail-End scavenging operation to clean up the aqueous uranium stream from Uranium Recovery, Redox or Purex prior to calcination. The object is to insure that the product from the Uranium Recovery Plant will meet specifications and to eliminate additional uranium cycles from Redox and Purex.

Experiments with Redox plant IIDF and IIIDF solutions from recent non head-end treated runs, as well as with Purex ICU from SPRU pilot plant operations, have shown that beta and gamma specifications are met by precipitating copper(II)

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sulfide from these solutions while simultaneously scavenging with either Super Filtrol or silica gel (to remove Zr and Nb). Alternately, copper sulfide precipitation may be followed by passage through an absorption column packed with silica gel. Such an experiment produced a product meeting both beta and gamma specifications and shows no evidence of break-through after passage of more than 90 bed volumes of solution. Spectrographic analyses indicate that the product uranium solutions are free of silicon or copper. Thus, these data indicate that sufficient decontamination of current irradiated uranium might be achieved by one solvent extraction cycle followed by Tail-End treatment. It also follows that such steps might provide adequate decontamination for current metal waste and certainly for aged metal waste. These will be tested. This would be particularly true if the feed were given the Head-End treatment.

Large amounts of cerium or rare earth activity may be removed with a Dowex-50 resin column. Thus an RCU solution produced from Mini runs on six year old metal waste failed to meet beta specifications because of rare earths. Passage through a resin column gave approximately 400 bed volumes of effluent which met both beta and gamma specifications. This treatment also gives some plutonium decontamination as does Super Filtrol scavenging.

Purex Studies - Second Plutonium Cycle with Reflux

A second cycle with reflux was tested in the batch countercurrent separatory funnel bank. The feed was acidified Redox IBP which had been treated to convert all plutonium to the IV state. The product was refluxed to 64 g/l. Measured decontamination for betas was 1500, for gammas 10,000. The fission product activity in the product was less than 20 per cent of that due to plutonium. Limited decontamination from UX_1 was observed.

A Purex second cycle run was performed without reflux from the stripping stages. This run was intended to assess the value of the above reflux run as regards decontamination. The product contained three times the fission product gammas as the run with reflux, and the same amount of betas. In both runs the activity level of the product was less than that found in Redox E-3 (IIIBP stream) samples.

These runs indicate that reflux operation not only provides a product of the desired high concentration but also provides some additional decontamination.

Treatment of Off-Standard Purex Streams

Studies of the removal of dibutyl phosphate from concentrated aqueous wastes combined with 10 column wastes are being held up for lack of an acceptable method for determining DBP in the stream. Modifications of the standard "C" test, as used to determine DBP in an organic stream, have been tried but have not been found sensitive to DBP concentrations in the aqueous stream of less

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than 10 to 100 ppm. Since temporary specifications call for one ppm or less DBP in organic streams, this test appears to be of insufficient sensitivity for the purpose of the proposed studies.

Although, as previously reported, removal of plutonium as a contaminant from a Purex product uranium stream (IIEU) by ion exchange is readily accomplished at practical flow rates and column capacity, regeneration of the resin by forward flow requires excessively large quantities of regenerant. Reverse flow regeneration is under study.

Attempts have been made to apply the plate theory of adsorption in an ion exchange column, recently proposed by J. A. Hermann (IA-1346), to the data obtained in these studies. While the theory appears to predict reasonably well the form of the break-through curve obtained for a particular column, attempts to use data obtained for a given column to predict break-through curves for other columns have been only partially successful.

Preparation of PuF_3 by Reactions with Freons

Past experiments have involved vacuum dried plutonium oxalates as starting materials. Such a vigorous method of drying is not necessary. A freshly prepared plutonium(IV) oxalate slurry (about 30 per cent by volume 0.01 M HNO_3) has been dried by heating in an inert gas stream (argon) at 100°C. until visibly caked (one hour for nominal one gram scale) followed by an additional hour and one half at 225°C. at which time the cake appeared crumbly. Freon 12 was then admitted and the temperature raised to 425°C. Conversion to the trifluoride was presumably complete in one hour. Analyses enabling calculation of per cent conversion of this and previous experiments await analytical equipment which is very near to completion.

Ruthenium Chemistry

Attention has been given to reagents other than hydrogen peroxide for reducing ruthenium tetroxide to ruthenium(IV). Mercurous perchlorate was found to reduce all of the ruthenium tetroxide present (10^{-4} to 10^{-5} M) in 1.2 M perchloric acid within five minutes. The reduction of ruthenium tetroxide in perchloric acid solutions of hydrogen peroxide does not proceed in a direct and rapid manner to the usual Ru(IV)-ClO_4^- solution. There is formed rapidly with the evolution of heat and gas a yellow intermediate with absorption peaks at 335 mu and 450 mu. This yellow intermediate slowly changes to yield a solution with the usual Ru(IV)-ClO_4^- spectrum. The kinetic behavior of this yellow intermediate is being investigated to determine the feasibility of continuing to use tracer ruthenium solutions prepared by this method as tracer Ru(IV) solutions.

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Effect of Complexing Agents on $BiPO_4$ Process Waste System

Flushing the cells with solutions of citrate, tartrate, versene or fluoride is being considered as a means of decontaminating the Bismuth Phosphate Process canyons in case they are placed on a stand-by basis. Since such wash solutions would pass through the second cycle waste settling tanks to underground cribs, a study was made of the effect of these agents on decontamination in the tanks and retention of plutonium and fission products by the soil. Citrate and fluoride solutions had little effect either on decontamination in the tanks or on retention of fission products by soil. Versene and tartrate solutions decreased decontamination in the tanks, the latter seriously so by preventing the precipitation of bismuth; both interfered with the retention of fission products and plutonium by the soil.

Alpha Glove Box Program

Continued difficulties with the 222-S alpha glove box pulse column necessitated shut down for alterations following Redox emulsification studies. These difficulties and their solutions are as follows:

1. Malfunctioning of Skinner solenoid valves. All Skinner valves in process solution lines were removed and replaced by hand operated Hoke valves.

2. Continued failure of Zenith pumps. A suitable positive displacement, remotely driven pump has been developed utilizing a Zenith Pump-Graham Drive Unit to drive a double ended hydraulic cylinder which in turn drives two reciprocating plunger type pumps using ball check valves. These pumps are currently under construction.

Multicurie Cell Equipment Development

Cold laboratory studies with a one-half inch diameter by 27.5 inches packed height precision bore glass pulse column with an air driven pulse generator were made under Purex IA column extraction section conditions with CCl_4 diluent. Cartridge geometry was as follows: plate spacing - 0.25 inches, perforation hole size - 0.020 inches, open area - 30 per cent. The plates were Kel-F (fluorothene) coated and all runs were made with organic phase continuous. Low HTU values of 0.2 feet or less (HETS values of 0.6 feet or less) were readily obtained in this column with this system.

234-5 PROCESS DEVELOPMENT

Plutonium(IV) Oxalate

Solubility vs. Acidity - Confirming earlier work done with synthetic 3BP solutions, plutonium solubilities in the plutonium(IV) oxalate precipitation

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from Redox 3BP were found to be lowest at a nitric acid concentration in the slurry of about two molar, ranging from 0.014 g Pu/liter at 1.72 M HNO_3 to 0.146 g Pu/liter at 3.44 M HNO_3 and 0.147 g Pu/liter at 1.31 M HNO_3. Post-precipitation became evident at acidities of 3.8 molar.

Plutonium-Uranium Separation - It has been demonstrated in the laboratory that a separation factor of 20 for the uranium in a solution containing 3.8 g H+/liter, 60 g Pu/liter, and up to 6 g U/liter (100,000 ppm), will result from a plutonium(IV) oxalate strike and washes. Each wash following the first removed one-fourth as much uranium as might have been expected on a dilution basis.

Possible Losses in Drying Filter Cakes - The possibility that small losses may occur when a damp filter cake of plutonium(IV) oxalate is dried in a filter boat was demonstrated by a laboratory scale experiment in which losses of 0.04-0.3 per cent resulted from drying a plutonium(IV) oxalate filter cake under conditions simulating those in the RM filter boats.

In attempting to evaluate the possibility of loss of plutonium by transport of solution through the bottom of the filter boat during the drying process, an oxalate filter cake containing two grams of plutonium (still damp from the 2 M HNO_3, 0.05 M $H_2C_2O_4$ wash) was dried at 190°C in a one cm. diameter, medium-porosity fritted glass funnel, with air flowing downward through the cake and filter. Two ml of filtrate, collected by passing the air through a cold trap, contained 0.74 mg plutonium at a concentration of 0.37 g Pu/liter. After drying for one hour, the cake was moistened with the wash solution and dried again. This time, the 2 ml of filtrate which were collected contained 4.76 mg plutonium, at a concentration of 2.38 g/liter.

Accountability in 231 Building Filter Boat Process - The plutonium(IV) oxalate from Redox Run S-5-54 was dissolved out of the filter boat with potassium permanganate and assayed, for a direct comparison between the amount of plutonium in the boat and that assumed to be there on the basis of 231 Building assays. The 231 base value for the boat contents was 327 grams of plutonium: by radioassay of the oxalate solution (average of four determinations), the boat contained 314 grams; by chemical assay, 316 - 332 grams.

Destruction of Oxalic Acid in Plutonium(IV) Oxalate Supernatants - The possible necessity of eliminating uranium recycle and build-up in the Recuplex - Task I operations by processing the plutonium(IV) oxalate supernatants through a resin column led to attempts to destroy oxalic acid in oxalate supernatants without introduction of other cations or excessive evaporation.

A maximum of 46 per cent oxalate destruction was achieved by boiling plutonium (IV) oxalate supernatant solution containing 4 M HNO_3 with a 40-fold excess of hydrogen peroxide. 96-98 per cent oxalate destruction was achieved by boiling in the presence of platinized asbestos either with or without hydrogen peroxide present.

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Reduction with Sulfur Booster - Two sulfur-boosted reductions of PuF_4, made with NaF in the charge in an attempt to produce a lower-melting, three component slag, gave irregular buttons with yields of 92 - 93 per cent and sodium contents of 2 - 50 ppm. Two calcium-magnesium alloys (45 - 55 weight per cent and 78 - 22 per cent) and one calcium-strontium alloy (50 - 50 per cent) have been prepared for study of their use as reductants for the metal-reduction operation.

Recuplex

General - Phase II of the Project Proposal for the Recuplex installation (requesting funds for material procurement) was submitted to the A and B Committee on May 12, 1952. The committee's approval has been placed in abeyance pending the approval of the Certification of Funds Document which was submitted to the Bureau of the Budget.

The preparation of the Design Criteria Document was continued and the present schedule calls for the completion of the rough draft form by June 15, 1952.

In accordance with the Atomic Energy Commission Directive HW-279, the detailed engineering design of the Recuplex facility was initiated on May 19, 1952.

A study was made to determine the necessity of incorporating an ion exchange system in the Recuplex process to prevent the build-up of uranium in the Recuplex product solution under the condition of a prolonged recycling of Task I supernatant to Recuplex. The calculations reveal that if the uranium concentration in the separations plant feed to Task I exceeds the arbitrarily established maximum of 500 ppm that the optimum stream for treatment would be the solvent extraction product (CCP). To permit the processing of the Purex product with its presently conceived uranium concentration of 1,000 to 10,000 ppm, an ion exchange facility has been incorporated into the Recuplex design scope.

Slag and Crucible Dissolution - The dissolution of a fluoride-iodide slag plus crucible fragments was essentially complete after 1-1/2 hours of boiling in (initially 8 M) nitric acid as indicated by the plutonium and hydrogen ion content of the dissolver solution when sampled at hour intervals during a six hour dissolution period. Crushing of fluoride-sulfide slag and crucible residues to approximately 1/4 inch size prior to charging into the dissolver has been found to reduce the time necessary for dissolution of this type of residue in nitric acid to one hour as compared to the excessive time (8 hours or longer) required when a massive fluoride-sulfide slag is charged to the dissolver.

From the corrosion of test coupons suspended within the liquid in the dissolver during runs, the penetration of the type 309 Cb stainless steel vessel during dissolution (1-1/2 hours with uncomplexed fluoride plus six hours

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of digestion in the presence of ANN) is predicted to be 0.016 mils per run (0.0016 inches per month corrosion rate).

Five plant-scale batches of slag and crucible fragments, three from uranium runs and two from plutonium runs, were dissolved during the month as part of the program (a) to prepare CAF solution for pulse column and "Mini" mixer-settler extraction studies, (b) to obtain additional data relative to dissolving variables, and (c) to obtain plutonium assays of recovered residues to permit completion of plutonium material balances for a number of plant runs.

Solvent Extraction Studies

Three more uranium runs have been made on Recuplex flowsheet HW #5 using the 1/2 inch and 3/8 inch Minis in series as extraction and stripping units, respectively. Operation was satisfactory, although uranium material balances indicated that the run time should be six hours or longer to insure steady-state conditions in both units.

Equipment Evaluation - Test of Sample Can Closure Plug - A recently designed closure plug which contains a valve mechanism for release of pressure built up during the shipment and storage of plutonium nitrate solution has been tested under CO_2 pressures up to 600 psig and found to maintain these pressures without leakage and to operate satisfactorily in release of the gas pressures.

Experimental Coating Program

Stainless steel stand-in pieces are being coated after evacuating the coating chamber with a mechanical pump and admitting nitrogen as an air-purge gas between evacuations. Four pieces have been coated without evidence of porosity. An electrolytic test using a 2 per cent solution of ortho-phenanthroline in 0.1 N HCl is being used as the test for porosity. Porosity should result in red spots on the chemically treated filter paper used in the electrolytic test. Further evaluation of coatings deposited by procedures eliminating high vacuum treatment of the pieces prior to coating will be made by Quality Control and Applied Research personnel in the 234-5 Building.

Crucible Shop

H-3 Crucible Dies - A steel die for fabricating H-3 pouring crucibles is nearing completion in the shop. The acquisition of this equipment will give the 234-5 Building independence with respect to all crucibles with one exception if the situation should demand a supply from entirely local manufacture.

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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 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	INVENTION
E. E. Voiland	The use of phenylarsonic acid to improve zirconium decontamination in solvent extraction processes.
P. K. York	A Wide-Range Slow Metering Device

R. B. Richards

R. B. Richards, Manager
Separations Technology Unit

June 6, 1952

RBR:fmf

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APPLIED RESEARCH UNIT

MAY, 1952

VISITORS AND BUSINESS TRIPS

G. W. Ogden, Baird Associates, Cambridge, Massachusetts was here May 1-3 adjusting and calibrating the Baird water analyzer.

W. N. Carson spent May 5-8 attending and presenting a paper at the Electrochemical Society Meeting in Philadelphia, Pennsylvania. May 9-10 was spent at the Brookhaven National Laboratory, Upton, Long Island, New York discussing coulometric titration analyses.

J. A. Parodi spent May 9 at the U. S. Bureau of Mines, Albany, Oregon discussing spectrographic analysis of zirconium and zirconium alloys.

J. E. Drummond spent May 1-3 in Washington, D. C. attending the American Physical Society Meeting.

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Applied Research Unit

G. A. Last, L. D. Turner, R. G. Wheeler, O. J. Wick and R. Ward spent May 8-10 in Spokane, Washington attending a meeting of the American Institute of Mining and Metallurgical Engineers.

R. E. Peterson spent May 7-8 at the American Cyanamid Company, Arco, Idaho discussing J-Slug recovery and exposure of samples in the MTR Reactor.

L. F. Kendall spent May 22 at the American Instrument Company, Silver Spring, Maryland discussing analysis for water vapor.

T. C. Nelson and L. D. Turner spent May 23 at the State College of Washington, Pullman as speakers at a meeting of the American Society for Metals.

ORGANIZATION AND PERSONNEL

Personnel totals as of May 31 were as follows:

	Exempt	Tech. Grad.	Non-Exempt	Total
Physics	18	8	8	34
Metallurgy	15	8	17	40
Analytical Research	29	2	7	38
Analytical Service	54	45	102	201
Administration	5	0	3	8
Total	121	63	137	321

METALLURGY

Metallurgy of Uranium

Fabrication. A metallurgical evaluation of uranium rods for the Chalk River Pile Test was started this month. The object of this joint program with Chalk River and Argonne is to determine the relationship between the dimensional instability of uranium during pile irradiation and the mechanical and structural properties, prior to irradiation, of the uranium. Initially this work has consisted of determining the crystallographic orientation of samples from sixteen rods which are to be pile tested. Data obtained to date indicate that the degree of preferred orientation existing in these rods is a function of the rolling temperature. In addition, analysis of the data indicate that some asymmetry is introduced in the rolling of the round rods. Both of the above results are in agreement with previous results which have been obtained here with alpha rolled rods for Hanford.

During the February production rolling of uranium at Lackawanna, twelve billets were rolled to determine (1) the effect of high alpha phase rolling and (2) beta heat treatment prior to finish rolling on the preferred orientation of the finished rod. Preliminary X-ray diffraction data indicate that there is little

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variation in the degree of preferred orientation resulting from the two different rolling procedures. Limited samples from both groups of rods show near random orientation. Further X-ray as well as metallographic data are being obtained.

Uranium Alloys. -Studies were initiated to investigate the feasibility of producing a uranium-nickel surface alloy by galvanic deposition of nickel on uranium from a fused chloride salt bath. Samples immersed in a low nickel content bath (5 per cent $NiCl_2$) showed corrosive attack of the samples by the bath with no evidence of a nickel coating. Samples immersed in the high nickel content bath (35 per cent $NiCl_2$) were found to be completely coated with a thick, spongy, loosely adherent nickel coating. Such layers were easily stripped from the specimen with no indication of any bonding of the nickel to the surface.

Two ingots of nominal 1.0 atomic per cent and 0.75 atomic per cent aluminum were cast and heat treated to obtain maximum grain refinement. Microscopic examination of transverse sections of each casting revealed a non-uniform grain structure in that the outer surface was fine grained (0.05 mm) and the center exhibited a larger (0.200 mm) grain size. In summarizing the results of the cursory examination of uranium-aluminum alloys, it does not appear that low concentrations of aluminum in uranium will produce a gamma heat treatable alloy of sufficient promise to warrant further study of this system.

The mechanical properties of four isothermally heat treated, cast uranium-chromium ingots were determined. The data obtained compare favorably with the results obtained from alpha-rolled, beta heat treated uranium-chromium alloys of similar composition. In addition, X-ray examination of longitudinal and transverse sections of each of the four heat treated ingots indicate that these alloys have a randomly oriented grain structure.

Mechanical and Physical Properties. The electrical resistivity of uranium slugs obtained from rods representing the eighth Lackawanna experimental rolling varied from 25.8 to 29.1 microhm-cm. Only slight correlation exists between resistivity and Metal Comparator values, and between resistivity and orientation values.

Recent studies with the Metal Comparator have been directed towards the wide variations in the results obtained using different rods. X-ray diffraction studies on the uranium slugs which are being used for this work indicate that there are differences in the orientation of the 110, 130, and 131 planes. These differences in orientation could affect the impedance readings. The relief of internal stress, as a major factor in controlling the impedance value, is also being studied.

Small beta transformed uranium samples were tested in compression. The specimens were deformed approximately 65 per cent and only slight cracking was noted along the outer periphery of the deformed piece. The ultimate stress calculated on the basis of the original area was 1,000,000 psi.

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Tensile specimens, one notched and one unnotched, were obtained from three rods of "as rolled" and three rods of beta transformed uranium. Results obtained using notched specimens show that the ultimate strength is decreased 16 to 20 per cent and that the elongation is decreased 40 to 65 per cent for the "as rolled" uranium. This "notch-sensitivity" was not found with beta transformed uranium. The degree of preferred orientation of the "as rolled" specimens is being obtained by X-ray techniques in an attempt to correlate these two factors.

Metallurgy of Plutonium

Preliminary work toward providing a hood with a helium atmosphere is progressing. The construction of a new air lock system will insure that a minimum amount of air will enter the hood when the air lock is opened. Suitable control valves to regulate hood vacuum are to be procured. It is intended to have the valves available toward the end of June.

New interferometer plates for the dilatometer were procured and tested. The present camera support has proven unsuitable and will be redesigned to permit the camera to be focused sharply on the quartz interferometer plates.

The high-vacuum melting and casting furnace has been redesigned to permit furnace changes to be completed entirely within the hood in order to more effectively control contamination. With the new design it will be unnecessary to disturb any portion of the furnace which penetrates the barrier to change furnace pots.

Thermal analysis equipment is now being installed in the hoods. Nearly all details are complete and shortly after installation the equipment is expected to be available for use. It is anticipated that this equipment will be the first available for use with plutonium.

Verification of the loads actually applied to the indentor of the Tukon hardness tester has been completed. Serious discrepancies in hardness values determined with light loads (25 to 100 grams) are now felt to be actual hardness variations due to cold work from surface preparation.

Metallographic examinations have been made of a thermocouple well removed from a casting furnace in the RMA line and which failed after about 50 cycles of heating to 900°C. Failure of the pure nickel tube is attributed to intergranular oxidation of the nickel at high temperatures.

Radiometallurgy

Development. Thirteen ruptures were typed according to the Radiometallurgy classification system. Four were from April failures, seven from May failures and two were from previously reported failures that had stuck in their process tubes. When the results from this examination were combined with the total number of failures to date, it showed that type 1 and 2 failures continued to account for 60 per cent of all failures, types 4, 5, 6, and 7, are postulated for 25 per cent of the known types, and type 3 and unclassified ruptures for the remaining 15 per cent.

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Since type 1 and 2 failures account for the majority of the ruptures, twenty caps from these types of ruptured slugs were examined in detail to determine to what extent the caps contribute to the cause of failure of the slugs. A report is in progress.

Fifty-eight irradiated slugs were examined in the 105 basin for any surface effects which might be attributable to slug overheating as a result of having the pile cooling water off for eleven hours commencing 1-1/2 hours after shutdown. Some surface abnormalities were observed and several slugs were set aside for more detailed examinations.

Examinations of two can wall sections containing donuts and two caps from irradiated slugs are almost complete. Approximate hardness values on the cap section are 35 D.P.H. on the can wall and cap, and 530 D.P.H. on the Al-Si. A report is in progress.

Visual examination of the polished section of the wafer that was cut from a bumpy, alpha rolled, irradiated slug canned 5/31/50 showed that the bumps were solid metal. Different chemical solutions and methods were investigated to determine the best techniques for revealing the macro- and microstructure.

Facilities. Radiation readings taken one inch from the surface of one gallon of water removed from the cut-off box storage tank after sectioning an irradiated slug were 20 mr/hr and 50 mrep/hr thereby indicating that the gravity filter has a high particle retention efficiency. Design work on an improved cut-off box for cell use has been started.

A Junior Cave was received unassembled. Negotiations with Separations Technology for partial use of multi-curie cave #4 in Building 222-S were concluded. This later facility will aid the examination of radioactive materials.

Autoradiography of radioactive alloys as a measure of solid state diffusion is being developed by using alpha track emulsions. The high resolution of alpha autoradiography makes it possible to study the entire diffusion zone with one exposure on the polished surface.

An improvement was made to the circulating hot water system for testing suspect ruptured slugs by installing a single pass, tube type, heat exchanger that will permit controlling the temperature of the circulating water. A differential manometer was installed to measure the flow rate.

The design of the double crystal spectrometer is continuing. The detailed drawings for the monochromating crystal mechanism are almost complete and the design of the "hot" integrating sample holder is in progress. Further study of shielding problems is being conducted in an effort to simplify the final form of the spectrometer.

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Plant Services

Experiments have been conducted to find some material or coating which is superior to the type 347 stainless steel now used as tongs and baskets in the Al-Si baths. A sample of tungsten immersed in molten Al-Si for 24 hours showed very little overall corrosion and a small amount of pitting.

A number of radiographs were taken of the weld bead and cap portion of a canned slug. This work was of a preliminary nature and the radiographs were taken in an attempt to determine optimum exposure time, type of film, and quality of radiation which would give best results in detecting voids or inclusions which might be present.

An examination was made to determine the depth of the shrinkage cracks found in the weld preheat track of 2S aluminum caps from eight inch Hanford slugs. Several caps were examined and the maximum depth of cracks was found to be 0.0209 inches. A similar examination was made on experimentally welded 63S aluminum caps of four inch slugs. It was found that these caps contained cracks of less magnitude, ranging from 0.0026 to 0.005 inches in the preheat track. Considerable porosity was observed in the weldment and in the preheat track near the weld of the 63S aluminum caps.

Several cap and can wall sections from slug autoclave failures were examined for possible cause of failure. It was shown that two of the ruptures were the result of Al-Si pentration.

ANALYTICAL RESEARCH

General Research

A large scintillating crystal was received and an improved method for optical coupling was developed in connection with the current planning and assembly of a gamma scintillation spectrometer. Pending availability of this instrument a similar instrument, belonging to the Experimental Physics group, was employed for analytical purposes. Preliminary tests showed that the spectrometer is capable of making qualitative identification of individual fission products, and it was employed to identify ruthenium as the active agent in hot chips found in the 200 Area grounds. The spectrometer was employed to examine a sample of isotopically pure U-237, and it was noted that a 0.35 Mev gamma emission was present. A larger sample of the uranium isotope is being obtained from aged plutonium solution by extracting the plutonium with TTA and subsequently extracting the U-237 daughter of Pu-241 with TBP. The material will be used to establish the decay scheme of the isotope by making coincidence counts and gamma absorption curves. The uranium-free plutonium will be examined to establish the energy distribution of gamma radiations from plutonium and from conversion electrons.

The Pu-241 contents of a group of aged plutonium solutions were obtained, and exhibited a smooth, continuous relationship to the independently determined Pu-240

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content. The determined 241 values agreed with the theoretical values for low MWD exposures but were about 50% higher for high exposures. The determination, which provides a basis for calibrating the alpha flow chamber to allow direct counting of Pu-241 beta emission, was made by determining americium in the solutions and calculating the concentration of the 241 parent.

Preliminary work showed that the alpha backscatter from smooth platinum, stainless steel, and glass discs was in the relation predicted by theory. Etching the surface lowered the counting rate, whereas passivating the stainless steel discs increased it. The study will be continued to evaluate the scattering at various angles and to establish the absorption effect of various admixed salts.

Work has been undertaken to determine the plutonium and uranium isotope contents of samples machined from a six year old irradiated uranium slug. Samples will be taken from different depths and at different positions along the length of a slug in order to provide basic data on uranium burn-out and plutonium production.

Separations Plants

A coulometric procedure for determining acid in metal recovery feed solution was developed and placed in service in the Redox laboratory. The method employs a 10 ul. sample which is treated with excess monohydrogen phosphate to react with the uranium and is then titrated manually with coulometrically generated base to the thymol blue endpoint. Uranium reacts to form sodium uranyl phosphate. Since it is necessary to report a free acid figure, which represents free nitric acid plus two hydrogens of the phosphoric acid, it is necessary to apply a mole for mole correction based on the uranium content. The uranium coulometer was transferred from a gloved box to a hood. The move served to eliminate many mechanical difficulties arising from the high humidity and fume content of the gloved box atmosphere.

Previously reported tests of pH glass electrodes in highly radioactive solutions led to the conclusion that the conventional electrodes can be expected to suffer a change of asymmetry potential corresponding to a maximum decrease of 0.2 pH unit in a two-week period. Since calibration and/or electrode replacement frequency would thus not be underly great, it was recommended that installation of the electrodes be initiated for the continuous measurement of pH in metal recovery neutralized waste.

The G.E. smoke detector obtained for measuring turbidity in metal recovery blend tank solutions was found to lack the sensitivity and stability desired, whereas the Beckman RXG amplifier was adequate in these respects and was observed to easily detect 3 ppm of barium sulfate precipitate. Plastic cells, containing the light source and pickup unit, softened under exposure to the

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active nitric acid solution. A glass cell was designed and constructed for the purpose. It is recommended that the glass cell employing reflected light pick-up rather than direct pickup be employed together with a Beckman unit and continuous recording.

The mass spectrometer employed for uranium isotope determination caused some difficulties because of frequent burn-out of the electron beam filament. The manufacturer advised of an improved method for spot welding the filament, and this eliminated the difficulty. Isotope contents of UO_3 lots 10-13, inclusive, were in sharp disagreement with the reported Oak Ridge results. Part of the discrepancy was eliminated when it was learned that Oak Ridge makes a practice of reporting isotope weight per cent under the designation "atomic ratio". The remainder is attributed to the fact that the Hanford analyses were made during a period when the instrument behaved erratically because of difficulties with the magnetic scanning system. It was learned from Oak Ridge that their analyses on the subsequent 10 or 15 lots were in very close agreement with those from Hanford.

It was previously reported that the chromatographic separation of fission products from Redox uranium product failed because of the erratic behavior of ruthenium. Modifications of the procedure allowed complete recovery of ruthenium but caused a precipitation of zirconium so that it was not completely recovered. Further modifications of the developing and eluting solutions have led to a technique which allows 95-98% recovery of these two elements. However, the desired objective has still not been reached because the uranium daughters remained with the fission product group. Work is continuing to eliminate the latter difficulty.

A consideration of process vessel corrosion and studies of the decomposition of carbon tetrachloride in highly radioactive fields made necessary the determination of small quantities of chloride in highly active solutions. A micro method involving treatment of a sample with permanganate, heating, diffusion of chlorine to an iodide solution, and subsequent colorimetric determination provided a method for determining 0.5 to 5 ug. of chloride with a precision of ± 10 to ± 30%. Nitrite interference is eliminated by preliminary treatment with hydrazine; iodide and bromide interference is eliminated by dichromate addition and sparging. Since the method is not applicable in the presence of TBP, a slightly less sensitive turbidimetric procedure that is not subject to this interference was developed.

In providing other assistance to the Redox control laboratory, equipment was assembled for the determination of freezing point of concentrated neutralized RAW solution; the infrared spectrophotometer was installed in the control laboratory, and personnel were trained for the determination of TBP; equipment was installed, and a method for determining the distribution ratio of uranium in TBP was introduced; and a group of analyses for application in connection with the uranium oxide reactivity test was obtained from Oak Ridge. Other investigations have been initiated because of the need for determining acid in ferrous sulfamate solutions and because of the inaccurate results obtained with the present method for phosphate in uranium recovery feed solution.

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A standard sample was submitted to the 222-S and 231 Laboratories to check the analyses corresponding to the PR and P-1 solutions. Good checks were obtained for the nitric acid content and specific gravity. The plutonium assays disagreed slightly, and it was observed that this resulted from the application of different backscatter corrections in the two laboratories.

Piles

It was previously reported that the flame photometer provided a considerably more accurate and more rapid procedure for the determination of sodium and calcium in pile water. 100 Area personnel expressed the opinion that the initial expenditure for such an instrument was not justified because highly accurate results were not a requirement and because the limited number of laboratory personnel could not be further reduced to take advantage of the time-saving. The instrument and technique have been transferred to the Analytical Services 100 Area Laboratory for application to research and development samples. A photomultiplier pickup attachment, which promises a ten-fold increase in sensitivity, will later be evaluated to find if the technique can be extended to iron, magnesium, and other elements.

Tests with the Baird infrared analyzer showed it to be inadequate for the continuous determination of moisture in gas samples arising from in-pile graphite burn-out studies because of the excessive interference from carbon dioxide and carbon monoxide. It is recommended that the instrument be returned to the manufacturer. The Aminco electric hygrometer promises to meet the requirements for continuous moisture determination, and steps were taken to obtain a suitable unit.

In further support to various 100 Area problems, a series of gas standards were supplied to calibrate the infrared analyzers employed for carbon dioxide and carbon monoxide determinations in the study referred to above. Also, a sensitive procedure for determining iodine was developed to allow study of the efficiency of the separation of iodine in a charcoal trap from xenon extracted from hot slugs.

Plutonium Metal Fabrication

A method patterned after that developed at Los Alamos was installed for the determination of carbon in plutonium metal. It allows the determination of approximately 400 ppm carbon with a precision of ± 14% in 15 minutes, as contrasted with a precision of ± 38% in 1 1/4 hours with the previously used method. Probably the major advantage with the new method is the fact that it operates at atmospheric pressure and thus eliminates the hazard associated with handling large quantities of plutonium oxide in a high vacuum system.

Work has continued with a method for separating impurities from plutonium according to a procedure which involves initial extraction of some impurities

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with TTA from trivalent plutonium and subsequent extraction of tetravalent plutonium from the remaining impurities with TTA. According to this procedure, better than 80% extraction was obtained for each of 10 elements tested. Iron proportionates and thus may not be determined in this manner. Work will continue to evaluate the behavior of 70-58 and to test application of the technique to oxalate and fluoride samples.

Metallurgy

Evaluation of a spectrographic method has been initiated to meet the request for determination of small concentrations of hafnium in zirconium. The refractory nature of both elements leads to low sensitivity of the emission lines. Because of the higher dispersion and the higher line to background ratio, the third order emission lines have been examined as a possibility for effecting the determination. A visit was made to the Bureau of Mines station at Albany, Oregon, to gain information concerning this determination and to make preliminary arrangements for the analysis of a limited group of samples at that site.

Miscellaneous

In cooperation with the various control laboratories, a program was initiated to revise the standard Hanford analytical manual and to bring it up to date. The Special Hazards section will be eliminated from the manual and placed as an individual responsibility of each laboratory; the Apparatus section will be eliminated and maintained as a separate file copy; the Solutions section will be issued separately and will contain only procedures for standardizing solutions; the methods will be rewritten with the elimination of many unnecessary portions; and a new and convenient code system will be applied.

ANALYTICAL SERVICE

Work Volume Statistics

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

	April		May	
	Samples	Determinations	Samples	Determinations
Process Control - 234-5	664	6,401	805	5,302
Process Control - Metal Preparation	639	3,357	813	7,388
Research & Development Programs	2,702	6,683	4,870	8,017
Water Quality	505	1,654	365	1,939
Redox	1,489	4,563	1,542	5,036
TBP	31	80	8	12
UO_3	151	719	665	1,574
Essential Materials	42	341	91	780
Special Samples	259	1,693	295	2,530
Process Reagents	475	1,037	554	1,306
Totals	6,957	26,528	10,008	33,884

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Applied Research Unit

100-300 Area Services

An Orsat type, Fisher Gas Analyzer has been installed in the 100-B Mass Spectrometer Laboratory. Personnel have been trained in its operation in order that more complete and varied gas analyses service can be rendered in conjunction with the mass spectrometer.

A general recalibration of both the Consolidated Neir and the General Electric mass spectrometers is being made. In several instances the factors for the G. E. instrument had changed considerably.

Factors for T^+/HT^+ and T^+/T_2^{++}, used in the calculation of the He^3 peak of the C-N Mass Spectrometer, have been revised. This revision represents an improvement on calculations from earlier primary data rather than experimental variation. The accuracy of the tritium half-life study should be improved by this change.

In connection with Water Plant Development, a request has been made for extremely sensitive determination of Fe, Mn and Al in the filtered water. Accuracies required are Fe to ± 0.001 ppm. in the range of 0.000 to 0.005 ppm., Al to ± 0.005 ppm. in the range 0.0 to 0.1 ppm., and Mn to ± 0.002 ppm. with the range unstated. Since these requests are beyond the scope of the present methods, Analytical Research has been requested to develop adequate new methods.

Several aluminum jacket samples with an etched or spotted surface were submitted by members of the Pile Technology Unit. Employing a dithizone extraction technique mercury was shown to be present in these spots.

In support of an investigation of phosphate pick-up in the reagents used in the Redox process, ANN samples from the delivery truck and from the storage tank were analyzed. The phosphate content of the tank samples was noticeably higher, e.g., truck sample, 1.2 mg/l, tank sample, 1.9 mg/l. Work is also in progress to determine the phosphate content of a new and a used plastic ANN storage tank liner; considerable difficulty is being experienced in dissolving and analyzing these samples. Ionic phosphate determinations were completed on IAW, IIAW, and PR line samples and no detectable phosphate was found.

222-S Building Laboratory

Two Redox fission product distribution studies were started during the month. Unsteady column performance during sampling and erratic analytical results due to extremely low counting rates prevented drawing any conclusions from the first set of data. The second study is in process and as of this date the summations of individual fission products agree within 65%-125% of the total activity of the sample. The fission products under investigation are: ruthenium, zirconium, niobium, iodine and total rare earths.

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The two fluorimeters in routine use for low-level uranium determination are controlled by daily assays of pure uranium solution using method UF-1b (hexone extraction). These data have shown the average recovery to be 96.1% at the 0.05 g/l level. The major source of error to be variations between the average of sets of four dishes rather than between the individual dishes in each set. Accordingly, on May 21 the number of dishes prepared per sample was decreased from four to two with negligivle effect on the precision of the method (± 12.9% for four versus ± 13.7% for two) and a savings of 10 minutes per determination by method UF-1b and 20 minutes per determination by method UF-1a. To detect erratic results, a range limit of eight per cent between the two dishes has been adopted.

A manually operated falling drop apparatus using "between line" sample measurements has been fabricated and is available as emergency equipment when regular equipment is not functioning properly.

Installation of the twin coulometer instrumental equipment was completed during the month. The titration cell equipment for one instrument has been installed and has operated successfully for two weeks with an average of eight duplicate determinations per shift. Titration equipment for the second instrument is to be installed early in June and both units will be available for TBP Process cold runs.

A second gamma scintillation counter was installed during the month to relieve the pressure on the original instrument and prevent possible delays in production resulting from instrument failure.

Preparation of a TBP Process analytical method manual and training on synthetic samples continued during the month. It is planned to obtain samples from the TBP blend tanks and use them for the final tests on TBP methods and equipment. Plant Assistance personnel have given their assurance that the Redox workload will be reduced as the TBP load increases.

Considerable difficulty was experienced during the month with the mass spectrometer, employed for isotopic analysis of UO_3 product. Hot spots resulting from faulty repair jobs on the source filament caused the filament to burn out several times and resulted in a great deal of down time. Another filament has been ordered to prevent this down time and instructions have been received from Consolidated Engineering on repairing these filaments.

A statistical study of H-7 (metal storage) sampling was completed during the month. Duplicate samples of H-7 solution were taken and allocation of dilution and disc preparation to laboratory personnel was made in such a manner as to separate plant sampling error from laboratory error and to determine sources of laboratory error. The results were as follows:

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Total Error (99% Confidence)	
Laboratory	± 3.5%
Sampling	± 6.1%
Total Error	± 7.1%

Laboratory Error (99% Confidence)	
Between dilutions	0%
Between chemists preparing discs	± 2.1%
Between discs	± 3.0%
Total Error	± 3.5%

A statistical study of Redox laboratory data during the month revealed that there was no significant change in precision of average data from last month. Differences between precision of average were found to be attributable to chance variations.

234-5 Building Laboratory

The high vacuum method for determining carbon in metal casting (MC) samples was replaced on May 21 by a low vacuum method which is faster, safer, more reliable, and possesses a greater sensitivity. In this method the sample is oxidized on a bed of copper oxide in the presence of purified oxygen at atmospheric pressure. The carbon dioxide is separated by condensation, brought to room temperature and the pressure read on a capillary manometer. It is estimated that the revised procedure will result in a monthly savings of 50 man-hours, based on a production schedule of 300 runs per month. With slight modification this equipment is suitable for determining the oxygen content of the MC samples.

Effective May 6, the present carrier distillation spectrographic method was revised to incorporate a 4% carrier and a fixed arcing time (HW-24337-R). An estimated savings of 15 man-hours per month will be realized from this change.

All pieces produced in the RG line are being analyzed for plutonium content, employing recently provided samples of 40 mils thickness. The first twenty samples analyzed indicated the precision of analysis was excellent but recently erratic results have been obtained. The specific cause is not definitely known but present indications are that the error is occurring during the initial weighing of the 500 mg. sample due to static electrical charges on the volumetric flasks. The precision data for the first twenty samples are as follows:

Precision (99% Confidence Level) of average of four titrations	± 0.12%
Precision (99% Confidence Level) of plutonium content of castings	± 0.28%
Precision (99% Confidence Level) of summation of constituents	± 0.29%
Average plutonium content of castings	98.85%
Average summation of constituents	99.87%

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The conversion of two empty hoods in Room 139 to gloved hoods was completed during the month. This arrangement permits transfer of the P-4 conversion box operation, presently contained in a wooden gloved box in Room 134, to the more desirable gloved hood, and permits the installation of a second dissolving hood. This will eliminate "bottleneck" conditions currently associated with this operation.

During the month 102.672 units of plutonium were officially returned to production, with an additional 435 units delivered but not officially transferred. The first recovery run using $Pu(IO_3)_4$ precipitation indicated this method is superior to the hydroxide precipitation for the recovery of plutonium from analytical wastes obtained in the determination of fluoride in metal. Improved distillation equipment installed last month has also improved recovery operations.

Methods Control

Activities of Methods Control personnel in direct support of a laboratory are reported under the applicable laboratory heading.

Safety & Special Hazards Control

Two high air samples occurred in the 234-5 Building Laboratory during the month, but no personnel contamination resulted. Personnel contamination did occur to the extent of 1.5×10^5 d/m in Room 144 of the 234-5 Building Laboratory as a result of a sample spill in Hood 4. During removal of a stopper from a 10 ml. dilution of active material located on top of a magnetic stirrer the insecured flask fell to the floor of the hood. Droplets of contamination were splashed on the employee's right jaw, neck area, coveralls, and film badge. Decontamination was effected to a level of 5,000 d/m at which point skin abrasion made it necessary to send the employee to Kadlec Hospital for further decontamination. Bio-assay samples were taken the following day, May 7, but the results are not yet available. The incident has been publicized and recommendations made for prevention of recurrences.

The per cent guided work time in the 234-5 Building Laboratory is the lowest (0.2%) ever attained in three years of operation.

A minor amount of floor contamination and a 1 mg. plutonium spill within a hood occurred in Room 97, Building 3706 during the month. Neither incident was serious.

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Applied Research Unit

PHYSICS

Exponential Experiments

On account of the interest in higher power densities in operating piles, the exponential experiments are being extended to include two smaller size slugs. These slugs will have diameters of 0.925 and 1.175 inches and will be used in lattices of 4-3/16, 5-3/16 and 6-3/16 inches as well as some of the lattices used with the standard size slugs. In addition, the graphite blocks are being so designed that standard size slugs may be used in the smaller lattices. In this way data will be available for a large range of graphite-uranium ratios.

The values of the thermal utilization, f, of the process tube assembly have been computed from measurements of the buckling of the lattice and the average cadmium ratio in a unit cell. These values are given in the table below:

	8-3/8"	8"	7-1/2"	7"
Wet	0.890	0.898	-----	0.923
Dry	0.905	0.913	0.928	0.937

The thermal utilization of graphite, (1 - f), as calculated from cross sections and diffusion theory differs by 15 per cent from these measured values. An attempt is being made to determine the source of disagreement between the two methods.

Measurements of slug blackness that have been obtained so far have not been consistent with one another. It appears likely that this may be due to the low counting rates, and a possible impurity in the gold being used for foils. These matters are being examined at present in an attempt to get accurate measurements.

Determination of the lattice constants for the 7.5 inch lattice with water in the process tubes is in progress.

Lattice Design

The yield of Xe^{135} from the new generator slug described last month has been measured and found to be approximately 12 per cent of the theoretical yield. A yield of 29 per cent had been obtained with an old slug previously. It is not certain that these numbers represent the true difference between the two slugs on account of the difficulty of controlling all the variables in experiments of this type.

A similar uncertainty exists for the measurements of the effect of elevated temperature on yield. Here one is interested in showing that the yield will

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be adequate at the temperatures expected when the generator slug is inserted into a production pile. Calculations show that the highest temperature in this case will be about 325° C. At these temperatures, experiments in the Test Pile show that the yield may be as low as nine per cent. Now sufficient xenon can be extracted for the cross section measurement if the yield is ten per cent. It thus appears that the method is feaaible even though it should prove to be the case that the yield falls to these low values.

Measurements of the surface area of the hydroxide used in the generator slugs show that for the temperatures involved (up to 300° C) there is no significant decrease of surface area with heat treatment.

The γ-ray spectrum of krypton 85 has been examined for shielding purposes. The most intense lines are near 0.2 and 0.4 mev. as expected. The number of γ-rays with energy beyond 0.4 mev. is very small; thus the reported 2 mev. γ-ray from three hour krypton-88 will present no shielding problem.

A production test is being written to authorize an experiment at the Test Pile in which the feasibility of a method for the accurate dilution of xenon will be studied.

It had been reported earlier that there was some evidence for a second nuclear energy level in the xenon 135 disintegration scheme. This has now been explained by the back scattering of Compton electrons in the sodium iodide crystal.

A new collimator has been designed for the neutron spectrometer for use in the measurement of the fission cross section of Pu^{239}.

Large Scale Pile Structure

A calculation of the effect of zoning slugs in a 105 pile has been completed and is reported in HW-24631. If present manufacturing tolerances on uranium and slugs are correctly represented by measurements in the Test Pile, the maximum production gain from zoning is about five effective tubes per pile.

Preliminary results from Test Pile measurements of the blackness of the C Pile control rod with its water annulus give the value 63 per cent.

It is planned to measure the volume of air displaced from C Pile when CO_2 is introduced in the start-up of this pile. To do this it is necessary to determine the proportion of CO_2 to other gases in the pile atmosphere during the purging by CO_2. In addition it is hoped that an accurate measurement of the nitrogen to oxygen ratio of the displaced air can be made to detect the existence of any preferential adsorption of these gases by graphite. These measurements are being discussed with the mass spectrometry group.

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Miscellaneous Physics Problems

The concentration of krypton 85 is being calculated as a function of exposure, Pu concentration, and time after discharge.

Heat flow equations have been developed for the cooling of a canned slug that has been heated to a uniform temperature. These are to be used in determining the heat transfer coefficient of the slug-can bond by the Pile Fuels Sub-Unit.

INVENTIONS

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

Inventor(s)	Title
None	

Signed: F. W. Albaugh
F. W. Albaugh
Manager, Applied Research Unit

FWA:ltc

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TECHNICAL SERVICES UNIT

MAY 1952

6-4-52

VISITORS & BUSINESS TRIPS

There were no off-site visitors sponsored by this Unit during the month.

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

M.G. Freidank spent May 14 - 16 attending the AEC Records Management Conference at Albuquerque, New Mexico.

B.B. Lane spent May 26 - 31 in New York, New York, attending a meeting of the Special Libraries Association.

ORGANIZATION AND PERSONNEL

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

	April	May
Laboratory Engineering	84	83
Technical Information	82	82
Administrative	3	3
Unit Totals	169	168

LABORATORY ENGINEERING SERVICES

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

Work volume statistics for the Mechanical Shops are as follows:

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	Customer Unit or Program	April No. of Jobs	April Man-Hours	May No. of Jobs	May Man-Hours
Work Done on Jobs Completed	Applied Research	22	701	22	349
	Pile Technology	36	419	46	832
	Separations Tech.	38	633	24	529
	Technical Services	14	345	14	246
	Others	12	149	14	114
	Sub-Totals	122	2247	120	2070
Work Done on Jobs Not Completed	Applied Research	8	265	4	80
	Pile Technology	10	309	16	238
	Separations Tech.	7	206	4	78
	Technical Services	13	492	11	678
	Others	5	185	3	10
	Sub-Totals	43	1457	38	1084
Total Work Done			3704		3154
Work Backlog:					Man-Hours To Complete
Jobs Started	Applied Research	8	115	4	101
	Pile Technology	10	280	16	227
	Separations Tech.	7	128	4	84
	Technical Services	13	1032	11	859
	Others	5	52	3	15
	Sub-Totals	43	1607	38	1286
Jobs Not Yet Started	Applied Research	1	21	9	177
	Pile Technology	10	279	14	612
	Separations Tech.	4	124	3	140
	Technical Services	4	28	1	32
	Others	1	10	4	43
	Sub-Totals	20	462	31	1004
Total Backlog			2069		2290

The shop is operating on a 2290 man-hour backlog, which represents 14 working days with present forces.

The following work was completed for the Technical Units as indicated.

Applied Research

A revision of the original 12-place magnetic stirrer currently in use in the Analytical Services Laboratories resulted in a reduction of the unit cost from $625 to $325. This saving is a direct result of design changes made by shop personnel. A section of large diameter brass tubing was used for the housing in place of the square plastic box previously used. Ball bearings were substituted for the machined bronze bearings. The drive mechanism is similar to that used in the original model. These changes resulted in the cost savings indicated.

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Similar revisions are being incorporated on a 4-place stirring unit now being fabricated.

Separations Technology

A pneumatically operated valve for Alpha Pulse Column work was developed and tests have indicated that the unit is completely satisfactory.

Fabrication of an osmometer to determine the osmosis of carbon tetrachloride through various plastic membranes was completed. The device consists of a pressure chamber divided into halves by the plastic membrane being tested. A motor driven magnet suspended above the chamber is used to drive a small metallic disc in the carbon tetrachloride section.

A double acting pulseless hydraulic pump unit was fabricated and has proved highly satisfactory. Displacement pistons were mounted on each end of a double action hydraulic cylinder. A 4-way solenoid activated check valve was used to direct the liquid flow from the displacement cylinders, and the pump unit was mounted on a stainless steel base. The displacement pistons were machined from stainless steel and the inside surfaces were ground to a high polish. Teflon gaskets were used in the displacement piston. The pump is driven by a worm-gear reduction unit. Fabrication of four revised units of smaller capacity was started on an emergency basis.

Pile Technology

The Shop was asked to determine the possibility of molding a rubber or plastic form containing a high concentration of powdered iron to provide a material with a low eddy-current loss for use as a flexible high frequency search coil. Several discs were fabricated and initial tests have indicated that the material produced will be satisfactory. The core material must be flexible since it is to be used in non-destructive testing of process slugs. Procurement of the desired form from an outside vendor is planned.

The thermal cycling unit previously described was completed and delivered. Machining of concave radii on the ends of the transite sample boats was required to insure proper alignment and motion of the samples through the cycle.

Several punches and dies of different sizes and a hydraulic press were fabricated for canning method studies. The dies were fabricated to extremely close tolerances using heat treating and grinding facilities available in the 101 Area.

A boroscope support rack and driving mechanism was started. Several substitutions of the materials have been made in accordance with the customers' desires. The unit is 95% complete.

Technical Services

A waste chute for the safe removal of sealed hot liquid or dry waste packages from laboratory hoods and caves was completed. The chute consisted of a 4" Lucite tube containing a pin release mechanism to hold the waste package

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until the desired release time. The Lucite tube is to be used as a connecting link between the hood or cave and the disposal cask. Indications are that the unit is satisfactory and that it will be installed in the Building 222-S laboratories.

A sealed liquid waste transfer unit was completed. The device used two hypodermic type needles to puncture an inverted serum bottle bottle cap. A vacuum may be applied to one needle causing the liquid waste to be drawn into the container through the second needle. The unit was equipped with a spring loaded stripper for removal of the needles from the bottle cap.

A six-month work load forecast for the Mechanical Development Shops was requested from the various Technical Units and final results are being compiled. Preliminary review indicates that there will be no decrease in the anticipated shop work load.

Glass Shops (Buildings 3706 and 222-S)

Work volume statistics for the Glass Shop are as follows:

	April	May
Jobs Completed		
New	79	104
Revisions	19	12
Repairs	7	13
Totals	105	129

Seven of the above jobs required quartz fabrication. At the present time the shop has a backlog of 11 jobs including one item to be fabricated in quartz. This represents approximately five man-days with present forces.

All accessories for the new Model K Litton glass lathe have been received and the lathe has been placed in operation. Some difficulties are being experienced in finding a suitable motor mount, since the bracket originally provided projected behind the lathe into the aisle and constituted a definite tripping hazard. A flexible coupling installed to remedy this situation failed after only a short period of operation. It is anticipated that these difficulties will soon be remedied. This addition completes the glass and boron-free quartz working facilities in the 3706 Building Glass Shop.

One glassblower continued on assignment to the 108-B Building, another to the 222-S Building and a third to the 108-F Building.

Equipment Development

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

	April		May	
	Engineering	Drafting* & Misc.	Engineering	Drafting** & Misc.
Pile Technology Engineering	18	268	48	315

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Pile Technology (Cont'd)				
Pile Materials	56	241	64	240
Pile Fuels	55	216	56	226
Separations Technology				
Development	112	455	16	272
Research	224	668	104	239
Applied Research				
Analytical Services	140	385	264	610
Analytical Research	19	157	-	98
Metallurgy Research	109	7	88	233
Physics Research	-	-	-	52
Technical Services				
Laboratory Engineering	617	1065	600	749
Laboratory Equipment Development (RDA #TC-5)	306	771	200	526
Totals	1656	4236	1440	3560

* Includes 1512 hours of drafting time.
** Includes 1480 hours of drafting time.

The work loads associated with Redox Analytical Services Laboratories increased substantially during the month, while those associated with Chemical Research and Chemical Development decreased. The following work was done for the various customer groups, as indicated:

Pile Engineering

Engineering assistance was given on the drafting of the process tube slitter, resistance heating equipment, slug weighing apparatus, pigtail test equipment, in-pile heater test, metering pin, horizontal rod gland seal, special slugs, spatial relation drawing, alterations to the fire house, and various charts and graphs.

Pile Fuels

Engineering assistance was given on the design of the slug brusher, high temperature furnace, split die, bench drill, and hydraulic press. Assistance was given on drafting of the centerless slug brusher, report illustrations, multi-test circuit diagram, sounding tank, thermal shock unit, redesigned slug assembly, and various graphs and charts.

Pile Materials

Assistance was given on the design of the bicrystal furnace, tube reduction unit, and split furnace. Engineering assistance was given on the drafting of the 6' positive gripper, tongs, dichromate-free slug, pressure test panel layout, heat exchanger, uniscan, high temperature split furnace, portable cask, channel apparatus, "V" hole drain change, flow diagram, tube rolling unit, and various graphs and charts.

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Chemical Development

Work continued on outfitting of the multicurie cell in Building 222-S and on the development of equipment for the junior cave to be used for study of coatings.

Chemical Research

Work continued on the outfitting and trouble shooting of the alpha gloved box pulse column and the multicurie cell pulse column in Building 222-S. Engineering assistance was given on the design of the osmometer support, movable table, magnetic stirrer, and miniature mixer-settler; and on the drafting of the air pulse generator and constant flow pump.

Analytical Services

Work continued on the development of simplified equipment for the analytical line of Building 222-S. Assistance was given on the drafting of the chuck and case for the 16-place magnetic stirrer, doorstop lift (model III), waste removal system, Gilmont sampler, revised standard micro-pipet, 4-place cardboard disk carrier, and falling drop apparatus.

Analytical Research

Assistance was given on design and development of electrode assemblies; and on the drafting of the fluorometer, remote hydraulic pinch clamp opener, and mason jar type containers.

Metallurgy Research

Assistance was given on the design and development of the double crystal X-ray spectrophotometer, and of equipment for the metallurgy hot cells.

Physics Research

Assistance was given on the drafting of the automatic sample changer.

Laboratory Equipment Development (RDA #TC-5)

Development of the vapor ionization recorder continued with extended air background count tests on the detection chambers. The chart recording system was under construction.

Experimental decontamination chamber operation continued with the decontamination of numerous pieces of equipment, including a high-alpha gloved box. Contamination control continued to be excellent. An in-chamber miniature crane was under development to provide better maneuverability. The hot sandblaster was not yet completed in the shops.

The completed "Hanford Slave" manipulator is ready for installation in the multicurie cells of Building 222-S. A shielded leak-proof liquid waste disposal unit was developed for laboratory hood and cave use. This device allows remote engagement and disengagement of liquid lines to a waste bottle, while the bottle is at all times both sealed and shielded.

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New Laboratory Planning

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

Area conditions forced the withdrawal of construction personnel on May 1. Minor Construction forces have been assigned the completion of the job, but as yet they have not taken over in the field. At month end the job was at a standstill except for material take-offs, etc.

Mechanical Development Bldg., Proj. C-406

The subcontract (G-416) with the Dix Steel Building Company for the design of the interior (Phase II) of the Mechanical Development Building expired on May 7, with the work still incomplete. The architect-engineer is now being held in technical default pending completion of the work.

At month end a partial payment of 50% had been allowed by the Commission and the Dix Company seemed confident that they could complete all work under this contract by June 14, 1952.

Radiochemistry Bldg., Proj. C-381

The basement slab is over 80% complete. The first floor steel decking is 85% complete and the roof is 50% complete. Piping under the first floor deck has progressed about 30%. Fabrication of duct work is continuing offsite. Requisitions for uninstalled equipment are awaiting project proposal approval for further processing.

Outside Facilities and Utilities, Proj. C-394

Construction continues ahead of schedule.

Badge House - This facility is complete except for touch-up painting, weather stripping and air conditioning balancing.

340 Building and Retention Basin - The concrete work is complete except for one wing wall. Pipe sleeves have been set in the 340 Building wall. Delivery of the tanks was delayed when it was determined that improper welding rod had been used in the fabrication.

Sanitary Sewers - The sanitary sewer system is complete except for a short run of the Radiometallurgy Building.

Crib Waste - The main from buildings to the 340 Building is almost complete.

Water Lines - The completed main from North Richland is being tested for Public Health approval. The first test gave positive results indicating that additional flushing is required.

The perimeter grid is complete and the well water line to the 340 Building is almost complete.

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Radiometallurgy Bldg., Proj. C-385

All structural steel work for this building is in place with only a limited amount of welding required to complete the main structural framework. The ventilation duct is being hung in the canyon area, decontamination room, and storage area. Work continued during the month on placing and forming of the basement slab. At month end the steel "Q" decking was being placed on the roof and the Robertson "Q-Insulated Panels" for the siding were being delivered on plant site.

Farrel-Birmingham Company, the fabricator of the Dry Storage Cell, advised on May 17, 1952, that the present revised delivery date of mid-June or early July was still possible. However, they advised that a directive be placed on this order to insure its position on their production schedule.

Pile Technology Bldg., Proj. C-414

The first car of structural steel for the subject building arrived on site May 23, 1952. At month end the major portion of the structural steel had arrived and preliminary structural steel erection work had begun.

Library and Files Bldg., Proj. C-421

The exterior siding has received a prime coat of paint. The second floor windows have been glazed, and the first floor window frames are in place. The roofing is better than 80% complete and the light troffers and duct work above the suspended ceiling is about 70% complete.

Building Services

Building 3706

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

	April	May
Purchase Requisitions		
Total number processed	118	125
Number requiring special expediting	80	103
Number requiring emergency handling	6	22
Work Orders Processed	85	50
Miscellaneous Services		
Number store orders processed	993	766
Store stock requests	0	0
Office furniture requests	7	12
Office machines sent in for repair	16	18
Precious metal transactions	29	10
Trips to 200-W for contaminated waste disposal	17	7
Photographic work requests	22	26
Special messenger trips	37	38

A job write-up for the transfer of low level plutonium aqueous waste from one gallon jugs to 55 gallon stainless steel drums for disposal at Building 222-S was approved by the Radiations Monitoring Unit. Four full drums of low level

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plutonium waste were transferred to Building 222-S for disposal, and estimated savings reported last month on trips to the area were realized.

Outstanding routine work orders were revised to cover only that portion of the building maintenance which is now the responsibility of Technical under the terms of the OPG covering landlord responsibility. In this connection, a new work order control form was developed which will facilitate a more positive internal control of work order costs.

Final arrangements were completed to permit Hanford utilization of the instrument rental service maintained by the General Engineering Laboratory at Schenectady. A list of the instruments available was received and distributed to interested Technical personnel. Laboratory Services-3706 will be responsible for procurement, control and return of all instruments rented from this source.

Filming of the construction operations at the 105-C facility continued. The completed film is being edited to make it possible to tie in a sound tract.

Work was started on the conversion of one office to a laboratory and one laboratory to an office for the Applied Research Unit.

Building 222-S

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

	April	May
Material dispensed, 222-S stockroom	$4,446	$4,252
Withdrawals (customer orders)	1,969	1,653
Emergency trips (pick up and delivery)	18	12
Work orders processed	44	37
Storage "Hot" waste transfer (219 to 202-S), gallons	4,966	4,947

The agitator drive unit of the crib waste neutralizer tank No. 102 failed on May 13. The failure was due to insufficient lubrication of the upper section of the reducing gear unit. New parts were ordered and the oil overflow was raised to provide the necessary level for proper lubrication of the upper section. An identical drive unit is installed on the storage "hot" waste receiver tank No. 103. That unit will be checked to determine if the oil overflow line needs the same extension, though there has been no indication of trouble to date.

Chemical Development personnel observed steam coming out of the cubicle floor drains during the operation of the jet utilized for off-gassing the "dissolver unit" installed in one of the cubicles. The probability of this occurrence was previously considered but tests and investigation indicated it would not be extensive. It has been determined that use of the present spare storage waste line for the discharge of all steam jets in the multicurie section will conveniently and completely segregate them from the drains.

Radiation exposure of personnel assigned to the Decontamination Room frequently approaches the daily permissible limits. The larger portion of this exposure

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is probably received during the disposal of waste samples and traps, and subsequent cleaning of the equipment. Special pencil-type radiation meters, which record the discharge of gamma radiation are being used to study disposal and decontamination procedures. Results are expected to help in determining the efficiency of remote handling tools and methods, and also the best scheduling of assignments to reduce personnel exposure.

Arrangements were completed to receive and discard plutonium waste from Building 3706, and approximately 250 gallons were transferred during May. This waste currently contains from 5 to 1,000 micrograms of plutonium per liter and is transferred in 55 gallon stainless steel drums. The contamination level necessitates its disposal to underground storage via 202-S facilities. The waste will continue to be transferred in estimated volumes of 100 to 150 gallons per week.

TECHNICAL INFORMATION SERVICES

Plant Library

Library work volume and book statistics were as follows:

	April	May
Number of books on order	391	360
Number of books fully cataloged	280	207
Number of bound periodicals processed but not fully cataloged	77	218
Pamphlets added to the pamphlet file	70	0
Miscellaneous material received, processed and routed (including reprints)	60	28
Books and periodicals circulated	4,591	5,132
Unclassified reports processed	295	359
Unclassified reports circulated	376	315
Reference services rendered	1,636	1,775
Inter-library loans	33	41
Photostats from off-site	33	27
New periodical titles added to Kardex	10	21

	Main Library	W-10 Library	108-F Library	Total
Number of books	8,819	4,056	498	13,373
Number of bound periodicals	5,579	1	665	6,245
Totals	14,398	4,057	1,163	19,618

Work in the Plant Library proceeded routinely during the period, with a total work load approximately equal to that of the previous month. Book and periodical circulation climbed another 12% to a new high and reference work continued extremely active. A sampling of reference questions follows:

How to weld AISI 502 chrome iron
Anthracene intensifying screens for radiographic work
Construction of differential analyzers
Fluorethene as a protective coating
General properties of gallium including toxicity

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Testing of respirators
Weekly price quotations on copper and aluminum
Table of atomic radii
Mechanical strength of Lucite
Flow rates and energy generated by water falls
Kinetics of simultaneous absorption and chemical reaction
Chemically balanced equations for reactions in Orsat apparatus
Critical flow and critical pressure data of steam-water mixtures
Colorimetric determination of trace quantities of iron
Psychrometric charts for CO_2 and Helium
Mollier diagrams for CO_2 and Helium
Procedure for purification and recrystallization of Titan Yellow
Suitability of methyl alcohol-water mixture as heat transfer medium
Exact mass of Cadmium 113
Nature and properties of chelate compounds
Methods for removing mildew from air brushed, heavy linen-backed paper print

As in the past, the Library continued to exploit sources distributing free information of technical reference value. A sampling of such material is shown below:

U.S. Bureau of Mines
Explosive Characteristics of Titanium, Zirconium, Thorium, Uranium, and Their Hydrides. Report of Investigation 4835.

U.S. Federal Civil Defense Administration
Passive Protection for Industrial Plants

New York University
High Altitude Balloon Trajectory Study

U.S.Q.M. Research and Development Laboratory
The Flameproofing of Fabrics

National Industrial Conference Board
Developments in Supervisory Training

University of Connecticut, Engineering Experiment Station
The Hydrodynamic Lubrication of Sector-shaped Pads

Heyden Chemical Corporation
Neomycin, Literature Review and Other Pertinent Data

Mellon Institute
Determination of Phenols in Aqueous Wastes from Coke Plants

U.S. Federal Housing Administration
Minimum Property Requirements for Properties of One or Two Living Units Located in the States of Kansas and Missouri

U.S. Forest Service
List of Publications on Mechanical Properties and Structural Uses of Wood and Wood Products

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U.S. Weather Bureau
Manual of Surface Observation

U.S. Office of Naval Research
Measuring Shielding Efficiency of Screened Enclosures

U.S. National Advisory Committee for Aeronautics
Hydrodynamic Lubrication of Cyclically Loaded Bearings

The Library's technical reference resources were augmented by the addition of a 30 year run of Justus Liebigs "Annalen der Chemie." The Library has been trying for a number of years to locate a partial run of this valuable reference tool, which is standard equipment in industrial libraries.

The Library and Document Control Committee of the Technical Information Panel, under the chairmanship of the Hanford representative, has been able to secure agreement on a procedure for disposal of surplus books and periodicals in project libraries. As pointed out in earlier reports, it is impractical to dispose of this type of material through normal surplus channels. As finally determined, two alternates are available. The General Services Administration has approved exchange of surplus books and periodicals with the United States Book Exchange, an activity of the Library of Congress. An alternate procedure permits the shipment of surpluses to the Technical Information Service of the AEC in Washington. The accumulation will be used to stock new libraries within the Commission's activities.

The Technical Librarian attended a meeting of the Special Libraries Association in New York. The meeting was particularly valuable since two full days were devoted to consideration of the problems of organizing the unprecedented volume of reports resulting from Government-sponsored scientific research. Basic techniques for making this unpublished information available to scientists were discussed.

Classified Files

Work volume statistics for the Classified Files were as follows:

	April	May
Documents routed and discharged	20,687	19,407
Documents issued	7,812	6,501
Registered packages prepared for off-site	356	242
Inter-area mail sent via transmittal	30,880	31,714
Holders of classified documents whose files were inventoried:		
(a) Because of normal perpetual inventory procedure	0	29
(b) Because of transfer of work assignment	9	1
(c) Because of termination	3	3
Inventory reductions:		
Copies of documents destroyed	1,118	2,497
Copies of documents downgraded to:		
RESTRICTED	0	0
CONFIDENTIAL	0	0
Copies of documents declassified	0	0

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	April	May
Classified documents located which were unaccounted for in previous inventory	38	9
Standard storage cartons of material retired to the Records Center:		
Unclassified and Official Use Only	0	0
Classified	0	11
Off-site originated reports requested by Hanford personnel	57	115
Hanford originated reports requested by off-site personnel	117	59

Work volume in the Classified Files continued normal, with approximately the same work load as the previous month. Noted again is the continuing rise in the volume of inter-area classified mail.

A representative sampling of reference questions worked on by the Classified Files personnel are as follows:

Schematic drawings of pile process tubes
Interim report on Production Test 105-417-P
Hanford experimental physics reports for 1948, 1949, 1950
Radiation effects on rubber
Chemistry of ruthenium
Thermal conductivity of graphite
Background material on Purex process
Material on crystal structure of uranium alloys from Battelle Memorial Institute
X-ray determination of Pu
Decontamination of crib wastes
Activation of U-235 and natural uranium foils
Recent values of nuclear constants of 25 and 49 by Fermi
Investigation of the properties of thorium and some of its alloys
Information on Fernald process
Design of X-type reactor
Americium recovery
Earthquake problem at Hanford
234-5 waste recovery
Third safety device
Material on UO_3 - specifications for and reactivity of

The summary of the Classified Files inventory was completed during the month and is in the process of being finally checked before submission to the Atomic Energy Commission. Completion of this assignment has released inventory workers for field work, and the increased emphasis on this phase of the program is reflected in the monthly statistics. The field work this year, at the request of Security, will include a check of all combination-locked safes even where Classified Files records do not indicate that the custodian has documents charged to him. It is expected by this extension of the program to locate other missing documents. In this connection, there has been a noticeable change in employee acceptance of the inventory program. Earlier resistance appears to have completely disappeared and the offices are enthusiastic about the value of the program.

On May 23, 1952, Technical Information was assigned responsibility for the issuance and control of classified photographs. An Organization and Policy Guide on the matter, previously drafted, will be revised to reflect this decision and issued

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shortly. It is anticipated that one additional person will be required to handle this assignment and that final arrangements for taking over the responsibility will require approximately two weeks.

Another draft on the manual on the preparation and care of classified documents was completed and re-submitted to Public Relations Section for their final review. The present draft, representing a fourth re-write of the text, appears to be satisfactory. It will be issued separately in approximately 500 copies and the present inadequate instructions in "This Way, Please" regarding classified documents will be deleted and reference made to the new manual.

Classified Files was visited during the month by Eleanor Abshire from the Bureau of Mines at Albany, Oregon. This agency has a contract with the Atomic Energy Commission and is apparently being set up as a central file for all information on the properties of zirconium and the application of this metal to the Commission's activities. The visit was for the purpose of learning approved procedures for the control of classified information. She indicated particular interest in the reports index and its reference value.

In connection with the close-out of the Job 15 records, the Vitro Corporation has supplied a complete listing of all classified records created under this contract up to April 1, 1952, when the Hanford Operations Office took over. Unfortunately, the listing does not indicate final disposition of all copies, and this information will be necessary in order to make the necessary transfers of accountability. Vitro has agreed to supply this additional information as soon as possible.

The Supervisor, Classified Files, attended the AEC Records Management Conference at Albuquerque, New Mexico, May 14, 15 and 16. This is in line with the present policy of coordinating the document retirement program of the Classified Files with the work of the Records Center.

L.R. Mitchner of the Materials and Information Branch of the AEC visited Hanford to discuss off-site distribution of the so-called "internal" Hanford reports. A meeting was held with representatives from Engineering and Manufacturing where the matter was reviewed. Mitchner proposed that TIS at Oak Ridge be supplied with three copies of all internal reports of technical significance where external distribution had been made. This would enable Hanford to route subsequent off-site requests for these documents to TIS and place on TIS the responsibility for making additional reproduction as required. It was agreed that the suggestion had merit, and would be given a trial.

An inter-communication system was installed in the 700 Classified Files to improve the efficiency of communication. Space limitations have necessitated locating workers in both the upper and lower vaults, and this has made the necessary direct communication difficult. It is anticipated that the inter-communication system will result in more efficient use of clerical time.

The Head, Technical Information, was appointed Hanford representative to the AEC Technological Information Committee. This Committee, working with the Technical Information Panel, is trying to make available to industry as much of the technology developed within the Commission as appears applicable to industry and is permitted by the security regulations.

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Reports and Abstracting

The work statistics for the group were as follows:

	April	May
Formal Research and Development Reports issued	7	6
Formal reports in process	8	9
Reports abstracted	727	617

Work in Reports and Abstracting proceeded routinely during the period. The bibliography "Concretes for Radiation Shielding" was completed and issued as a formal report (HW-24071). Satisfactory progress was made on other bibliographies (Slug Canning, Graphite, Non-Destructive Testing, etc.) in process. A revision of the bibliography on the "Dimensional Instability of Uranium" (HW-17195) was begun. Requests were received for a revision of "Special Radiation Requests" (HW-18907) and for a new bibliography on the 200 series production tests.

A normal volume of reports abstracting was done during the month, although addition of the cards to the reports index was delayed due to reproduction difficulties. However, the duplication of catalog cards was on a current basis at month end. Abstracting of the reports in the 760 Classified Files proceeded as scheduled and will be completed in three to four months.

The abstracters continued to make contributions to the current revision of CA-1927 (Subject Headings for the Indexing of Reports) to make it more usable for Hanford purposes. For the fifth revision, the entire subject breakdown on "Separation Processes" and "Slugs" were reviewed and reorganized. Similarly, a breakdown of subject headings under "Extraction Apparatus" was developed and supplied. On the matter of subject headings, the abstracters are currently working with Classified Files supervision on a revised set of subject headings to replace HEW-7000 which is now out of date.

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 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, Unit Manager

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DESIGN SECTION

May, 1952

VISITORS AND BUSINESS TRIPS

M. F. Parr, Foxboro Company, visited Hanford May 12-16 to inspect damaged equipment.

V. Rutherford and K. E. Atwood, Bailey Meter Company, visited here May 13-15 for technical consultation on instrumentation.

R. A. Anderson, Panellit, Inc., visited Hanford May 13-15 for instrument consultation.

J. W. Peckham, Bristol Company, visited here May 13-15 for instrument consultation.

R. L. Butenhoff and L. J. Deal, AEC Washington D. C., visited the 3707-C Laboratory May 7 to inspect radiation instruments.

E. P. Peabody visited (1) C. T. Main, Boston, May 4-7 and (2) General Electric, Schnectady, May 8-11 to consult on "X" Water Plant.

T. H. Edwards visited Dix Steel Company, Spokane, May 25-29 to coordinate plans for the Mechanical Development Building.

H. W. Heacock visited Olympic Pipe, Seattle, May 5-6 to discuss special fittings for Project C-482.

A. J. Karnie visited Haughton Elevator, Toledo, Ohio, May 12-13 to discuss elevator design for Project CG-494.

E. S. Day and I. M. Jacobs visited KAPL and du Pont, Wilmington and Aiken, May 16-31 to consult on pile instrumentation

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I. M. Jacobs visited Argonne National Laboratories May 24 for pile instrument consultation.

H. S. Davis visited Puget Sound Naval Shipyard, Bremerton, April 30- May 3 to observe test crate assembly.

D. L. Peterson visited J. M. Gauntlet Company, Seattle, May 12-14 to observe tests at vendor's plant.

J. C. Estes visited:

(1) Americal Machine and Foundry, Buffalo, May 5 to discuss redesign of vertical safety rods.

(2) Corning Glass Works, Corning, N. Y., May 6-8 to discuss Ball 3-X system glass balls.

(3) Tube Reduction Company, Wallington, N. J., May 12 on redesign of vertical safety rods.

(4) Industrial Tectonics Company, Ann Arbor, Michigan, May 13 to discuss Ball 3-X system glass balls.

(5) Stephens - Adamson Corp., Aurora, Illinois, May 14 to discuss Ball 3-X skip hoist.

J. F. Nesbitt visited the Whiting Corporation, Chicago, May 5-9 to answer engineering questions on winch assembly.

J. H. Snyder visited C. T. Main, Boston and Cleveland, May 6-10 to attend conferences on 100-K Water Plant design scope.

M. H. Russ visited C. T. Main, Boston, April 27- May 3 to discuss 190-K pumping system.

R. T. Jaske visited C. T. Main, Boston, May 2-10 to coordinate 100-K Water Plant with reactor design.

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ORGANIZATION AND PERSONNEL

Personnel Statistics:

	April 30			May 31		
	Exempt	Non-Exempt	Total	Exempt	Non-Exempt	Total
Design Management	4	2	6	4	2	6
Process Engineering Unit	45	11	56	48	13	61
Design Planning Unit	8	9	17	10	9	19
Design Engineering Unit	62	17	79	64	16	80
Total Section Personnel	119	39	158	126	40	166
Technical Graduates (Rotational)	—	21	21	—	18	18
TOTAL	119	60	179	126	58	184

Accessions = 11
Separations = 6

GENERAL

Design Section engineering effort for May was distributed approximately as follows:

	Man Months Expended	% of Total
Reactor Design	53.2	41
Research & Development	44.8	35
Other Design Projects & Orders	31.2	24
	129.2	100

DESIGN DEVELOPMENT

Statistics:

The total number of engineering man months expended on research and development during May was distributed as follows:

		Man Months Expended	% of Total
RDA-DC-3	Reactor Development	15.7	35.0
RDA-DC-4	Separations - Design	8.4	18.8
RDA-DC-5	Metallurgy	.1	.2
RDA-DC-6	Water Plant	7.0	15.6
RDA-DC-7	Separations - Process	7.5	16.8
RDA-DC-9	234-5	3.0	6.7
Standards		3.1	6.9
	TOTAL	44.8	100.0

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Design Section

Accomplishments:

RDA-DC-3 - Engineering Development Studies to Improve Design Bases for Future 100 Area Production Facilities

Data obtained during the Prepakt test program are being analyzed and prepared for publication. In general, Prepakt erection tests demonstrated that the Prepakt method is satisfactory for use in the construction of heavy aggregate shields of the Hanford Works type.

Work is being expedited on the development of glass balls for the Ball 3-X system. Four hundred pounds of balls have arrived at Hanford and are being tested.

Tests have been initiated to determine the feasibility of substituting boric acid for potassium tetraborate in the "ink" system. If boric acid is suitable, it will alleviate the shielding problem inasmuch as the activity build-up for this material is less than for potassium tetraborate.

Final assembly of the test crate for the new concrete shield design was completed at the Puget Sound Naval Shipyard, and shipment has been made to Hanford for further inspection and tests.

Sections of 2S72S clad process tubes extruded in 50 ft. lengths were vanstoned by two different techniques, and samples were transmitted to the Technical Section for further examination and evaluation.

The contract for testing an energy absorber-type downcomer design with Washington State College is being extended. The tests to date indicate that the new design will be satisfactory although it has been found that the inlet conditions are critical, and further data and tests are necessary on this phase of the work.

RDA-DC-4 - Engineering Development Studies to Improve Design for Future Separations Facilities

The results of the alternate building arrangement studies are being evaluated for the purpose of preparing a firm recommendation to the Design Committee on the type of general building arrangement to be used for a new separations facility. Preliminary building arrangement drawings are being prepared for a separations plant based on an average capacity of 200 tons of processed uranium per month.

Document HW-24475 recommending the use of pulse column type contactors for future separations facilities was issued during May and approved by the Design Committee in document HW-24349.

The test work with the remote pipe connectors has been held up pending the delivery of test models from the Crane Company. All preliminary field arrangements for fabrication and testing of jumpers equipped with these improved connectors have been completed.

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The study on remote maintenance viewing devices has been delayed pending the approval of a contract with the du Mont Laboratories for the rental of studio-type television equipment. Delivery of this equipment will be expedited and it is expected to be available for test installation the first week in June.

Instrument engineering flow diagrams for the proposed separations facility have been developed as far as is considered practicable in view of incomplete process flow diagrams. Preparation of Instrument Design criteria has been started.

RDA-DC-5 - Design Development Mechanization of the 300 Area Slug and Component Preparation Facilities

Work on design development of a canning and quenching machine has been suspended pending test by the Technical Section of components of the G.E.L. design.

RDA-DC-6 - Process Water Cooling System Including Retention Basin, Design Development

A study is in process to develop cost and schedule information relative to the construction of two single reactor areas, in which the reactors are separated by a distance of two and one-half miles and erected at sites above Grand Coulee disaster flood levels.

RDA-DC-7 - Separations Process Engineering, Expansion and Improvement

Preliminary engineering flow diagrams were prepared for the Purex aqueous make-up section.

A review was made of Redox capacity information resulting from operating experience to date in order to confirm earlier estimates or revise conclusions regarding the requirements for capacity increase.

Preparation of material for the Recuplex design criteria was continued. Facilities for solvent treatment, and for the ion exchange system for intermittent clean-up of the product stream, were included on the process flow diagrams.

Preliminary designs for four alternate liquid waste storage methods have been completed for economic comparison with the existing type of storage system.

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RDA-DC-9 - Product Purification and Metal Fabrication Equipment

Work on the plutonium fabrication equipment development program included the start of design to correct the mechanical features of the general conveyor, investigation of methods to correct the Task III mixer visibility, and the initiation of a study to determine the suitability of the Task III furnaces. The Working Committee has started a study of the production line operational methods in order to establish a policy guide regarding remote versus hand operation for future design development.

Standards

The following Standards and Design Guides were approved by the HW Standards Committee during May:

E-5-12 Encasement specifications for underground conduit crossing railroads and highways.

E-5-13 Encasement for underground conduit crossing railroads and highways, Type A Encasement.

E-5-14 Encasement for underground conduit crossing railroads and highways, Type B Encasement.

E-5-15a Turn out - 15'0" switch with No. 8 Frog.

E-5-15b Turn out - 16'6" switch with No. 10 Frog.

B-5-6 Typical Single Reduction P. R. V. #2.

B-5-7 Typical Double Reduction P. R. V. #1.

DG-1-M Spacing of Supports and Gradient for Steam Distribution Lines.

DG-100-M HW Design Guide for Process and Service Piping.

The preparation of the following HW Design Guides advanced 5% during May to 95% complete.

Valves and Valve Equivalent

Packing and Gasket Materials

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DESIGN ENGINEERING

Statistics:

Design Engineering effort for the month of May was expended in the following categories:

	Man Months Expended	% of Total
Reactor Projects	53.2	63.0
Major Projects - Other than Reactor	13.8	16.4
Minor Projects and Design Orders	17.4	20.6
TOTAL	84.4	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
Projects - Reactor	194	55	20.7	228.3
Major Projects - Other than Reactor	45	20	11	54
Research and Development	252	0	19.8	232.2 *
Standards & Specifications	94	0	4	90 *
Minor Projects and Design Orders	154	14.2	16.2	152
TOTAL	739	89.2	71.7	756.5

Present Total Backlog is distributed over the five engineering branches in terms of man months as follows:

Civil and Architectural	153
Mechanical	225
Electrical	199.5
Instrument	123
Standards	56
TOTAL	756.5

* Backlog extended through Fiscal 1953

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The backlog in the Design Engineering Unit is scheduled according to the following table:

	AVERAGE MAN MONTHS						
	June	July	Aug.	Sept.	Oct.	Nov.	Balance
Projects - Reactor	19	20	20	20	20	20	109.3
Major Projects - Other than Reactor	11	13	11	7	6	6	0
Research and Development	11	10	10	10	10	10	171.2 *
Standards & Specifications	5	5	5	7	7	7	54 *
Minor Projects and Design Orders	16	16	13	11	11	11	74
Available for Future Orders	None	None	4	8	14	14	—

Accomplishments:

"K" Reactor (CG-494)

Design for the "K" Reactor was approximately 16% complete at the month's end, an increase of 4.5% during the month. Approximately 430 drawings have been started, 260 issued for preliminary comment and 60 issued for final comment. The preparation of requisitions began during the month and requisitions for equipment valued at $1,900,000 have been transmitted to the Purchasing and Stores Section for informational purposes. No funds have been authorized for "K" reactor procurement. Significant progress was made during the month in the design of the Ball 3-X system, the air-cushioned vertical safety rods, process piping, and the thermal shield.

The design of Building 105-KW advanced approximately 4% during May to 21.5%. Architectural and structural design is 35% complete, heating and ventilating design is 33% complete, utility piping is 18.5% complete, electrical design is approximately 10% complete and mechanical design is approximately 7% complete. Work has been retarded by changes made to improve the bomb blast resistibility. Of the 106 architectural and structural drawings required 71 have been started and 55 have been issued for preliminary comment. The preparation of drawings and specifications for procurement of the C, D and F elevators is in progress. The design of the heating system for the 105 Building is proceeding based on the use of a hot water recirculating system.

"X" Water Plant

An outline of a project scope document for the proposed water plant was prepared and is being reviewed. The water plant design being performed by C. T. Main is approximately 7% complete. Requisitions for the high lift process pumps, low lift process pumps, river pumps, service and backwash pumps, plug valves and traveling water screens have been received from C. T. Main. The value of requisitions covering the above items is $2,400,000. The basic design of the water plant was altered in one respect; the primary sub-station is to be split into two units in order to disperse heavy power equipment that cannot be replaced quickly.

* Backlog extended through Fiscal 1953

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C-406 - Phase II - Mechanical Development Building

A review was made of the Architect-Engineer's preliminary drawings and specifications, and comments were forwarded to the Project Section May 23, 1952.

C-431-B - 100-C Area Production Facilities

Design of the 105-C facility was essentially completed during the month with the exception of one drawing, a process water flow sheet. Design for the Metal Examination facility is 95% complete. Design of the Waste Crib facility is 90% complete.

C-442 - Additional Shielding - 3745-A Building

Comment prints and rough draft specifications were transmitted to the Project Section May 9, 1952. No additional work is proposed pending approval of the revised project proposal.

C-473 - New 100-B Area Automatic Dial Telephone Exchange

A floor plan was approved during the month and final design started. Design at the month's end was approximately 45% complete. Specifications for the project were started May 7, 1952 and are approximately 30% complete.

C-477 - Fifth Boiler Addition - 200-West

A study was completed for the coal conveyor chain belt extension to the fifth boiler addition. Findings indicated that the existing chain belt would be over-stressed and that stronger chain will be required.

C-482 - Pile and Pile Water Plant Improvement

Design work on the reactor modifications is proceeding according to schedule. Advance material orders for all critical items have been forwarded to the Project Section. Twenty-three design drawings have been completed and the remaining seven are approximately 70% complete.

C-495 - Outlet Tube Temperature Monitoring Spare Thermocouple 105-B, D and F

Arrangement and fabrication drawings were approved for construction during the month. All material has been ordered. Fabrication of duct sections for 105-B was started.

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C-496 - Recuplex Installation - 234-5 Building

Design was advanced to 5% during the month. The Recuplex process flow diagrams and process functions are being studied, preparatory to instrument design. Approximately ninety-eight vessel data sheets and six drawings for the design scope document have been completed and delivered to the Project Section. Arrangement drawings for the slag and crucible hood have been issued for comment. Drawings for the remaining two hoods and for the chemical make-up room are approximately 50% complete. Some delay has been encountered in completing hood arrangement drawings because of scope changes to the process. The final scope document is scheduled for completion the first of July.

C-498 - Hanford Seismoscope System

Design for the project was initiated during the month and is approximately 20% complete. Seismoscopes for five reactor installations were requisitioned.

Job 015 - Civil Defense Control Center

Preliminary discussions on building layout and site were held with the Project Section. No decision on final site selection has been received to date.

Job 017 - Fireproof Graphite Storage Warehouse

Preliminary architectural, mechanical and electrical designs were started during May on the proposed new raw storage warehouse and boiler house for the 101 Building.

E.O. 010661 - Electrical Distribution Building - Process Areas

Work was started on this assignment during the month. The preliminary design is being rescoped to include frangible siding in lieu of concrete block.

E.O. 010663 - Pile Technology Test and Storage Building

The preliminary design is being rescoped to include frangible siding in lieu of concrete block. Work on this assignment which started in May is approximately 50% complete.

E.O. 100201 - Repair of 105-B Reactor Effluent Line

The preliminary design was completed during the month and submitted to a representative of the Manufacturing Department who then requested that we proceed with the final design. This work was approximately 85% complete at the end of May.

E.O. 011184 - Repair of 105-D Reactor Effluent Line

Three alternate preliminary designs were prepared, two incorporating steel lines and one a wood line. The decision was made to adopt one of the steel alternates. This work completes preliminary design on this order.

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E.O. 100225 - Movable Partitions, Accustical Tile, Ceiling and Painting - New Wing - 703 Building

This assignment was received during the month and was approximately 25% complete at the month's end.

DESIGN SECTION WORK IN THE CLOSING STAGES OR COMPLETED DURING MAY

C-349 - Hot Semi-Works
C-362 - Waste Metal Removal and Recovery
C-413 - Expansion of 234-5 Capacity
C-431-A - 100-C Water Works
C-438 - Ball Third Safety System
C-447 - Portable Meteorological Mast
C-475 - Cross Header Pressure Monitoring System
* C-481 - 100 Area Loading Ramps
* C-483 - Downcomer Revisions
* C-491 - Metallurgy Laboratory - 300 Area
* Job 015 - Radiation Monitoring Office Addition - 105-D Building
* E.O. 010706 - Area Industrial Dispensary
* E.O. 010709 - Replacement of Fire and Sanitary Water Tank - 100-D Area
* E.O. 010711 - Waste Material Storage
E.O. 011180 - Additional Facilities 189-D Building
E.O. 100094 - 700 Area As-Builts

INACTIVE PROJECTS

No work was performed during the month on the following projects:

C-192 - Biology Laboratory - 108-F Building
C-441 - Solvents Building

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

P. H. Beaton

Manager, DESIGN

* Design Section Work Completed During May.

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MONTHLY NARRATIVE REPORT - MAY 1952

PROJECT SECTION

I. SUMMARY

A. ORGANIZATION

Following is a summary of personnel data for the Project Section, May 1952:

	May 1, 1952	June 1, 1952	Net Change
Employees on Payroll	492	482	-10
Technical Graduates-Rotational	6	6	0
Employees on Loan to Section	5	1	-4

The end-of-month status involved these changes:

	Project Section Personnel	Personnel on Loan to Section
Payroll Additions	2	
Payroll Removals	7	
Transfers to Section	1	
Transfers from Section	6	4
Transfers within Section	2	

B. SCOPE OF ACTIVITIES

Major projects advanced during the month and attained construction completion status as follows: CG-349, Hot Semiworks, 95%; CA-362, Waste Metal Recovery (TBP), 89.4%; CG-413, Expansion of 234-5 Facilities, 100%; CA-431-A, 100-C Production Facility, Part A, 75.7%; CA-431-B, 100-C Production Facility, Part B, 69%; CG-438, Ball Third Safety System, 6%.

C. MATERIAL PROCUREMENT

There were minor difficulties in final inspection and acceptance of a few items for CA-431-B; however, these do not seriously affect completion schedules. Slow delivery of critical or fabricated materials has delayed several smaller projects. The Minor Construction Management Unit has reestablished stock levels and completed transfers of Stores material to the main CFFF contractor.

D. CRAFT LABOR

Continued labor difficulties, chiefly shortage of craftsmen and poor performance, have seriously delayed some major projects, especially the 100-C Area. A letter dated May 29, 1952, from the Manager, Engineering Department

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CRAFT LABOR (Continued)

informed the AEC Hanford Operations Office of these critical delays and requested a joint review of the entire situation. The National Joint Board for Settlement of Jurisdictional Disputes rendered two decisions for Hanford Works, one regarding plumbers and teamsters, and the other for carpenters and ironworkers. Neither decision has cleared the disputes. Two work stoppages occurred during the month, though neither exceeded a day. Two difficulties with the plumbers' union were temporarily overcome. Negotiations on the Master Agreement between Hanford Works contractors and the unions continued. After conferences with AEC officials on May 15, the negotiators recessed to obtain concurrence of uniform agreement at Hanford Works.

E. SAFETY

An excessive number of accidents or near-accidents which were related to the lifting of material occurred during the month. No disciplinary action has been taken by the main CPFF contractor or its subcontractors. Water for fire protection has been installed at the Tank Farm areas. The Minor Construction Management Unit continued its meetings to discuss special hazards and the general safety program.

F. HIGHLIGHTS OF UNIT ACTIVITIES

Minor Construction Management Unit completed three work orders and its assigned portions of four projects: CG-412, CG-461, CG-463, and CG-468. New work authorized to the Unit consisted of five jobs estimated at $11,495. The Unit is now operating with 66% of the pipefitters and welders authorized. The AEC signed new twelve-months labor service contracts and subcontracts with its construction contractors for work to be managed by Minor Construction. A manpower forecast of contractor personnel for twelve months, beginning June 1, 1952, was prepared for AEC's use in contract negotiations.

Project Engineering Unit worked on 65 project items and 12 informal requests, totaling $18,060,900. Six project proposals were transmitted to sponsoring organizations. One informal request was approved by the A&B Committee, and two authorizations were granted by AEC. Six engineering requests were initiated. Four project items were completed, and nine engineering requests were either completed or cancelled.

Project Services Unit completed two brochures, one on landlord responsibilities of the Hanford Area, and the other on the management and operation of the North Richland Construction Camp from July 1947 through March 1952. Work on Project AEC-117 (Survey of Richland) was completed and accepted during the month. Inspection, cleaning, and repairs of the 3000 Area Steam Plant boilers were continued. The work load for Drafting and Reproduction service decreased.

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Reactor Projects Unit devoted considerable time to labor difficulties and conferences with architect-engineers. All phases of construction on 100-C Waterworks are progressing, although slowly. The first stage impellers for pumps in 190-C Pump House are being redesigned. Building 105-C is substantially complete. In the 105-C Process Unit, work is proceeding on items which must be placed before the heavy aggregate concrete is poured. In the 115-B Facility, pipe work is about 75% complete. Equipment installation is better than 80% complete. After conferences related to CA-406, Mechanical Development Building, General Electric Company provided an electrical engineer to work with the architect-engineer for one week in May.

Separations Project Unit completed CG-413, Expansion of 234-5 Facilities, except for about $20,000 in work orders for design and start-up modifications. All construction on the RMB Line was completed May 28. About half (1928) of the required 4000 "as-built" drawings have been issued for the RMA Line, RMB Line, and Building Modifications. This project was completed more than a month ahead of schedule and with an estimated underrun of approximately $1,000,000. CA-362, Waste Metal Recovery (TBP), is about 10% behind schedule. The CPFF contractor has submitted a revised construction schedule which changes the completion date of Phase II from September 1, 1952 to December 1, 1952. A Project review meeting is scheduled for June 6, 1952.

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: May 31, 1952

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II. STATISTICAL AND GENERAL

A. SIGNIFICANT ASSIGNMENTS

1. Initial Reporting

CG-346, Facilities for Exponential Experiments (P-12)

Completion status was design 80%, construction 40%. A revised project proposal is being prepared for submission to the AEC. The original scope is being revised to include special tube bearing blocks and shims for lattice spacings of 4-3/16, 5-3/16, and 6-3/16 inches; and the rolling, shipping, machining, and canning of special size slugs. The three proposed slug diameters are: (1) 1.350 inches (Hanford standard), (2) 1.175 inches, and (3) 0.925 inches. Sufficient funds were previously authorized by Directive HW-147.

CG-420, CO_2 Bulk Storage Facilities

Completion status was design 100%, construction 42%. The revised project proposal has been approved and forwarded to the A&B Committee.

CG-503, Waste Storage Hutment, 234-5 Building

Completion status was design 100%, construction 15%. This work was authorized by the AEC to be done on an urgent basis. The concrete pad for the hut has been completed.

2. Final Reporting

CG-413, Expansion of 234-5 Facilities

Construction was completed on the RMB Line, May 16, about 45 days ahead of schedule. Building modifications were completed May 28. Design work orders for about $20,000 have been issued to cover start-up modifications. Preliminary cost estimates indicate an underrun of about $1,200,000.

CG-456, Addition 12-Quad Telephone Cable - BY to Point "T"

Information for Physical Completion Notice was submitted May 22.

CG-468, Horizontal Rod Mock-up Test Facilities - 189-D

All phases, including "as-built" drawings, have been completed, and information for Physical Completion Notice has been submitted. The facilities were ready for use by the Pile Technology Unit on May 2.

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CA-470-R, 200-W Badge House Remodeling

Final inspection was held May 23. The work was accepted without exceptions.

CG-484, 300 Area Administration Building

The work order was closed out with design completion status remaining at 10%. The project proposal for a separate new building was disapproved by the A&B Committee.

ER-E-476, Design and Specification for Improved Lighting, White Bluffs and 200-E and W Telephone

This job has been contracted with CA-430-R.

ER-A-569, 300 Area General Improvements

The work order was closed out. No further work will be done until plans for 300 Area have been completed.

ER-A-654, Conversion of Building 3702 to Laboratory Supply Building

Preliminary work has been completed; however, project submission has been delayed until present work in 300 Area has been accomplished.

ER-A-679, Floor Foundations Studies - 700 Area Buildings

This study has been completed and recommendations made to the Using Department. The work order has been closed out.

ER-A-710, Spare Parts Warehouses - 100-200 Areas

This work for the Purchasing and Stores Section was closed out. A request is forthcoming from the Separations Section for a spare parts warehouse for the 200 Areas only.

ER-A-714, Minor Construction Transportation Shops

Work order was closed out at request of Using Section.

ER-A-1177, Additional Indication of Moderator Temperatures, 105-B,D,F, and DR

Management of project was transferred to the Manufacturing Department.

ER-2713, Ground Level to Roof Stairway - 224-U

Designs and a cost estimate were developed. This work can be covered by a work order.

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ER-6013, Piping Design Guides

The engineering order was closed out May 15.

3. Current Projects

CG-349, Hot Semiworks

Design had been completed previously; construction was advanced 5% to a total of 95%. The lump sum phases are completed except for installation of undelivered critical items, minor alterations requested by the sponsor, and acceptance testing. Additional funds in the amount of $68,000 are being requested to complete acceptance testing and other job obligations. Approval of this request will bring the total authorized funds to $3,403,000.

CA-362, Waste Removal and Recovery Facilities (WRP)

Design had been completed previously; construction was advanced 3.1% to a total of 89.4%. A revised construction schedule was submitted by the main CPFF contractor on May 27 in which the completion date for Phase II was changed from September 1, 1952 to December 1, 1952. A project review meeting was scheduled for June 6, 1952.

A re-estimate of costs for CA-362 is being made. Present indications are that the total cost will increase about $2,200,000.

On Phase I, work to be performed by Minor Construction remains at 99.4% of a scheduled 100%. The main CPFF contractor has completed 99.9% of a scheduled 100%. On Phase II, work to be performed by Minor Construction was 66.2% complete of a scheduled 100%. The main CPFF contractor has completed 65% of a scheduled 99%. (The revised schedule proposed by the contractor schedules completion at 69.7% as of June 1, 1952.)

Approximately 100 "as-built" drawings were received from the architect-engineer, bringing the total to 360 of an expected 2550. Completed "as-builts" from the Design Section remained at 106, or about 50% of total required.

CA-406, Mechanical Development Building (Phase II)

Design was advanced 10% to a total of 65%; construction has not begun. A meeting with the architect-engineer was held May 21 to discuss minor revisions in mechanical and structural plans. The electrical plans and specifications were far from acceptable. A General Electric engineer was assigned to work with the architect-engineer's electrical designer during the week of May 26.

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CA-431-A, New Reactor - 100-C Plant (Waterworks)

Design had been completed previously; construction was advanced 13.4% to a total of 75.7%. The architect-engineer is proceeding slowly on the reworking of acceptance test procedures and preparation of "as-built" drawings. Design engineering is proceeding on the substitution of alum and activated silica for water treatment. The Manufacturing Department has approved this substitution.

Construction is substantially complete on all buildings. Installation and final tests of equipment are proceeding. Because of excessive noise at rated flow and pressure, the vendor has decided to design new first stage impellers for pumps in 190-C Pump House. Flushing operations can be done with pumps which have not been modified.

The 183-C Clearwell Tanks No.3 and No.4 are practically complete, and work on No.2 and No.5 is progressing. The 151-B Substation switchgear is practically complete. The 107-C Retention Basin tanks have been tested and are being painted. The north tank of 187-C High Tanks is complete except for some seam welding. Erection of the south tank has begun.

CA-431-B, New Reactor - 100-C Plant (Reactor)

Design completion status remains at 99%; construction was advanced 7.5% to a total of 69%. On 105-C Building, work is essentially complete on concrete placement, structural steel, and asbestos siding. Work began on the Metal Examination Facility.

In preparation for placing heavy aggregate concrete for the 105-C Process Unit, the following items have been performed: Installation and testing of the gas seal, beams for the top shield, Ball 3X, and vertical rod thimbles.

Pipe work on the tunnel section of 115-B Facility was about 75% complete. Cooler blower turbines have been set and tested. Other equipment installations were about 80% complete.

CG-433, Expansion 300 Area Power House and Pumping Station Facilities

Design was advanced 1% to a total of 99%; construction was advanced 11.8% to a total of 16%. This completion figure does not reflect materials delivered and on the job. The contractor and subcontractor made substantial progress on foundations, boiler installation, and piping. The air compressors have been placed.

CG-438, Ball Third Safety System

Design had been completed previously; construction was advanced 1% to a total of 6%. This work included installation of batteries and racks in the battery rooms, and the continued fabrication of special tools and equipment.

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CG-438, Ball Third Safety System (Continued)

A critical delay in the ball procurement occurred with the failure of the induction furnace generator in the vendor's plant. By expediting repairs, the delay was reduced from one month to ten days.

The pile shutdown date of August 11, 1952, for installation of the Ball System may be rescheduled. Consideration is being given to other work that should be accomplished during an extended shutdown; so an exact schedule cannot be established at this time.

CG-482, Pile and Pile Water Plant Improvement

Design was advanced 15% to a total of 55%; construction has not begun. The designs of all critical components required for the rear face pile revisions have been completed. Procurement is being negotiated by the Hanford Operations Office of the AEC, due to an agreement that General Electric would not perform the procurement function until the provisions of the Construction Rider have been complied with.

Studies of aluminum pigtails are continuing. Sample pigtails with inside diameters of 15/16 inches, 7/8 inches, and 3/4 inches have been fabricated and are being completely investigated as to adaptability, fatigue, corrosion, and precise boiling limits. Fatigue limits and extrusion problems in the Van Stone are being investigated.

B. OTHER ASSIGNMENTS

CG-187-E, Conversion of Unassigned Space for Radiochemistry Laboratory

Completion status remains at design 100%, construction 25%. The main CPFF contractor was relieved of all field work, but will continue to furnish all material and do all shop fabrication. Minor Construction Management Unit has been accumulating data on material and preparing to assume responsibility for all field work.

CA-192, Biology Laboratory 108-F

Completion status remains at design 98%, construction 88%. The revised project proposal is still awaiting AEC authorization. The subcontractor for fabrication of the growth chamber has requested additional time for completion, primarily because of material shortage.

CA-204, Extension to Existing Kadlec Hospital and Medical Arts Building

Design had been completed previously; construction of the six-room addition was advanced 10% to a total of 85%. Construction is on schedule. Some steam line insulation work is being assigned to General Electric forces.

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CG-404, Primary Power Lines for Hanford Works Laboratory

Completion status remains at design 100%, construction 83%. Invitations for bids have been issued by the AEC Contract Section.

CG-410, In-Pile Controlled Atmosphere Experiment

Design had been completed previously; construction was advanced 2% to a total of 94%. The water analyzer was improved by the work of the vendor, but consideration is being given to replacement of the instrument by a new and different type. The fabrication of the new heater elements is proceeding as rapidly as possible.

CG-412, P-10-X Extraction Facilities

Both design and construction had been completed previously. The sponsor has requested that close-out papers be held pending reopening of the job scope.

CG-419, Induction Heating Unit - Building 3732

Completion status remains at design 100%, construction 0%. The induction heating unit is still promised for shipment in October 1952.

CG-424, Water Quality Experimental Facilities

Design had been completed previously; construction was advanced 3% to a total of 92%. Work is now being scheduled for shutdowns, with a completion date set for the shutdown in early July.

CA-430, Improved Lighting - 703 Building

Completion status of the additional lighting remains at design 100%, construction 0%. A contract for the remaining work has been let. Installation of fixtures is scheduled to begin July 15, 1952.

CG-432, Air Raid Warning System, Richland and North Richland

Design had been completed previously; construction was advanced 1% to a total of 99%. The preliminary acceptance was signed May 16. If tests during June are satisfactory, final acceptance will follow immediately.

CA-434, New Bio-Assay Laboratory

Since design rescoping was completed, design completion status was revised downward to 50%. The revised project proposal requesting authorization of $325,000 was forwarded for the A&B Committee meeting in June.

CA-441, Solvent Building

Completion status remains at design 90%, construction 0%. Work has been authorized by the AEC. Final design is scheduled for completion July 15, 1952.

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CG-442, X-Ray Machine - 3745-A

Completion status remains at design 95%, construction 90%. The machine is scheduled for a recheck on June 3. The revised project proposal for a total cost of $90,000 includes concrete building shielding.

CG-445, BY Telephone Exchange Additions and Changes

Completion status remains at 100%; as a result of reanalysis, the construction status was revised downward to 73%. Delivery of equipment may be delayed until late 1958.

CG-447, Portable Meteorological Mast

Design was advanced 7% to a total of 81%; construction was advanced 10% to a total of 35%. The portable mast has been erected in the field on a trial basis and appeared to need only additional guy supports. Electrical design was completed, and electrical work is being installed in the van.

CG-451, Extension of 300 Area Underground Electrical Power Distribution System

Design had been completed previously; construction has not begun. The AEC was informed by letter of the contamination hazard in the 313 Area, and appropriate contract provisions were recommended.

CA-452, Meteorology Tower Elevator

Completion status remains at design 100%, construction 0%. Revised specifications have been completed, and a new bid opening date of June 6 has been established.

CG-454, Spectrometer Shielding

Completion status remains at design 98%, construction 65%. A revised project proposal is being routed for signatures.

CA-455, Replace Two Elevated Water Tanks in 200-E Area

Completion status remains at design 70%, construction 0%. The AEC is holding rough draft specifications until the Manufacturing Department can complete additional study data.

CA-457, Pile Technology Office Building

Design had been completed previously; construction was advanced 1% to a total of 98%. Installation and testing of ventilation equipment was continued. The outside hardware has arrived.

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CA-460, Installation of Asbestos S[illegible] and Painting Wood Trim-272-E&W

Design had been completed previously; construction was advanced 18% to a total of 28%. The original contractor has gone bankrupt, but another company has assumed responsibility for the job and is continuing the work as scheduled.

CG-461, Maintenance Hot Machine Shop

Design had been completed previously; construction was advanced 8% to a total of 98%. The electrical buss duct is being installed. A new completion date of July 1, 1952, has been authorized.

CA-473, 100-B Automatic Dial Telephone Exchange

Design was advanced 10% to a total of 60%; construction has not begun. Design has progressed slowly because of consideration for minimum building area, separate battery rooms, and better ventilation. The solutions to these problems have been approved.

CG-477, Building 284-W - Fifth Boiler Addition

Design was advanced 7% to a total of 42%; construction has not begun. Design is now to the stage that construction can begin after approval of the appropriate drawings. Fencing and foundation work are scheduled to begin during June.

CA-478, Area Fence and Minor Repairs Excess Material Warehouse-North Richland

Completion status remains at design 100%, construction 0%. Notice to proceed has been issued. A 30-day option is provided to include a truck scale, loading ramp, and scrap metal storage slab.

CA-479, Replacement of Docks and Outside Stairs-700 Area Permanent Building

Design was advanced 2% to completion; construction has not begun. Lump sum bid assemblies have been prepared, and bid opening date is set for June 17, 1952.

CA-480, Remodeling 722-C Building for Office Equipment Repair

Design was advanced 2% to completion; construction has not begun. Lump sum bid assemblies have been prepared. Bid opening date is set for June 17, 1952.

CG-483, Downcomer Repairs in 100-B,D,DR,and H,and Replacement in 100-F

Design was advanced 5% to a total of 90%; construction has not begun. Drawings have been approved for vent repairs in 100-DR and 100-H, and the downcomer replacement in 100-F. Tests for welding specifications are being conducted. All material, except the A.I.S.I. Type 502 Plate and Shapes, is in stock.

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CA-480, Positive Ion Accelerator

Completion status remains at design 10%, construction 0%. The project proposal is still awaiting authorization by the AEC.

CA-491, Metallurgy Laboratory, 300 Area

Design was advanced 4% to completion; construction has not begun. Lump sum bid assemblies are being prepared. Bid opening date is scheduled for June 11, 1952. Purchase orders have been placed for all General Electric purchased and installed equipment.

CG-492, Experimental One-Tube Ink Facility

Design was advanced 3% to a total of 98%; construction has not begun. Drawings for the detailed design have been approved. Installation will be done on the regular shutdown schedule, beginning with the next shutdown.

CG-493, Duct Level Safety Showers, Building 234-5

Completion status remains at design 100%, construction 0%. Engineered materials are on order.

CG-496, Recuplex Installation, 234-5 Building

Design was advanced 2% to a total of 12%; construction has not begun. Procurement has been delayed until the requirements of the Construction Rider have been complied with. Material probably cannot be ordered on the June-July schedule. Process changes have delayed issuance of design criteria until early July.

CA-497, New Substation Fences and Grounding of Existing Fences

Completion status remains at design 40%, construction 0%. The project proposal is still awaiting AEC approval.

* * * * * * *

The following studies and engineering requests, involving preparatory work and scoping of future projects, were active during the month:

ER-E-466, Improved Lighting and Increased Electrical Capacity - Miscellaneous 700 Area Buildings

Completion status remains at design 20%, construction 0%. The project proposal was submitted to the A&B Committee by the Plant Security and Services Section.

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ER-E-477, Remote Supervisory Control 100 Area Water Plants

No design or construction work has been done. The Informal Request letter for design funds has been submitted to the A&B Committee.

ER-A-661, Central Distribution Headquarters

Preliminary design, estimate, and project proposal have been completed. Additional redesign work is being done to comply with the AEC requirement for friable construction.

ER-A-663, Pile Technology Test and Storage Building

Preliminary design is proceeding. New design criteria have been established.

ER-A-667, Water Drainage Around 700 Area Buildings

Preliminary design and studies are progressing.

ER-A-669, Parking Lot on 720 Building Site

Preliminary design and estimate have been prepared for this parking lot to be installed upon the removal of the existing 720 Building.

ER-A-671, Crushed Rock and Oil Covering-700 Area

Preliminary design and studies are progressing.

ER-A-673, Floor Coverings - 700 Area Permanent Buildings

Preliminary study and estimate have been completed. The project proposal was prepared and submitted by the Using Department.

ER-A-681, Roads and Walks - 700 Area

Preliminary design and studies are progressing, in correlation with ER-A-667 and ER-A-671.

ER-A-682, Underground Steam Line, 722-C and 707 Buildings

Preliminary design and estimate have been prepared for forwarding to the sponsor.

ER-A-686, Painting High Tanks - 105-B and 105-F

Rough drafts of the estimate and project proposal have been sent to the Using Department for review and comments.

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ER-A-698, Lubrication Pits, 100-D and 100-F Buildings

Project proposal is awaiting AEC approval.

ER-A-702, Exhaust System Alteration, 716-1131 Buildings

Informal Request was authorized May 19. Final design and specifications are being completed.

ER-A-703, Sanitary Facilities - Surplus Sales Yard

Project proposal is being prepared.

ER-A-704, Addition to Kadlec Hospital

A rough draft of the project proposal is being prepared for submittal in early June, 1952.

ER-A-705, Rest Room Alterations, 700 Area Buildings

The informal request was approved by the A&B Subcommittee. The estimate and project proposal information has been submitted to the Using Department.

ER-A-706, Area First Aid Buildings

Preliminary design has been completed, and a project proposal estimate of $70,000 has been prepared.

ER-A-707, Fire Protection Buildings, 272 E and W

A rough draft of the project proposal for $29,200 is being prepared.

ER-A-708, Temperature Recording Stations

This work has been authorized by the Radiological Sciences Department. Minor Construction has begun fabrication of the three instrument houses to be installed in early June, 1952.

ER-A-709, Replacement of Fire and Sanitary Water Tank, 100-D

Design information for tank supports was received.

ER-A-712, Richland Air Raid Shelter Study

Informal request is still awaiting authorization by the AEC.

ER-A-713, Substation Service Building 1100-300 Area

It is proposed to erect three small metal substation service buildings in the 1100 and 300 Areas. Lump sum bid opening date is June 9, 1952.

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ER-A-715, Fireproof Graphite Storage Warehouse

Preliminary scope design is proceeding for the erection of a 70,000 sq.ft. fireproof warehouse in the 101 Area.

ER-A-716, Minor Construction Fabricating Shops

Preliminary design has been requested for general renovation of the Minor Construction Shop Area, to include lighting, heating, fire protection, and general building improvements.

ER-A-1149, Repairs to the 107-B,D,F, and DR Retention Basins

Design is about 40% complete. A project proposal has been submitted to the A&B Committee requesting funds for: Stabilization of the subsoil under each basin, repair and sealing of cracks and joints, and repair of baffle walls and inlet distribution chamber planking.

ER-A-1179, High Pressure Water Supply to Front Face, 100-B,D,F,DR & H Areas

The rough draft of the project proposal is still under review by the Reactor Section.

ER-A-1180, Additional Facilities in 189-D Building

Design is about 10% complete. An informal request letter is being circulated for approval.

ER-A-1182, P-13 Pressure Assembly Removal

Negotiations are being attempted with the Argonne National Laboratory to accept charges for this work. There has been no agreement to date.

ER-A-1183, Repair of 105 Effluent Line Junctions with 107-DR

Design is about 25% complete. The project proposal is awaiting authorization.

ER-A-1184, Replacement of 100-D Reactor Effluent Line

Design is about 20% complete. A preliminary design scope has been approved to enter the basin by passing over the wall A project proposal is being prepared on this basis.

ER-A-1185, Car Puller and Car Shake-out

A project proposal is being prepared. The scope of this work will include the installation of a double track spanned moncrail structure in each of the 200 Areas, and the installation in all of the 100 and 200 Areas of car shakers, hoists and trolleys, car pullers, and shelters.

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ER-A-3094, Design Development, Mechanization of the 300 Area Slug and Component Preparation Facilities

Design development status remains at 34%. This work is being transferred to the Design Section for further investigation.

ER-2596, Remodel Former Laundry Building for Engineering Offices

Completion status remains at design 15%, construction 0%.

ER-2720, Fire Protection Equipment - Building 234-5 Filter Room

Design is about 20% complete. Preparation of scope material is almost complete.

ER-2721, Water Quality Laboratory, 108-B

Design is about 25% complete. Designs and the informal request are being prepared.

ER-2722, Duct Level Elevator Stop, 234-5 Building

Design is complete; construction is about 75% complete. Construction was started on a work order, but an informal request is being prepared to provide additional funds required.

ER-6011, (M-135) - 700 Area Steam Study

The study has been completed, and the report is being prepared for issue.

ER-6012, Hanford Works Standards Evaluation

The study has been completed, and is still awaiting approvals.

ER-6016, Equipment Price Standardization

The study was begun to determine the functions and use of the three major equipment price numbering systems in use at Hanford Works, and to determine further if a standard system could be used in the plant.

M-713, (ER-A-1068) Vertical Safety Rod Corrective Designs, 105-B,D,and F

Completion status remains at design 65%, construction 0%. With the decreasing rate of pile distortion, the present safety rod design appears adequate. A closing notice is being prepared.

M-852 (IR-96) Replacement of Air Lock Doors, 234-5 Building

Design was completed; construction was about 20% complete.

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IR-112, Building 224 Waste Diversion, 224 E & W

Design was completed; construction was about 70% complete. During the month a cheaper and better method was developed by the sponsor for the West Area phase, which is scheduled for completion in early June, 1952.

IR-113, Pile Technology Metallurgical Laboratory Alterations--234-5 Bldg.

Design was completed; construction was about 40% complete. Work is proceeding, also a check on the adequacy of funds.

IR-115, Radiation Monitoring Addition to 105-D

Design was completed; construction has not begun. Materials are being obtained for an early start of construction.

IR-116, Combined Civil Defense and Plant Disaster Control Center

Design was about 5% complete; construction has not begun. The location of the facility has not been determined.

AEC-117 (010) - Survey of Richland, Washington

Field work has been completed and accepted. Final drawings are being prepared.

C. RELATED SERVICES

1. Design Services

Drafting work load declined during the month, with Program "X" being the largest job. Total production was 169 new drawings, 15 charts and graphs, and 126 revisions. Average time spent was 9.4 man-days per drawing.

Reproduction output decreased considerably from the April total. Total square feet of prints produced was 213,890. The largest single orders were 1,080 prints for CA-431-B and 870 prints for CG-413. The volume of small orders remained high in comparison with the number of large, volume-producing orders. A study was begun on Reproduction expense with the objective being a more equitable liquidation of operating expense.

Field Service work load remained stable. All work on Project AEC-117, (Survey of Richland) was completed, physically inspected, and accepted by May 25. The Estimating Services group completed 35 estimates, of the 55 in progress.

Project Control conducted the study on Reproduction expense and continued work on a new system of charts to depict projects under General Electric Company management.

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2. Staff Services

The History group issued three histories during the month. The Unit Services work load remained stable.

The major special assignments completed were brochures on the operation of the North Richland Construction Camp from 1947 to 1952 and the landlord functions for the Hanford Area.

On May 2, the Number 3 boiler in the 3000 Area Steam Plant was turned off for inspection and repair. The Number 3 boiler will require replacement of its front fire wall. Number 2 boiler was put back in service.

D. CRAFT LABOR

Labor difficulties which have been compounding for several months reached the degree that completion of some major projects was seriously delayed. Completion date on CA-362 (TBP) has been delayed 90 days and at an expected increase in cost of $2,200,000. Part "A" of the 100-C Production Facility, which should be completed before Part "B", is over 90 days behind schedule. This condition was summarized in a letter dated May 29, 1952, from the Manager, Engineering Department, Nucleonics Division, to the Chief, Engineering and Construction, AEC, Hanford Operations Office. The letter further requested a joint review of the entire situation, particularly the insufficient number and ineffective performance of pipefitters and welders.

There was a slight decrease in voluntary terminations of CPFF construction contractors' personnel. Percentage of terminations in May was 6.7 percent, compared with 6.9 percent for April. However, there was a net loss of 72 plumbers and welders during the month. There remained 81 on requisition, including 51 welders.

The jurisdictional dispute between plumbers and teamsters over the loading and unloading of piping on the Project was decided on May 8, 1952, by the National Joint Board for Settlement of Jurisdictional Disputes. The award, however, did not accomplish peace between these two crafts' disagreements and disputes continued to a lesser degree during the month.

A jurisdictional dispute between carpenters and ironworkers over the rigging of concrete forms was decided by the National Joint Board for Settlement of Jurisdictional Disputes.

Two work stoppages occurred during the month. The first was May 14 when about 200 men, representing all crafts except plumbers and electricians, were off the job at 200-E Tanks Farm in protest against delays in checking out through congested clock alleys. Discussions with business representatives of the unions resulted in a return to work the following morning. The second stoppage occurred May 18 when electricians in 200-E and W remained off the job to force their demands for exclusive shuttle bus service. A return to work was effected later in the day.

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CRAFT LABOR (Continued)

A threatened work stoppage by the plumbers in protest against the appointment of a piping superintendent was averted by a conference between officials of the plumbers' union and the construction contractor. Another impediment to the completion of the 105-C Reactor was removed on May 8 when the plumbers formally agreed to install cross-headers which have been the subject of a dispute for several months. The agreement was accomplished among the plumbers' union, the main CPFF contractor and the AEC.

Negotiations on the Master Agreement (covering most construction crafts) between construction contractors and the unions continued on May 14. The union's committee presented a document which was acceptable to all crafts except plumbers and electricians. The contractors maintained that negotiations would be futile unless a uniform agreement could be obtained. A joint committee (two union and three contractor representatives) was appointed to meet with AEC officials on May 15. After that meeting, negotiations were recessed to obtain concurrence of the Plumbers International with the principle of a uniform agreement at Hanford Works, and to have such concurrence transmitted to the Local level.

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MEDICAL DEPARTMENT

MAY 1952

General

Personnel Changes

The roll increased from 271 to 274.

Visits

Dr. Fuqua attended the Meeting of Industrial Physicians associated with the A.E.C., which was held at the University of Rochester in New York.
A. P. Skoog, M.D., Director of Health and Safety, Ames Laboratory, visited us while here attending the A.E.C. Safety Conference.

Industrial Medicine

Employee physical examinations declined slightly from 2010 to 1925. Dispensary treatments decreased from 10,579 to 8,677 due to a decline in construction employees. The monthly health topic was Mental Health. No G. E. employees were treated for major injuries while only one was treated for sub-major injury. Subcontractor employees were treated for five major and 9 sub-major injuries.
The sickness absentee rate was 1.65 as compared to 1.87 for April. The total absentee rate was 2.47 as compared to 2.64 for April.

Kadlec Hospital

The average daily census decreased from 100.7 (89.2 adults, 11.5 newborns) to 89.9 (79.4 adult 10.5 newborn). The decrease represents the expected seasonal decline. The census was 92.2 a year ago.
The occupancy rate for mixed services (all services except obstetrics) was 73.8%.
Nursing hours per patient day were 3.6 for the mixed services and 4.7 for obstetrics.
The ratio of in-patient hospital employees to patients was 1.84 for April.
The facilities of Kadlec Hospital were shown to several hundreds of people at the annual Open House, May 7th. The six-room addition to Wing C is complete with a few minor exceptions.

Public Health

The incidence of communicable disease dropped to about half that of April with mumps the major offender
A preliminary study of absenteeism indicated that time card records of reasons for absences were inadequate in about 44% of the cases. Efforts are in progress to improve this situation.
The mass chest x-ray survey for Richland and North Richland resulted in 3,522 chest plates taken by the traveling x-ray unit in 8 days. At the same time heights and weights were taken and showed 43% of the men and 25% of the women to be overweight.
To facilitate mosquito control, the crew will work from 5:00 a.m. to 1:30 p.m. from June 1st through September.
The need for speed in securing covers for reservoirs for community water has been emphasized by the finding of some midge fly larvae in the domestic water supply.

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MEDICAL DEPARTMENT

MAY 1952

General (Continued)

Costs - April

Medical Department costs before assessments to other departments were as follows:

	March	April	April Budget
Industrial Medicine (Oper.)	$35,918	$34,182	$37,062
Public Health (Oper.)	10,642	12,975	12,163
Kadlec Hospital (Net)	12,827	18,287	22,973
Hospital Expense Credits	4,074	2,715	2,180
Subtotal - Medical Dept. (Oper.)	63,461	68,159	74,378
Construction Medical (Industrial and Public Health	16,202	13,437	18,443
Total Operations and Construction	79,663	81,596	92,821

The net cost of operating the Medical Department before assessments to the other departments was $81,596, an increase of $1,933 and $11,225 below the budget.

Kadlec Hospital's net cost was up $5,460 due to a decreased revenue which failed to be offset by decreased cost. This is a seasonal change which is expected.

Decreases in industrial medical expense were due largely to change to five day week.

1196649

MEDICAL DEPARTMENT

MAY 1952

Industrial Medical Section

Medical examinations decreased from 2010 last month to 1925. Dispensary visits also decreased from 10,579 to 8,677. Visits of construction employees dropped 1202 and visits of operating employees was 700 less than the previous month. General Electric employees sustained no major injuries and 1 sub-major and construction employees sustained 5 major injuries and 9 sub-majors. Eight hour a day medical service was discontinued in the 101 Area due to a reduction of force at that location and on 5-9-52 permitted a return to one hour a day service from the 100 F Area.

On May 15 and 16 Dr. Fuqua attended the AEC Meeting for Industrial Physicians at the University of Rochester School of Medicine. Represented at this meeting were physicians from the various AEC installations. Mutual problems were discussed and a visit to the Eastman Kodak Company plant was made.

The May Industrial Staff Scientific Meeting dealt with absenteeism. The counseling service available through the Public Health Section was described and a general discussion of the problem followed.

The Chemical Hazards Committee met on May 28th. Three reports have been issued on the health hazards of solvents, namely Methylchloroform, Turco-Aernulso and Penetone No. 602. Steps were also taken to control purchasing of solvents through the Purchasing and Stores Section.

The Health Activities Committee met on May 18th and the health topic on Mental Health was presented. Material on this subject was prepared for distribution throughout the plant. A preliminary report on the study of plant absenteeism was made. Methods to break down and define personal illness on time cards was discussed. The combined sickness absenteeism for both weekly and monthly roll employees was 1.65 for the month of May as compared to 1.87 in April.

Allan P. Skoog, M.D., Director, Health and Safety Department, Ames Laboratory, U.S. Atomic Energy Commission, Ames, Iowa. was a plant visitor during the month.

April gross costs totaled $35,129 as compared to $36,725 in March, a reduction of $1,596. Details of these costs may be compared as follows:

	April	March	Increase (Decrease)
Salaries	$ 24,770	$ 26,109	$ (1,339)
Continuity of Service	2,481	2,586	(105)
Laundry	292	338	(46)
Utilities, Transportation, Maintenance	3,394	3,247	147
Supply and Other Costs	4,192	4,445	(253)
Gross Operating Costs	$ 35,129	$ 36,725	$ (1,596)
Less: Revenue	947	807	140
Expense Credits	4,909	5,329	(420)
Net Cost of Operations	$ 29,273	$ 30,589	$ (1,316)

1196650

Industrial Medical Section (Continued)

Salaries have decreased $1,339 due to a shorter work month and one less employee on the roll. Replacement of this employee has since been made.

Supply and Other Costs were reduced by $253 due primarily to a shorter work month.

Industrial Medical - Construction

The reduction of $2,129 in gross costs is summarized as follows:

	April	March	Increase (Decrease)
Salaries	$ 10,665	$ 12,173	$ (1,508)
Continuity of Service	1,051	1,206	(155)
Laundry	60	52	8
Transportation and Maintenance	47	92	(45)
Supply and Other Costs	1,462	1,891	(429)
Total	$ 13,285	$ 15,414	$ (2,129)

The decrease of $1,508 in salaries is due to a shorter work month and less overtime paid because of going back on a 5 day week schedule. Supply and Other Costs decreased $429 due to the same reasons.

1196651

MEDICAL DEPARTMENT

MAY 1952

Industrial Medical Section (Continued)

Physical Examinations	April	May	Year to Date
Operations			
Pre-employment	88	143	517
Rehire	15	15	61
Annual	308	312	1399
Interim	87	68	431
A. E. C.	70	71	251
Re-examination and rechecks	57	75	374
Termination	156	136	810
Sub-total	781	820	3843
Contractors			
Pre-employment	118	130	917
Rehire	157	153	1000
Recheck	46	39	311
Termination & Transfer	906	781	3818
Interim	2	2	21
Sub-total	1229	1105	6067
Total Physical Examinations	2010	1925	9910
Laboratory Examinations			
Clinical Laboratory			
Government	349	358	1112
Pre-employment, Termination, Transfer	2504	2757	16204
Annual	1829	1699	8245
Recheck (Area)	648	568	2900
First Aid	52	52	220
Clinic	643	617	3164
Hospital	4180	4119	23083
Public Health	33	16	116
Total	10238	10186	55044
X-Ray			
Government	42	48	195
Pre-employment, Termination, Transfer	369	409	2465
Annual	327	350	1488
First Aid	245	213	1220
Clinic	251	255	1518
Hospital	332	329	1775
Public Health	7	3	29
Total	1573	1607	8690
Electrocardiographs			
Industrial	27	25	137
Clinic	6	3	36
Hospital	41	45	241
Total	74	73	414

1196652

MEDICAL DEPARTMENT

MAY 1952

Industrial Medical Section (Continued)	April	May	Year to Date
First Aid Treatments			
Operations			
New Occupational Cases	475	384	2125
Occupational Case Retreatments	1512	1277	7198
Non-occupational Treatments	3136	2733	15528
Sub-total	5123	4394	24851
Construction			
New Occupational Cases	936	665	4346
Occupational Case Retreatments	3602	2818	17534
Non-occupational Treatments	870	751	5217
Sub-total	5408	4234	27097
Facility Operators	48	49	200
Total First Aid Treatments	10579	8677	52148
Major Injuries			
General Electric	1	1*	5
Contractors	13	5	90
Total	14	6	95
Sub-major Injuries			
General Electric	2	1	12
Contractors	17	9	68
Total	19	10	80
Absenteeism Investigation			
Total No. calls requested	9	10	74
Total No. calls made	9	10	74
No. absents due to illness in family	0	0	1
No. not at home when call was made	1	5	13

* Occurred 4-30-52 - not shown on April report.

1196653

MEDICAL DEPARTMENT

MAY 1952

Hospital Section

General

The Medical Department's roll increased from 271 to 274.

The average daily adult census decreased from 89.2 to 79.4, as compared to 81.1 a year ago. This represents an occupancy percentage of 70.8, broken down as follows: Mixed Service (Medical, Surgical, Pediatrics) 73.8%; Obstetrical Service 57.6%. The minimum and maximum daily census during the month ranged as follows:

	Minimum	Maximum
Mixed Service	54	83
Obstetrical Service	7	17
Total Adult	66	98

The average daily newborn census decreased from 11.5 to 10.5, as compared to 11.1 a year ago.

Nursing hours per patient per day:

Medical, Surgical, Pediatrics	3.6
Obstetrical	4.7
Newborn	3.4

The ratio of in-patient hospital employees to patients (excluding newborn) for the month of April was 1.84. When newborn infants are included, the ratio is 1.63.

The net expense for the operation of Kadlec Hospital for April was $18,287, as compared to $12,827 for March. Summary is as follows:

Kadlec Hospital net expense $ 18,287

This is an increase of $5,460 over March. Gross costs were reduced by $3,566, but this was more than offset by a reduction in revenue and expense credits of $9,026. due primarily to a reduction in average daily patient census and a shorter month.

Kadlec Hospital held its annual Open House on May 7th and many Richland residents, both children and adults, availed themselves of the opportunity of becoming better acquainted with their hospital.

Satisfactory progress is being made on the 6-room addition to the C Wing (Medical) of Kadlec Hospital and it is expected that final acceptance inspection will be made early in June.

1196654

MEDICAL DEPARTMENT

MAY 1952

Hospital Section (Continued)	April	May	Year to Date
Kadlec Hospital			
Average Daily Adult Census	89.2	79.4	89.0
Medical	24.6	25.3	28.3
Surgical	31.7	28.5	32.7
Pediatrics	20.3	13.5	15.1
Mixed	76.6	67.3	76.1
Obstetrical	12.6	12.1	12.9
Average Daily Newborn Census	11.5	10.5	11.7
Maximum Daily Census:			
Mixed Services	89	83	95
Obstetrical Service	19	17	23
Total Adult Census	104	98	110
Minimum Daily Census:			
Mixed Service	59	54	52
Obstetrical Service	6	7	6
Total Adult Census	76	66	63
Admissions: Adults	547	543	2894
Discharges: Adults	571	558	2902
Newborn	82	79	405
Patient Days: Adult	2678	2462	13539
Newborn	345	327	1788
Total	3023	2789	15327
Average Length of Stay: Adults	4.7	4.5	4.7
Medical	4.7	5.0	5.2
Surgical	4.5	3.9	4.3
Pediatrics	5.5	4.7	5.1
Mixed	4.8	4.4	4.7
Obstetrical	4.2	4.2	4.3
Newborn	4.2	4.2	4.4
Occupancy Percentage: Adults	79.6	70.8	79.5
Medical	74.5	76.7	85.7
Surgical	109.3	98.3	112.7
Pediatrics	70.0	46.5	52.1
Mixed	84.2	73.8	83.6
Obstetrical	60.0	57.6	61.4
Newborn	44.2	40.3	45.0
(Occupancy Percentage based on 112 adult beds and 26 bassinets.)			
Avg. Nursing Hours per Patient Day:			
Medical, Surgical, Pediatrics	3.6		
Obstetrics	4.7		
Newborn	3.4		
Avg. No. Employees per Patient (excluding newborn)	1.84		
Operations: Major	73	70	402
Minor	85	83	462
E.E.N.T.	86	77	408
Dental	2	0	6
Births: Live	77	79	408
Still	2	4	10

1196655

MEDICAL DEPARTMENT

MAY 1952

	April	May	Year to Date
Kadlec Hospital (Continued)			
Deaths	4	5	25
Hospital Net Death Rate	.15	.47	.42
Net Autopsy Rate	50.0	40.0	56.0
Discharged against advise	2	1	7
One Day Cases	119	144	671
Admission Sources:			
Richland	74.8	77.5	76.1
North Richland	12.0	9.0	11.6
Other	13.2	13.5	12.3
Admissions by Employment:			
General Electric	69.6	75.3	71.4
Government	1.5	2.8	2.3
Facility	6.6	6.1	6.5
Contractors	15.9	11.2	14.1
Schools	2.0	1.5	1.8
Military	0	.5	.7
Others	4.4	2.6	3.2
Hospital Outpatients Treated	423	459	2234
Phsyical Therapy Treatments			
Clinic	279	281	1250
Hospital	154	214	688
Industrial: Plant	254	215	1212
Personal	7	7	38
Total	694	717	3188
Pharmacy			
No. of Prescriptions Filled	3186	3069	16273
No. of Store Orders Filled	767	699	3772
Patient Meals			
Regulars	3837	3500	20686
Children under 8	1005	714	3510
Specials	1592	1423	7453
Lights	3	4	8
Softs	687	1004	4551
Tonsils	178	142	784
Liquids	138	130	857
Surgical Liquids	93	61	419
Total	7533	6978	38268
Cafeteria Meals			
Noon	1877	1798	9209
Night	232	263	1299
Total	2109	2061	10508

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MEDICAL DEPARTMENT

MAY 1952

Public Health Section

General

Although the number of communicable disease cases reported dropped, the number of cases of mumps remained at the same level. The reduction in communicable diseases is due chiefly to fewer cases of German Measles. The drop in Public Health nursing home visits was due primarily to the absence of two staff members for the greater part of the month.

The preliminary study of absenteeism was completed. It was found from study that inadequate reasons for absences from work amounted to 43.9% of the total. Where reasons were given, the range was similar to the national pattern with upper respiratory infections leading in the list. As a first step in improving this picture, it is felt than an attempt should be made by supervision to get better reporting for reasons of absences of employees on time cards.

The mass chest x-ray survey was completed with a total of 3,522 persons responding. 95 volunteers contributed time or effort to this undertaking. In addition, a height-weight check was made, results of which will be reported in the near future. It was generally felt that the survey completed was one of the most successful ever carried on in the community.

The mental health movie panel discussion series held with pre-school P.T.A. representatives was completed. Interest was high and the people in attendance indicated they wished to continue some sort of study group in the fall.

Mosquito control activities consisted mostly of field inspections and spraying. A total of 2,625 gallons of 5% DDT oil solution was sprayed. Of this total 1,010 gallons were sprayed by aircraft. The entire periphery of the village was covered. Residential areas are being sprayed with 5% DDT emulsion. Larvae were found in the south end of well field. This was drained and sprayed.

A meeting was held with Dr. R. McCauley and Mr. Marion Bacon, representatives of the U. S. Public Health Service and Army Engineers. Methods of mosquito identification and control was discussed and followed by field work.

To facilitate mosquito control, the crew will work from 5:00 a.m. to 1:30 p.m. from June 1st thru September. Residential areas will also be sprayed.

Numerous complaints were received regarding worms in domestic water supply. Inspection revealed them to be larvae forms of midge fly. Reservoirs were drained and cleaned, and this eliminated the larvae.

Two new food handling courses were held. Response was favorable. It is planned to cover all the food handling establishments until every foodhandler attends one and to hold them on a monthly basis for new personnel. Results of restaurant inspections were satisfactory.

1196657

MEDICAL DEPARTMENT

MAY 1952

Public Health Section (Continued)

120 resazurin tests were run on milk producers. Two producers were degraded because of high grades. Ring test for Bangs are being run on all herds in the Yakima valley in an effort to eliminate this disease from the herds.

Bacteriological results of water and sewage samples were satisfactory.

Warfarin bait was supplied to two plant areas for control of rodents. Results were satisfactory.

1196658

MEDICAL DEPARTMENT

MAY 1952

Public Health Section (Continued)	April	May	Year to Date
Education			
Pamphlets distributed	35,000	33,467	97,682
News Releases	0	14	18
Staff Meetings	1	1	5
Classes	0	5	33
Attendance	0	67	1020
Lectures & Talks	12	4	53
Attendance	227	92	1809
Films Shown	13	18	106
Attendance	446	328	5991
Community Conferences	16	33	104
Radio Broadcasts	4	0	7
Immunizations			
Diphtheria	14	14	79
Diphtheria Booster	5	15	427
Tetanus	15	14	190
Tetanus Booster	6	18	402
Pertussis	11	14	38
Pertussis Booster	2	15	25
Smallpox	6	10	81
Smallpox Revaccination	210	6	1116
Tuberculin Test	0	0	5
Rocky Mt. Spotted Fever	0	2	2
Immune Globulin	41	8	72
Other	3	2	7
Social Service			
Cases carried over	73	68	350
Cases admitted	15	22	94
Cases closed	20	11	85
Remaining case load	68	79	359
Activities:			
Home Visits	7	9	32
Office Interviews	249	259	1134
Conferences	68	49	319
Meetings	9	5	34
Santitation			
Inspections made	134	160	631
Conferences held	36	34	167
Bacteriological Laboratory			
Treated Water Samples	204	226	942
Milk Samples (inc. cream & ice cream)	10	13	58
Other bacteriological tests	192	283	1301
Total	406	522	2301

1196659

MEDICAL DEPARTMENT

MAY 1952

Public Health Section (Continued)	April	May	Year to Date
Communicable diseases			
Amoebic Dysentary	0	0	4
Chickenpox	8	15	68
Erysipelas	0	0	1
German Measles	144	28	549
Gonorrhea	2	1	9
Impetigo	3	0	3
Influenza (U.R.I.)	0	0	1
Infectious Mononucleosis	0	0	3
Measles	1	2	5
Mumps	46	54	193
Pediculosis	0	0	1
Pinkeye	5	1	24
Rheumatic Fever	0	0	1
Ringworm	1	3	10
Roseola	2	0	2
Scabies	0	0	1
Scarlet Fever	5	1	29
Thrush	0	0	1
Tuberculosis	0	0	2
Whooping Cough	2	0	2
Total	219	105	909
Total No. Nursing Field Visits	1011	807	4867
Total No. Nursing Office Visits	157	105	974

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MEDICAL DEPARTMENT PERSONNEL SUMMARY

May 31, 1952

		Physicians	Nurses	Anesthetists	Nurse Aides	Orderly & Am.Dr.	Technicians - Clinical Lab.	Tech. - X-Ray	Tech.-Bac. Lab.	Tech.-Phy. Ther.	Secretary	Steno-Typist	Office Mach.Opr.	Telephone Opr.	General Clerk	Pharmacist	Dietitian	Cook	Kitchen Worker	Soc. Serv. Couns.	Sanitarian	Health Educator	Janitors	Records Supv.	Adm. & Assistant	Others	TOTAL
1100 Area	Department Admin	2	2						2		1	1		3	4									1	2	1	19.0
	Industrial	3	8		1					1		2	1		7.975								4.4				28.4
	Hospital	2	*61	3	23	5	5.6	4		1		4			10.5	4	2	5	12				8			8	158.1
Outlying Areas	Public Health	1	7		1							2			1.125					3	2	1	.6				18.7
	Industrial	2.7	1				1	1							7.4								.7				13.8
	Public Health		2																				.3				2.3
	300	.2	2				.2								.333												2.7
	100-B	.1	1												.25												1.3
	100-D	.1	4												.25												4.4
	100-H	.1	1				.2								.25												1.6
	100-F	.1	4				.2								.25												4.6
	200-E	.2	4				.2								.333												4.7
	200-[illegible]	.3	6				.6								.333												7.2
	White Bluffs		1																								1.0
	101		1																								1.0
	100-C	.2	3												1												4.2
	M. J. - 4		1																								1.0
	TOTAL	12	109	3	25	5	8	5	2	2	1	9	1	3	34	4	2	5	12	3	2	1	14	1	2	9	274

*Three part-time nurses included

Number of employees on roll:

Beginning of month	271
End of month	274
Net increase	3

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Radiological Sciences Department

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RADIOLOGICAL SCIENCES DEPARTMENT

MAY 1952

Summary

There was no Class II radiation incident. Five Class I incidents were recorded. Potentially, the most serious involved the use of a defective survey instrument.

The ruthenium particle situation at the Redox Plant remained essentially the same as reported last month. No further emission of particles from the stack has been observed.

In other phases of the hazard control program, no unusual items were reported.

Biophysics and biology research activities progressed satisfactorily.

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Radiological Sciences Department

RADIOLOGICAL SCIENCES DEPARTMENT

MAY 1952

Organization

The month end force of 365 included 26 supervisors, 89 engineers and scientists, 16 clerical, and 234 other personnel. The net increase was 3.

General

Work was continued on ruthenium radioactive particles, without clear resolution of the basic problem.

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

	April	May	1952 To date
Special Work Permits	905	776	3833
Routine & Special Surveys	1263	1271	6879
Air Samples	2170	2118	8437
Skin Contamination Cases	123	102	448

Monitoring was provided for the neutron diffusion length tests at the 105-C reactor building. This work was performed without incident in five consecutive shifts.

Surveys were made to determine the extent of radioactive particle deposition in the vicinity of the Redox Plant, and results are reported separately.

A contract carrier's truck returning from a routine shipment to Arco was found to be generally contaminated upon arrival. Low level contamination on the driver and two AEC couriers was easily cleaned. This is the second occasion when contamination has been found on trucks on this route, each time after exposure to precipitation in southern Idaho about 24 hours after a Nevada test.

The 200 North Area drainage ditches have been backfilled to cover residual contamination.

2. Standards

There was no Class II radiation hazard incident. Five Class I incidents (#217-221) were recorded. One incident involved facial area contamination of about 1 μg Pu with decontamination completed at the hospital under the direction of a physician. Another concerned unauthorized entry of major construction forces into the 105-B reactor building work area. A third involved the contaminated Arco shipment truck mentioned above. A potentially serious incident occurred during monitoring at the 242-T Waste Evaporator, when a defective survey instrument indicated only about 10% of an exposure rate of 3.5 roentgens per hour. Fortunately, exposure received was within weekly permissible limits. All instruments of this type are being rewired and insulated to prevent a recurrence. The last incident concerned uncontrolled radiation exposure to a mechanic at the Calibrations Laboratory.

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Radiological Sciences Department

3. Exposure Records

(a) Personnel Meters, and Records and Photometry

General Statistics	April	May	1952 To date
Gamma pencils read	242,398	211,042	1,029,130
Potential overexposures	8	4	28
Confirmed overexposures	0	0	3
Slow neutron pencils read	1,358	982	4,608
Potential overexposures	0	1	1
Confirmed overexposures	0	0	0
Beta-gamma film badges processed	48,496	41,220	225,850
Potential overexposures	10	6	57
Confirmed overexposures	0	0	6
Fast neutron badges processed	372	435	1,991
Potential overexposures	0	0	0
Confirmed overexposures	0	0	0
Lost readings (all causes)	39	30	174

(b) Bioassay

1) Plutonium analyses:	April	May	1952 To date
Samples assayed	428	617	2,820
Results over detection limit	0	6	15
Maximum d/m/sample	-	1.70	1.70
Resamples of previous months	0	0	6
Maximum d/m/sample	-	-	BDL*

* Below detection limit

2) Fission Product Analyses:			
Samples assayed	440	585	2,783
Results over 10 c/m/sample	0	0	0

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3) Uranium analyses:

Results of 322 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	17	5	19	28	8	10
Machining	16	6	23	10	6	10
Melt Plant	54	15	39	24	9	34
Material Handling	19	9	20	22	9	18
Inspection	10	5	24	21	6	20
305 Building	4	4	1	0	0	0
Clerical	-	-	0	-	-	0
Coverage	25	17	3	8	5	3
R.M.U.	-	-	0		-	0

	Before Job Maximum	Average	Number Samples	After Job Maximum	Average	Number Samples
Car unloading	8	5	3	25	17	3

	Miscellaneous Samples (µg/liter) Maximum	Average	Number Samples
Random samples	-	-	0
224-U Building	3.6	1.6	92

4) Tritium analyses:

	Activity Density (µc/cc x 10^3) ≤ 2	2-5	5-10	10-20	20-35	35-65	>65	Total
No. samples-Tritium operations	36	10	0	0	0	0	0	46
No. samples-Biology laboratory	43	1	0	0	3	1	0	48

(c) Thyroid Checks

All thyroid checks were below the warning level.

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Radiological Sciences Department

(d) Hand Score Summary

There were 44,330 alpha and 67,337 beta hand scores reported. About 0.11% of the alpha scores, and 0.02% of the beta scores were above the warning levels. There was no attempt made to reduce seven of the high alpha scores and one of the high beta scores. Where decontamination was attempted, it was successful.

4. Calibrations

Number of Routine Calibrations

	April	May	1952 To date
Fixed instruments	271	240	1,271
Portable instruments	2,454	2,299	10,441
Personnel meters	19,505 *	18,360	78,480
Total	22,230 *	20,899	90,192

*Corrected figures

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Radiological Sciences Department

BIOPHYSICS SECTION

CONTROL UNIT

Regional Survey

The general findings are summarized in the following table:

SAMPLE TYPE AND LOCATIONS	Activity Type	Average Activity Density µc/cc
Drinking Water		
Benton City Water Co. Well	alpha	1.6×10^{-8}
Richland, N.Richland, Benton City Wells (500 cc)	alpha	$0.5\text{-}1.2 \times 10^{-8}$
100 Areas	beta	8.0×10^{-8}
Pasco, Kennewick, McNary Dam	beta	$< 0.5\text{-}2.6 \times 10^{-7}$
Backwash Solids-Pasco Filter Plant	beta	6.7×10^{-3} (µc/gm)
Backwash Liquids-Pasco Filter Plant	beta	4.8×10^{-7}
Sand Filter-Pasco Filter Plant	beta	3.7×10^{-5} (µc/gm)
Anthracite Filter-Pasco Filter Plant	beta	2.2×10^{-5} (µc/gm)
Other Waters		
300 Area Wells #1, 2, 3,	alpha	5.1×10^{-8}
300 Area Well #4	alpha	1.5×10^{-8}
Well #4 measured as Uranium	U	1.0×10^{-7}
Columbia River-Hanford Ferry	beta	4.6×10^{-6}
Columbia River-Patterson to McNary	beta	4.5×10^{-7}
Columbia River-Shore mud	beta	$3.0\text{-}6.0 \times 10^{-5}$ (µc/gm)
Raw water-Operating areas	beta	$< 0.5\text{-}3.8 \times 10^{-7}$
Pile effluent retention basins	beta	$1.6\text{-}2.4 \times 10^{-3}$
Pile effluent retention basins	alpha	$< 5.0 \times 10^{-9}$
I^{131} in Farm wastes	I^{131}	3.3×10^{-6}
I^{131} in Columbia River-Hanford	I^{131}	$< 5.0 \times 10^{-8}$
Atmospheric Pollution		
Gross alpha emitters	alpha	$< 0.4\text{-}6.3 \times 10^{-14}$
Gross dose rate -Separations areas	beta-gamma	0.5-2.5 mrep/24 hrs.
Gross dose rate -Residential areas	beta-gamma	0.2-0.9 mrep/24 hrs.
Filterable beta -Separations areas	beta	$0.3\text{-}3.6 \times 10^{-12}$
I^{131} -Separations Areas	I^{131}	$0.02\text{-}1.0 \times 10^{-11}$
I^{131} -Separations Stacks	I^{131}	$\sim$ 5 curies/day
Active particles - Wash., Idaho, Ore., Mont.	--	0.03-0.3 ptls/m^3
Active particles -Hanford Works	--	0.03-0.3 ptls/m^3
Tritium (as oxides) -Reactor stacks	T	1.7×10^{-8}

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Radiological Sciences Department

Regional Survey - continued

SAMPLE TYPE AND LOCATIONS	Activity Type	Average Activity Density µc/gm
Vegetation		
Environs of Separations areas	I^{131}	3.0×10^{-5}
Residential areas	I^{131}	$< 3.0 \times 10^{-6}$
Eastern Wash. and Oregon	I^{131}	$< 3.0 \times 10^{-6}$
Non-volatile beta emitters - Wash.& Ore.	beta	$0.4\text{-}3.2 \times 10^{-4}$
Alpha emitters -Separations areas	alpha	$0.6\text{-}2.3 \times 10^{-7}$
Alpha emitters -300 Area	alpha	2.5×10^{-7}

ANALYTICAL CONTROL LABORATORY

Routine analyses were carried out as follows:

Laboratory

Type Sample	Analyses Completed May	1952 To Date
Vegetation	1648	8027
Water	1593	10161
Solids	453	1856
Air samples	176	1985
Fluorophotometer	525	2863
Special Survey samples (RMU)	45	224
Special Survey samples (RS)	111	184
Total	4551	25477*

*Includes 177 measurements from the Dow background study.

Counting Room

Beta measurements (recounts included)	9073	33506
Alpha measurements (recounts included)	3815	18867
Control points (alpha and beta)	2766	14296
Decay curve points (beta and alpha)	2816	17745
Absorption curve points	3	804
Total	18473	85218

Radiochemical analyses of particulate matter, found in the vicinity of the Redox plant during late April, show the activity from I^{131} to be less than 2% of the total beta activity with the remainder of the activity due to ruthenium. The particles which were completely segregated from soil particles and tested are non-magnetic, light transparent, and easily fractured.

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Radiological Sciences Department

Isotopic analysis of the effluent water from 100-F pile showed a decrease in the activity density from Mn^{56} from a high of 4.0×10^{-3} μc/cc in April to 1.5×10^{-3} μc/cc on May 6.

Control Services

A preliminary study of the determination of the random errors in counting measurements showed that the experimental error exceeded the theoretical error significantly on all measurements studied. Incomplete analysis of the results of blank samples run in the Control Laboratory has indicated that the errors of measurement are distributed randomly and do not vary significantly with time.

Synoptic Meteorology

Forecasts	Number made	May Percent Reliability
Production	93	81.7
24-hour	62	78.5
Special	55	80.0

Temperatures during the month ranged from a low of 37°F on May 2 to a high of 92° on May 27. The overall monthly average, 62.7°, was slightly above normal.

The month's weather was featured by a series of storms occuring from May 10 to May 15. On May 10, 0.27 inch of rain fell in 20 minutes. On May 13, hailstones as large as 0.25 inch in diameter fell with the rain.

Precipitation during the month totaled 0.58 inch, 0.42 inch of which occurred on the two days previously mentioned. Normal for May is 0.44 inch.

ENVIRONMENTAL HAZARDS AND GENERAL STUDIES UNIT

Experimental Meteorology

Studies of the trajectories of hypothetical emission clouds and of the records of the outlying stations were continued.

Analysis of photographs taken of a previous field test with emission of oil fog from the 183-foot level was completed. A rough estimate of oil fog concentration within the plume indicated an inverse linear relationship between distance from the source and concentration.

The portable mast was erected near the 622 Building.

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Geology-Hydrology

There was no significant change in the contaminated ground water zones beneath the 200 Areas. Special samples of radioactive waste from Well 224-T-9 located about 100-feet southwest of the 5-6 and 2nd cycle crib indicated an increase in activity by about 30% when compared with a sample taken last September. They also indicated significant amounts of cesium as well as ruthenium in contrast with the previous sample which contained insignificant amounts of radioactive elements other than ruthenium.

The beta contamination in Wells 108-B - 1 and 2 continued to rise to the highest levels encountered to date. The maximum was about 1.4×10^{-6} µc/cc.

Westward movement of the ground water in the 300 Area was apparent following the sharp rise in the level of the Columbia River which began about May 5.

Soil Science

Changes in the concentrations of cesium and strontium in soil columns at two cm. intervals from the surface were still observed after a standing period of three months. Movement downward is apparently taking place by exchange and diffusion.

A centrifuge technique was developed to investigate the adsorption of cations on soil under equilibrium conditions. Preliminary tests using cesium indicated that initial breakthrough ($<$ 99% of the cesium adsorbed) was reached at 1×10^{-4} symmetry concentration. A symmetry concentration of one is considered to be the number of chemical milliequivalents of any cation required to saturate the total exchange capacity of the soil under investigation. The use of symmetry values relates the amount of any cation adsorbed to the total capacity of the soil to absorb cations.

Industrial Hygiene

A study was initiated to determine the characteristics of the particles being discharged by the 291-S stack. Two samples were obtained with a

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four stage cascade impactor followed by a filter during periods of ruthenium oxidation. The results were as follows:

Stage	Mean particle size	Percent of Ruthenium Activity
1	>7 μ	1
2	5.5 μ	4
3	1.7 μ	20
4	0.9 μ	65
filter	0.3 μ	10

The method of collecting the sample from the stack was such that it did not permit isokinetic sampling so that considerable error is to be expected for the larger sizes. Another sampling line located near the top of the stack is being activated and will be capable of producing more representative samples.

Methods

The constant monitor for I^{131} in the T Plant stack has been operated continuously through the month. A temporary model of the I^{131} monitor was installed on the Redox stack in order to obtain data on fluctuations in amounts of radioactive materials emitted. Both units have been turned over to the Regional Survey group for operation. A procedure for removal of iodine from the small silver reactors to be tested for air sampling procedures has been developed but not yet tested with radioactive iodine.

Work has continued on the derivation and testing of equations intended to describe the flow patterns of the pile effluents in the Columbia River. Results to date have yielded no equation which quantitatively describes the patterns observed.

Variations in yield with sample size have been noted in the procedure for extraction of ruthenium from vegetation. Consistent results are obtained when the same weight of vegetation is used.

The noble gas monitor on the 100-DR pile effluent water was removed from operation on May 18 due to the lack of time to maintain operation. There was some indication of increases up to 25% during steady operation which were attributed to gross rod movements in the pile.

Radium analyses were made on a series of samples from the Dow Survey by measuring the equilibrium radon in a one liter ionization chamber recording on a vibrating reed electrometer.

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Low yields are still being obtained on the three gallon water samples and large vegetation samples when analyzed for plutonium or uranium by ether extraction. The factor causing this loss in yield has not as yet been isolated.

Adequate calibration curves for oil fog measurement by the filter-fluorophotometer technique have been obtained by weighing the amount of oil collected on the filter before analysis and by collecting gross amounts of oil in a condenser after it has left the generator. The two curves are in reasonable agreement with acceptable reproducibility.

Attempts have been made to eliminate the black deposit which occurs on the cathode during the electrodeposition of plutonium. A reduction in the amount of sodium hypochlorite used reduces the amount of the deposit to the point where it is scarcely noticeable in most cases. Attempts are being made to plate from cells drilled into a block of lucite in such a position that the resulting slide can be exposed directly to a NTA slide without individual mounting of the sources. Initial yields were on the order of 70% with later work raising these values to 80-85%.

Radiochemical Standards

No encouraging data were obtained during this period relating to the direct counting of tritium dilutions, the particular difficulty being lack of precision in duplicate dilutions.

The study of calibration factors for and performance of 2 π proportional beta counters continued. Results of backscatter measurements showed that the value of the backscatter factor obtained is highly dependent upon the film thickness used for the "zero"-backed source. Films as thin as 20 $\mu g/cm^2$ appear to be too thick for mounting soft emitters such as S^{35}.

Experiments with 4 π counting using P^{32} mounted on 20 $\mu g/cm^2$ showed that the present arrangement used gives good agreement with the U.S.B.S. calibration. An average of $(2.44 \pm 0.03) \times 10^5$ d/s/ml was obtained for a solution reported by the U.S.B.S. to contain P^{32} disintegrating at the rate of $(2.46 \pm 0.07) \times 10^5$ d/s/ml. Using a carefully determined backscatter factor, several measurements of the activity in the same solution evaporated on stainless steel and using the 2 π chamber gave very satisfactory checks with the U.S.B.S. value, all within $\pm$ 2%.

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Radiological Sciences Department

RADIATION MEASUREMENTS

Physics

A preliminary calibration of the large cobalt-60 source to be used by Calibrations indicated a strength of about 3.2 curies.

Studies are being made to determine the adequacy of various beta shields for possible use in film badges and of the effect of these shields on the photon response of the film.

A scintillation "crystal" consisting of zinc sulfide dispersed through lucite has been prepared and tested. Used with a 5819 photomultiplier tube, it gave 5.5 counts/min/neutron/cm^2 which is about 5 times better than any other scintillation detectors tested.

A Raychronix Model E-1 fast neutron dosimeter was given a preliminary performance check, with available fast neutron sources. The results indicated rather more gamma response than desirable.

Instrument Development

The pulse height analyzer was tested for application to the problem of determining the amount of Pu collected on air samples. Tests indicate that some resolution of peaks is possible on filters used for sampling air, but it is not good enough for reliable estimates particularly when large amounts of radon daughters are present.

Alpha scintillation survey probes have been in limited service in the 202-S Area, and are now considered satisfactory. The main difficulty in operation has been the extreme fragility of the light screen which was materially improved by the use of rubber cement diluted with ether and alcohol to cement three separate sheets of aluminum Dutch Leaf together. Tests of G.E. television tube phosphor "2n-S-Ag-3-200" indicate pulse heights about 8 times larger than those from previously used phosphors.

Engineering of equipment for dispensing and collecting phosphorescent zinc sulfide for meteorological studies is in progress. The basic design, obtained from Stanford University, is being slightly altered to provide different emission and collection rates and to allow use of A.C. equipment in place of D.C. equipment.

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Radiological Sciences Department

BIOLOGY SECTION

AQUATIC BIOLOGY UNIT

Biological Chains

Trout spawning was completed with six lots of eggs taken for hatching.

Ecology

Survey of the Columbia River

Average activity densities at Hanford were 9.1×10^{-3} µc/g of plankton, and 1.5×10^{-4} µc/g of small fish. Maximum activity density in game fish at Hanford was 7.8×10^{-4} µc/g of scales, and 3×10^{-5} µc/g of associated muscle from white fish.

Chinook salmon fry at 300 Area averaged 2.7×10^{-6} µc/g which was nearly twice the average for Hanford, presumably due to the downstream migration of these fish. Decay curves of water and plankton from Hanford showed significant increases in short-lived isotopes as compared to last year. Decay curves of insect larvae and small fish were not significantly changed.

Effluent Monitoring

Observations were similar to those reported last month with a 51.6% average cumulative mortality in fish exposed to 10% effluent.

BIOLOGICAL SERVICES UNIT

Biological Monitoring

Canada goslings exhibited an increase of bone activity density from background at one day of age to 10^{-4} µc/g in one-week old birds, reflecting physiological demand for radiophosphorus. Other tissues (thyroid excepted) contained about 2×10^{-5} µc/g.

Maximum activity density in rodents was 0.015 µc I^{131} per gram of thyroid, with an average of 0.004 µc/g among animals collected.

Clinical Laboratory

Nine hundred and sixty-four determinations.

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Radiological Sciences Department

Microscopy

Routine histological preparations, photomicroscopy, and electron microscopy.

Radiochemistry Laboratory

Services included 318 TTA and ether determinations of plutonium in biological samples, the preparation of 34 isotope solutions, approximately 5400 alpha and beta counts, and the calibration of the flame photometer.

METABOLISM UNIT

Animal Metabolism

Plutonium analyses were completed on 16 control rats and 40 rats in each of the two groups which received the lowest level of plutonium administration. Preliminary indications are that no significant difference in soft tissue activity exists between the control animals and the experimental animals. The activity in the skeleton of the rats administered plutonium is significantly different from the controls and indicates an absorption from the gut and deposition in the skeleton of at least 0.003% of the plutonium fed.

There was no evidence of isotopic fractionation in the excretion of HTO and HDO by rats.

The percutaneous absorption of liquid water by anesthetized rats was approximately 2½ times that previously observed with animals exposed to an atmosphere saturated with water vapor.

Determinations of the rate of passage of tritium gas through isolated pieces of rats and mouse skin were completed. Two such determinations were made on human skin.

Microbiology

Irradiation of the minimal nutrient medium for extended periods prior to inoculation with L. Casei resulted in a somewhat lower growth rate than was found in unirradiated minimal medium. The effect was negligible, however, over the 40-hour period employed in RBE determinations.

Plant Nutrition

The leaf/root ratio of 0.003, as a measure of uptake efficiency for yttrium, compared with leaf/root ratios of 0.7 and 0.8 for cesium and strontium under similar experimental conditions.

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Studies of the effect of nutrient pH on the translocation of iodine absorbed through an exposed leaf were completed. The percent of total iodine in the plant which was found in parts other than the exposed leaf was as follows: pH 4, 0.025%; pH 5, 0.047%; pH 6, 0.29%; pH 7, 0.14%.

Plant water activity in a leaf exposed to an atmosphere containing 200 mc tritium gas/cc averaged about 12 mc/g. Activity in water from other plant parts was lower by an average factor of 100. Tissue-bound tritium activity ranged from 0.08 to 0.001 μc/g fresh weight with the highest activities present in the exposed leaf.

Plant Metabolism

A study of the effect of pH on the growth of *Chlorella pyrenoidosa* indicated that some of the previously obtained results which were attributed to radiation damage, and also some of the presumed protective effects, may have been due to uncontrolled changes in pH.

The ratio of tritium concentration in the hydrogen of algae to tritium concentration in the hydrogen of water was found to be constant at 0.45, regardless of the concentration of tritium in the nutrient medium.

TOXICOLOGY UNIT

Experimental Animal Farm (Toxicology of I^{131})

The thyroids of sheep previously fed (10 months ago) thyroid ablative doses of I^{131} but supplemented with inert iodine were still functional. The thyroids of the control animals fed desiccated thyroid show a significantly subnormal uptake.

Physiology

One hundred mice were started on tests for toxicology of active particles.

In four animals injected intravenously with +4 plutonium, zirconium citrate removed up to 16% of the plutonium during the first day. In another animal injected with +6 plutonium, zirconium citrate removed over 50% during the first 24 hours. Following the first day's zirconium administration, no significant benefit was realized from further treatment.

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FINANCIAL DEPARTMENT MONTHLY REPORT
MAY, 1952

General

Quarterly breakdown of the budget for FY 1953 was completed and submitted to the Commission on May 20. The Commission, by formal letter to Mr. W. W. Smith, supplied General Electric with 10 copies of the FY 1954 and FY 1953 Revised Budgets as submitted to the Washington Office. These have been carefully compared with the requests prepared by General Electric and it is noted that:

a) The supplemental budget covering "high spot" estimates for possible expansion at Hanford was consolidated by the Commission and treated as a single budget request.

b) For FY 1953, the Commission made only minor adjustments in the operating funds requests.

c) For FY 1953, the Commission made rather drastic reductions in "Equipment Not Related to Construction Projects". The reductions were not detailed but are currently under analysis by the General Cost Section and respective Section Accountants will be kept advised.

d) Changes by the Commission in the Construction Budget followed, in the main, the advance informal schedules given to General Electric. These changes are also being reconciled and Accountants will be kept advised.

An audit report was issued covering review of the financial operations of the Graduate School of Nuclear Engineering. The review covered accountability of books and tuition revenue, verification of payments to instructors and study of the adequacy of clerical procedures for purposes of control.

A review of memorandum control records which had been previously established for special materials such as gold, platinum and silver in the custody of various departments, was completed. The general ledger transfer of platinum in the custody of laboratory supervisors transferred from Engineering Department to Manufacturing Department was reviewed.

The landlord program was started in the 100 Areas during May. The program is now in effect for all sections of the Manufacturing Department.

Calculation and payment of overtime premium for monthly salaried employees, covering the period March 1, 1951 to April 1, 1952, was completed during the month of May. The payment aggregated $323,470 for active and inactive employees.

Time clocks were installed in the gate house of the 300 Area and in Buildings W-10 and W-20. Employees began using the clocks on Monday, May 12, 1952. The

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transition to the use of the time clocks was made very smoothly. A representative of the Payroll Section was present in the 300 Area gate house to render any assistance that was necessary. In preparation for the transition to the IBM system of payroll preparation, IBM Time Cards were placed in use on May 26, 1952 for employees who do not use time clocks.

Wage and Salary Stabilization Board approvals have been received by General Electric covering a change in the vacation plan and for the 1.03% cost-of-living adjustment. Requests have been submitted to the AEC for reimbursement authorizations and, upon receipt of same, a revision of the Policy Guide on vacations will be issued to incorporate the provision for three weeks of vacation after 15 years of continuous service.

A summary of cash disbursements and receipts (excluding advances from AEC) for the months of May and April, 1952 is shown below:

Disbursements	May	April
Payrolls (net)	$3 058 029	$2 930 683
Materials and Freight	1 973 733	2 619 434
Payroll Taxes	813 207	768 218
U. S. Savings Bonds	166 691	195 235
Pension Plan - Employees' Portion	88 463	71 928
Payments to Subcontractors	28 280	8 503
Other	434 266	344 065
Total	6 562 669	6 938 066
Receipts		
Miscellaneous Accounts Receivable	56 999	9 283
Refund of Advance from Subcontractor	-0-	250 000
Sales to AEC Cost-Type Contractors	403 344	220 128
Rents	108 865	125 169
Hospital	75 452	66 598
Telephone	19 442	20 079
Bus Fares	9 803	10 564
Scrap Sales	73 857	9 699
Refunds from Vendors	4 075	4 003
Other	8 321	9 799
Total	760 158	725 322
Net Disbursements	$5 802 511	$6 212 744

Advances from AEC increased from $4,000,000 as of April 30 to $4,500,000 as of May 31, 1952 and may be summarized as follows:

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	May 31	April 30
Cash in Bank - Contract Accounts	$4 022 489	$3 362 255
Cash in Bank - Salary Accounts	50 000	50 000
Cash in Transit	302 511	462 745
Travel Advance Funds	125 000	125 000
Total	$4 500 000	$4 000 000

Personnel and Organization

	Current Month	Prior Month
Personnel Changes During Month		
Employees at beginning	375	384
Additions and transfers in	7	3
Removals and transfers out	(13)	(12)
Employees at close	369	375
Personnel by Sections at Month-End		
General	10	9
General Accounting Section		
General Accounts	21	20
Plant Accounts	25	25
Accounts Payable	26	25
Accounts Receivable	21	20
General	3	3
	96	93
Payroll Section		
Weekly Payroll	68	72
Monthly Payroll	17	19
General	7	7
	92	98
General Cost Section		
Consolidated Costs and Budgets	5	4
Utilities and General Services	17	16
Community Real Estate and Services	14	14
Radiological Sciences and Other	7	7
Medical	3	3
General	2	2
	48	46
Manufacturing Cost Section		
Costs and Budgets	35	35
General	6	6
	41	41
Engineering Accounting Section		
Audits	1	2
Accounts Payable	23	23
Costs and Budgets	34	35
General Accounts	5	7
General	3	4
	66	71
Rotational Trainees	3	5
Internal Audit Section	13	12
Total	369	375

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Personnel and Organization (continued)

Personnel by Job Classification at Month-End	Current Month	Prior Month
Exempt	65	64
Non-Exempt		
Accounting Clerks A	4	4
B	7	6
C	7	9
D	16	16
Business Graduates	26	26
Clerical Working Leaders	10	10
Cost Clerks A	6	6
B	6	6
C	10	9
D	13	13
Field Clerks A	4	4
C	3	4
General Clerks A	49	51
B	63	62
C	21	23
D	7	7
E	2	2
Office Machine Operators A	10	12
B	6	6
Secretary A	1	1
B	6	6
Steno-Typist A	5	5
B	12	15
C	10	8
Total	369	375

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 -10
General Cost Section	Ic - 1 through Ic - 2
Manufacturing Cost Section	Id - 1 through Id - 2
Engineering Accounting Section	Ie - 1 through Ie - 4
Internal Audit Section	If - 1

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GENERAL ACCOUNTING SECTION
MONTHLY REPORT - MAY, 1952

ACCOUNTS PAYABLE

Although the dollar volume of recorded vouchers increased slightly this month, the number decreased 11 per cent, to 2,609, amounting to $2,216,566, as compared with 2,945 vouchers totaling $2,163,417 entered in April. Similarly, the number of freight bills declined to 1,023, amounting to $239,645, as compared with 1,260 totaling $321,397 recorded and paid in April.

Consistent with the general decrease in Accounts Payable volume this month, 1,546 checks were issued in payment of 2,764 vouchers totaling $2,183,664 as compared with April disbursements of 1,758 checks covering 2,882 vouchers amounting to $2,176,499. The average number of vouchers per check was therefore 1.79.

On June 2 the originals of all vouchers paid during the month of February were transferred to GAO for final disposition. To date the Atomic Energy Commission Administrative Audit Section has approved all but nine of the transmitted vouchers, which remain incomplete for the following reasons:

Number	Amount	Reason
4	$ 113	Purchase order alterations
3	212	Adjustments from vendors
1	12 280	Engineering approval
1	1 949	Instructions for carrier claim
9	$14 554	

A continued concentrated effort by Purchasing and Stores to return vendor owned containers enabled Accounts Payable to reduce returnable container deposits 20 per cent this month to a balance of $28,598 at May 31, as compared with $35,590 at April 30.

The outstanding balances by year paid decreased for all years except 1947 as indicated below:

Year Paid	May	April
1947	$ 150	$ 150
1948	150	200
1949	465	655
1950	1 373	1 853
1951	10 188	14 609
1952	16 272	18 123
	$28 598	$35 590

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General Accounting Section

ACCOUNTS PAYABLE (CONTINUED)

As requested by General Cost Section, effective with the May report the monthly total of purchase order commitments was modified to reflect the amount of purchases summarized primarily by Departments rather than detailed by subaccounts. Revision of the report will reduce considerably the time required for preparation in Accounts Payable.

ACCOUNTS RECEIVABLE

The Accounts Receivable balance at May 31, 1952, amounted to $531,457, a reduction of approximately $58,000 from the balance at April 30, 1952.

Kadlec Hospital out-patient invoices numbered 2,084, amounting to $8,964, as compared to 2,236 invoices amounting to $10,741 in April. In-patient revenue decreased $3,038 in May, as compared to April, primarily as a result of reduced patient-day census. Sales of $64,622 were booked in May, and cash receipts totaled $79,940, resulting in the receivable balance being reduced approximately $15,000, from $145,032 at April 30, 1952, to $130,501 at May 31, 1952.

Uncollectible accounts in the hands of collection agencies at April 31, 1952, numbered 164 and totalled $19,550. Seven additional accounts, totaling $147, were referred to the collection agency in May. Two accounts were collected in full, and three accounts were partially collected in April, totaling $148, half of which was remitted to General Electric. Four accounts, totaling $2,957, were deemed uncollectible by the agency and were returned. At May 31, 1952, 165 accounts, totaling $16,592, were in the hands of collection agencies.

Effective April 1, 1952, responsibility for collecting barracks and trailer rents from General Electric employees occupying rental quarters in North Richland was transferred from Engineering Accounting. Due to the transfer of responsibility for the operation of the North Richland construction camp from General Electric to Universal Food Service, Inc., all General Electric employees occupying such quarters were requested to sign revised payroll deduction forms, or state their desire to pay such rent in cash. Payroll deduction forms were transmitted to employees through supervision on May 26, 1952. At May 31, 1952, approximately one third of authorizations were signed and had been returned to Accounts Receivable.

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General Accounting Section

GENERAL ACCOUNTS

Advance from the Atomic Energy Commission at May 31, 1952, amounted to $4,500,000, an increase of $500,000 from the amount at the end of last month. This advance has been applied as follows:

	May	April
Cash in Bank - Contract Accounts	$4 022 489	$3 362 255
Cash in Bank - Salary Accounts	50 000	50 000
Cash in Transit	302 511	462 745
Travel Advance Funds	125 000	125 000
Total	$4 500 000	$4 000 000

Considerable time was spent this month revising certain reports, including the Project Cost report, Excess Materials Report, and a portion of the Inventory Report.

A new report, "Telephone and Telegraph Expense," was issued this month by General Accounts.

At the request of the Hanford Operations Office of the Atomic Energy Commission, certain inventory information is now being prepared by General Accounts for submission to the Washington, D. C., office of the Atomic Energy Commission. These reports in past months were prepared by the Hanford Operations Office of the Atomic Energy Commission.

Accounting control over off-project shipments of material and equipment was reviewed this month, and changes were made in the procedure for handling shipping documents. This change resulted in greater efficiency in our billing procedure, where billing is to be affected.

Current month charges to the Travel and Living Expense variation account totaled $2,395, an increase of $482 from April. These charges represented entertainment expense and cost of company owned cars of $1,768 and the excess of amount reimbursed employees over amount billed to the Atomic Energy Commission of $627.

PLANT ACCOUNTS

The reconciliation of field inventories covering production equipment in the 100-B, 100-DR, and 200-E Areas was completed during the month. As a result of this reconciliation, adjustments totaling $69,300 were made to the plant accounts. In most cases, adjustments were required for location changes and the addition or deletion of items omitted or duplicated from the original plant appraisal.

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General Accounting Section

PLANT ACCOUNTS (CONTINUED)

Work progressed in revision of the Property Record Unit Catalog to incorporate the two broad definitions - Catalogued and Uncatalogued Plant. A detailed breakdown of the property record units to be included in Uncatalogued Plant is nearing completion, and this phase of the work is expected to be completed in June.

The Retirement Work In Progress ledger was revised during the month to simplify postings to the ledger and to expedite analysis for reporting purposes.

The Atomic Energy Commission has requested that we again, at the close of this fiscal year, furnish them with definite information for their annual report. Specific detail requested is as follows:

(a) A schedule listing individual items comprising reclassification and prior year adjustments.

(b) A breakdown of current year costs as included in additions in progress, showing in detail any prior year adjustments.

(c) A split of salvage credits to show that portion representing amounts received for trade-in or sale and that portion representing the net book value (acquisition cost less accumulated depreciation).

(d) A schedule showing gross Plant and Equipment and Construction Work In Progress by geographical location.

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General Accounting Section

	May	April
Accounts Payable		
Balance at Beginning of Month	$ 236 300	$ 246 427
Vouchers Entered	2 216 566	2 163 417
Cash Disbursements	2 183 664 DR	2 176 499 DR
Cash Receipts	337	2 450
Other	-0-	505
Balance at End of Month	$ 269 539	$ 236 300
Number of Vouchers Entered	2 609	2 945
Number of Checks Issued	1 546	1 758
Number of Freight Bills Paid	1 023	1 260
Amount of Freight Bills Paid	$ 239 645	$ 321 397
Number of Purchase Orders Received	1 190	1 285
Value of Purchase Orders Received	$ 474 414	$ 571 146
Cash Disbursements		
General Accounting	$5 408 384	$5 302 417
Engineering Accounting	1 154 285	1 635 649
Total	$6 562 669	$6 938 066
Material and Freight	$1 973 733	$2 619 434
Lump Sum and Unit Price Subcontracts	28 280	8 503
Payrolls (Net)	3 058 029	2 930 683
Payroll Taxes	813 207	768 218
United States Savings Bonds	166 691	195 235
Pension Plan - Employees' Portion	88 463	71 928
All Other	434 266	344 065
Total	$6 562 669	$6 938 066
Number of Checks Written		
General Accounting	1 546	1 758
Engineering Accounting	826	1 079
Total	2 372	2 837

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General Accounting Section

	May	April
Cash Receipts		
General Accounting	$6 858 892	$8 178 417
Engineering Accounting	364 011	448 120
Total	$7 222 903	$8 626 537
Detail of Cash Receipts		
Advances from AEC	$6 462 745	$7 901 215
Sales to AEC Cost-type Contractors	403 344	220 128
Rents	108 865	125 169
Hospital	75 452	66 598
Scrap Sales	73 857	11 042
Miscellaneous Accounts Receivable	56 999	9 283
Telephone	19 442	20 079
Bus Fares	9 803	10 564
Refunds from Vendors	4 075	4 003
Utilities	3 058	3 198
Employee Sales	591	788
Educational Program	27	93
Refund of Advances to Subcontractors	-0-	250 000
Other	4 645	4 377
Total	$7 222 903	$8 626 537
Bank Balances at End of Month		
Chemical Bank & Trust Company - New York		
Contract Account	$ 444 893	$ 489 684
Seattle - First National Bank - Richland		
Contract Account	2 753 393	2 042 307
United States Savings Bond Account	240 406	260 736
Salary Account No. 1	20 000	20 000
Salary Account No. 2	30 000	30 000
Travel Advance Account	62 765	61 184
Seattle - First National Bank - Seattle		
Escrow Account	5 875	5 875
National Bank of Commerce - Richland		
Contract Account	824 203	830 265
Total	$4 381 535	$3 740 051

1196687

General Accounting Section

	[illegible]	[illegible]
Accounts Receivable		
AEC Cost-type Contractors	$ 253 053	$ 307 964
Hospital	130 501	145 032
Rents	62 379	57 049
Equipment Sales to Facilities	43 732	44 081
Miscellaneous Services	22 563	17 659
Telephone	11 931	11 559
Utilities	6 274	5 742
Safety Shoes	1 024	913
Sub-total	531 457	589 999
Reserve for Bad Debts	43 358 CR	43 428 CR
General Ledger Balance	$ 488 099	$ 546 571
AEC Cost-type Contractors		
Number Invoices Issued	19	15
Amount of Invoices Issued	$ 29 615 CR	$ 12 229 CR
Cash Received	50 167	53 600
Hospital		
Number Out Patient Invoices Issued	2 084	2 236
Charges During the Month	$ 64 622	$ 69 436
Collections - Cash	75 452	66 598
- Payroll Deductions	4 488	5 438
Rents		
Houses		
Number Houses Occupied	6 046	6 047
New Leases and Lease Modifications	87	132
Lease Cancellations	71	125
Charges During the Month	$ 273 803	$ 274 225
Collections - Cash	48 077	41 064
- Payroll Deductions	230 537	231 764
Dormitories		
Number Rooms Occupied	1 086	1 082
New Assignments	67	39
Removals	63	[illegible]
Charges During the Month	$ 15 051	$ 15 [illegible]
Collections - Cash	3 377	2 923
- Payroll Deductions	12 076	12 467
Facilities		
Number Facility Leases	135	119
Revenue	$ 52 777	$ 54 372

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General Accounting Section

	May	April
Accounts Receivable		
Miscellaneous Services		
Number Invoices Issued	347	287
Amount of Invoices Issued	$ 58 250	$ 4 930
Cash Received	54 939	6 160
Telephones		
Working Telephones (Excludes Official Telephones)	5 466	5 465
Telephone Work Orders Processed	287	262
Charges During the Month	$ 44 260	$ 42 466
Collections - Cash	19 442	20 079
- Payroll Deductions	23 159	22 459

	Number	Amount
Uncollectible Accounts (Total to Date)		
Accounts Forwarded to Collection Agencies	365	$ 37 482
Accounts Returned as Uncollectible	81	14 449
Collections	144 -1)	6 441 -2)
Balance at Collection Agencies - May 31, 1952	165	$ 16 592

(1- Includes 119 accounts collected in full and 25 accounts partially collected.

(2- Represents total collections, half of which is remitted to General Electric.

	May	Total To Date
Scrap Sales		
Number of Sales	13	502
Revenue (Excluding Sales Tax)		
Scrap Sales	$ 73 857	$ 519 925
Tract House Sales		
Revenue to AEC	-0-	34 148
Revenue to GE	-0-	14 673
Total	$ 73 857	$ 568 746

1196689

General Accounting Section

	May	April
Travel Advances and Expense Accounts		
Cash Advances - Beginning of Month	$ 38 026 -1)	$ 25 264
Advances During the Month	35 813	22 817
Expense Accounts Submitted	27 916 CR	22 867 CR
Cash Refunded	11 939 CR	4 718 CR
Cash Advances - End of Month	$ 33 984	$ 20 496
Outstanding Cash Advances		
Current	$ 26 427	$ 18 299
Over 30 Days	7 557	2 197
Total	$ 33 984	$ 20 496
Traveling and Living Expenses - All Departments		
Paid Employees	$ 29 529	$ 34 599
Billed to Government	27 134	32 686
Balance in Variation Account at End of Month	28 251 DR	25 856 DR

(1- Includes balance of advances transferred from Engineering Department in May, 1952 ($17,530).

1196690

PAYROLL SECTION MONTHLY REPORT
MAY 1952

As of May 31, 1952, there were 8,786 employees on the payroll. This represents a net decrease of 46 employees since April 30, resulting from 103 additions to the payroll including 20 employees reengaged with continuous service, and 149 removals from the payroll during the month including 4 leaves of absence, 43 illness removals, 3 for lack of work, and 2 transfers to other divisions of the Company.

Authorization for payroll deductions for the cost of safety shoes were received from 185 employees during May. There were 76 open payroll deduction accounts at May 31, 1952.

Due to transfer or reclassification of employees, preferential rates were eliminated in 6 cases of weekly paid employees during the month. This left approximately 850 weekly paid employees having preferential rates as of May 31, 1952.

A total of 792 weekly paid employees were scheduled to begin their 1952 vacations in May. To date, 1823 vacation notices have been received for weekly paid employees or 29% of the total number of weekly paid employees eligible for vacations.

In the month of May, 663 benefit claims were processed and forwarded to Metropolitan Life Insurance Company. A total of 1,257 checks in the amount of $81,693, covering 984 benefit claims were received from the insurance company and forwarded to employees, hospitals, and surgeons during May. Since December 1, 1950, the effective date of the new insurance plan, employees of the Nucleonics Division have received $993,591 in benefits under the terms of the health insurance portion of the plan.

In May, 155 newly eligible employees were canvassed for participation in the General Electric Pension Plan. Of these, 111 employees elected to participate, 28 employees elected not to participate, and replies have not been received from 16 employees. Application for one optional retirement pension was prepared and forwarded to the Pension Department during the month.

Payroll Section delivered 600 checks directly to employees rather than through supervision. Of these, 400 salary checks were for area employees whose days of rest were Thursday and Friday; these checks were held in Payroll at the request of the employees' supervision. Termination checks, suggestion awards, etc., accounted for 159 checks, and the remaining 41 checks were mailed to employees who have been removed from the roll for various reasons. In addition, approximately 75 salary checks were picked up by a representative of Employee and Public Relations for delivery to employees absent due to illness.

Garnishments against seven employees were received during May, and all were released without payment to the court. Of the six garnishments pending as of the end of April, two have been released and one was settled with payment to the court. There were three garnishments pending as of May 31.

In the month of May, 70 suggestion award checks in the aggregate amount of $880 were prepared and forwarded to the Secretary of the Suggestion Committee for delivery to Nucleonics Division employees.

Military Duty Allowances were paid to three employees during the month of May. As of May 31, 1952, 227 employees of the Nucleonics Division had entered military service.

One patent award payment in the amount of $25.00 was made during May.

1196691

Payroll Section (Continued)

Payments in the aggregate amount of $1,900 covering classes for the month of April are made in May to instructors who teach in the Graduate School of Nuclear Engineering.

In addition to regular payroll addressograph work, 90,000 items were addressographed for other departments at their request.

United States Savings Bonds having a maturity value of $29,675 were withdrawn from the Stock Bonus Plan by 99 employees during the month of May.

United States Savings Bonds purchased under the Stock Bonus Plan during the years 1948, 1949, and/or 1950 were withdrawn by 15 participants. Checks covering the income earned at December 31, 1951, on the forfeited stock which had been contingently credited to their accounts were delivered to the employees.

Custody receipts were reported lost by three employees during May.

Total gross payment as of May 29 to General Electric employees performing construction work for the period September 1, 1947, through September 30, 1951, is $132,618.50 for 1,109 employees, excluding 51 checks in the total gross amount of $2,061.07 which are being held by Payroll because addresses of these former employees are not available, and 2 checks totaling $1,099.69 for deceased employees which have not been prepared due to legal requirements. Total retroactive payments after the remaining 53 checks are disbursed will be $135,778.81 for 1,162 employees. As of May 29, 57 checks in the net amount of $754.25 are outstanding.

During May, one salary check was reported lost. Of the six lost check cases pending at April 30, two have been replaced with duplicate checks. As of May 31, 1952, five lost check cases are pending.

During May, approximately 800 hours were expended by the Benefit Plans Group in preparing statements to be furnished employees showing their individual status in General Electric Benefit Plans as of December 31, 1951.

Calculation and payment of overtime premium for monthly salaried employees, covering the period March 1, 1951 to April 1, 1952, was completed during the month of May. Approximately 550 man hours were expended by Payroll Section in accomplishing the payment. The payment aggregated $323,470 for active and inactive employees.

A new general ledger account - Account 47.5, Unclaimed-Uncashed Checks - has been established. Payroll Section will cancel unclaimed checks after 90 days and transfer a corresponding amount of money to this account. A stop-payment order will be issued on uncashed checks after 1 year and the equivalent in money will be credited to Account 47.5. After a reasonable period of time the Unclaimed-Uncashed Check Account will be audited and reviewed to determine if the monies should be transferred to U. S. Treasury. A net amount of $696.74 for uncashed checks issued during the years 1947, 1948, 1949 and 1950 was transferred to the Atomic Energy Commission in May.

Memorial Day, Friday, May 30, 1952 was an observed holiday at Hanford Works. Weekly salary checks covering the week ended May 25, 1952, for employees in the outer areas were delivered to patrolmen at the area gate houses between the hours of 8:00 p.m. and 11:00 p.m. on Wednesday, May 28, 1952. Salary checks for employees located in Richland and North Richland were available to authorized representatives of the departments at 8:00 a.m. on Thursday, May 29, 1952

1196692

Payroll Section (Continued)

Time clocks were installed in the gate house of the 300 Area and in Buildings W-10 and W-20. Employees began using the clocks on Monday, May 12, 1952. The transition to the use of time clocks was made very smoothly and a representative of the Payroll Section was present in the 300 Area gate house to render any assistance that was necessary. Employees were very cooperative and no serious problems arose, other than slight delays in finding time cards, which will be eliminated after the employees have become familiar with the use of the time clocks.

In preparation for the transition to the IBM System of payroll preparation, IBM Time Cards were placed in use on May 26, 1952, for employees who do not use time clocks. Very good cooperation was given by supervision, however a few questions arose with respect to cost codes which are now recorded on a separate trailer card. The use of a separate cost code card is a temporary measure.

A "Dry" run of the payroll for the Manufacturing Department was made by the Payroll Section and the Statistics and Computing Services Unit. The IBM payroll was checked against the payments made by the Payroll Section and no major differences were found. Differences were noted in the case of call-ins and pay adjustments, however, procedures are being established to properly handle these exceptional cases under the IBM method of operation.

Year to date figures for Gross Earnings, Taxable Earnings, Income Tax, Pension Contributions and Social Security Tax, were punched into IBM cards from the Earnings Ledger, which is maintained by the Payroll Section on all employees. These IBM cards will be used as controls for tax reports made to the various tax commissions and for reports of a statistical nature.

Wage and Salary Stabilization Board approvals have been received by General Electric covering change in the vacation plan. A request has been submitted to the Atomic Energy Commission for reimbursement authorization and upon receipt of same, a revision of the Policy Guide on vacations will be issued to incorporate the provision for three weeks of vacation after 15 years of continuous service.

A tentative approval, pending Wage and Salary Stabilization approval, has been received from the Atomic Energy Commission to our request for reimbursement authorization covering increase in isolation pay and area differential.

Wage and Salary Stabilization Board approvals have been received covering the 1.03% cost-of-living adjustment and a request for reimbursement authorization has been submitted to the Atomic Energy Commission.

Organization and Policy Guide No. 18.6 on the subject "Direct Deposit--Salary Checks" and OPG 13.10 covering the G. E. Employees Savings and Stock Bonus Plan" were issued in May. A draft of OPG 18.11 "Removal from Payroll", prepared by the Procedures Analysis Group, was reviewed and a number of revisions suggested.

Considerable publicity and instruction material was prepared in connection with the inauguration of the new time card for the IBM payroll system, including five news articles and two illustrations for the Hanford Works News, two office letters, with illustrations; and a memorandum to supervisors. Part of this material will be released early in June.

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Payroll Section (Continued)

Bank reconciliations completed in May were:

Weekly Salary through #29[illegible], week ended May 4, 1952
Weekly Salary Vacation through #297, week ended May 4, 1952
Bond Account - April, 1952
Monthly Payroll #68, April, 1952

Payrolls reimbursed were as follows:

Weekly Salary through May 25, 1952
Monthly Salary through May, 1952

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Payroll Section

STATISTICS	Total	Monthly Payroll	Weekly Payroll
Employees and Payroll			
Employees on payroll at beginning of month	8 832	2 076	6 756
Additions and transfers in	103	8	95
Removals and transfers out	(149)	(14)	(135)
Transfers from weekly to monthly payroll		26	(26)
Transfers from monthly to weekly payroll			
Employees on payroll at end of month	8 786	2 096	6 690

Number of Employees	May	April
Bargaining group - HAMTC	3 484	3 510
Bargaining group - Building Services	68	68
- Two Platoon Firemen	55	55
- Hanford Guards	590	601
Other weekly - non-bargaining	2 548	2 577
Executive, administrative and operating	1 533	1 490
Professional	493	517
Other monthly	15	14
Total	8 786	8 832

Number of Employees		
Engineering	1 631	1 645
Manufacturing	3 119	3 131
Utilities & General Services	2 318	2 337
Community	218	211
Real Estate & Services	317	325
Financial	369	375
Employee & Public Relations	108	107
Radiological Sciences	364	363
Medical	272	270
General	26	26
Law	7	7
Accountability	21	22
Technical Personnel	16	13
Total	8 786	8 832

Overtime Payments		
Weekly paid employees	$ 65 166	$ 75 902
Monthly paid employees	20 200(a)	27 563(b)
Total	$ 85 366	$103 465

Number of Changes in Salary Rates and Job Classifications	1 228	1 436

(a) Payments cover period May 1 through May 31, 1952, except in the case of Patrolmen in the Plant Security & Services Section of the Utilities & General Services Department who were paid for the period April 1 through April 30, 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 April 1 through April 30, 1952, except in the case of Patrolmen in the Plant Security & Services Section of the Utilities & General Services Department who were paid for period March 1 through March 31, 1952. Includes overtime for the month at the rate of time and one-half on the first $7 500 of annual base compensation.

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Payroll Section (Continued)

Gross Amount of Payroll	May	April
Engineering	$ 935 574	$ 872 693
Manufacturing	1 500 795	1 550 617
Utilities and General Services	1 032 917	991 678
Community Real Estate and Services	233 619	244 807
Other	527 956	532 992
Total	$4 320 961 (a)	$4 192 987 (b)

Annual Going Rate of Payroll		
Base	$40 235 715	$40 310 060
Overtime	865 315	1 180 376
Isolation Pay and Area Differential	1 492 646	1 522 818
Shift Differential	482 071	493 598
Other	27 628	29 222
Total	$43 103 375	$43 536 074

Average Hourly Base Rates		
Bargaining group - HAMTC	$2.096	$2.092
- Building Services	1.622	1.622
- Two Platoon Firemen	2.052	2.056
- Hanford Guards	1.832	1.826
Other weekly - non-bargaining	1.790	1.775
Executive, Administrative and operating	2.980	2.983
Professional	3.068	3.036
Other monthly	2.277	2.363
Total	$2.195	$2.187

Average Earnings Rate Per Hour (c)	May			April		
	Weekly	Monthly	Total	Weekly	Monthly	Total
Engineering	$1.949	$3.110	$2.455	$1.959	$3.101	$2.445
Manufacturing	2.292	3.101	2.441	2.283	3.105	2.429
Utilities and General Services	1.981	2.838	2.100	1.974	2.836	2.093
Community Real Estate and Services	2.041	2.596	2.229	2.048	2.574	2.226
Other	1.801	3.205	2.136	1.802	3.209	2.133
Total	$2.073	$3.033	$2.298	$2.071	$3.028	$2.291

(a) Includes payments for five-week period ended May 25, 1952 in the case of weekly paid employees. Excludes $395 retroactive payments to construction workers for periods of employment between September 1, 1946 and September 30, 1951. Includes $317 917 retroactive overtime premium for the period March 1, 1951 through March 31, 1952 in the case of monthly paid employees.

(b) Includes payments for four-week period ended April 20, 1952 in the case of weekly paid employees. Includes overtime for the month at the rate of time and one half on the first $7 500 of annual base compensation in the case of exempt employees. Includes $502 879 retroactive general salary increase of 3.58% for the period September 17, 1951 through March 16, 1952 in the case of weekly paid employees and $222 043 retroactive general salary increase of 3.58% for the period September 15, 1951 through February 29, 1952 in the case of monthly paid employees. Excludes $1 249 retroactive payments to construction workers for periods of employment between September 1, 1946 and September 30, 1951.

(c) Includes shift differential and isolation pay in the case of weekly paid employees and area differential in the case of monthly paid employees. Excludes overtime premiums, commissions, suggestion awards, etc.

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Payroll Section (Continued)

Employee Benefit Plans

Pension Plan	May	April
Number participating at beginning of month	6 774	6 674
New participants and transfers in	131	149
Removals and transfers out	(43)	(49)
Number participating at end of month	6 862	6 774
% of eligible employees participating	94.0%	94.0%

Employees Retired	May	Total to Date
Number	1	200(a)
Aggregate Annual Pensions Including Supplemental Payments	$ 97	$48 111(b)
Amount contributed by employees retired	285	42 993

(a)-Includes 8 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 case of employees who received lump sum settlement.

	May	April
Number who became eligible for participation	155	217
Number who applied for participation	111	148
Number who elected not to participate	28	61
Replies not received	16	8

Insurance Plan (c)

Personal Coverage		
Number participating at beginning of month	8 952	8 992
New Participants and transfers in	86	71
Cancellations	(30)	(19)
Removals and transfers out	(98)	(92)
Number participating at end of month	8 910	8 952
% of eligible employees participating	98.4%	98.3%

Dependent Coverage		
Number participating at beginning of month	5 601	5 603
Additions and transfers in	61	53
Cancellations	(5)	(9)
Removals and transfers out	(40)	(46)
Number participating at end of month	5 617	5 601

Claims - Disability Benefits (d)

Number of claims paid by insurance company:

Employee Benefits		
Weekly Sickness and Accident	140	161
Daily Hospital Expense Benefits	169	156
Special Hospital Services	200	182
Surgical Operations Benefits	148	128

(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.

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Payroll Section (Continued)

Employee Benefit Plans (continued)

Claims - Disability Benefits (continued)

Dependent Benefits	May	April
Daily Hospital Expense Benefits	292	216
Special Hospital Services	360	261
Surgical Operations Benefits	310	239
Amount of claims paid by insurance company:		
Employee Benefits	$37 906	$30 075
Dependent Benefits	43 787	33 766
Total	$81 693	$63 841

Number of Disability Claims Forwarded to Insurance Company		
Hospital Benefits		
Kadlec Hospital	437	563
Other Hospitals	113	166
	550	729
Weekly Sickness and Accident Benefits	139	197
Total	689	926

Claims - Death Benefits (a)	May	Total to Date
Number	3	85
Amount	$17 000	$476 000

Group Life Insurance

The Group Life Insurance Plan was discontinued November 30, 1950. As of May 31, 1952, 4 employees who are absent due to total disability are still participating in the Group Life Insurance Plan. They were not actively at work December 1, 1950, and therefore were not eligible to participate in the new Insurance Plan. However, they will become eligible upon their return to work.

Vacation Plan

Number of employees granted permission to defer one week of their 1952 vacation to 1953

	May			Total to Date		
	Weekly	Monthly	Total	Weekly	Monthly	Total
Engineering	10	8	18	37	29	66(b)
Manufacturing	4	3	7	138	42	180(c)
Utilities and General Services	9	5	14	140	23	163(d)
Community Real Estate and Services	7	1	8	20	15	35(b)
Financial	1	0	1	13	2	15
Employee and Public Relations	0	0	0	1	1	2
Radiological Sciences	0	0	0	4	4	8
Medical	2	0	2	5	1	6
General	0	0	0	0	1	1
Total	33	17	50	358	118	476

(a)-Total to date includes all claims under the old and new Insurance Plans and 4 deaths on which accidental death benefits were paid.
(b)-Total to date decreased by 1 cancellation
(c)-Total to date decreased by 5 cancellations
(d)-Total to date decreased by 2 cancellations

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Payroll Section (Continued)

Employee Benefit Plans (continued)

U. S. Savings Bonds	Engineering	Mfg.	Utilities and General Services	Community Real Estate and Services	Other	Total
Number participating at beginning of month	882	1 528	1 035	276	598	4 319
New authorizations	12	19	26	0	14	71
Voluntary cancellations	(11)	(27)	(20)	(1)	(8)	(67)
Removals and transfers out	(11)	(11)	(13)	(4)	(11)	(50)
Transfers in	7	10	1	2	5	25
Number participating at end of month	879	1 519	1 029	273	598	4 298
Percentage of Participation						
G.E. Employees Savings and Stock Bonus Plan	49.7%	43.0%	38.0%	44.9%	45.1%	43.3%
G. E. Savings Plan	7.9%	11.7%	10.5%	12.0%	9.8%	10.4%
Both Plans	53.9%	48.7%	44.4%	51.0%	50.5%	48.9%
Bonds issued						
Maturity value	$44 050	$91 875	$58 850	$12 850	$31 000	$238 625
Number	791	1 606	1 076	227	570	4 270
Refunds issued	13	28	23	2	20	86
Revisions in authorizations	5	27	7	3	10	52
Annual going rate of deductions						
G. E. Employees Savings and Stock Bonus Plan	$341 738	$610 723	$381 447	$90 560	$220 548	$1 645 016
G. E. Savings Plan	56 991	189 514	113 938	26 309	42 553	429 305
Total	$398 729	$800 237	$495 385	$116 869	$263 101	$2 074 321

Withdrawal of U. S. Savings Bonds from G.E. Employees Savings and Stock Bonus Plan

	May	Year to Date
Number of participants withdrawing Bonds	99	625
Maturity value of U. S. Savings Bonds withdrawn	$29 675	$212 400

Check-off of Union Dues

Number of Payroll Deduction Authorizations in Effect	5-31-52	Cancellations and Terminations	Additions	4-30-53
Hanford Atomic Metal Trades Council	1 230	14	38	1 206
Building Service Employees International Union, Local 201 (Medical Department Employees)	28	1	2	27
Hanford Guards Union, Local 21 of the International Guards Union of America	234	4	4	234
Total	1 492	19	44	1 467

1196699

Payroll Section (Continued)

Employees Who Have Entered Military Service	Total to Date		
	Called to Duty	Volunteered for Duty	Total
Reserve Officers	21	3	24
Enlisted Reserve	51	6	57
National Guard	6	-0-	6
Selective Service	47	-0-	47
Voluntary Enlistments	-0-	93	93
Total	125	102	227

Number of Rent, Telephone and Hospital Deductions from Salaries	May	April
House Rent	5 108	5 149
Dormitory Rent	868	887
Barracks Rent	-0-	2
Trailer Space Rent	-0-	-0-
Telephone	3 747	3 737
Hospital	570	590
Total	10 293	10 365

Annuity Certificates (For duPont Service)	May	Total to Date
Number issued	-0-	84

Suggestion Awards		
Number of awards	70	1 456
Total amount of awards	$880	$27 890

Employee Sales Plan	May		
	Major Appliances	Traffic Appliances	Total
Certificates issued	10	218	228
Certificates voided	-0-	1	1

Salary Checks Deposited	May		April	
	Weekly	Monthly	Weekly	Monthly
Richland Branch - Seattle-First National Bank	765	850	770	854
North Richland Area Office - Seattle-First National Bank	11	6	11	6
Richland Branch - National Bank of Commerce	473	313	464	305
Out of state banks (Schenectady Staff)	-0-	1	-0-	1
Total	1 249*	1 170	1 245**	1 166

*Week ended 5-18-52
**Week ended 4-20-52

Special Absence Allowance Requests	May	April
Number submitted to Pension Board	5	8
Absenteeism		
Weekly - Men	2.50	2.41
Weekly - Women	3.71	4.58
Total Weekly	2.81	2.98
Monthly	1.46	1.63
Grand Total	2.47	2.64

1196700

GENERAL COST SECTION
MONTHLY REPORT
MAY, 1952

Quarterly breakdown of the budget for FY 1953 was completed and submitted to the Commission on May 20. The Commission, by formal letter to Mr. W. W. Smith, supplied General Electric with 10 copies of the FY 1954 and FY 1953 Revised Budgets as submitted to the Washington Office. These have been carefully compared with the requests prepared by General Electric and it is noted that:

a) The supplemental budget covering "high spot" estimates for possible expansion at Hanford was consolidated by the Commission and treated as a single budget request.

b) For FY 1953, the Commission made only minor adjustments in the operating funds requests.

c) For FY 1953, the Commission made rather drastic reductions in "Equipment Not Related to Construction Projects". The reductions were not detailed but are currently under analysis by the General Cost Section and respective Section Accountants will be kept advised.

d) Changes by the Commission in the Construction Budget followed, in the main, the advance informal schedules given to General Electric. These changes are also being reconciled and Accountants will be kept advised.

Summaries of Operating Costs for the Nucleonics Division for the month of April were issued to Managers on May 16. Departmental cost reports for April were issued to managers about May 16. Supplementing these reports, letters were issued to department and section managers analyzing costs incurred during April and explaining major variations when compared with the previous month. Letters to Staff Department Managers accompanied the cost report. Other letters were completed between the 16th and 20th of May.

Production Cost summaries for the first ten months of the fiscal year together with bogey estimates for the last quarter of FY 1952 and the first quarter of FY 1953 were issued to Plant Management on May 21. First quarter FY 1953 budget was also included.

An over liquidation of Transportation Section costs amounting to approximately $390 000 was distributed to departments using Transportation services and facilities. Studies were completed for revision of all liquidating rates used in the Utilities and General Services Department.

A study of Industrial Medical Costs was undertaken to determine accuracy of charges for service to other departments. Results will be forthcoming early in June.

Considerable effort was devoted to organization of the physical inventory of the Community Real Estate and Services Department inventories which will be taken under direction of the General Cost Section during the first week of June.

1196701

A Study of the Costs of the Training and Program Development Section of the Employee and Public Relations Department was made at the request of Mr. W. E. Johnson and the final report was submitted.

Considerable effort was devoted to a Financial Department analysis of FY 1953 Operating Budget to determine possible reductions should action by Washington require.

1196702

MANUFACTURING COST SECTION
MAY, 1952

SPECIAL REQUESTS

The procedure to be used in connection with "Special Irradiations" and Other Services (Off-Site A.E.C. Accommodations) was distributed to field personnel.

An audit of all charges to Special Request codes is being made to verify the accuracy of our billings to other installations, and the Atomic Energy Commission.

A total of 67 requests for billing, totaling $45,318 were prepared, indicating the increased activity in this program. A request for billing on the only backcharge (Montgomery Electric Company) on Manufacturing Accounting books was also prepared. Meetings were held with personnel in General Accounts Section to discuss the best methods of correlating the invoices with shipping documents.

MAINTENANCE AND PLANT IMPROVEMENT

The first I.B.M. runs that indicate total expenditures to date, as related to authorized amounts, were received. Reports were issued to Section Managers during the month. Considerable work was done on review and prevention of overruns by section supervision.

The ten digit project breakdown code on new projects was discontinued. New projects will be opened on work orders for various phases of the individual project, providing the same basic information without the problem of coding by field supervision.

A revised work order authorization list is being prepared and will be issued during the month of June.

The landlord program was started in the 100 Areas during May. The program is now in effect for all Sections of the Manufacturing Department.

REPORTS AND RECORDS

A major change in the "Process Material Inventory Report" will be made in the May Report. The consolidated reports will be issued to interested section supervision, as well as department management, and the separate reports, previously reflecting activity within each section, will be discontinued. This will result in considerable savings in time required for preparation, and in printing expense.

Considerable time has been spent by personnel in reviewing and revising the proposed uniform cost code system for Indirect Manufacturing Expense to be effective in F. Y. 1953. The I.M.E. accounts agreed upon are basically the same as accounts shown in General Electric Company Accounting Instructions.

BUDGETS

Forms for collecting information useful in the next mid-year Budget Review were made up during the month. The budget for the first quarter of F.Y. 1953 is being broken down to months for use on the Operating Reports.

1196703

PRODUCTION COST ACCOUNTING

Considerable work was done on procedures to be used in connection with the use of "Product Cost Transfer Vouchers" relieving General Electric books of all finished product as requested by the Atomic Energy Commission.

REACTOR SECTION ACCOUNTING

Procedures were prepared and issued to section supervision to insure proper charges to the "Landlord Responsibility Program". Billings were made for the month of May at a uniform rate per square foot for buildings wholly or partially occupied by other than Reactor Section personnel.

Cost meetings for section supervision were continued during the month with special meetings arranged to take care of shift supervision.

Revised distributions of electricians stand-by time and electrical energy consumed were obtained from the electrical engineer of the Power & Maintenance Unit.

SEPARATIONS SECTION ACCOUNTING

The proposed Indirect Manufacturing Expense Accounts to be used with the uniform cost coding system were reviewed and recommendations made.

The Process Unit of the Separations Section is now performing work on work orders to provide a more accurate distribution of cost.

A new sub-unit code has been requested to be effective July 1, 1952 to segregate laboratory or Analytical personnel expense from the Process or Plant Assistance Group. This will also correspond to the sub-units used in the other Manufacturing Department Sections.

METAL PREPARATION SECTION ACCOUNTING

The special report prepared on process code for machining was reviewed and well received by area supervision with additional requests received. Preparations have been made for meetings with supervision to be held to discuss cost variances and trends as soon as possible after reports are issued.

ER 6/10/52

1196704

ENGINEERING ACCOUNTING SECTION
MONTHLY REPORT FOR MAY, 1952

ACCOUNTS PAYABLE

Early in the period a check was received from the duPont Company in the amount of $353,176.94 for our invoice which covered costs incurred in the machining of graphite for their test pile.

In the past two months considerable time and effort has been directed to the audit of approximately 1500 purchase orders. Some 10,000 orders remain to be audited before this activity can be considered as being on a current basis.

There were 1093 vendors' invoices processed during the month in the aggregate amount of $1,049,184.

A brief summary of disbursements during May is listed below:

Material and Freight	$1 117 015
Lump Sum Subcontracts	28 280
Miscellaneous	8 990
	$1 154 285

The balances in accounts receivable rents, miscellaneous and AEC cost type contractors have been substantially reduced as compared to the balances at April 30, as shown below:

	May 31	April 30
Rents	$ 346	$ 4 985
Miscellaneous	1 422	6 704
AEC Cost Type Contractors	17 883	361 938
	$19 651	$373 627

DESIGN SECTION COST

Assets and Inventories

The General Ledger Account 10.16 Inventories - Construction Stores will appear as a zero balance at May 31, 1952. The account has been reduced during the period January 31, 1952 to May 31, 1952 by means of fire loss adjustments and transfers to Atkinson - Jones Company.

Additional Small Tool account fire loss adjustments were processed during May in amounts as shown:

Acquisition Value	$5 080.39
Depreciation Reserve	1 473.31
	$3 607.08

The adjustment was made through the General Ledger Account 35.9 Costs - Prior Months.

1196705

ENGINEERING ACCOUNTING SECTION

ESIGN SECTION COST (Continued)

Discussions were completed with the Plant Accounting Group during May in regard to the transfer of accounting responsibility for the following Asset Accounts:

Major Construction Program Equipment

24.01	Major Equipment
	ME-2 Minor Construction
24.03	Shop Equipment
	SE-2 Minor Construction
24.04	Small Tools
	ST-2 Minor Construction

It was agreed that the balances in these accounts at May 31, 1952 would be transferred as a June entry. Work was begun during May to prepare details of the accounts.

The balance in the account, Major Construction Program Facilities, in the amount of $2 640.08 was transferred to Plant and Equipment in Service during the period. This represents MWI-27 Installation of Five Evaporation Coolers - Minor Construction offices.

Reconciliation of the accountability records and General Ledger account 10.4.2 Inventories - Special Materials - Engineering was started during the period. Work is progressing satisfactorily and is expected to be completed during June.

Cost Accounting

Every effort is being made to improve the Design Cost Report and increase its effectiveness. Changes will be noted in the May report which are designed to further this end.

It has been agreed between the Design Section Management and Financial Department that all customer work performed by the Design Section will be controlled by Design orders. This will show weekly the source of all Design Section Costs and their disposition. It will further display the amount of Design Section work commitment.

PROJECT COST

The standard costs recently established for the Project Section and the actual costs for April were analyzed. This first comparison of standard to actual costs revealed discrepancies in coding and incorrect distribution of time by direct employees. More detailed instructions will be issued to personnel which should eliminate these difficulties. The standard costs, from present indications, may require some revision due to reduced work-load.

Project Cost and Unit expense reports were assigned new identification numbers in conjunction with a uniform system for Financial Department reports. Project

1196706

ENGINEERING ACCOUNTING SECTION

PROJECT COST (Continued)

Section's report series ranges from FE 200 to FE 299.

Financial Closing Statements were issued on the following projects:

C-172	Dismantling Equipment in the Demineralizing and Deaerating Plants, 105 B, D, F Areas.
C-289	Additional Laundry Facilities - 200 West Area
C-295	Enlarging 251 Substation on 13.8 KV Feeder Lines
C-340	P-11 Project (Critical Mass Laboratory)
C-409	Riverland Elevated Water Tank
C-416	Construction Division, D & C Combined Shops
C-440	IR-90 Replacement of Dry Waste Crib, Building 222-T

The following Projects were unitized during the month:

MWI-23	Teletalk System 760 Building
C-295	Enlarging 251 Substation on 13.18 KV Feeder Lines
C-416	Construction Division, D & C Combined Shops

The following Projects were closed on a Preliminary Final basis during the month:

C-380	Electric Metering - Village of Richland
C-398	Experimental Coating Hood, Building 234-5
C-403	New Fences for Distribution and 230 KV Substation
C-411	P-10-X, "J" Slug Storage and Shipping Facilities
C-423	Additional Waste Storage Facilities
C-469	Front Tube Corrosion Mock-Up.

BUDGETARY CONTROL

Methods of cost code checking of source documents in the Engineering Accounting Section were analyzed and a summary review was prepared for the Assistant to Manager, Finance.

In conjunction with the Computation of Prime Contract Amount in Fiscal Year 1953, the determination of funds required for construction projects was well underway.

The existing basis of distributing reproduction costs was analyzed and a tentative new basis of distribution was calculated, effective April 1, 1952.

Bogey estimates for Design Section's Research and Development costs were computed for May and June, Fiscal Year 1952.

Within Technical Section, 95 personnel and related funds were transferred to Applied Research from Pile Technology for the 4th Quarter, Fiscal Year 1952 Midyear Budget Review.

Work on preparing the uniform coding system for the Engineering Department was progressing at the end of the month.

1196707

ENGINEERING ACCOUNTING SECTION

TECHNICAL COST

A summary of costs for Technical Section was issued to the Manager - Technical on May 14, 1952 followed by a detail of operating costs on May 15. Letters analyzing variations in cost were issued to the Manager - Finance and Manager - Technical on May 16 and 19 respectively.

During May, all reports which are routinely issued were numbered according to a system established for numbering all Financial Department reports. Technical Section's report number series ranges from FE 300 to FE 399.

A plan for the installation of a new plant wide coding system has been reviewed and discussed during the past month. Many points are still undecided and much more work will be done on this subject in future months.

1196708

INTERNAL AUDIT SECTION
MONTHLY REPORT
MAY, 1952

An audit report was issued covering review of the financial operations of the Graduate School of Nuclear Engineering. The review covered accountability of books and tuition revenue, verification of payments to instructors and study of the adequacy of clerical procedures for purposes of control.

A new account, Unclaimed-Uncashed Checks was established to record the value of checks remaining unclaimed over 90 days and the value of those remaining uncashed over one year. Instructions governing the use of and responsibility for the account were prepared. A schedule of 53 uncashed weekly payroll checks outstanding over one year was prepared and given to Payroll for recording in the new account.

Statement of gross earnings, operating costs and net profits from operation of the Area Office of the Seattle-First National Bank located in North Richland was reviewed to determine rent payment due for the first quarter of 1952.

Copies of audit reports, letters covering procedures and results of investigations, and other memoranda issued by the Internal Audit Section were assembled and sent to the Atomic Energy Commission, in accordance with a request made by the General Accounting Office to review our audit work.

A review of memorandum control records which had been previously established for special materials such as gold, platinum and silver in the custody of various departments, was completed. The general ledger transfer of platinum in the custody of laboratory supervisors transferred from Engineering Department to Manufacturing Department was reviewed.

A follow-up was made of the bus collection procedure resulting in two recommendations to improve control of handling and deposit of bus revenues.

The loss sustained from the burglary at Kadlec Hospital reported in a preliminary report was verified as being the correct and final figure of loss unless the stolen funds should later be recovered.

Work was started on an analysis of telegram usage to determine the feasibility of establishing facilities at Richland to dispatch messages over the General Electric teletype network.

An audit program was completed for a cash audit which includes review of receipt book usage and procedures for handling payments received by mail. This audit will be performed jointly with A.E.C. Finance, as a portion of the 1952 fiscal year-end balance sheet verifications. A program has also been prepared for an audit of scrap sales.

1196709

PLANT SECURITY AND SERVICES SECTION

MONTHLY REPORT - MAY 1952

SUMMARY

There were no major injuries during the month. A major injury which occurred on April 30, 1952, too late to be included in the April report, has been included in the annual figures which now reflect five major injuries for the year to date with a frequency rate of 0.67.

There were seven industrial fire alarms during the month. Losses were fixed at $40.

An award from the Atomic Energy Commission which has been won for the second time by the General Electric Company was presented by Dan Hayes, Chief, Safety and Fire Protection Branch, AEC, Washington, D.C. The award was made for the greatest improvement in operating safety during 1951 of all AEC installations.

During the same ceremony, the National Safety Council Award of Honor was made by G. Roy Fugal, Employee Relations, General Electric Company, New York. This is the highest award made by the National Safety Council in the field of industrial accident prevention and marks the third consecutive year that Hanford Works has won such recognition for its safety accomplishments.

On May 22, 1952, the Records Control Supervisor presented a paper on "Records Disposal" before the AEC -Contractors Records Management Conference at Albuquerque, New Mexico. The paper was well received and has resulted in several requests for additional information concerning Hanford Works records management program.

Procedures Analysis has submitted a preliminary discussion type report for the purpose of establishing basic policies governing Stores functions. Further action in connection with the Stores and Purchasing study will be based upon the basic policies established by that Section.

Total savings accomplished by Procedures and Forms Control activities were $2,013 for the month of May. $1,056 of this amound will be on an annually recurring basis. Accumulated savings from 1-1-52 are $78,201.

1196710

PLANT SECURITY AND SERVICES SECTION

MONTHLY REPORT - MAY 1952

ORGANIZATION AND PERSONNEL:

Number of employees on payroll:

	Beginning of Month	End of Month	Increase	Decrease
Staff	7	7		
Patrol and Security	652	640		12 (a)
Safety and Fire Protection	148	150	2 (b)	
Office Services (Laundry and Building Services, Clerical Services, Records Control and Procedures Analysis)	340	339		1 (c)
TOTALS	1,147	1,136	2	13

NET DECREASE: 11

(a) - Patrol and Security

1 - New Hire
1 - Reactivated
5 - Transferred to other departments
4 - Deactivated
5 - Terminations

(b) - Safety and Fire Protection

5 - New Hires
1 - Reactivated
2 - Transferred from other departments
6 - Terminations

(c) - Laundry and Building Services

1 - New Hire
2 - Reactivated
1 - Transferred from another department
1 - Transferred to another department
4 - Deactivated
1 - Termination

Clerical Services

7 - New Hires
1 - Transferred from another department
4 - Transferred to other departments
3 - Terminations

1196711

Procedures Analysis

1 - Termination

Records Control

1 - Transferred from another department

SAFETY AND FIRE PROTECTION UNIT

Injury Statistics

	APRIL	MAY	YEAR TO DATE	COMPARATIVE PERIOD 1951
Major Injuries	2*	0	5	4
Sub-Major Injuries	2	1	12	9
Minor Injuries	411	372	1,953	1,487
Exposure Hours	1,481,599	1,426,678	7,469,794	6,715,402
Major Injury F/R	1.35	0.00	0.67	0.60
Major Injury S/R	0.051	0.00	0.026	0.07
Penalty Days	75	0	75	450
Actual Days Lost	30	62	121	281
Minor Injury F/R	2.77	2.61	2.61	2.21
Estimated Medical Treatment Time Required	1,660 Hours	1,496 Hours	7,908 Hours	6,020 Hours

* Major Injury No. 81 occurred 4/30/52 too late to be included in April report.

Industrial Fires

Department	Area	No. of Fires	Cause	Loss
Utilities & Gen. Serv. Dept. Transportation Section Equipment Maintenance Unit	200-W	1	Automotive	$40.00
Engineering Department Technical Section Analytical Unit	200-W	1	Flammable gas	None
*Manufacturing Department Metal Preparation Section Operations Unit	300	1	Process Material	None
Manufacturing Department Separations Section Plant Eng. Services Unit	Outer	1	Rekindling of controlled burning	None
Not chargeable to Dept.	Outer	1	Lightning	None
Not chargeable to Dept.	Outer	1	Smoking material	None
Not chargeable to Dept.	Outer	1	Wind	None

*Fire occurred in April too late for monthly report.

1196712

Safety and Fire Protection Activities

The annual conference of AEC and Contractor Safety and Fire Protection Personnel was held in the Public Library Building on May 26, 27 and 28. On May 27, a dinner was served at the Desert Inn at which members of GE Management delivered interesting talks on the safety experience at the Hanford Works.

The award from the Atomic Energy Commission, which has been won for the second time by GE people here at Hanford Works, was presented by Dan Hayes, AEC Chief of the Safety and Fire Protection Branch, Washington, D.C. It was given to GE for the greatest improvement in operating safety during 1951 of all AEC installations.

Presentation of the National Safety Council Award of Honor was made by G. Roy Fugal, Employee Relations, General Electric Company, New York. It is the highest award in the field of accident prevention and control of industrial accidents given by the National Safety Council. It was given for the safety efforts of GE people here during 1951. This is the third consecutive year that GE people at Hanford Works have won national recognition from the National Safety Council for their safety accomplishments.

Several interesting papers were read by members of GE Management and other authorities on safety during the conference. All Safety Engineers attended the conference during Tuesday and Wednesday.

As a result of special efforts on the part of Area Management in developing competitive activities on housekeeping and other safety mindedness between Manufacturing Units in all the areas, the minor injuries dropped from 411 to 371 - an improvement of 9.7%.

The method of sand blasting the shower room floors to prevent slipping was eliminated and the non-slip abrasive strips were selected and instructions issued for installation of same.

The 200 Areas are now in the stage of forming committees and laying out competitive plant areas for the forthcoming safety contest.

A new safety record and bulletin board has been designed for the 300 Area.

The 300 Area has set up a safety contest known as "S Day". An appropriate slogan is being solicited and the contest is expected to get under way about June 20.

Considerable effort has been put forth in getting the subcontractor on the Power House in the 300 Area to comply with safe practices. During the past three weeks there has been marked improvement.

On May 28 a grass fire was reported south of Hanford. Approximately 1,000 acres were burned over. The same area has burned over in other years and it has been necessary to call on earth moving equipment to aid in extinguishing it. This year we were able to bring it under control without outside help mainly due to the fact that the 4,000 gallon semi-trailer was able to keep the brush truck supplied with water.

Building surveys were completed on the following buildings: 183-DR, 190-DR, 274-W, Spare Parts Warehouse, 200-West Area, and 314.

The puncturing registers on the fire alarm systems in the 100 Areas have been reconditioned.

1196713

Work has been completed on the fire alarm system in the new 1703-D Building.

It was recommended that a proper structure be provided for spare parts in the 200-W Area. To improve conditions until a new structure can be provided it was recommended that additional fire hydrants and an automatic heat detector system be provided for the old structure.

The new sprinkler system was tested and placed in service in the 277-U Building. It has not been connected to the fire alarm system.

The Class I, Group D requirement for electrical equipment in the canyon area of the 321 Building was discontinued and limits for inflammable liquids in the area established.

A fire detector system was recommended for the Instrument Group hutment in the 300 Area.

The fire hazard of new chemicals used in the duplicating process was studied.

Fire hose in hose boxes in all areas was given the annual test.

Bids for our two new fire trucks have been opened in Washington, D.C. The General Truck was low bid. Information on the General Truck in North Richland was forwarded to Washington in an attempt to have the low bid rejected.

OFFICE SERVICES

Building and Laundry Services

Plant Laundry - 200-West Area	April	May
Pounds Delivered	251,421	187,117
Pounds Rewash	15,600	11,651
Total Dry Weight	267,021	198,768
700 Laundry		
Flatwork - Pounds	52,691	36,671
Rough Dry - Pounds	38,213	27,986
Finished - Pounds	2,886	2,696
Estimated Pieces	122,864	88,232
Total Dry Weight - Lbs.	93,790	67,353
Monitoring Section - Plant Laundry		
Poppy Check - Pieces	204,693	158,242
Scaler Check - Pieces	225,830	170,860
Total Pieces	430,523	329,102

1196714

Clerical Services

Plans and specifications were prepared for fabricating furniture and equipment for new quarters in the 703 Building. It is anticipated that Clerical Services will move into the new wing of the 703 Building the latter part of June.

Central Mail

The volume of mail for May showed a slight increase over the previous month. Area deliveries are resulting in shortened schedules and improved mail service because of centralized control.

The Western Union strike lasted throughout the month and teletype service was restricted.

Difficulty was experienced in providing personnel for area mail runs because of vacations, and enlistments into the Armed Forces.

Types and Pieces of Mail Handled:	May	April
Internal	1,104,567	1,152,754
Postal	76,752	73,818
Registered	1,058	1,269
Insured	344	417
Special Delivery	272	278
Total Mail Handled	1,182,993	1,225,636
Total Postage Used	$ 1,931.95	$ 2,609.56
Total Teletypes Handled	2,027	2,439
Total Store Orders Handled	455	464

Office Equipment

The Utilization Survey of office machines was completed for the Utilities and General Services Department this month. Indications to date are that approximately 10% of assigned equipment is available for pickup on the basis of our experience so far.

One Helper, one Trainee and one Journeyman were hired during the month to bring our personnel up to full strength. A large amount of office machines were excessed during this month and more will continue to be excessed now that we have some additional employees to relieve the work load in the shop.

Machine Repair:	May	April
Office machines repaired in shop	158	204
Office machine service calls	521	617
Total machines serviced	679	821

Furniture Moving and Repair:	May	April
Maintenance calls completed	29	
Moves completed	6	5
Pickups	67	96
Store orders completed	279	489
Property transfers completed	37	46
Pieces of furniture delivered	450	852
Exchanges made	113	
Furniture returned from repair	97	

Central Printing

The volume of printing continued heavy through May. During the week ending 5-25-52, a total of 577,135 copies were produced for an all time high for one week's production.

An investigation of the type of solvents used in printing has been undertaken in cooperation with the 700 Area Safety Engineer and the Radiological Sciences representatives. Results of this study will be evaluated and proper safety rules adopted to reduce the potential hazard involved in the use of solvent cleaners.

Cost experience in the Printing group continues to be favorable since reductions in force were made to adjust the labor costs in line with the total costs.

Work Completed:	May	April
Orders received	349	364
Offset orders completed	312	293
Offset copies	1,177,881	1,201,420
Letter press completed	42	60
Letter press copies	86,316	51,033
Orders on hand	51	56
Negatives mask	245	
Negatives processed	543	566
Zinc plates made	451	461
Photo copy prepared	259	234

Stenographic Services

Some concern has been felt as a result of the reduced amount of work being sent to the Stenographic Pool. This matter was taken up with R. L. Warburton because it was felt the hourly rates being charged for liquidation costs were too high. Loan requests, however, have continued very heavy during the month, tending to offset the light load being sent to the pool. It is felt that the new fiscal year will bring a change in this trend because of increased activities in other departments. Personnel in the pool is at a new low but it is anticipated that this will change shortly because of a large number of applicants seeking work since graduation from high schools and colleges. All machines in the pool have been cleaned and checked in anticipation of a larger number of employees using them during June.

1196716

	May	April
Dictation	.0	.0
Machine Transcription	69.5	8.0
Letters	42.5	112.0
Rough Drafts	100.0	56.0
Stencils, Dittos, Duplimats	408.5	639.5
Miscellaneous	361.5	324.0
Meeting Time	.0	.0
Training Time	91.5	234.0
Absentee Time	8.0	8.0
Holiday and Vacation Time	80.0	.0
Unassigned Time	8.0	32.0
Total	1,169.5	1,413.5
Employees loaned other Depts.	758.5	1,221.5
Total Hours Available	1,928.0	2,635.0

Area Mail and Duplicating Services

Because of an excessive profit margin, a new pricing schedule for duplicating was introduced the latter part of May. This schedule is designed to achieve liquidation with approximately a 10 to 15% profit margin. This new schedule will compare favorably with any commercial rates in use in the Northwest.

Facilities in the 3000 Area were consolidated by trading space with the AEC thus enabling our Mail and Duplicating Services to be in immediately adjoining rooms. Offset type duplicating continues to show steady growth and many departments are requesting preprinting masters to facilitate preparation of material to be duplicated.

Area Mail Statistics:	May	April
Total pieces of mail handled	184,893	211,766
Duplicating Statistics:		
Offset plates	13,271	8,821
Offset copies	631,866	592,815
Xerox plates	1,592	2,419
Number of stencils	1,247	2,110
Number of copies	62,982	95,875
Number of ditto masters	1,864	4,365
Number of ditto copies	55,593	222,890

Records Control

Quantity of records received, processed and stored:

Community Real Estate & Services Department	22	Standard	Storage	Cartons
Engineering Department	73	"	"	"
Employee & Public Relations Department	14	"	"	"
Financial Department	97	"	"	"
General Administrative Department	11	"	"	"

1196717

Manufacturing Department	71	Standard Storage Cartons
Medical Department	13	" " "
Radiological Sciences Department	15	" " "
Subcontractor - Vitro Corporation	10	" " "
Utilities and General Services Department	75	" " "
Total	401	Standard Storage Cartons

Persons provided records services:	550	
Records cartons issued:	363	
Records Cartons replaced:	460	cartons were reboxed replacing worn out or damaged cartons.
Filing Service provided:	7,900	records were refiled in with material already in storage.

Percentage of the Records Service Center vault occupied by records is 99.6% excluding Civilian Defense portion.

Uniform filing was established in twenty-five offices during the month. A total of two hundred sixty-six offices have installed the uniform filing system to date.

Sixteen requests for file cabinets were received. Fifty requests were filled covering current requests and backlog. Twenty-three combination locked cabinets were exchanged by substituting key locked cabinets resulting in a savings of $2,875.00 ($200.00 cost of combination cabinet minus $75.00 cost of key locked cabinet equals $125.00 saving per cabinet). Twenty-nine requests for cabinets were cancelled resulting in a saving of $2,175.00 ($75.00 current cost of four-drawer key locked cabinet). Thirteen cabinets were picked up for reissue.

Requests for disposal of fifty-one records were transmitted to the Atomic Energy Commission.

A paper on "Records Disposal" was presented before the Atomic Energy Commission - Contractors Records Management Conference in Albuquerque, New Mexico on May 22, 1952.

Procedures Analysis

General Activities:	April	May
Printing Orders received	334	399
Printing Orders rejected	19	23
New forms assigned	77	128
Forms designed	54	56
Suggestions processed	14	16

Fifteen suggestions were received during the month, replies prepared and returned to the Suggestion Committee.

As a direct result of the report P.A. 22, "Roster Listings", published 12-28-51, the Stores catalogues are now being prepared by the "Lindex-Xerography" method. This will be an additional savings created by P.A. 22.

An analysis has been made of different reproduction processes for reproducing form samples, that are sent out to off plant printers, by the Procedures Analysis group. By adopting the "Xerox-Ozalid" process in lieu of the Photostat process, an annual recurring savings of approximately $400 will be realized. The Ozalid process is also being experimented with as a possible equipment type to be used for very low volume reproduction of forms, etc.

The present series of training film used in the indoctrination program has been completed. Those films shown this month are as follows:

a. Office Etiquette
b. Improving the Job
c. Eight Parts of a Business Letter
d. Illustration of a "Therblig" Check List
e. Take A Letter Please (on how to dictate)

It was found that the three films listed under a, b and c were applicable to steno training. These films have been recorded to be shown to the Steno Pool during the latter part of June when the large volume of "new hires" come to work.

Requests for information on a visual aid film and display card program on work simplification have been made. This program has been developed by Gerome Barnum, Management Council, Harrison, New York. If it is found that the material in this program proves favorable to Procedures Analysis work, it will be adopted as a part of the training program.

As a part of the scheduled training program, all of the analysts have been conducted through the AEC Microfilming Project with the cooperation of the AEC Records Branch.

Technical Services Unit has requested that an analysis be made of Classified Files in the 700, 300, 1100 Areas. This analysis is now being scoped and is scheduled to start in the latter part of June.

The termination clearance procedure analysis has been completed as far as investigation and preparation of the final report is concerned. Rough drafts of the Organization and Policy Guide 18.11 have all been distributed and returned. A final rough draft including all changes has been distributed in sixteen copies and returned. It has been advised that one last meeting be held between Finance, Employment, Legal, and Procedures Analysis to clear up one point of the procedure concerning Employee Benefits in relation to the terminating employee and General Electric. This final point will have a direct bearing on the savings involved so the total savings will be included in the monthly report for June.

A preliminary discussion type report, dated May 15, has been submitted. The purpose of this report is to establish basic policies governing Stores functions. A reply to this report has not been received. Further action will be based upon Stores' reply to this report.

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There were 119 new permanent form numbers assigned and nine temporary or "X" numbers assigned during May, 1952.

Savings realized for May:	One Time	Annual Recurring
Forms Control	$ 959	$ 654
Analysis	---	400

Total Savings for Previous Month:	$ 1,240
Total Savings for May:	2,013
Accumulated Savings from 1-1-52:	$78,201

SECURITY AND PATROL

Number of technical and scientific documents classified "confidential" or higher reported unaccounted for May 1:	408
Documents (technical and scientific) reported unaccounted for during May:	7
Documents (technical and scientific) reported found during May:	5
Number of technical and scientific documents unaccounted for May 31:	410
Number of non-technical documents classified "confidential" or higher reported unaccounted for May 1:	33
Documents (non-technical) reported unaccounted for during May:	17
Documents (non-technical) reported found during May:	13
Number of non-technical documents unaccounted for May 31:	37
Total number of technical and scientific and non-technical documents unaccounted for May 31, 1952:	447

Due to personnel problems in Classified Files, the material reviewed by the Non-Technical Document Review Board has not been processed by Files. The results will be reported at a later date.

There were 13 security violations committed by General Electric Company personnel involving improper storage of classified material.

Security Education

There were 238 security meetings held and attended by 3,426 employees during the month.

Five security items appeared in the Works NEWS during the month.

A representative of the Security Unit showed the following security films at security meetings during the month:

"The Case of the Smokeless Chimney" at three meetings with an average attendance of twenty-five employees at each meeting.

"On Guard" at one meeting with twelve employees in attendance.

"The Man on the Left" was shown at twenty meetings with an average attendance of eleven employees.

"Sabotage" was shown at one meeting with ten people in attendance.

"Only the River" was shown at six meetings with an average attendance of thirty employees.

"A-B-C" security pamphlets were distributed during the month as follows:

8,000 copies of the pamphlet with the slogan "Teamwork Counts" were distributed on May 19.

500 copies of the pamphlet with the slogan "Challenge all Visitors to Your Area" were distributed on May 5.

500 posters with the slogan "Loose Talk Tells the Saboteur When to Wreck" were distributed throughout the plant during the month.

The latest security film entitled "Only the River" which was made through the combined efforts of the Atomic Energy Commission and General Electric Security Offices was completed and released for showings at security meetings on May 23.

Thirty-one employees of the General Electric Company received a "Q" orientation talk from either a representative of the Security Unit or an Area Patrol Captain during the month.

Statistical Report of Security Patrol Activities

	100-B	100-D	100-F	100-H	200-E	200-W	300
Pat Searches	93	93	93	52	112	145	8
Escorts	29	15	18	68	81	84	60
Ambulance Runs	2	2	2	4	0	4	3
Passes issued:							
One day temporary	13	16	11	13	8	92	38
Travel	0	0	0	0	0	0	150
Red Tag	170	154	143	64	14	2,451	161
Telephonic	0	0	0	1	0	0	43
Supervisors' post contacts	729	496	328	370	421	1,754	971

Arrest Report:

	No. of Violations	Cont. Cases from April '52	Cases Cleared	Pending	Fined
Speeding	1	1	1	1	1

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Citation Tickets Issued:	1
Warning Tickets Issued:	3
Verbal Warnings:	9

Other Security Patrol Activities:

Buildings and doors opened:	206
Railroad gates opened:	153
Master System Keys issued:	124
Operation gas pumps:	71

The following classes were conducted at the Patrol Training School during the month:

.30 caliber machine gun	2	hours
.45 caliber machine gun	1	hour
12 gauge riot gun	2	hours
Safety	1/2	hour
Security	1/2	"
Security Film	1/2	"
First Aid	1 1/2	hours

Security Patrol Post Changes

The White Bluffs Tube Shop, under supervision of the 100-H Area, was closed May 2. One man was being used on the No. 2 shift Monday through Fridays only.

On May 19, the Hanford Ferry Post was discontinued. This was under the supervision of 100-F Area. The United States Army took over the duties and responsibilities of manning this post.

Security Field Inspection

Contacts made to locate unaccounted for documents:	35
Documents classified "confidential" or higher, previously unaccounted for, located:	18
Searches made to locate unaccounted for documents:	16
File combinations overdue and custodians notified to change them:	33
File combinations changed:	18

General

On May 11, Procedure Memorandum No. 36, Revision No. 3, on the Security Patrol Emergency Officer's procedure covering area clearances during off-shift hours was issued. This revision was necessary due to personnel changes and completion of construction of operations buildings.

The 105-C Control Room and outer rod room were made a part of the 105-C Exclusion Area on May 9. Entrance requirements were further restricted to certain personnel with clearances being maintained in a Kardex control file.

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A "Visi" Record was established in the 105-H Exclusion Area, 100-H Area, on May 10 on a trial basis for the purpose of replacing the present type Kardex file.

On May 14, Procedure Memorandum No. 44 on "Reporting of Accidents Involving Government Vehicles" was issued. Effective with the issuance of this procedure, the Transportation Section assumed responsibility for processing reports of accidents. Security Patrol will continue to investigate all accidents of this type.

Operations Order I-263 "Control and Issuance of Pass Folders" was issued May 19 providing that all pass folders are to be issued only on a replacement basis. Personnel in the 100, 200 and 300 Areas may draw replacement folders from Area Patrol Headquarters. Employees in the 700, 1100 and 3000 Areas may exchange folders at the Security Patrol Administration Office. It is estimated that this procedure will reduce the number of folders used by employees and result in a substantial saving.

The construction personnel cleared for room 205, 234-5 Building, 200-W Area, had their clearances cancelled May 19 as the construction work that had to be completed in that west portion of the building was finished as of May 19.

Remodeling work begun in April on the 200-W Area Main Badge House with alterations was completed May 23.

There were 3,512 badge transactions for area clearances during the month of May.

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HANFORD WORKS
General Electric Company
Richland, Washington

REPORT OF VISITORS FOR PERIOD ENDING MAY 31, 1952

Name- Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
MEDICAL DEPARTMENT							
I. Visits to other Installations							
P. A. Fuqua, M. D. to: U. S. Atomic Energy Comm. School of Medicine and Dentistry University of Rochester Rochester, New York	Attend spring meeting of Industrial Physicians	Dr. G. A. Hardie Dr. H. A. Blair	5-15-52	5-16-52	X		
DESIGN SECTION-ENGINEERING DEPARTMENT							
I. Visitors to this Works							
A. A. Batza General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	D. A. Hoover	4-2-51	5-26-52	X		200-W 234, 235 234-5 Const.
J. E. Brown, Jr. General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	D. A. Hoover	9-7-51	5-26-52	X		200-W 234, 235 234-5 Const.
F. J. Champlin, Jr. General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	D. A. Hoover	1-14-52	5-26-52	X		200-W 234, 235 234-5 Const.
J. C. Coons General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	D. A. Hoover	2-19-52	5-26-52	X		200-W 234, 235 234-5 Const.

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
E. P. Diehl General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	D. A. Hoover	11-5-51	5-26-52	X		200-W 234, 235 234-5 Const.
C. W. George General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	D. A. Hoover	2-12-51	5-26-52	X		200-W 234, 235 234-5 Const.
K. E. Gilbert General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	D. A. Hoover	2-12-52	5-26-52	X		200-W 234, 235 234-5 Const.
E. Long General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	D. A. Hoover	6-26-51	5-26-52	X		200-W 234, 235 234-5 Const.
J. L. Matrone General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	D. A. Hoover	2-12-52	5-26-52	X		200-W 234, 235 234-5 Const.
R. N. Poole General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	D. A. Hoover	10-1-51	5-26-52	X		200-W 234, 235 234-5 Const.
C. P. Sherman General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	D. A. Hoover	10-17-51	5-26-52	X		200-W 234, 235 234-5 Const.
R. Siftar General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	D. A. Hoover	10-1-51	5-26-52	X		200-W 234, 235 234-5 Const.
R. W. Stanhouse General Engineering Laboratory Schenectady, New York	Consultation an installation of equipment on 432 Project	D. A. Hoover	1-14-52	5-26-52	X		200-W 234, 235 234-5 Const.
W. M. Wheeler General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	D. A. Hoover	2-26-52	5-26-52	X		200-W 234,235 234-5 Const.

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
R. A. Anderson Panellit Incorporated Chicago, Illinois	Consultation on design of temperature and pressure monitor systems	B. E. Woodward E. S. Day, Jr.	5-15-52	5-16-52	X		100-D 105,D-DR 100-B XXX
K. E. Atwood Bailey Meter Company Cleveland, Ohio	Consultation on installation of equipment for power calculator	J. W. Conley T. M. Clement E. S. Day, Jr.	5-12-52	5-13-52	X		100-B 105 100-H 105
H. Bowman Prepakt Concrete Company Seattle, Washington	Consultation on concrete installation	L. Pihlfeldt V. D. Nixon	4-24-52	6-1-52		X	100-C Const. 105-C White Bluffs
D. R. Combs Foxboro Company Foxboro, Massachusetts	Inspect equipment damaged in transit on order HWS 14267 (inlet water panel for 105-C)	E. S. Day, Jr.	5-1-52	5-2-52		X	White Bluffs
M. F. Parr Foxboro Company Foxboro, Massachusetts	Detailed inspection of connections and circuit analysis of inlet water panel for 105-C and power calculator system	E. S. Day, Jr.	5-13-52	5-13-52		X	105-C 100-H 105
B. A. Lamberton Prepakt Concrete Company Seattle, Washington	Consultation on concrete installation	L. Pihlfeldt V. D. Nixon	5-13-52	5-31-52		X	White Bluffs 105-C 100-C Const.
V. S. Rutherford Bailey Meter Company Cleveland, Ohio	Consultation on installation of equipment for power calculator	J. W. Conley T. M. Clement	5-12-52	5-13-52	X		100-B 105 100-H 105

II. Visits to other Installations

E. S. Day, Jr. to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on pile instrumentation engineering	C. A. Hansen, Jr.	5-19-52	5-28-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
E. S. Day, Jr. to: E. I. du Pont de Nemours Augusta, Georgia	Consultation on pile instrumentation engineering	H. L. Bowman A. J. Schwertfeger	5-19-52	5-28-52	X		
E. S. Day, Jr. to: E. I. du Pont de Nemours Wilmington, Delaware	Consultation on pile instrumentation engineering	V. F. Hanson F. A. Trapnell	5-19-52	5-28-52	X		
R. T. Jaske to: Charles T. Main Co., Inc. Boston, Massachusetts	Discuss design basis for new production facilities	R. K. Patterson	5-5-52	5-12-52	X		
I. M. Jacobs to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on pile instrumentation engineering	C. A. Hansen, Jr.	5-19-52	5-28-52	X		
I. M. Jacobs to: E. I. du Pont de Nemours Augusta, Georgia	Consultation on pile instrumentation engineering	H. L. Bowman A. J. Schwertfeger	5-19-52	5-28-52	X		
I. M. Jacobs to: E. I. du Pont de Nemours Wilmington, Delaware	Consultation on pile instrumentation engineering	V. F. Hanson F. A. Trapnell	5-19-52	5-28-52	X		
I. M. Jacobs to: Argonne National Lab. Chicago, Illinois	Consultation on pile instrumentation engineering	M. H. Wahl	5-22-52	5-22-52	X		
J. E. Love, Jr. to: E. I. du Pont de Nemours Aiken, South Carolina	Consultation on Separations and 100 Area production facilities	J. Ellett R. K. Mason	5-12-52	5-14-52	X		
J. E. Love, Jr. to: U. S. Atomic Energy Comm. Washington, D. C.	Attend meeting on Passive Defense	R. W. Alter	5-15-52	5-18-52	X		
V. D. Nixon to: E. I. du Pont de Nemours Aiken, South Carolina	Consultation on Separations and 100 Area production facilities	J. Ellett R. K. Mason	5-12-52	5-14-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
V. D. Nixon to: U. S. Atomic Energy Comm. Washington, D. C.	Attend meeting on Passive Defense	R.W. Alger	5-15-52	5-18-52	X		
V. D. Nixon to: E. I. du Pont de Nemours Wilmington, Delaware	Consultation on 100 Area production facilities	W. R. McKenna	5-17-52	5-19-52	X		
V. D. Nixon to: General Engineering Lab. Schenectady, New York	Discuss development work for Hanford	C. W. George	5-19-52	5-21-52	X		
V. D. Nixon to: Knolls Atomic Power Lab. Schenectady, New York	Discuss experimental work for Hanford	L. L. Ferguson	5-19-52	5-21-52	X		
V. D. Nixon to: Charles T. Main Co., Inc. Boston, Massachusetts	Discuss 100-X Water Plant Design development	R. K. Patterson	5-21-52	5-23-52	X		
E. P. Peabody to: Charles T. Main Co., Inc. Boston, Massachusetts	Discuss electrical design with engineers on RDA-DC-6	R. K. Patterson	5-6-52	5-9-52	X		
J. H. Snyder to: Charles T. Main Co., Inc. Boston, Massachusetts	Water Plant Scope Development conference	R. K. Patterson	5-5-52	5-9-52	X		

PROJECT SECTION-ENGINEERING DEPARTMENT

I. Visitors to this Works

C. J. Blom Byron Jackson Company Los Angeles, California	Inspection of pumps supplied by his firm	J. W. Conley	5-19-52	5-27-52	X	190-C	
C. P. Carr Eastern Industries Norwalk, Connecticut	Discuss difficulties with agitators produced by his firm	G. C. Gabler R. C. Hollinghead	5-12-52	5-14-52	X	244-UR 241-WR	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
J. R. Casey Gas Turbine Division General Electric Company Schenectady, New York	Inspect equipment	J. G.Carriere	5-15-52	5-15-52		X	
E. S. Constant Buffalo Forge Corporation Seattle, Washington	Inspect difficulties of bearings in 291-U fans	R. C. Hollinghead	5-20-52	5-20-52		X	291-U
L. C. Ford General Electric Company Spokane, Washington	Install equipment furnished by Apparatus Division in 105-C	V. G. Blanchette	5-1-52	5-2-52		X	105-C
R. M. Parrish SKF Industries Seattle, Washington	Inspect difficulties of bearings in 291-U fans	R. C. Hollingshead	5-20-52	5-20-52		X	291-U
J. H. Wills General Machinery Spokane, Washington	Examine pumps furnished by his firm	R. C. Hollingshead	5-1-52	5-2-52		X	277-U Mockup
E. E. Lindros Byron Jackson Company Los Angeles, California	Inspection of pumps supplied by his firm	J. W. Conley	5-16-52	5-27-52	X		190-C
A. L. Bunke Byron Jackson Company Los Angeles, California	Inspection of pumps supplied by his firm	J. W. Conley	5-13-52 5-20-52	5-15-52 5-27-52		X	190-C
J. F. Valle Byron Jackson Company Los Angeles, California	Inspection of pumps supplied by his firm	J. W. Conley	5-19-52	5-27-52		X	190-C
G. W. Ogden Baird Associates, Inc. Cambridge, Massachusetts	Repair water vapor analyzer for C-410 Project	M. G.Patrick	5-1-52	5-3-52		X	300 3706
C. J. Thompson North American Aviation Downey, California	Discuss graphite machine work and fabrications	H. L. Sterling	5-20-	5-21-52	X		101-Hanford

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
P. Dix Dix Steel Building Company Spokane, Washington	Liaison on subcontract G-416	J. R. Kelly O. W. Priebe W. W. McIntosh	5-21-52	5-21-52		X	
G. Conklin Dix Steel Building Company Spokane, Washington	Liaison on subcontract G-416	J. R. Kelly O. W. Priebe W. W. McIntosh	5-21-52	5-21-52		X	
Mr. Martel Dix Steel Building Company Spokane, Washington	Liaison on subcontract G-416	J. R. Kelly O. W. Priebe W. W. McIntosh	5-21-52	5-21-52		X	
II. Visits to other Installations							
C. E. Love to: J. M. Gauntlet Company Seattle, Washington	Inspection on purchase order C-431-B contract	Manager	5-12-52	5-16-52		X	
D. D. Taylor to: General Electric Company Pittsfield, Massachusetts	Attend G.R.S.C. meeting	Mr. E. Otto	5-7-52	5-8-52		X	
EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT							
I. Visitors to this Works							
G. R. Fugal New York Office General Electric Company New York, New York	Inspect site for public relations interests	H. E. Callahan	5-26-52	5-27-52		X	
RADIOLOGICAL SCIENCES DEPARTMENT							
I. Visitors to this Works							
E. C. Barnes Westinghouse Atomic Power Pittsburgh, Pennsylvania	Discuss control of health hazards and associated research work	H. M. Parker F. E. Adley	5-26-52	5-29-52	X		100-H 105; 700 300 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							
P. L. Eisenacher to: U. S. Atomic Energy Comm. New York, New York	Instrument consultation	H. D. Levine	5-23-52	5-23-52	X		
P. L. Eisenacher to: General Electric Company Syracuse, New York	GE Coordinating Committee Meeting on radiation instruments	R. H. Rudolph	5-22-52	5-22-52	X		
P. L. Eisenacher to: Nuclear Instrument & Chemical Corp. Chicago, Illinois	Instrument discussion	J. L. Kuranz	5-20-52	5-20-52	X		
H.M. Parker to: U. S. Atomic Energy Comm. Washington, D. C.	Budget meetings	S. Warren	5-19-52	5-21-52	X		
M. F. Scoggins to: Washington, D. C.	Meteorology meeting	- -	5-12-52	5-13-52		X	
B. Shorr to: Los Angeles, California	Attend Second National Air Polution Symposium	- -	5-3-52	5-7-52		X	
J. M. Smith, Jr. to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Consultation on Rad. Sc. problems	J. S. Parker	5-14-52	5-21-52	X		
J. M. Smith, Jr. to: Oak Ridge National Lab. Oak Ridge, Tennessee	Consultation on Rad. Sc. problems at Mr. Parkers request	J. S. Parker	5-14-52	5-21-52	X		
R. C. Thompson to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Discuss current tritium and plutonium experiments	W. Langham H. Foreman	5-5-52	5-7-52	X		
I. Visitors to this Works (cont'd)							
L. R. Gibbs R.C.A. Services San Fr[illegible]lsco, California	Service electron microscope	R. Borasky	5-28-52	6-2-52		X	100-F 108-F

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
T. Hungerford Oak Ridge National Laboratory Oak Ridge, Tennessee	Discuss health physics radiation personnel monitoring systems at Hanford	W.A. McAdams H. A. Meloeny	5-27-52	5-29-52	X		300 XXX Redox 200-W 221-T 200-W Const-241-U
MANAGEMENT							
I. Visitors to this Works							
J. S. Parker Aircraft Nuclear Propulsion Project Lockland, Ohio	Discuss personnel recruitment	W. E. Johnson	5-25-52	5-27-52	X		700
F. P. Hungate Reed College Portland, Oregon	Inspect Biology Lab.	D. W. McLenegan	5-15-52	5-15-52		X	100-F XXX
MANUFACTURING DEPARTMENT							
I. Visitors to this Works							
M. R. Myers International Business Machines Richland, Washington	Repair IBM machines	L.T. Hagie	5-6-52	5-6-52		X	100-H 105
D. F. Crumb International Business Machines Richland, Washington	Repair IBM machines	L. T. Hagie	5-19-52	5-19-52		X	100-H 105
A. R. Whittlesey Traveler's Insurance Seattle, Washington	Inspect 100 Area boilers	A. Frew E.R. Hill K.W. McKay A.C.Whiteside	5-6-52	5-6-52		X	100-B 184 100-D 184 100-F 184 100-H 184
W. A. Shearer Wash. Public Service Commission Olympia, Washington	Inspection and certification of HW railroad scales	E. G. Jones	5-15-52	5-16-52		X	Riverland Yds.

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
R. N. Cartmell Engineering and Service Dept. General Electric Company Portland, Oregon	Inspection of motors	H. A. Carlberg	5-2-52	5-2-52		X	200-E XXX
G. M. Clifton Apparatus Division General Electric Company Pasco, Washington	Inspection of motors and electrical installations	H. A. Carlberg	5-20-52	5-20-52		X	100-C
D. P. Gunn General Electric Company Walla Walla, Washington	Inspection of motors	H. A. Carlberg	5-2-52	5-2-52		X	200-E XXX
H. M. Gustafson Apparatus Division General Electric Company Seattle, Washington	Inspection of motors and electrical installations	H. A. Carlberg	5-20-52	5-20-52		X	100-C
L. C. Ford General Electric Company Spokane, Washington	Inspection of electrical installations and testing equipment installaed	H. A. Carlberg	5-1-52	5-31-52		X	105-C
II. Visits to other Installations							
J. H. Hoage to: Charles T. Main Co., Inc. Boston, Massachusetts	Discuss design matters associated with RDA-DC-6	R. K. Patterson	5-5-52	5-7-52	X		
J. P. Langan to: Charles T. Main Co., Inc. Boston, Massachusetts	Discuss design matters associated with RDA-DC-6	R. K. Patterson	5-5-52	5-7-52	X		
P. E. Lowe to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on reactor experiments and problems and reactor development program	L. L. Ferguson	5-21-52	5-23-52	X		
W. K. MacCready to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on Hanford Works matters	B. R. Prentice	5-9-52	5-9-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
W. K. MacCready to: General Engineering Lab. Schenectady, New York	Consultation on Hanford Works matters	K. H. Kingdon	5-9-52	5-9-52	X		
L. M. Meeker to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Discuss essential materials and gauges in DP West	R. D. Baker	5-4-52	5-7-52	X		
C. W. Higby to: State College of Washington Pullman, Washington	Observe flow tests on model downcomer	C. Barker A. J. Roberson	5-6-52	5-6-52		X	

PURCHASING AND STORES SECTION-UTILITIES AND GENERAL SERVICES DEPARTMENT

I. Visitors to this Works

A. Schuman United Truck Lines Kennewick, Washington	Deliver material on order	H. L. Morgan	5-5-52	5-5-52		X	100-F 105 100-D 105
	Deliver material on order	H. L. Morgan	5-12-52	5-12-52		X	100-B 105 100-D 105 100-F 105
G. Hixon Inland Motor Freight Kennewick, Washington	Deliver material on order 87743	H. L. Morgan	5-6-52	5-6-52		X	300 303-J
	Deliver material on order HW 83029	H. L. Morgan	5-28-52	5-28-52		X	300 303-J
F. Colbert United Truck Lines Kennewick, Washington	Deliver material on order 96565	H. L. Morgan	5-6-52	5-6-52		X	200-W 271-T
	Deliver material on order 90853	H. L. Morgan	5-13-52	5-13-52		X	100-B 105 100-D 105
	Deliver material on order	H. L. Morgan	5-15-52	5-15-52		X	100-D 105 100-B 105
	Deliver material on order AEC 56111	H. L. Morgan	5-26-52	5-26-52		X	300 303-J
	Deliver material on order	H. L. Morgan	5-27-52	5-27-52		X	300 303-J

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
W. Fruehling United Truck Lines Kennewick, Washington	Deliver material on order 90853	H. L. Morgan	5-9-52	5-9-52		X	100-B 105 100-D 105
	Deliver material on order 93029	H. L. Morgan	5-14-52	5-14-52		X	100-F 105
R. Bagby West Coast Fast Freight Kennewick, Washington	Deliver material on order	H. L. Morgan	5-19-52	5-19-52		X	100-D 105 100-F 105
	Deliver material on order 98053-M	H. L. Morgan	5-22-52	5-22-52		X	100-B 105
	Deliver material on order HW 90853-M	H. L. Morgan	5-27-52	5-27-52		X	100-D 105 100-F 105
B. D. Stanley Liquid Carbonic Company Seattle, Washington	Deliver Carbon Dioxide	L. G. Hendrickson	5-20-52	5-20-52		X	100-H 105
L. W. Baur General Electric Company Seattle, Washington	Supervise installation of circuit breakers	G. J. Hayward	5-12-52	7-1-52		X	100-C
C. Bartolero Byron Jackson Company Los Angeles, California	Repair pump assemblies being supplied on order HWC 12454	G. J. Hayward	5-5-52	5-12-52		X	190-C Bldg.
A. L. Bunke Byron Jackson Company Los Angeles, California	Repair pump assemblies being supplied on order HWC 12454	G. J. Hayward	5-5-52	5-12-52		X	190-C Bldg.
J. F. Bromberger High Voltage Engineering Corp. Cambridge, Massachusetts	Inspection of electro-static generator	G. J. Hayward K. E. Novinger	5-26-52	6-11-52		X	300 3745-A
R. T. Best Wallace & Tiernan Sales Corp. Seattle, Washington	Supervise installation of Chlorine Feed Equipment	G. J. Hayward	5-19-52	5-26-52		X	100-C Const.
J. G.Carney Viking Electric Company Los Angeles, California	Inspect thermocouple assemblies	G. J. Hayward	5-8-52	5-8-52		X	100-C Const.

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
A. J. Hilde, Jr. DeLaval Pacific Company San Francisco, California	Supervise installation of lubricating oil purifier being supplied on order HWC 18212-AJ	G. J. Hayward	5-22-52	5-22-52		X	190-C Bldg.
K. A. Jones Travellers Insurance Co. Seattle, Washington	Inspect boilers	G. J. Hayward	6-3-52	6-5-52		X	100-B 184 100-D 184 100-F 184 100-H 184 200-E 284 200-W 284 300 384
H. Knapp Western Gear Works Lynwood, California	Supervise installation of gear increasers on orders DC 61231 and HWC 18816	G. J. Hayward	4-21-52 5-5-52	5-5-52 5-16-52		X X	100-C 190-C 100-C 190-C
J. W. Norcross Viking Electric Company Los Angeles, California	Inspect thermocouple assemblies	G. J. Hayward	5-8-52	5-8-52		X	100-C 190-C
J. F. Valle Byron Jackson Company Los Angeles, California	Supervise installation of pump assemblies	G. J. Hayward	5-19-52	5-26-52		X	White Bluffs 100-C 190-C
A. R. Whittlesey Travellers Insurance Company Seattle, Washington	Inspection of boilers	G. J. Hayward	5-6-52	5-7-52		X	100-B 184 100-D 184 100-F 184 100-H 184 200-E 284 200-W 284 300 384

PLANT SECURITY & SERVICES SECTION-UTILITIES AND GENERAL SERVICES DEPARTMENT

I. Visitors to this Works

H. B. Gardner Metzger, Blair, Gardner & Bolt Tacoma, Washington	Consultation on legal matters	T. B. Farley	5-20-52	5-23-52		X	100-B XXX 200-E XXX100-D XXX 200-W XXX100-F XXX 300 XXX100-H XXX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
J. Blair Metzger, Blair, Gardner & Bolt Tacoma, Washington	Consultation on legal matters	T. B. Farley	5-20-52	5-23-52		X	100-B XXX 100-D XXX 100-F XXX 100-H XXX 200-E XXX 200-W XXX 300

ELECTRICAL DISTRIBUTION AND TELEPHONE SECTION-UTILITIES AND GENERAL SERVICES DEPARTMENT

I. Visitors to this Works

M. Sargent Western Engineering Company Spokane, Washington	Make special radio tests on transmitter and antenna equipment	G. R. McKinney	4-17-52	4-18-52		X	Gable Mts.

PLANT SECURITY & SERVICES SECTION-UTILITIES AND GENERAL SERVICES DEPARTMENT

I. Visitors to this Works

W. H. Burgess E. I. du Pont de Nemours & Co. Aiken, South Carolina	Annual safety and fire conference	F. J. McKinnon	5-26-52	5-29-52	X		700; 300-XXX 200-W 221-T Redox 100-H 105 200-E XXX
E. L. Kelso Argonne National Laboratory Chicago, Illinois	Annual safety and fire conference	F. J. McKinnon	5-23-52	5-29-52	X		700; 300-XXX 200-W 221-T Redox 100-H 105 200-E XXX
L. H. B. Peer Knolls Atomic Power Laboratory Schenectady, New York	Annual safety and fire conference	F. J. McKinnon	5-26-52	5-29-52	X		700; 300-XXX 200-W 221-T Redox 100-H 105 200-E 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							
S. B. Badgett to: Santa Fe Operations Office Los Alamos, New Mexico	Discuss Records Center operations	Records Officers	5-14-5	5-17-52	X		
STATISTICAL AND COMPUTING SERVICES-UTILITIES AND GENERAL SERVICES DEPARTMENT							
I. Visitors to this Works							
M. R. Myers International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson J. M. Ward W.C. McGee	5-1-52	5-31-52		X	700 722-A
C. G. Kruse International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson J. M. Ward W. C. McGee	5-1-52	5-31-52		X	700 722-A
D. F. Crumb International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson J. M. Ward W. C. Gee	5-1-52	5-31-52		X	700 722-A
F. Corazza International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson J. M. Ward W. C. McGee	5-1-52	5-31-52		X	700 722-A
R. C. Warren International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson J. M. Ward W. C. McGee	5-1-52	5-31-52		X	700 722-A
N. B. Norby International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson J. M. Ward W. C. McGee	5-1-52	5-31-52		X	700 722-A
J. N. Morris Columbia High School Richland, Washington	Inspect IBM operations	P. E. Johnson	5-20-52	5-20-52		X	700- 722-A

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
W. D. Bell Telecomputing Corporation Burbank, California	Study automatic recording of pile outlet temperature data for IBM computations	B. F. Butler	5-14-52	5-15-52	X		100-B 105 100-D 105-DR,105 700
C. C. Hurd International Business Machines New York, New York	Confer on IBM methods	B. F. Butler	5-5-52	5-5-52		X	700 722-A
R. W. Hubner International Business Machines Seattle, Washington	Confer on IBM methods	P. M. Thompson	5-5-52	5-5-52		X	700 722-A
II. Visits to other Installations							
H. G. Rhoads to: Union Pacific Railway Co. LeGrande, Oregon	Study scheduling and and dispatching methods	B. B. Johnson	5-9-52	5-9-52		X	
C. A. Bennett to: American Society for Quality Control Syracuse, N.Y.	Present paper on Quality Control	- -	5-22-52	5-24-52		X	
TECHNICAL SECTION-ENGINEERING DEPARTMENT							
I. Visitors to this Works							
W. Browning, Jr. California Research & Development Co. Livermore, California	Discussion of radiation and irradiation techniques	H. L. Henry	5-1-52	5-2-52	X		100-B 105 100-D 105 100-F 105 100-H 105 300 303; 700
J. E. Brown, Jr. General Engineering Laboratory Schenectady, New York	Consultation on "C" Basin viewing facility design	R. M. Fryar J. J. Cadwell R. L. Reynolds	5-1-52	5-2-52	X		100-B 1703 100-D 105 100-C 105-C 300 303
D. Carter West Coast Fast Freight Kennewick, Washington	Deliver supplies for W. K. McCarty, NAA	H. L. Henry	5-8-52	5-8-52		X	100-H XXX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
R. M. Edwards General Engineering Laboratory Schenectady, New York	Consultation on "C" Bascin viewing facility design	R. M. Fryar J. J. Cadwell R. L. Reynolds	5-1-52	5-2-52	X		100-B 1703 100-D 105 100-C 105-C 300 303
R. C. Feber Knolls Atomic Power Laboratory Schenectady, New York	Redox consultation	R. B. Richards	5-5-52	5-18-52	X		700; 300-XXX Redox 221-U; 224-U
D. Howard North American Aviation Downey, California	Discussion on in-pile experiments	H. L. Henry	5-12-52	5-31-52	X		100-B 105 100-D 105 100-F 105 100-H 105 300 303; 700
W. K. McCarty North American Aviation Downey, California	Discussion on in-pile experiments	H. L. Henry	5-9-52	7-11-52	X		100-B 105 100-D 105 100-F 105 100-H 105 300 303; 700
G. W. Ogden Baird Associates Cambridge, Massachusetts	Adjust and calibrate Baird water analyzer	A. H. Bushey	5-1-52	5-3-52	X		300 3706
D. C. Overholt Oak Ridge National Laboratory Oak Ridge, Tennessee	Isolation Development Process consultations	R. B. Richards W. H. Reas	5-22-52	5-23-52	X		300 XXX 200-W 2704-Z 221-U; 224-U
A. U. Seybolt Knolls Atomic Power Laboratory Schenectady, New York	Consultation on uranium and uranium coating program and fuel element development program	W. L. Schalliol	5-20-52	5-22-52	X		105-C 100-B 108 300 303; 700
S. Siegel California Research & Development Co. Livermore, California	Discussion of radiation and irradiation techniques	H. L. Henry	5-1-52	5-2-52	X		100-B 105 100-D 105 100-F 105 100-H 105 300 303; 700

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
G. N. Steele North American Aviation Downey, California	Discussion on in-pile experiments	H. L. Henry	5-12-52	5-31-52	X		100-B 105 100-D 105 100-F 105 100-H 105 300 303; 700
D. W. White Knolls Atomic Power Laboratory Schenectady, New York	Consultation on uranium and uranium coating program and fuel element development program	W. L. Schalliol	5-20-52	5-22-52	X		105-C 100-B 108 300 303; 700
II. Visits to other Installations							
J. J. Cadwell to: Argonne National Lab. Chicago, Illinois	Attend meeting on corrosion	J. E. Draley	5-20-52	5-21-52	X		
J. J. Cadwell to: General Engineering Lab. Schenectady, New York	Attend meeting on corrosion	H. Poritsky	5-22-52	5-22-52	X		
W. N. Carson to: Brookhaven National Lab. Upton, Long Island, New York	Discuss coulometer titrator	H. L. Finston	5-9-52	5-10-52	X		
R. S. Dalrymple to: Argonne National Lab. Chicago, Illinois	Attend meeting on corrosion	J. E. Draley	5-20-52	5-21-52	X		
M. G. Freidank to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Records Management meeting	R. Fitz	5-14-52	5-14-52	X		
M. Lewis to: Argonne National Lab. Chicago, Illinois	Attend meeting on corrosion	J. E. Draley	5-20-52	5-21-52	X		
R. S. Paul to: Argonne National Lab. Chicago, Illinois	Observe and assist in slug rupture detection experiments	N. H. Wahl	5-15-52	5-21-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
R. E. Peterson to: American Cyanamid Company Arco, Idaho	Discuss J-slug recovery and exposure of samples in the MTR reactor	D. Reid	5-7-52	5-8-52	X		
J. W. Riches to: Battelle Memorial Institute Cincinnati, Ohio	Metallurgical consultation	H. R. Nelson	5-12-52	5-12-52	X		
J. W. Riches to: Simonds Saw & Steel Co. Lockport, New York	Experimental rolling discussions	A. D. Potts	5-13-52	5-15-52	X		
J. W. Riches to: National Lead Company Fernald, Ohio	Consultations on rolling	S. F. Audia	5-13-52	5-15-52	X		
R. B. Socky to: Argonne National Lab. Chicago, Illinois	Conferences on leak tests, radiography, and attend Non-Destructive Test Meeting	A. H. Barnes R. H. Vanderlaan	5-13-52	5-15-52	X		
J. A. Parodi to: U.S. Bureau of Mines Albany, Oregon	Discuss spectrographic analysis of zieconium and zirconium alloys	D. M. Mortimore A. H. Roberson	5-9-52	5-9-52	X		
L. F. Kendall to: American Instrument Co. Silver Springs, Maryland	Discuss analysis for water vapor	C. T. Clayton	5-22-52	5-22-52			
A. M. Platt to: Oak Ridge National Lab. Oak Ridge, Tennessee	Purex consultation	F. L. Steahly W. K. Eister	5-1-52	5-2-52	X		
R. E. Tomlinson to: Oak Ridge National Lab Oak Ridge, Tennessee	Purex consultation	F. L. Steahly	5-1-52	5-2-52	X		
R. J. Anicetti to: Norton Company Worcester, Massachusetts	Consultation on ceramic manufacture	D. E. Webster C. H. Gustafson	5-1-52	5-2-52	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
E. F. Kurtz to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Training in and observation of slag and crucible recovery operations	R. D. Baker A. G. Allison	5-1-52	5-28-52	X		
A. G. Blasewitz to: Oak Ridge National Lab. Oak Ridge, Tennessee	Discuss product recovery from process wastes	F. L. Steahly	5-1-52	5-1-52	X		
A. G. Blasewitz to: Naval Research Lab. Washington, D. C.	Discuss air filtration media	T. D. Callihan	5-2-52	5-2-52		X	
A. G. Blasewitz to: Hurlburt Paper Co. Cambridge, Massachusetts	Discuss air filtration media	E. A. Sitzer	5-5-52	5-5-52		X	
A. G. Blasewitz to: Arthur D. Little, Inc. Cambridge, Massachusetts	Discuss air filtration media	W. B. Smith	5-6-52	5-6-52		X	
A.G. Blasewitz to: Visual Planning Equipment Oakmont, Pennsylvania	Discuss applicability of visual equipment to Recuplex design study	H. H. Dasey	5-7-52	5-7-52		X	
A. G. Blasewitz to: Mine Safety Appliances Pittsburgh, Pennsylvania	Discuss air filtration media	R. B. Evans	5-8-52	5-8-52		X	
E. A. Eschbach to: Mass. Institute Tech. Cambridge, Massachusetts	Consultation on canning problems	A. R. Kaufmann	5-1-52	5-1-52	X		
E. A. Eschbach tO; Sylvania Electric Products Pittsburgh, Pennsylvania	Consultation on canning problems	H. H. Hausner J. L. Zambrow	5-2-52	5-2-52	X		
S. S. Jones to: Puget Sound Navy Shipyard Bremerton, Washington	Machining consultation on bare, unirradiated, natural uranium slugs	S. L. Allison	5-1-52 5-19-52	5-1-52 5-23-52	X X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
DESIGN SECTION-ENGINEERING DEPARTMENT (cont'd)							
I. Visitors to this Works							
J. W. Peckham Bristol Company Los Angeles, California	Consultation on instrumentation	E. S. Day, Jr.	5-15-52	5-15-52	X		100-D 105
R.L. Butenhoff U.S. Atomic EnergyCommission Washington, D. C.	Inspect radiation instruments	M. Slind	5-7-52	5-7-52	X		300 3707-C
L. J. Deal U. S. Atomic Energy Commission Washington, D. C.	Inspect radiation instruments	M. Slind	5-7-52	5-7-52	X		300 3707-C
II. Visits to other Installations							
H. W. Heacock to: Olympic Pipe Fabrication Co. Seattle, Washington	Discuss fabrication of special pipe fittings for C-482	W. Lonsky	5-5-52	5-6-52		X	
A. J. Karnie to: Haughton Elevator Co. Toledo, Ohio	Discuss elevator design arrangements for CG-494	Mr. Blakeman	5-12-52	5-13-52		X	
T. H. Edwards to: Dix Steel Company Spokane, Washington	Coordination of Dix Steel plans for Mech. Development Bldg.	E. Smith	5-25-52	5-29-52		X	
J. C. Estes to: American Machine & Foundry Buffalo, New York	Redesign of vertical safety rods	E. Faragher	5-5-52	5-5-52		X	
J. C. Estes to: Corning Glass Works Corning, New York	Ball 3-X Glass Balls	Dr. Shover	5-6-52	5-8-52		X	
J. C. Estes to: Tube Reducing Wallington, New Jersey	Design of VSR	Mr. Megargle	5-12-52	5-12-52		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
J. C. Estes to: Industrial Tectonics Ann Arbor, Michigan	Ball 3-X Steel Balls	Mr. Stern	5-13-52	5-13-52		X	
J. C. Estes to: Stephens-Adamson Aurora, Illinois	Skip Hoist (3-X)	Mr. Thiel	5-14-52	5-14-52		X	
J. F. Nesbitt to: Whiting Corporation Harvey, Illinois	Engineering consultation on winch assembly	J. E. Morton	5-5-52	5-9-52		X	
H. S. Davis to: Puget Sound Navy Shipyard Bremerton, Washington	Observe assembly test crate	S. L. Allison J. V. Schuster	4-30-52	5-3-52	X		
D. L. Peterson to: J. M. Gauntlet Seattle, Washington	Discuss design change and observe test results at that plant	J. M. Gauntlet	4-12-52	4-14-52		X	
J. H. Snyder to: Charles T. Main Co., Inc. Boston, Massachusetts	Conference on water works (100-K Area)design scope	R. K. Patterson	5-6-52	5-9-52		X	
J. H. Snyder to: Charles T. Main, Inc. Cleveland, Ohio	Observe equipment for aluminum metallizing of steel pipe	K. H. Donaldson	5-10-52	5-10-52		X	
R. T. Jaske to: Charles T. Main, Inc. Boston, Massachusetts	Coordinate 100-K Water Plant with reactor design	R. K. Patterson	5-2-52	5-10-52	X		
M. H. Russ to: Charles T. Main, Inc. Boston, Massachusetts	Discuss 190-K pumping system	R. K. Patterson	4-27-52	5-3-52		X	

PURCHASING AND STORES SECTION-UTILITIES AND GENERAL SERVICES DEPARTMENT (cont'd)

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
H. A. Hauser to: J. M. Gauntlet Co. Seattle, Washington	Procurement of critical materials	Mr. McCarthy	5-12-52	5-12-52		X	
H. A. Hauser to: Puget Sound Navy Shipyard Bremerton, Washington	Procurement of critical materials	S. L. Allison	5-13-52	5-13-52	X		
O. P. Fleming to: Whiting Corporation Harvey, Illinois	Expedite material on order	E. Swigart	4-24-52	5-9-52		X	

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PURCHASING AND STORES SECTION
UTILITIES AND GENERAL SERVICES DEPARTMENT
SUMMARY -- MAY 1952

Personnel of the Purchasing and Stores Section showed a net decrease of 4 as noted below:

TOTAL PERSONNEL

	4-30-52	5-31-52	Net Change
Exempt	90	88	-2
Non-Exempt	311	309	-2
	401	397	-4

International Nickel Company has agreed to give preference to AEC orders. Procedures to identify our orders with the AEC Program have been established and should improve delivery of our orders for items containing nickel, monel, or inconel.

Request by AEC for revision in applications for controlled materials allotments will require a breakdown of forecasts by project. Considerable analysis and detail will be added to the preparation of applications.

Approval was received on lists of material and equipment which were recommended for procurement by General Electric in event Program "X" is authorized.

All claims and adjustments on the Redox and TBP connector orders with Crane Company were settled.

Deliveries of balls required for the third safety system became extremely critical when the decision was made that glass balls were not acceptable. Intensive efforts are being made to get the producer of boron alloy steel wire to step-up production so an order can be placed with an additional manufacturer of steel balls.

Present plant stocks of steel sleeves are at approximately a three months' level. An emergency stock of seamless steel tubing, from which these sleeves are made, has been accumulated on plant for use in event the steel strike is prolonged.

Limiting items for Project C-431 are boron steel balls, 54" valves, and winches. However, five winches have been shipped and a shipping schedule established on the balance.

A compilation of available tooling for production of nozzles for pile improvement was made from tooling available in vendors' plants and on plantsite and furnished to AEC Procurement. Furnishing such tooling to the successful vendor should reduce total cost of the nozzles by approximately $10,000.

Off-plantsite inspection of work in vendors' plants for a fixed-price AEC contract was started during the month.

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PURCHASING AND STORES SECTION
SUMMARY

All horizontal and vertical safety rods have been received for Project C-431.

Material and supplies in Operations Stores inventories valued at $133,095.99 were declared excess due to obsolescence and inactivity. Materials valued at $84,000 were transferred from General Supplies, Account 10.2, to Spare Parts, Account 10.1

Purchase requisitions processed through screening totaled 2670 with 3114 items being furnished from Stores Unit inventories.

Nine scrap sales were completed from which $81,500.01 was realized.

Three AEC Surplus-Salvage Sales conducted by Stores Unit resulted in revenue of $18,604.98.

Extended negotiations with transcontinental railroads resulted in a reduction in the rate on Sulfamic Acid from Grasselli, New Jersey to Hanford Works. This will result in an annual savings of approximately $7600.

A petition to the rail lines for a reasonable rate on bulk iron ore from Hanford Works to Seattle for processing and return resulted in an agreement by the carriers to protect the rate proposed. This rate will mean a freight savings of $5.05 per net ton. On the movement which took place in May a savings of $1304 was made.

As a result of rate reductions obtained from carriers, there was a savings in freight charges for the month of May amounting to $6394.76. This makes a total savings from September 1, 1946 to date of $1,714,066.32.

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PURCHASING AND STORES SECTION
GENERAL

Stores Procedure G-7 "Operations Stores Surplus Stock" was published.

A study of the Spare Parts warehousing Procedure on method of receiving materials was made and submitted to Stores supervision.

An objective survey of the operations of Stores Unit is being made to evaluate the full utilization of manpower and equipment.

Erection Engineers were brought in from ten companies to supervise installation of equipment in the areas.

The International Nickel Company has agreed to give preference to Atomic Energy Commission orders. We have established procedures to identify our orders, whether they be direct with that company, or indirect through a distributor or chain of suppliers. This positive identification with the Atomic Energy Commission Program should improve delivery of our orders for materials or products containing Nickel, Monel, or Inconel.

Request by the Atomic Energy Commission for revision in our applications for controlled materials allotments will necessitate a change in our procedure and will require a complete breakdown of forecasts by project. Considerable analysis and detail will be added to our work in preparing applications.

Five requests for NPA Directive or DX action were received.

Five cases were submitted to the Atomic Energy Commission for directive or DX action by Priorities.

Special forecasts and reports on requirements of lithium, nickel, cobalt, anhydrous ammonia, magnesium, lead, copper, and tin were prepared and transmitted to the Commission.

PERSONNEL

	As of 4-30-52			As of 5-31-52			Net Change		
	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total
Staff	2	1	3	2	1	3	0	0	0
General	2	3	5	2	2	4	0	-1	-1
Priorities	6	7	13	6	6	12	0	-1	-1
Inventory	2	12	14	2	12	14	0	0	0
Clerical	2	33	35	2	32	34	0	-1	-1
	14	56	70	14	53	67	0	-3	-3

SAFETY AND SECURITY

Safety and Security Meeting Scheduled	1
Number of Employees Attending	58

1196749

PURCHASING AND STORES SECTION
GENERAL

STATISTICS

The following schedule reflects total allotments received from the Atomic Energy Commission and allotments used and extended to suppliers and contractors through May. 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.

OPERATIONS

CONTROLLED MATERIAL	UNIT MEASURE	2 Q 52	3 Q 52	4 Q 52	1 Q 53
Carbon Steel (including	Short	89.00	100.00	110.00	80.00
wrought iron)	Tons	80.62	12.28	0	0
Alloy Steel (excluding	Short	3.00	4.00	3.00	2.00
Stainless Steel)	Tons	.56	0	0	0
		17,675	13,000	12,000	12,000
Stainless Steel	Lbs.	17,663	738	4,751	0
Copper & Copper Base Alloy		4,050	7,200	3,000	3,000
Brass Mill Products	Lbs.	3,879	475	0	0
		3,000	10,000	10,000	5,000
Copper Wire Mill Products	Lbs.	1,964	416	0	0
Copper & Copper Base Alloy			200	150	100
Foundry Products & Powder	Lbs.	None	0	0	0
		239,980	271,342	154,000	115,000
Aluminum	Lbs.	213,140	113,394	97,200	9,600

CONSTRUCTION

CONTROLLED MATERIAL	UNIT MEASURE	2 Q 52	3 Q 52	4 Q 52	1 Q 53
	Short	71.00	46.00	160.00	
Carbon Steel Plate	Tons	52.24	.25	0	None
Carbon Steel	Short	56.00	24.00	30.00	15.00
Structural Shapes	Tons	48.90	6.35	0	0
Carbon Steel	Short	208.25	300.00	250.00	30.00
Other Forms	Tons	174.26	.05	0	0
Alloy Steel (excluding	Short	34.00	4.00	3.00	2.00
Stainless Steel	Tons	31.05	.05	0	0
		41,415	27,000	115,000	700
Stainless Steel	Lbs.	41,415	2,200	0	0
Copper & Copper Base Alloy		3,475	3,150	500	50
Brass Mill Products	Lbs.	1,560	200	0	0
		12,235	4,000	4,000	500
Copper Wire Mill Products	Lbs.	11,930	1,200	0	0
Copper & Copper Base Alloy		100			
Foundry Products & Powder	Lbs.	100	None	None	None
		5,985	22,250	9,000	
Aluminum	Lbs.	3,920	200	0	None

1196750

PURCHASING AND STORES SECTION
GENERAL

Vendor Contacts	152
Claims Processed	38
Accts. Payable Requests Handled	177
Difference Slips Processed	26
Clearance Slips and Letters	136
Material Exception Reports	104
Return Orders issued	113

	G	D	TOTAL
Requisitions on Hand 5-1-52 (Includes 131 Assigned to Gov't.)	856	342	1198
Requisitions Assigned During May	1961	640	2601
Requisitions Placed During May	1939	680	2619
Requisitions on Hand 5-30-52 (Include 130 Assigned to Gov't)	878	302	1180

	NUMBER	VALUE	
H. W. Orders Placed	1285	$636,356.26	
H. W. Alterations Placed	104	4,479.33	Cr.
TOTAL	1389	$631,876.93	
H.W.C. Orders Placed	541	$181,482.10	
H.W.C. Alterations Placed	111	406,937.63	
TOTAL	652	$588,419.73	
AEC Orders Placed	106	$112,456.57	
D Orders Placed	43	36,045.23	

	OR	ORC
Government Transfers	0	0

1196751

PURCHASING AND STORES SECTION
CONSTRUCTION PROCUREMENT UNIT
MAY 1952

The work load in the Construction Procurement Unit remained at a low level. Approval was received on the lists of materials and equipment which a Committee recommended for General Electric Company procurement in event Program "X" is authorized. Preliminary requests for quotations were mailed covering major items of materials and equipment which would be required for a new construction project. These requests stipulated that funds were not available but quotations were being solicited so that orders could be placed immediately upon receipt of authorization.

All claims and adjustments on the Redox and TBP connector orders with Crane Company were settled.

The General Electric recommendation for settlement of claims submitted by Southwest Welding & Mfg. Company were approved by the Atomic Energy Commission. Negotiations toward final settlement were under way at the end of the month.

A claim was filed against Apex Steel Corporation because the cast iron shielding blocks which they produced did not meet our field requirements.

Deliveries of balls required for the third safety system became extremely critical when the decision was made that glass balls were not acceptable. In an attempt to increase production of boron alloy steel balls the Manager, Purchasing & Stores, and the Purchasing Agent, Construction Procurement Unit, left near month end on a trip to Crucible Steel Co Syracuse, N.Y., the only known producer of boron alloy steel wire. If Crucible can step-up their wire output, an order will be placed with an additional manufacturer of balls to assure full utilization of wire as fast as it becomes available.

A visit was made to Food Machinery and Chemical Corporation, and K-Plastix by representatives of the Construction Procurement Unit and the Project Engineering Unit to coordinate and expedite orders for hoppers and shielding required for the new third safety in existing areas.

PERSONNEL

As of 4-30-52			As of 5-31-52			Net Change		
Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total
7	5	12	7	6	13	0	+1	+1

SAFETY AND SECURITY

Safety and Security Meetings - 1
Number of Employees Attending - 11

1196752

PURCHASING AND STORES SECTION
OPERATIONS PROCUREMENT UNIT
MAY - 1952

A new contract has been negotiated with West End Chemical Company for our year's requirements of Sodium Carbonate. Requests for quotation for our requirements of Rock Salt covering the contract year have been sent to vendors.

The finished draft of the request for quotation, which we propose to use in soliciting bids on Steam Coal requirements, has been sent to the Atomic Energy Commission for prior approval. Requests for quotation will be issued early in June covering the fiscal year 1953.

Present plant stocks of steel sleeves are at an approximate three months' level. Manufacturing difficulties on the new 9½" design have been alleviated and no further difficulties should be experienced. An emergency stock of the seamless steel tubing, from which these sleeves are made, has been accululated on plant for use in the event the steel strike is prolonged and this item becomes a supply problem.

Personnel

As of 4-30-52			As of 5-31-52			Net Change		
Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total
11	13	24	11	13	24	0	0	0

Safety and Security

Safety and Security Meetings scheduled: 1
Number of employees attending: 24

1196753

PURCHASING AND STORES SECTION
INSPECTION AND EXPEDITING UNIT
MAY 1952

The workload of Inspection and Expediting has remained fairly constant because the remaining engineered items require more attention as project completion dates draw nearer, and because of the receipt of a number of "Dry Run" requisitions for 105-K Project.

Critical items for C-431 Project at the present time are boron steel balls, 54" valves, and winches.

A trip by an expeditor to the Whiting Corporation resulted in the work on winch parts under sub-contract at Products Manufacturing being taken away from them and performed in Whiting's own shop. Five winches have been shipped, and a shipping schedule has been established on the balance.

A compilation of available tooling for production of nozzles for pile improvement was made from tooling available in vendors' plants and on plantsite, and furnished to A.E.C. procurement. It is felt that furnishing such tooling to the successful vendor will reduce the total cost of these nozzles by approximately $10,000.

Off-plantsite inspection of work on a fixed-price A.E.C. contract was started during the month. The welding performed by one vendor in Portland was rejected in its entirety because of the use of the incorrect welding rod. Several discrepancies exist between our instructions to the inspector based on contract requirements and the understanding the vendor has gained through 4 tiers of sub-contractors. These discrepancies have been referred to A.E.C. Engineering for decision.

The thimble assemblies for 105-C have been completed and shipped. This job necessitated many contacts with Engineering and could be accepted only after several tolerance relaxations.

During the past few weeks a number of discrepancies has been brought to our attention on the hoppers for the Ball 3-X System. Most of these problems involved design changes and in turn price increases.

In the final fitup of the 54" elbows for inlet headers for 105-C at Puget Sound Sheet Metal Works they found a drawing discrepancy which had to be clarified. This will delay shipment about 3 weeks and increase the unit price.

Several trips to vendors' plants by Purchasing and Engineering personnel were necessary on the Ball 3-X System Trip Gates to solve problems in the operation of the gate mechanism. It appeared this would delay construction, but through the cooperation of all concerned units are arriving satisfactorily.

Most everyone involved on the HS and VS Rod orders are quite relieved in knowing that all rods have arrived on the Project. This seemed doubtful on several occasions in the past.

1196754

PURCHASING AND STORES SECTION
INSPECTION AND EXPEDITING UNIT
MAY 1952

One inspector resigned to accept employment with A.E.C. Washington D.C., and one inspector transferred to Lockland, Ohio.

Three inspectors were returned to the Project for temporary transfer to Stores and Engineering pending anticipated increase in workload.

PERSONNEL

	As of 4-30-52			As of 5-31-52			Net Change		
	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total
Inspection	28	4	32	26	3	29	-2	-1	-3
Expediting	13	8	21	13	8	21	0	0	0
	41	12	53	39	11	50	-2	-1	-3

SAFETY AND SECURITY

Safety and Security Meetings Scheduled	1
Number of Employees Attending	22

STATISTICS

Inspection

Number of open orders requiring inspection	118
Number of open orders being inspected	112
Number of new orders requiring inspection	8
Number of open requisitions requiring inspection	65
Number of completed orders (cancelled, waived, etc.)	42
Number of open orders requiring inspection - sub-vendor	11
Number of open orders being inspected - sub-vendor	11
Number of completed orders - sub-vendor	1

Expediting

HW orders expedited in May (active)	435
HW orders expedited in May (routine)	1208
HWC orders expedited in May	816
Sub-vendor orders expedited in May	700*
HW orders completed in May	1249
HWC orders completed in May	567

* Estimated

1196755

PURCHASING AND STORES SECTION
STORES UNIT
MAY, 1952

GENERAL

Maintenance materials, supplies, and spare parts disbursed from Operations inventories were valued at $334,291.66. Receiving reports issued during the month totaled 4,474.

Material and supplies valued at $133,095.99 were declared excess due to obsolescence and inactivity. Materials valued at $84,000 were transferred from General Supplies Account 10.2 to Spare Parts Account 10.1.

Purchase requisitions processed through screening totaled 2670 with 3114 items being furnished from Stores Unit inventories.

Materials and equipment valued at $66,825.08 from 11 captions of the 10.20 Account (Construction Materials Held for Future Use) were disbursed to construction forces during the month. In addition to the foregoing, materials valued at $2,409.64 were shipped as directed by the Commission. Materials declared excess from this account totaled $205,938.11. The total value of materials disposed of during the month was $295,210.07.

Materials and equipment valued at $19,380.18 were withdrawn from the 10.10 Account (Excess) for use on the project. Excess materials and equipment valued at $296,112.51 were shipped from the project as directed by the Commission. Total value of Excess materials disposed of this month was $315,492.69.

During the month 13 formal excess lists with a total value of $126,609.97 were submitted to the Commission for disposition.

131 representatives of Government and private business 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. Nine scrap sales were completed this month for a revenue of $81,500.01.

Three AEC Surplus-Salvage Sales conducted by Stores Unit personnel during May resulted in a total revenue of $18,604.98.

PERSONNEL*

	As of 4-30-52			As of 5-31-52			Net Change		
	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total
Administrative	5	0	5	5	0	5	0	0	0
Operations Material (Code 132)	5	91	96	5	81	86	0	-10	-10
Receiving (Code 138)	1	44	45	1	43	44	0	- 1	- 1
Surplus (Code 131)	4	80	84	4	92	96	0	+12	+12
TOTAL	15	215	230	15	216	231	0	+ 1	+ 1

1196756

PURCHASING AND STORES SECTION
STORES UNIT

*In order to conform with force reports and payroll records, the method of reporting personnel has been altered this month to show actual numbers of employees assigned to each of the three Stores Unit codes.

SAFETY AND SECURITY

Safety and Security Meetings Scheduled	9
Number of Employees Attending	204
Minor Injuries	4

1196757

PURCHASING & STORES SECTION
TRAFFIC UNIT
May 1952

GENERAL

The Rail Lines took favorable action on our proposal to lower the minimum weight requirements on carloads of Machinery or Machine Parts from Los Angeles to Hanford Works. The Section 22 Quotation covering this movement has been amended and made retroactive to February 28, 1952 effecting a savings of $420 on two shipments of Pumps from Los Angeles to Richland, Washington.

As a result of our proposal the Milwaukee Road has amended their tariff effective May 1, 1952 to provide for the application of rates on Machinery and Machines using the Group J combination to apply via CB&Q-Laurel-GN-Spokane-CMSTP&P to Hanford. This will effect a savings in freight charges of up to $200 per car on transcontinental shipments which are consigned to Hanford, Washington.

Extended negotiations with the Transcontinental Railroads resulted in a reduction in the rate on Sulfamic Acid from Grasselli, New Jersey to Hanford Works from $3.51 to $2.42 per cwt. This will effect savings of approximately $872 per car, and estimated annual savings of $7,600.

The Purchasing Section advised on May 7, 1952 that it would be necessary to ship immediately approximately 1,000,000 pounds of iron ore from Rock Island, Washington to Hanford Works via rail. A study of the rail tariffs disclosed that the lowest applicable freight rate was $9.85 plus 6% per net ton. This rate was excessive in comparison with intra-state rates on movements of iron ore in other sections of the country, and we immediately petitioned the rail lines to publish reduced rates. Our efforts were successful in having the carriers agree to publish a rate of $4.84 plus 6% per net ton which resulted in a reduction of $5.30 per net ton, and effected savings in freight charges of $2,453 on the movement that actually took place in May.

The Purchasing Section advised on May 6, 1952 that it would be necessary to ship by rail large quantities of bulk iron ore from Hanford Works to Seattle where it would be ground and returned in carload lots. A study of the rail tariffs disclosed that the lowest applicable freight rate between Hanford Works and Seattle was $8.60 plus 6% per net ton. This rate was far too high in comparison with intra-state freight rates on the movement of iron ore in other sections of the country, and we immediately petitioned the rail lines to publish what we considered a reasonable rate of $3.75 plus 6% per net ton. The carriers have agreed to protect the rate proposed and this action will result in freight savings amounting to $5.05 per net ton and on the movement that actually took place during May, the savings in freight charges amounted to $1,304.

1196758

PURCHASING & STORES SECTION
TRAFFIC UNIT
May 1952

GENERAL (CONT.)

Transcontinental Truck Lines were granted permission to increase freight rates 6%, effective May 20, 1952.

Inter-Coastal Steamship Lines were granted permission to increase freight rates approximately 15% on all commodities, effective May 30, 1952.

As a result of rate reductions obtained from the carriers, there was a total savings in freight charges for the month of May amounting to $6,394.76. This makes a total savings from September 1, 1946 to date of $1,714,066.32.

PERSONNEL

As of 4-30-52			As of 5-31-52			Net Change		
Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total
2	10	12	2	10	12	0	0	0

SAFETY AND SECURITY

Safety and Security Meetings Scheduled	1
Meetings Held	1
Minor Injuries	0

STATISTICS

Savings Report

1. Rate reductions obtained from the Carriers:

Commodity	Origin	Savings For May 1952	Savings 9-1-46 thru April 1952	Total Savings 9-1-46 to Date
Nitric Acid	Hedges, Wash.	$3,105.97		
Iron Ore	Rock Island, Wn.	1,390.71		
Iron Ore	Seattle, Wash.	1,304.51		
Crude Salt, Undried	Newark, Calif.	124.91		
Phosphoric Acid	Newark, Calif.	401.31		
Rail	Various	12.39		
Carloading	Various	54.96		
		$6,394.76	$1,707.671.56	$1,714,066.32

1196759

PURCHASING & STORES SECTION
TRAFFIC UNIT
May 1952

STATISTICS (CONT.)

Savings Report (Cont.)

	Savings For May 1952	Savings 9-1-46 thru April 1952	Total Savings 9-1-46 to Date
2. Freight Bill Audit	$2,386.16	$ 88,092.04	$ 90,478.20
3. Loss & Damage & Overcharge Claims	1,236.64	112,809.77	114,046.41
4. Ticket Refund Claims	731.49	24,549.50	25,280.99
5. Household Goods Claims	111.20	16,359.12	16,470.32
	$10,860.25	$1,949,481.99	$1,960,342.24

Work Volume Report

Reservations Made	Rail	116
	Air	145
	Hotel	197
Expense Accounts Checked		167
Household Goods & Automobiles	Movements Arranged Inbound	2
	Movements Arranged Outbound	4
	Insurance Riders Issued	1
	Claims Filed	2
	Claims collected - number	3
	Claims collected - amount	$111.20
Ticket Refund Claims	Filed	14
	Collected - number	23
	Collected - amount	$731.49
Freight Claims	Filed	9
	Collected - number	9
	Collected - amount	$1,236.64
	Over & Shorts Processed	14
	Damage Reports Processed	12
Freight Bill Audit Savings		$2,386.16
Freight Shipments Traced		132

1196760

PURCHASING & STORES SECTION
TRAFFIC UNIT
May 1952

STATISTICS (CONT.)

Work Volume Report (Cont.)

Quotations	Freight Rates	146
	Routes	203
Bills Approved	Air Freight	4
	Air Express	34
	Boat	1
	Carloading	101
	Express	170
	Rail	780
	Truck	508
Carload Shipments	Inbound	786
	Outbound	31

Report of Carloads Received

	CMSTP&P	NP	UP	TOTAL
General Electric Company				
Anthrafilt			1	1
Aluminum Ingots		1		1
Aluminum Sulphate		1	1	2
Asphalt, Liquid		1		1
Castings	2			2
Caustic Soda	8	9	9	26
Chlorine, Liquid	1	2	2	5
Coal	103		564	667
Ferric Sulphate		2	1	3
Graphite	1			1
Insulators		1	1	2
Iron Ore		11		11
Iron Sand		1		1
Lime	3	4	2	9
Machinery	1			1
Machinery Parts			2	2
Methyl Isobutyl Ketone	1			1
Nitric Acid		5	25	30
Paper, Building		1		1
Phosphoric Acid		2		2
Power Pumps	2			2
Salt		2	1	3
Silicate of Soda	1			1
Steel	1		1	2
Steel Partitions			1	1
Valves	4			4
Merchandise		1	3	4
Total	128	44	614	786

1196761

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TRANSPORTATION SECTION
MONTHLY REPORT
MAY 1952

GENERAL

Transportation Section personnel forces decreased from 528 to 523 employees during the month by 7 new hires, 6 transfers in, 12 transfers out, 4 terminations and 2 deactivations - personal illness.

RAILROAD ACTIVITIES

Commercial cars handled during May decreased 17% over April. The decrease in car movements was primarily due to a reduction in receipts of coal and construction material.

Process service was on a normal basis with all shipments made directly from the 100 Areas to the 200 Areas. In addition there were several car movements of equipment from the 200 North Areas to the 100 Areas.

Car movements including process service totaled 2,272 in May compared to 2,639 in April; 3,282 in March; 2,803 in February and 2,909 in January.

The following recapitulation indicates the number of commercial cars handled:

Carload Movements -	Loads In	Empties In	Loads Out	Empties Out
General Electric Company	799	38	42	789
Atkinson-Jones Constr. Co.	32	-	-	34
Buchanan Company	3	-	-	3
Bumstead & Woolford Co.	4	-	-	4
Chicago Bridge & Iron Co.	1	-	-	1
Emory & Bohm Electric Co.	2	-	-	2
Erwen Construction Co.	2	-	-	2
Head Mechanical Contractors	1	-	-	-
L. H. Hoffman Co.	11	-	-	10
R. C. Larson Co.	1	-	-	1
Northwest Painting & Roofing Co.	1	-	-	1
Pittsburgh-Des Moines Steel Co.	11	-	-	12
The Royal Company	1	-	-	1
Sound Construction Co.	2	-	-	4
U. S. Army	13	14	13	13
	884	52	55	877

Progress on the major overhaul of diesel electric locomotive No. 39-3725 was limited awaiting repair parts.

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The supporting structures and monorail were reinforced in A.E.C. car 1043. Further work of this nature is awaiting travel experience of the unit.

Railroad track maintenance and rehabilitation work continued on a routine basis. Lining, surfacing and dressing of track required 4,496 man-hours. Distribution and handling of track materials required 348 man-hours. Installation of ties, rail and other track material required 740 man-hours.

AUTOMOTIVE ACTIVITIES

The Plant Bus System transported .86% fewer passengers in May than in April. The following statistics indicate the magnitude of service rendered:

Passenger volume	157,530
Revenue - bus fares	$ 7,876.50
Earnings - transit advertising (April)	48.16
Bus trips	7,660
Bus miles (passenger carrying)	200,354
Passenger miles	4,802,840

The following is a comparative breakdown of average daily round trips to the lant 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	38
Passenger buses - 200-East	5
Passenger buses - 300 Area	6
Passenger buses - Riverland	2
Passenger buses - Pistol Range	2
Passenger buses - North Richland	3
Passenger buses - White Bluffs	3
700-300 Area Shuttle Service	21
Inter-Area Passenger Service	3
Inter-Area Express Service	1

Effective May 12, 1952 the Richland-North Richland shuttle bus service for General Electric personnel was expanded in the trailer camp area to a basis comparable to Richland. This was accomplished without addition of equipment or personnel.

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Transportation Section

The Richland Bus System transported 9% fewer passengers in May than in April. The following statistics indicate the volume of service rendered:

Total passengers including transfers	35,698
Revenue - bus fares	$ 2,715.65
Earnings - transit advertising (April)	7.80
Bus trips	3,652
Bus miles (passenger carrying)	20,700
Passenger miles	109,560

Special bus transportation was furnished to the Atomic Energy Commission on May 17 and 27 for touring the Plant Areas.

Off Plant chauffeured automobile trips (Company business and/or official visitors) totaled 166.

The following tabulation indicates the volume of Drivers Test Service rendered:

Applicants:	Male	55	Number tests given	65
	Female	10	Number rejected	0

Permits issued:	Limited to driving with glasses	24
	Unlimited	41

Permits reissued:	Routine	16
	New AEC	300
	New AEC to date	5900

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	37,274	16,459	4,556	2,687	208
Received during month	115,800	25,350	43,980	0	0
Disbursed during month	110,273	27,533	30,297	765	103
Stock at end of month	42,801	14,276	18,239	1,922	105

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Transportation Section

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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	21
Class A Inspections and Repairs	96
Class B Inspections and Lubrications	1200
Other routine maintenance repairs and service calls	2250
Tire repairs	519
Wash jobs	382

The following tabulation indicates the Plantwide usage of automotive equipment:

Code	Type	No. of Units	Total Mileage
1A	Sedans	385	666,397
1B	Buses	158	266,887
1C	Pickup Trucks	463	325,558
1D	Panel,Carryall,Sta.Wagon	129	160,612
1E	Armored Cars	12	210
1G	Jeeps	2	1,082
68 Series	Trucks	273	96,201
		1,422	1,516,947

The draining and storing of antifreeze for reuse, started last month, is 90% complete with 4500 gallons of this mixture salvaged and in storage.

A diesel engine was received and installed in the Aquatic Biology Unit boat at Hanford

The General Motors coach 1B 5118 which was extensively damaged January 15, 1952 has been repaired and placed back in service.

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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	0	0	2,803
Received during month	0	9,477	0	0
Dispensed during month	0	3,100	0	1,205
Stock at end of month	0	6,377	0	1,598

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	3/4" Crushed Rock Cu. Yd.	5/8" Chips Cu.Yd.	1/4" Chips Cu.Yd.
Stock at start of month	1,356	0	11,188	5,552	6,906
Made during month	0	243	540	1,204	720
Used during month	782	219	0	31	161
Stock at end of month	574	24	11,728	6,725	7,465

Maintenance of primary roads required 577 man-hours. Manufacturing and stockpiling of crushed rock and pre-mix materials required 555 man-hours.

Handling of materials and equipment for the Stores Unit at White Bluffs, Hanford, 700, 1100 and 3000 Areas included 62 carloads and 211 truckloads and required 6,484 man-hours.

Handling of Area deliveries required 1,433 man-hours; office furniture and equipment required 1,244 man-hours.

Shift hours for the two labor crews assigned to the 1131 Area were changed to start at 8:00 a.m. and end at 4:45 p.m. to permit a better working relationship with Stores Unit personnel. These groups had previously worked Area hours when work was more closely related to those activities.

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HW-24605-
Copies #1-#13-Plant Monthly Report
#14 - F. E. Baker
#15 - F. J. Mollerus
#16 - A.E.C.
Attention: J.I. Thomas
#17 - 700 File
#18 - 300 File
#19 - H. A. Remaly
20 - H. A. Carlberg

ELECTRICAL DISTRIBUTION AND TELEPHONE SECTION

MAY 1952

GENERAL

The Section total scheduled work backlog, as of May 31, 1952 was 3,931 man days distributed as follows:

	Days Per Craftsman	Total Man Days	Net Change Man Days
Line Maintenance	41.6	1,375	88 Decrease
Substation Maintenance	39.0	463	16 Decrease
Telephone Unit	52.3	2,093	2 Increase

April line maintenance backlog was adjusted to 1,463 man days and Section backlog to 4,033 man days.

The Section total work force was increased from 182 to 184.

Electric power peak demands for May were:

	Date	May KW Demand	Comparative April KW Demand
Process Load 5-2-52	(3 pm-3:30 pm)	78,150	79,124
Richland Load 5-5-52	(8:30 am-9 am)	20,150	24,000

Testing of "C" Area 2600 KW motors was regulated to avoid establishing new process area peak demand in excess of the 79,199 KW billing demand established in January.

A revision of the process area power forecast was completed for the next five (5) years, and the A.E.C. was supplied the required data. No change was made in the original five (5) year forecast for Richland Village.

The following items were covered with representatives of the A.E.C. and the Bonneville Power Administration in Meetings at Portland, Oregon on May 6-9:

a) A new simplified agreement was drafted to permit improved 230-KV system operating procedures.

b) A recommendation was made to the A.E.C. for discontinuing the use of the special leased telephone line between B.P.A. Ross Substation and Hanford Works Electrical Dispatcher. Daily tests conducted between these points demonstrated that use of the available normal leased line facilities will provide adequate service.

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c) A thorough discussion was conducted on the interrupting capacity of the 230-KV loop oil circuit breakers. Additional data will be secured on this subject.

A complete revision and consolidation of Section "Position Descriptions" reduced the number in use from twenty (20) to a total of eleven (11).

The A.E.C. approved expenditure of $37,716 for procurement and installation of radio equipment for Richland civil defense emergency communications. Local amateur radio operators participated, in a limited manner, for the first time in civil defense communications during a practice State-Wide "Red" Alert May 19. Richland electrical distribution system alterations were completed for providing a dual power supply for two additional schools designated as civil defense Field Aid Stations. Four of the five Field Aid Stations are now supplied in this manner.

ELECTRICAL DISTRIBUTION UNIT

Maintenance and Operation

The new rear bus at 151-B Substation, installed to supply Area 100-C load, was connected to the operating system.

A total power outage of one hour and nine minutes occurred in the 300 Area on May 11 (Sunday). This was caused by a patrolman's error in operating the area blackout switch, which trips the area main incoming circuit breaker.

A short power outage on the Hanford Works and Richland 115-KV system was caused by relay operations on May 15 resulting from a transformer breakdown at Grandview on the BPA system.

System Expansion and Planning

Development of the 230-KV system, and 13.8 KV bus for Program X substations were discussed in detail with the Engineering Section. A tentative operating agreement was reached on the same general basis as agreements for existing production facilities.

Project C-466 (230-KV Disconnect Servicing Devices) was closed out without having performed work, eliminating the planned expenditure of $18,500. The recently developed power procedures include a revised extended Critical Power Condition Grade "W" which permits disconnect maintenance without these special devices.

TELEPHONE UNIT

Maintenance and Operation

Four-party ringing frequency was connected to the 4000 and 5000 number groups in the Richland Exchange. One hundred and twenty (120) residence telephones are now provided four-party service.

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A re-survey was started of the "fill" on Richland Exchange party lines for the purpose of making lines available where possible by re-grouping vacant sides. An attempt will be made to provide information on the changed numbers concurrently with issuing the next new directory.

Some galley proofs have been received of the final copy of a new directory.

A summary of telephone subscriber service is as follows:

	Subscriber Stations in Service	Lines Available for Service	Sides Available for Service	Exchange Lines in Service
Richland	4,981 Residence 1,016 Official 406 Misc.	80	289	3,875
North Richland	512	151	33	449
Process Areas	1,354	475	—	1,277
TOTAL	8,269	706	322	5,601

System Expansion and Planning

Project B-1889 (Richland Official Telephone Exchange) - Basic policies and principles applying to the proposed separate Richland Exchange for official telephone service were agreed to with the A.E.C. Preliminary data has been assembled for preparation of the project proposal.

Planning was started for installation of a manual P.B.X. switchboard in the 300 Area new Library and Files Building.

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POWER STATISTICS

ELECTRICAL DISTRIBUTION AND TELEPHONE SECTION

FOR MONTH ENDING MAY 31, 1952

ITEM	ENERGY - MW HRS. April	ENERGY - MW HRS. May	MAX DEMAND - KW April	MAX DEMAND - KW May	LOAD FACTOR - % April	LOAD FACTOR - % May
230-KV SYSTEM						
A-2 Out (100-B)	8,260	7,995	15,500	17,600	74.1	61.1
A-4 Out (100-D)	14,470	15,770	23,000	23,000	87.3	92.2
A-5 Out (100-H)	8,784	7,992	13.650	13.800	89.4	77.8
A-6 Out (100-F)	7,415	8,190	12,300	11,900	83.7	92.5
A-8 Out (200 Area)	4,896	5,040	9,000	9,000	75.6	75.3
TOTAL OUT	43,825	44,987	73,450**	75,300**	82.9	80.3
MIDWAY IN	44,560	45,772	70,400*	70,000*	87.9	87.9
Transm. Loss	735	785				
Per cent Loss	1.6	1.7				
115-KV SYSTEM						
B1-S4 Out (N.Rich.)	2,078	1,814	4,090	3,456	70.6	70.5
Richland	10,280	8,446	24,000*	20,160*	59.5	55.3
BB3-S4 Out (300 Area)	920	864	2,080	2,000	61.4	58.1
TOTAL OUT	13,278	11,124	30,170**	25,616**	61.1	58.3
Benton In	1,080	2,840	33,600*	34,800*	4.5	10.9
So. Richland In	12,320	8,240	29.200*	24,000*	58.6	46.1
TOTAL IN	13,400	11,080	62,800**	58,800**	29.6	25.3
Transm. Loss	122	+44				
cent Loss	.9	+.4				
66-KV SYSTEM						
B9-S11 Out (100-C)	618	548	1,250	1,300	68.7	56.7
B9-S10 Out (W. Bluffs)	417	330	1,553	1,103	37.3	40.2
Hanford Out	311	310	600**	600**	72.0	69.4
TOTAL OUT	1,346	1,188	3,403**	3,003**	54.9	53.1
HANFORD IN	1,300	1,135	2,900*	2,900*	62.3	52.6
Transm. Loss	+46	+53				
Per cent Loss	+3.5	+4.5				
PROJECT TOTAL						
230-KV Out	43,825	44,987	73,450**	75,300**	82.9	80.3
115-KV Out	13,278	11,124	30,170**	25,616**	61.1	58.3
66-KV Out	1,346	1,188	3,403**	3,003**	54.9	53.1
TOTAL OUT	58,449	57,299	107,023**	103,919**	75.9	74.3
230-KV In	44,560	45,772	70,400*	70,000*	87.9	87.9
115-KV In	13,400	11,080	62,800**	58,800**	29.6	25.3
66-KV In	1,300	1,135	2,900**	2,900**	62.3	52.6
TOTAL IN	59,260	57,987				
Transm. Loss	811	686				
Per cent Loss	1.4	1.2				

*Denotes Coincidental Demand
**Denotes Non-Coincidental Demand

Average Power Factor - 230-KV System 93.0
Average Power Factor - 115-KV System 92.3
Average Power Factor - 66-KV System 89.8

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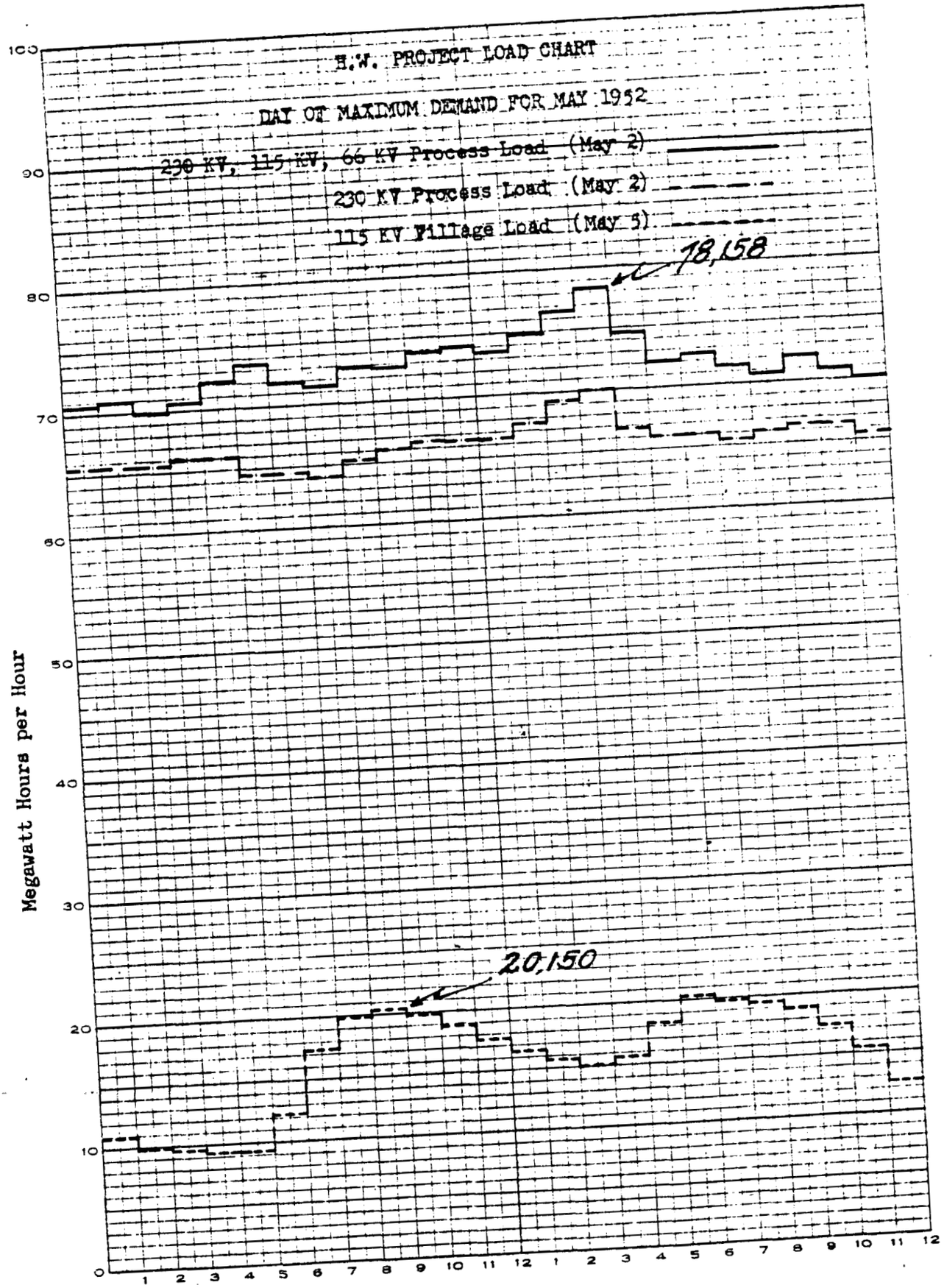
H.W. PROJECT LOAD CHART
DAY OF MAXIMUM DEMAND FOR MAY 1952
230 KV, 115 KV, 66 KV Process Load (May 2)
230 KV Process Load (May 2)
115 KV Village Load (May 5)
18,158
20,150
Megawatt Hours per Hour
100
90
80
70
60
50
40
30
20
10
0
1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12

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UTILITIES AND GENERAL SERVICES DEPARTMENT
STATISTICS UNIT

MONTHLY REPORT - MAY, 1952

GENERAL - C. A. Bennett

Organization and personnel of the Statistics Unit are summarized as follows:

	As of 5-31-52			As of 4-30-52			Net Change		
	Ex	Non-Ex	Total	Ex	Non-Ex	Total	Ex	Non-Ex	Total
100 Area Services	1	2	3	1	2	3	0	0	0
200 Area Services	2	1	3	2	1	3	0	0	0
300 Area Services	1	2	3	1	2	3	0	0	0
General Services	1	0	1	1	0	1	0	0	0
Methods	2	0	2	2	0	2	0	0	0
Staff	1	1	2	1	1	2	0	0	0
TOTAL	8	6	14	8	6	14	0	0	0

L. G. Waters and C. A. Bennett attended the National Convention of the American Society for Quality Control in Syracuse, New York on May 22, 23, and 24, 1952. The latter presented an invited paper at one of the technical sessions.

100 AREA SERVICES - R. F. Cell

Further assistance was given the Pile Technology Unit in support of the slug rupture investigation. A statistical study was made of the relationship between failure rate, power level, and predicted weight loss by corrosion, the data being separated by orifice zones. The significance of the difference in the average location in the tubes of cap and split failures was evaluated in connection with the study of corrosion and weight loss as a factor in slug failures. At the present time a detailed study is under way to determine the best curve which represents the relationship between tube exposure in MWD/ton and failure rate.

A statistical analysis of 232 sets of data obtained to determine the diffusion length in C pile was made for Pile Physics. The problem was set up and some preliminary calculations performed by the Statistics Unit, after which the bulk of the calculations were performed by the Computing Unit.

Additional data concerning Van Stone corrosion has been received from the Reactor Section for statistical analysis. On the basis of this and other samples from various piles, statistically derived predictions are being prepared of the distribution of minimum flange thickness for individual tubes in the piles. Comparisons are also being made between current data and data obtained in 1948 and 1951 where the latter is available.

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Assistance was given Manufacturing Engineering in interpreting some preliminary results obtained during the planning of an extensive experiment to determine the thermal efficiency of 100 Area combustion boilers firing with Kremmerer coal at various steaming rates. In particular, a study was made of water and steam flow meter readings comparing the observed flow with the known flow, measured by independent means, at various pressures. Similar analyses will be carried out on future experiments of the same type.

A statistical analysis was completed on data concerning pile flow meters which was obtained by the Pile Engineering group. The effect of various measurement errors on the final results was evaluated on the basis of least square computations and other considerations.

Final analysis was made of a series of experiments conducted by the Water Development group concerning film formation on aluminum plates at different water temperatures.

Further analyses and computations were performed on the results of film buildup studies from the 100-D flow laboratory. Trends and differences in trends in the data from tubes with varying water composition are being studied.

Various computations were performed for the Pile Fuels and Pile Materials sub-units to determine the effectiveness of proposed in-pile experiments comparing the dimensional stability and rupture rate of new types of metal with present metal.

Computations of averages and maximum deviations from temperature charts of irradiated graphite samples were continued during the month for the Pile Graphite Studies group.

200 AREA SERVICES - W. C. Healy

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Precision studies at the 222-S laboratory were completed and on the basis of these precisions, laboratory rerun limits were established for all routine analyses except waste level Pu radio-assays. These will be completed upon accumulation of more data at these low counting rates.

Comparisons of Redox plutonium product measurements before concentration (E-3), after concentration (PR), and at receipt in the 231 Building (P-1) gave no indica-

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tion of bias either during May or overall, and no indication of differences in precision. Comparisons of 103 shipper-receiver differences on UO_3 weights showed close agreement between Hanford Works and Oak Ridge weighings.

The special study of Pu measurements on the Redox metal solution (H-7) was completed and showed that sampling was the major source of error. A sampling test was designed involving different circulation times through the sampling line, and indicated somewhat better agreement between samples circulated for the longer times. This led to the adoption of a longer circulation period. Currently duplicate samples are still taken in order to evaluate the long run effect of this change.

It was recommended that duplicate sampling of the final Redox uranium product (E-12) be discontinued, on the basis of the steady and satisfactory precision of uranium measurements ($\pm$ 1.7 percent) at this point.

Miscellaneous services rendered included the development of a statistical test for excessive variability in a counter which records not a total count but rather the time required to register a pre-set number of counts; construction of a nomogram to assist in certain crystallographic computations for the metallurgy laboratory; and the adaptation of an exact test for comparing two Poisson-distributed observations to the problem of comparing low counts obtained in time intervals of two different lengths.

300 AREA SERVICES - L. G. Waters

Reactivity results on a number of stringers of uranium billet eggs tested before and after pickling were reported (Document No. HW-24380, "Reactivity of Billet Eggs Before and After Pickling", L. G. Waters to E. W. O'Rorke).

It was found last month that the error due to positioning of the stringer is one of the major causes of variation involved in the 305 Test Pile reactivity measurements. In conjunction with the Operations Unit, studies are being continued to try to reduce or eliminate this source of variation.

Cost studies were begun for the Operations Unit of the Metal Preparation Section to assist in predicting monthly unit costs.

At the request of the Process Unit of the Metal Preparation Section, a test was devised to determine from resamples of size 60 and 100 slugs if the original 100 per cent inspection of a day's production had eliminated at least 90 percent of the defective pieces. In addition, a new method has been devised for setting up control limits for the number of rejects in a truck, a lot, or a month's production of slugs.

Assistance was given Plant Engineering Services in the design of an experiment to determine what effect flaring the cap end of aluminum cans has on the aluminum-silicon reject rate. Assistance also was given in determining what effect increasing the machined slug tolerances has on the reactivity of the slugs in the 105 piles.

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A statistical report was issued on Metal Preparation Section results from Machining, Pickling, Canning and Autoclave, Test Pile, and Melt Plant (Document No. HW-24381, "Statistical Quality Report - 300 Area, April, 1952, L. G. Waters to W. W. Windsheimer). In addition, a metal quality report representing material produced by Hanford Works and Mallinckrodt Chemical Works was issued which graphically presented the average analytical results up to April, 1952 (Document No. HW-24453, "Statistical Quality Report - Uranium Metal", from L. G. Waters to W. T. Kattner).

Numerous equations concerning coefficients of thermal expansion of experimentally rolled uranium were computed for Metallurgy - Applied Research under program RDA-572. These equations were used to determine the feasibility of rolling uranium at sufficiently high temperatures to obtain random grain orientation. Thirty-eight other equations were computed on regular production uranium to study variation in rolling by months.

A comparison and listing of the reactivity and production results on regular rolled uranium by months (November, December, January, and February) was made for Pile Fuels for use at the non-destructive metal quality meeting held at the Argonne National Laboratory on May 14. Also for the same sub-unit (1) assistance was given in designing an experiment to investigate the cause of warp in 8-inch uranium slugs, (2) aid was given in selecting uranium rods to be used in an experiment at Hanford Works to determine the effect of pre-heating billets in a salt bath at the Bethlehem Steel Corporation's Lackawanna Plant, and (3) a comparison was made of the reactivity of 8-inch and 4-inch canned slugs. The amount of uranium in the 305 Test Pile was estimated for Pile Engineering for accountability purposes.

At the request of the Pile Technology Unit, the variance both within and between months of the reactivity of 4-inch and 8-inch M and Z type slugs was computed, and estimates of errors in the 305 Test Pile determinations were furnished.

GENERAL SERVICES

Some preliminary studies have been made of the distribution of operating costs of individual vehicles maintained by the Transportation Section. The final objective is the selection by machine rather than manual methods of those cases which merit investigation.

Work on the hematological data on sheep obtained by the Toxicology Unit of the Radiological Sciences Department was continued.

METHODS - F. H. Tingey

A problem of parameter estimation for a given functional relationship was solved in connection with the determination of the diffusion length of C pile. The necessary computational forms for obtaining the best estimate and the corresponding confidence limits were determined, and assistance given the Computing Unit in programming the computation.

Work has proceeded on the determination of revised control limits on each of the 61 classifications listed in the monthly "Statistical Quality Report - 300 Area". It

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is anticipated that the May report will contain the control limits on 4-inch canning rejects, and that the July report will contain all the necessary limits. The availability of many of these proposed limits is the result of an extensive study made by the Statistics Unit when it was found that existing techniques failed to reflect the true situation.

In addition to the limits cited above, limits were determined for specific canning defects at various inspection stations. This was done for both 4-inch and 8-inch slugs. The statistical distribution functions were determined and were submitted to the Computing Unit for tabulation. Provisions of this method permit an objective periodic examination of these limits as well as their revision in the event of long term shifts in the overall process average.

The abstracting of current statistical literature for subsequent dissemination of techniques to the senior statisticians was continued, and assistance was rendered the senior statisticians on various other statistical problems that did not lend themselves to immediate analysis.

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UTILITIES AND GENERAL SERVICES DEPARTMENT
COMPUTING UNIT

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MONTHLY REPORT - MAY, 1952

Following is the month end summary of personnel:

	As of 4-30-52			As of 5-31-52			Net Change		
	Ex	Non-Ex	Total	Ex	Non-Ex	Total	Ex	Non-Ex	Total
Staff	1	2	3	1	2	3	0	0	0
Planning	5	7	12	6	6	12	+1	-1	0
Operations	5	35	40	5	37	42	0	+2	+2
TOTAL	11	44	55	12	45	57	+1	+1	+2

There were no terminations during the month. An exempt accounting procedures man was hired to fill the position of IBM Accounting Coordinator, and one machine operator was hired.

A group of six machine operators has been organized to assist in the completion of the IBM payroll preparation procedure and control panel wiring. They are intended also to form the nucleus of the operating force required to begin the actual check writing operation. A partial test of the machine procedure was made on 2500 time cards. Gross pay, tax and pension calculations were made and payroll register and detail hours breakdown lists were printed. This test showed the calculations to be correct and indicated the basic procedure to be sound. Several reference files were key punched and verified, including the master personnel file,master payroll file, union dues, insurance, stock bonus, and savings bonds files. Time cards for machine use were prepared for all outer area personnel not using time clocks as the first step in introducing the new system.

A preliminary study was made of the applicability of machine methods to the Stores inventory control system and a report covering the broad aspects of the situation was submitted to the Purchasing and Stores Section. Conclusions reached were to the effect that machine methods could make definite contributions to both the inventory control problem and the cost accounting requirements. Specific proposals as to the extent of machine application or details of the method will await further study and discussion of the overall problem.

The Man Power Survey file is maintained in alphabetical sequence on punched cards. Special listings were made from this file for the Employment and Employee Services Section which required upsetting the sequence of the file. Normally such a file would be restored by alphabetic sorting. This is quite a lengthy process, however. To make alphabetic sorting of proper names unnecessary, a special four digit numeric code has been adopted. With the numbers from 0000 to 9999 ten thousand filing indexes are defined. These have been worked out on the basis of the frequency of occurrence so that a name file so coded will be accurate with very few exceptions, and these will be out of

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place one, or possibly two, lines. All future name files will be so coded to eliminate alphabetic sorting.

Several discussions were held with Civil Defense personnel to determine the extent IBM machines should be used in the preparation and maintenance of Civil Defense files. It has been agreed that punched card records will be set up to supply statistical data and special listings of individuals, but the directory will be made from Addressograph plate files. The size of the files does not warrant the use of punched card machines.

A study is in progress to reduce the volume of data presented in the IBM monthly reports of operating costs of motorized equipment. Rather than a listing of each vehicle with its cost of operation per mile, as is presently done, only those vehicles whose costs are abnormally high will be listed. The Transportation Section will then be able to concentrate its attention on those vehicles, and will not be burdened with the task of scanning a complete listing to detect significantly high costs. A statistical monetary unit is being established, below which costs are considered as normal and in control. Any costs above this calculated unit would be considered to be out of control and in need of investigation.

A procedure is being developed in connection with the establishment on punched cards of an active personnel file for the Employee and Public Relations Department. Among other demographic information it will include a record of past occupational experience of each employee at Hanford Works and will serve as an aid to the Employment Unit in locating personnel with specific qualifications for promotion or reassignment. Preliminary discussions have also been held with Technical Personnel Services people relative to setting up a similar file on technical and business graduates employed at Hanford.

Development is continuing on techniques for scheduling the IBM machine operations. Performance figures are derived from the comparison between actual time taken on each process step to the minimum time possible to indicate the efficiency of operation.

In order to establish closer control over reject criteria in the slug inspection, the Metal Preparation Section has requested the recording on punched cards of all inspection data as it is originally recorded on the inspection line. This data includes the names of nearly 100 operators, which will be coded, and the number of rejects by the various operators at each stage of inspection. A technique will be developed whereby the influence of the individual operator on the reject rate may be determined. The Statistics Unit has also expressed the desirability of having this data on cards to assist them in establishing inspection limits. The job will be carried on a non-routine basis for the next few months. Approximately 1000 cards will be punched (all 80 columns) per month.

The establishment of the slug inspection limits entails the use of a rather complicated mathematical formula known as the Beta Integral. The Statistics Unit has requested an extensive tabulation of this integral. Due to the complexity of this formula it was not evaluated directly. Instead, a simpler expression has been derived that approximates the formula to a satisfactory degree

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and the tabulation was made from the approximating expression. A very wide range of numbers were encountered so the solution was carried out on the floating decimal control panel which automatically positions the decimal at each step of the calculation.

A number of calculations were made on data pertaining to pile operation. A mathematical expression was determined that represents data taken at a start-up of H pile, using the method of least squares. This method very effectively evaluates each data point in determining the representative mathematical expression. The resulting expression will give a good evaluation of the pile start-up period. Further calculations have been made on the distribution of temperature in the slug and jacket for various operating conditions. Work is being resumed on "Boiling Disease Calculations." This pertains to the temperature and pressure conditions in the pile cooling water. The original programming for this problem has been modified to suit the new form of data being received. Seven temperature maps representing various summations and temperature differences were printed. Graphite temperature calculations were made for 105-D.

Work on the slug rupture problem continues. A monthly average power has been requested for all tubes charged during the months of January and February for B, D, and F piles. For H and DR the data is taken from the automatic IBM temperature punch and from the discharge decks for the other piles.

FOR THE FINANCIAL DEPARTMENT	NEW CARD VOLUME	MACHINE UTILIZATION REPORT	NUMBER OF REPORTS
Exempt Salary Distribution	6,700	117	2
Technical Cost Distribution Report	8,400	116	7
Manufacturing Payroll Distribution	48,392	830	10
General Payroll Distribution	20,523	431	9
Manufacturing Work Order Cost	29,150	579	45
Community Work Order Cost	16,049	380	12
General Work Order Cost	32,350	555	34
General Motorized Equipment Cost & Statistics	11,400	484	14
Electrical Billing	150	4	2
Check Writing Deduction & Payroll Statistics	100,000	1132	60
	273,114	4628	195
FOR THE RADIOLOGICAL SCIENCES DEPARTMENT			
Aquatic Biology (Regular)	500	34	1
Monthly Meteorological Studies	3,000	55	0
Weather Station Wind Study	50,000	149	3
Zoology (Thyroid Counts)	500	30	1
Zoology (Sheep Radioanalyses	500	19	1
Zoology Sheep Blood Record	100	150	2
Isotopic Buildup and Decay	500	260	1
	55,100	697	9

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	NEW CARD VOLUME	MACHINE UTILIZATION REPORT	NUMBER OF REPORTS
FOR THE MEDICAL DEPARTMENT			
Public Health Activities	800	24	5
	800	24	5
FOR THE ATOMIC ENERGY COMMISSION			
A.E.C. Quarterly Motorized Equipment	2,200	40	0
	2,200	40	0
FOR THE EMPLOYEE & PUBLIC RELATIONS DEPARTMENT			
Manpower Survey - Quarterly	0	5	0
	0	5	0
FOR THE SALARY ADMINISTRATION STAFF			
Exempt Salary Statistics	1,500	54	6
Exempt Salary Curve Fitting	2,500	21	2
	4,000	75	8
FOR THE MANUFACTURING DEPARTMENT			
Metal Quality Preparation	1,200	49	1
Metal Preparation Data Reduction Machining	200	7	2
Metal Preparation Data Reduction Canning	100	1	1
Metal Preparation Data Reduction Inspection	100	20	1
Evaluation of Beta Integral	200	422	1
	1,800	499	6
FOR THE ENGINEERING DEPARTMENT			
Temperature Maps	2,000	110	2
D-Pile Graphite Temperature Calculations	100	111	1
S.R. Exposure Calculations	500	109	1
Tube Exposure from Graph	500	35	1
Boiling Disease	1,000	193	2
Least Square Cosine Curve Fitting	200	2	3
Slug Skin & Axial Temperature	1,000	602	1

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	NEW CARD VOLUME	MACHINE UTILIZATION REPORT	NUMBER OF REPORTS
FOR THE ENGINEERING DEPARTMENT (Cont'd)			
Calculation of Coefficients in Study of Stress in Slugs	1,000	583	1
Calculation of Flux in Enriched Patch	0	3	0
Separations Sampling	0	24	3
Diffusion Length Tests	4,000	439	3
Heat Transfer Project	500	212	1
Exponential Integral Tables	2,500	76	1
Slug Temperature Distribution	500	2	0
Slug Rupture Calculations	1,600	257	4
	15,400	2,758	24
GRAND TOTALS	352,414	8,726	247

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EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

SUMMARY -- MAY, 1952

The number of applicants interviewed in May was 1,271 as compared with 1,262 in April. Of these applicants, 354 were individuals who applied for employment with General Electric for the first time. In addition, 109 new applicants applied by mail. Open, nonexempt, nontechnical requisitions increased from 203 at the beginning of the month to 214 at month end. Total Plant roll decreased from 8,839 to 8,804 with total separations including 4 laid-off for lack of work. Turnover rate decreased from 2.29% in April to 1.52% in May. During May, 36 new requests for transfer to other type work were received by Employment and 18 transfers were effected. Attendance recognition awards were distributed for 72 employees who qualified for one-year awards during April, and for 63 employees who qualified for one-year awards during March. Attendance recognition awards were distributed for 24 employees who qualified for two-year awards during April and for 58 employees who qualified for two-year awards during March. Final arrangements were made and plans formulated during May for the installation of officers ceremony for GenTrics, the recently organized Women's Club for Hanford Works. The installation ceremony was scheduled for the evening of June 2, 1952. As of month end, there were 300 charter members. A turnover study for the period January through March, 1952, of the 116 employees who left to take another job or to seek other employment was published and issued to Management on May 5, 1952.

Three employees died during the month, and two employees retired. One hundred and forty-eight visits were made to employees confined to Kadlec Hospital and 70 checks were delivered to employees confined either at home or in the hospital. At month end, participation in the Pension Plan was 94%, in the Insurance Plan 98.4%, and in the Employee Savings and Stock Bonus Plan 48.9%. At month end there were 969 registered under Selective Service, and 734 military reservists were on the roll. Since August 1, 1950, 205 employees have terminated to enter military service, of which 18 have returned, leaving 187 still in military leave status. Following meetings on May 5, 7, 8 and 12, of the Steering Committee appointed for the purpose of investigating interest in and promoting the establishment of a Services Fund, a questionnaire was sent to all employees on May 21 to give each employee an opportunity to designate whether they would be interested in the establishment of such a fund. By month end the rate of return had been excellent, however, final results were not yet known.

Training and Program Development objectives scheduled for May, 1952 and other training activities were completed as follows: New Supervisor's 40-Hour training program was conducted during the week of May 19-23. A total of 12 new supervisors were in attendance. Management Orientation was presented on May 5 with 21 new exempt personnel in attendance. Basic Economics program was presented on Wednesday and Thursday, May 14 and 15 with 20 new exempt personnel in attendance. You and Labor Law was presented Wednesday, May 28, with 15 new supervisory personnel in attendance. Principles and Methods of Supervision (PMS) Conference of 25 supervisors of the Pile Technology Unit attended 4-hour conferences on May 12, 19 and

[redacted] K-1

DECLASSIFIED

1196782

Employee and Public Relations
Summary

26. PMS--40-Hour - In answer to a questionnaire to all members of senior management at Hanford Works to ascertain if it might be possible to schedule supervisors working shift to attend PMS conferences as a 40-hour (one full week) presentation, the questionnaire results indicated that at least 50 people would be enrolled in such a presentation. Therefore, it was announced that PMS conferences would be presented the week of June 9-13 to one group and again the week of June 16-20 to another group. Management Development Conferences are planned to begin this fall. A prospectus was completed and submitted to top management for their review and approval. Supervisor's Handbooks are being kept current, a total of 68 pages have been revised and will be mailed very shortly to handbook holders. HOBSO was presented to a group of 29 electrical engineers in Yakima, Washington on May 2. Two members of the local Lions Club were trained during the month of May to present the HOBSO program and qualified by attending a HOBSO Institute conducted by a member of Training. Orientation of new employees was presented daily throughout the report month. Customer Relations "Meeting the Public" program is being presented to a group of Tenant Relations inspectors. Civil Defense program is being designed for presentation in three meetings to be given to the approximately 1,000 Civil Defense Wardens and alternates necessary in the Civil Defense Organization for Richland, Washington. Introductory Program for 1952 Technical Graduates is shaping into a firm schedule. The General Orientation section will be presented June 24 through 27.

A total of 53 releases were distributed during the month. Of these, 29 were sent to the "local list" and four to the "daily list" and the rest received special distribution.

"30 for the Month" was written and distributed for the month of April.

Information and photographs on Hanford Works were given to the executive editor of NUCLEONICS, Christian Science MONITOR writer, and the Pasco representative of West Coast Freightways.

The May Community NEWSLETTER was written and mailed to community leaders.

A total of 11 papers were presented for clearance during the month.

Civil defense movies were shown to 193 members of community clubs and organizations, and to 246 G-E employees.

Tours of the Civil Defense Control Center were completed by 95 people.

The Chief Warden made six public appearances and talks on behalf of Civil Defense during the month.

A total of 5,922 prints were produced during the month. Of the total prints produced, 4,400 were for employee identification and area admittance badges.

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Employee and Public Relations
Summary

Kadlec Hospital Open House, held on May 7, was publicized through the Works NEWS, local newspapers and radio spot announcements.

A total of seven films were booked this month for showing to plant and civic groups.

Nucleonics Employees Good Neighbor Fund promotion activities included employees news letter to all employees from the General Manager, three Works NEWS stories, and a questionnaire with accompanying fact sheet and return envelope.

Final approvals were obtained on page layouts and copy for the Nucleonics Division report entitled "1951 at Hanford Works." Printing was started and will take approximately four weeks.

A new 40-week series of Sheldon Claire employee relations posters were started during May.

The NLRB officially dismissed the petition for representation election filed by the HAMTC in behalf of certain personnel in the North Richland Powerhouse. The Board advised the Company on May 26, that the unfair labor practice charge filed in connection with the discharge of Bus Driver Loren M. Taylor was being dismissed because of insufficient evidence.

Atkinson-Jones received the decision of the National Joint Board in the jurisdictional dispute between Plumbers and Teamsters over the loading and unloading of piping material which precipitated two work stoppages in March. There remains a considerable difference of opinion between the two crafts regarding the movement of material from a warehouse to the job site. A work stoppage involving all Electrician Wiremen on Newberry-Neon Electric Service rolls in 200-E and W occurred on May 18, in protest over the failure of the employer to provide exclusive shuttle bus service to Electricians. A partial return to work was effected the same day. Approximately 200 men (all crafts except Plumbers and Electricians) were off the job at the 200-E Tank Farm on May 14, over delays being experienced by the men in checking out due to congestion in the clock alleys. Discussions with business representatives in Pasco during the day resulted in a return to work the following morning. Master Agreement negotiations were temporarily recessed in an effort to obtain the concurrence of the Plumbers International with the principle of a uniform Agreement on the Project. AJ is preparing to open the Schedules "A" of Operating Engineers, Laborers and Teamsters (firm through 1952) to negotiate wage increases equivalent to the balance of the 10 per cent available, plus the 15 cents per hour in accordance with the area practice. E. B. Skeels, General Manager of the Atkinson-Jones Company, accepted retirement effective May 15, 1952, and was replaced by W. A. Kettlewell, a vice president of the Guy F. Atkinson Company. Mr. Fred Smith started to work on May 26, as labor co-ordinator on AJ's payroll.

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Employee and Public Relations
Summary

Notification was received that the Wage Stabilization Board has approved the 1.03 per cent cost-of-living adjustment effective retroactive to March 15, 1952. Petitions were submitted to the WSB for an increase in the isolation pay for members of the Hanford Guards Union, Hanford Atomic Metal Trades Council and non-bargaining unit.

1196785

EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

MAY, 1952

ORGANIZATION AND PERSONNEL

General

There were no organizational changes during May.

Employment and Employee Services

Effective May 12, 1952, Patricia J. Madaia, a General Clerk C, was transferred to Union Relations.

Effective May 19, 1952, Madelyn R. Miles, General Clerk C, of Investigation and Files was transferred to Employee Services to replace Esther Parker who will be leaving the project June 6, 1952.

Training and Program Development

There were no organizational changes during May.

Public Relations

Effective May 2, 1952, one Steno-Typist C, was deactivated due to personal illness. This employee was replaced by a transferee from Technical on May 13.

Union Relations

Effective May 9, 1952, a General Clerk C, was deactivated due to personal illness.

Effective May 12, 1952, a General Clerk C, transferred from Employment to Union Relations.

Number of Employees on Roll	May, 1952
Beginning of Month	109
End of Month	108
Net Change	-1

1196786

Employee and Public Relations

ACTIVITIES

Employment and Employee Services

Employment	April, 1952	May, 1952
Applicants interviewed	1,262	1,271

354 of the applicants interviewed during May were individuals who applied for employment with the Company for the first time. In addition, 109 applications were received through the mail.

Open Requisitions	April, 1952	May, 1952
Exempt	1	3
Nonexempt	203	214

Of the 203 open, nonexempt, nontechnical requisitions at the beginning of the month, 85 were covered by interim commitments. Of the 214 open, nonexempt, nontechnical requsitions at month end. 23 were covered by interim commitments. During May, 112 new requisitions were received requesting the employment of 158 nonexempt, nontechnical employees.

	April, 1952	May, 1952
Employees added to the rolls	90	102
Employees removed from the rolls	206	137
NET GAIN OR LOSS	-116	- 35

Of the 137 employees removed from the rolls, 4 were removed due to lack of work, 2 of which were in Bargaining Units.

Turnover:

	April, 1952		May, 1952	
	Male	Female	Male	Female
Including employees who were laid off for lack of work	1.51%	5.43%	.92%	3.89%
Excluding employees who were laid off for lack of work	1.20%	3.52%	.87%	3.89%

Over-all Turnover:

	April, 1952	May, 1952
Including employees who were laid off for lack of work	2.29%	1.52%
Excluding employees who were laid off for lack of work	1.66%	1.47%

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Employee and Public Relations

During May, 27 employees left voluntarily to accept other employment, 3 left to enter military service, and 5 left to enter business for self.

Transfer Data

Accumulative total of requests for transfer received since 1-1-52	230
Number of requests for transfer received during May	36
Number interviewed in May, including promotional transfers	69
Transfers effected in May, including promotional transfers	18
Transfers effected since 1-1-52, including promotional transfers	129
Transfers effected in May for employees being laid off	4
Number of stenographers transferred out of steno. pool in May	3
Transfer requests active at month end	147

During May, 27 people whose continuity of service was broken while in an inactive status were so informed by letter.

A total of 38 hospital calls were made during May and checks delivered each Friday to female employees confined to the hospital.

On May 5, 1952, a turnover study for the period January through March, 1952, of the 116 employees who had left to take another job or to seek other employment was published and issued to Management. This study reflected the job classifications of the group, length of service, breakdowns as to specific reasons for leaving, age groups, performance ratings, educational level, and gender of the employees of the group. The study reflected that about 45% of the people who resigned during the 3-month period indicated that their primary reason for leaving was to take another job or to seek other employment.

In the latter part of April an inquiry was forwarded to Ft. Wayne, KAPL, Syracuse, Lockland, Erie, Schenectady, and Philadelphia, requesting data concerning turnover experience at those locations for the calendar years of 1950 and 1951. By the end of May, returns had been received from all except Syracuse and Lockland. A recapitulation of the data reflected that the annual rate for 1950 ranged from a low of 8.10% at KAPL to a high of 24.1% at Erie, with the Hanford rate being 17.10%. For the year 1951, the turnover rate ranged from a low of 9.07% at KAPL to a high of 41.3% at Erie, with the Hanford experience for 1951 being 23.74%.

A "Senior Career Day" program under the sponsorship of the Pasco Kiwanis Club was presented to the women graduating from Pasco High School on May 14. As a part of this program, Zane Wood, Staff Assistant, Employment, served as one member of a three member panel, at which time he discussed the advantages offered by large companies such as General Electric to people interested in employment in the clerical field. Other members of the panel gave talks on homemaking and on the problems of working in industry and at the same time maintaining a home.

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Employee and Public Relations

During the month, meetings were held with key personnel of the Walla Walla, Everett, Seattle, Tacoma, and Spokane offices of the Employment Security Department, at which time the Company's employee benefit plans were reviewed as well as general information concerning employment opportunities, housing, and rates of pay. The overall purpose of this undertaking is to establish better contacts and thus assure referral of applicants who might be best qualified to satisfy project requirements. The security aspect and general requirements as to security clearances were also reviewed. It is further planned to keep these particular offices, as well as a few others in the state, currently informed as to employment opportunities and this will be done through telephone, letter, and personal contacts.

On May 7, the Assistant Employment Supervisor-Women, addressed the graduating seniors who have specialized in commercial courses at Sunnyside, Toppenish, Grandview and Prosser. The theme of her discussion was in the area of vocational guidance and also included comments regarding employment opportunities at the Hanford Works. On May 12, 13 and 14, she made a similar presentation at the Yakima Business College, Yakima Valley Jr. College, and the three high schools located in Yakima or vicinity. On these same dates she recruited stenographers with applicants being interviewed in the offices of the Employment Security Department. The results were none too encouraging.

The Employment Supervisor, together with three members of Management responsible for instrumentation and maintenance, visited the J. M. Perry Institute at Yakima on May 23. This is the only technical institute in the western half of the country which offers specialized courses in instrumentation. Those members of Management who visited the institute were well impressed with the school, its staff, and facilities. Twenty of the students enrolled in the instrument courses were interviewed by the group, and, of course, were informed of the excellent opportunities for employment in their specialized field at this Works.

Ten students and instructors from Washington State College visited the project on May 20. The students are graduating from W.S.C. with a major in Secretarial Science. They were guests of the Atomic Energy Commission in the forenoon and of General Electric in the afternoon. Time did not permit their visiting the various places they had signified an interest in seeing, however, they did visit the Steno Services Pool, the I.B.M. operation, and the office of one of the department managers.

Final arrangement were made and plans formulated during May for the installation of officers ceremony for GenTrics, the recently organized Women's Club for Hanford Works. The installation ceremony was scheduled for the evening of June 2, 1952, with guests including Mr. G. R. Prout, Vice President and General Manager, and Mr. H. E. Callahan, Manager of Employee and Public Relations. The motto selected for the organization is "Place Aux Dames". Charter members totaled 300.

1196789

Employee and Public Relations

Employment Statistics

Number of employees on rolls	4-30-52	5-30-52
Exempt - Male	1,946	1,967
Female	58	58
	2,004	2,025
Nonexempt - Male	5,050	5,023
Female	1,730	1,702
	6,780	6,725
Community Firemen	55	54
TOTAL	8,839	8,804

ADDITIONS TO THE ROLLS

	Exempt	Nonexempt	Community Firemen	Total
New Hires	4	77	---	81
Re-engaged	---	1	---	1
Reactivations	2	17	---	19
Transfers (from other Divisions)	1	---	---	1
Actual additions	7	95	---	102
Payroll exchanges	31[a]	---	---	31
GROSS ADDITIONS	38	95	0	133

TERMINATIONS FROM THE ROLLS

Actual Terminations	11	77	---	88
Removals from rolls (deactivations)	3	42	1	46
Payroll exchanges	---	31[b]	---	31
Transfers (to other Divisions)	3	---	---	3
GROSS TERMINATIONS	17	150	1	168

GENERAL

	4-1952	5-1952
Photographs taken	230	222
Fingerprint impressions (taken in duplicate)	262	267

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Employee and Public Relations

ABSENTEEISM STATISTICS[c]

	4-1952	5-1952
Male	2.16%	*
Female	4.52%	*
Total Plant Average	2.64%	*

PERSONNEL SECURITY QUESTIONNAIRES PROCESSED

	4-1952	5-1952
General Electric cases	168	129
Facility cases	59	45
TOTAL	227	174

[a]Transferred from Weekly Payroll
[b]Transferred to Monthly Payroll
[c]Statistics furnished by Payroll

INVESTIGATION STATISTICS

	4-1952	5-1952
Cases received during the month	199	235
Cases closed	196	239
Cases found satisfactory for employment	153	190
Cases found unsatisfactory for employment	5	7
Cases closed before investigation completed	9	15
Special investigations conducted	3	9

PERFECT ATTENDANCE RECOGNITION AWARDS

Total one-year awards to date	2,901
One-year awards made in May for those qualifying in April	72
Total two-year awards to date	672
Two-year awards made in May for those qualifying in April	24

Employee Services

The following visits were made with employees during the month by a representative of Employee Services:

Employee contacts made at Kadlec Hospital	110
Salary checks delivered to employees at Kadlec Hospital	44
Salary checks delivered to employees at home	15
Disability checks delivered to employees at home	1

* These data not available

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Employee and Public Relations

At month end participation in Benefit Plans was as follows:

Pension Plan	94%
Insurance Plan	98.4%
Employee Savings and Stock Bonus Plan	48.3%

Three employees died during May, namely:

Charles Leslie Westover, W-3867-SJ, Utilities & General Services
Peter Becker, W-2306-VRH, Community Real Estate & Services
Leonard J. Prince, W-4955-UM, Utilities & General Services

Eleven letters were written to deceased employees' families during May, concerning payment of monies due them from the Company, and also to answer their questions.

Since September 1, 1946, 85 life insurance claims have been paid totaling $476,000.00.

Two employees retired during May, namely:

Cora B. Sanders, W-9267-CC, Optional Retirement
Vera C. Rice, W-7575-CC, Optional Retirement

During May, 27 letters were written to retired employees providing them with information of general interest. To date 192 employees have retired at Hanford Works, of which 92 are continuing their residence in the vicinity.

Following meetings on May 5, 7, 8 and 12 of the Steering Committee, appointed by the Vice President and General Manager for the purpose of investigating interest in and promoting the establishment of a Services Fund, which has been identified by the Committee as "Nucleonics Employees Good Neighbor Fund", a questionnaire was sent to all employees through line organization on May 21 for the purpose of giving each employee an opportunity to designate whether they would be interested in the establishment of such a fund. The questionnaire was accompanied by a list of questions and answers which was intended to give individual employees general information about the proposed plan. By month end the rate of return had been very good and it was expected that early in June a sufficient number of replies would have been received to provide the Steering Committee with the information necessary to formulate their conclusions and recommendations.

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	734
Number who returned to active duty to date	97
Number who returned to active duty in May	1

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Employee and Public Relations

Deferments requested to date	108
Deferments granted	100
Deferments pending	1
Deferments denied	4
Deferment requests withdrawn	0

The statistics with respect to employees registered under Selective Service are as follows:

Employees registered	969
Employees registered who are veterans	440
Employees registered who are non-veterans	529
Deferments requested to date (including renewals)	537
Deferments granted	384
Deferments denied and appealed at state levels	7
Deferments denied and appealed at local levels	2
Deferments denied and pending at national level	1
Deferments denied by local board and not appealed	2
Deferments denied by state board and not appealed	11
Deferments denied at national level (by Gen. Hershey's office)	1
Deferments denied at national level (by President)	1
Deferments denied by local and state boards and pending for review	0
Deferments requested, employees later reclassified	57
eferments requested, later withdrawn	0
Deferments pending	35

Military terminations since 8-1-1950 are as follows:

Reservists recalled	97
Selective Service	106
Female employees enlisted	2
TOTAL	205

Employees returned from military service:

Reservists	17
Selective Service	1
TOTAL	18

Number of employees still in military leave status	187

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Employee and Public Relations

TRAINING AND PROGRAM DEVELOPMENT

Training and Program Development objectives scheduled for May 1952 were completed as follows:

MANAGEMENT AIDS:

NEW SUPERVISOR'S 40-HOUR TRAINING PROGRAM was conducted during the week of May 19-23. A total of 12 new supervisors were in attendance and Mr. F. E. Baker, Manager of Utilities and General Services Department, was a guest at the Friday luncheon held in conjunction with this program.

MANAGEMENT ORIENTATION was presented on May 5 with 21 new exempt personnel in attendance. This program is a welcome to new exempt personnel to the "management team" and includes information and discussion of the necessary management tools which will be made available.

BASIC ECONOMICS PROGRAM was presented on Wednesday and Thursday, May 14 and 15 with 20 new exempt personnel in attendance. This program was revised to keep current the basic economics and includes information to gain an understanding of everyday business facts as they relate to human relations. As a part of the program, "In Our Hands", a film-discussion program sponsored by the American Economics Foundation, was incorporated for the purpose of surveying results. An anonymous questionnaire revealed that a greater understanding in economics is essential and that apparently this program fills such a need in our complete Management Aids.

YOU AND LABOR LAW was presented Wednesday, May 28, with 15 new supervisory personnel in attendance. In addition to familiarizing supervisory-management with the basic content of labor laws and providing information to help them gain understanding of their legal responsibilities, a member of Union Relations discusses current labor-management problems of a local nature. This program is always well received by participating members.

MANAGEMENT SKILLS:

PRINCIPLES AND METHODS OF SUPERVISION (PMS) CONFERENCE of 25 supervisors of the Pile Technology Unit attended 4-hour conferences on May 12, 19 and 26. This group of supervisors are hand picked and of a high educational level (eleven having Ph. D. degrees) and therefore this course will be presented in seven 4-hour sessions or a total of 28 hours rather than the normal 34 hours. These participating supervisors have shown unusual aptitude for the PMS methods and are exceptionally receptive.

PMS--40-HOUR-- In answer to a questionnaire to all members of senior management at Hanford Works to ascertain if it might be possible to schedule supervisors working shift to attend PMS conferences as a 40-hour (one full week) presentation, the questionnaire results indicated that at least 50 people would be enrolled in such a presentation. Therefore, it was announced that PMS conferences would be presented the week of June 9-13 to one group and again the week of June 16-20 to another group.

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TRAINING AND PROGRAM DEVELOPMENT

MANAGEMENT DEVELOPMENT:

MANAGEMENT DEVELOPMENT CONFERENCES are planned to begin this fall. A prospectus was completed and submitted to top management for their review and approval. Many members of senior management have indicated a desire for this type of training which may provide an effective mechanism for all members of the "management team" desiring to expand their scope in the application of good employee relations, which will lead to greater solidarity and uniformity throughout the "management team". This type of management development approaches the ideal of consultative management throughout the entire organization.

OTHER TRAINING ACTIVITIES AND PRODUCTION:

SUPERVISOR'S HANDBOOKS are being kept current; a total of 68 pages have been revised and will be mailed very shortly to handbook holders. Current status of handbooks is as follows:

Number of handbooks issued prior to May 1, 1952	-	1331
Number of handbooks issued during May	-	15
Number of handbooks issued to date	-	1333
Number of handbooks returned during May	-	13
Number of handbooks on hand	-	167
Total number of handbooks		1500

A revised addressograph mailing list has been prepared of handbook holders in order that future issues may be addressographed directly onto the cover letter. This will save individual preparation of envelopes and allow complete accuracy in maintaining handbook holders' mailing list.

HOBSO was presented to a group of 29 electrical engineers in Yakima, Washington on May 2. The presentation was requested by the local Lions Club.

Two members of the local Lions Club were trained during the month of May to present the HOBSO program and qualified by attending a HOBSO Institute conducted by a member of Training. It is their intention to make their services available through other Lions Clubs within the State of Washington.

ORIENTATION OF NEW EMPLOYEES was presented daily throughout the report month. A total of 84 persons (81 new, 1 transfer and 2 re-engaged) attended orientation. 98.8% indicated their desire to participate in the G.E. Insurance Plan and 89.3% to participate in the G.E. Pension Plan. The reason for lower participation in the Pension Plan than in the Insurance Plan is due to a few temporary employees included in the orientation percentage figures.

CUSTOMER RELATIONS "Meeting the Public" program is being presented to a group of Tenant Relations inspectors. The purpose of the program is to assist these employees who have contact with the public to better realize the far reaching aspects of their public relations and assist them in their problems in getting along with people. Two 4-hour meetings were held during the current month and it is planned that two more meetings will be held to complete the program. Already two requests have been received from other departments to present this same program to their employees who constantly deal with the public. To date the program has been presented only to non-exempt employees. The program to date has been received enthusiastically and the information welcomed by those participating.

Employee and Public Relations

TRAINING AND PROGRAM DEVELOPMENT

CIVIL DEFENSE PROGRAM is being designed for presentation in three meetings to be given to the approximately 1,000 Civil Defense Wardens and alternates necessary in the Civil Defense Organization for Richland, Washington. The material has been designed for use by experienced and professional training personnel. Therefore, members of Training Section will probably be responsible for disseminating this information. The local Civil Defense coordinator will be responsible for establishing dates, time and place for when these meetings will be conducted; however, Training Section will accept the responsibility as an assignment to schedule such meetings if it is determined advisable.

INTRODUCTORY PROGRAM FOR 1952 TECHNICAL GRADUATES is shaping into a firm schedule. The General Orientation section will be presented June 24 through 27; the following four weeks, approximately 80 participants will be divided into small groups, at which time five technical subjects, mathematics, physics, chemistry, metallurgy, and biophysics, and six business administration subjects, engineering economics, labor law, business law, effective presentation, policy seminar, and human relations subjects will be presented. Arrangements to date indicate that all meetings will be conducted in Dormitory W-10. During the General Orientation presentation each Department Manager of the Nucleonics Division will have an opportunity to present the functions of his department, and other pertinent subjects will be included.

RECOMMENDATIONS for contacting all employees going on leave of absence to inform them of company benefits while on leave was made. Another recommendation was submitted to top management that a personal letter from the General Manager be sent to new exempt personnel to welcome them to the "management team". Both of these recommendations have been submitted to interested and concerned parties.

MATERIAL REQUESTED-- During the current month 400 Pension Plan Booklets, 50 Insurance Application Cards and 20 Insurance Booklets were furnished to the Financial Department. Seventy-five Insurance Application Cards were furnished to Employee Services Unit. Attendance records maintained by Training Section were requested by Reactor Section, Electrical Unit, General Accounting, and Design Section. Complete orientation kits were furnished to Employment Supervisor for use in contact with State Employment offices.

1196796

PUBLIC INFORMATION

A total of 53 releases were distributed during the month. Of these, 29 were sent to the "local list", four to the "daily list," and the rest received special distribution.

Public Health news stories produced during the month covered free chest X-rays, classes for food handlers, and information about polio.

"30 for the Month", was written and distributed for the month of April.

The News Bureau Supervisor accompanied the Public Information Supervisor to Pullman to visit the WSC News Bureau. Their operations are based on about 20 years experience. Several of their time-saving methods and techniques for getting wider readership can be adopted for use here. One of them, a simple way of rewriting stories containing the names of individuals for special distribution to home-town and college papers, immediately was put in effect here

A policy for disseminating news about Kadlec Hospital was approved and placed in effect. This new policy, patterned after the American Hospital Association's suggested press policy, will expedite hospital news and will help insure favorable press relations.

Jerome Luntz, executive editor of NUCLEONICS, visited Hanford Works. Arrangements were made for interviews with various G.E. officials, and information was given to him on Hanford Works

Alice Winther, CHRISTIAN SCIENCE MONITOR writer, visited Richland. She was gathering material for an article on the sale of Richland homes and subsequent incorporation of the town. It was impossible to schedule interviews with G.E. community management people, because of her limited time here. However, she was furnished with background information on Hanford Works and placed on our mailing list for news releases.

The Pasco Representative of West Coast Freightways visited Hanford Works and photographs later were sent to him for forwarding to his Company's house organ.

Fourteen members of the Columbia High School graduating CLASS toured the 700 Area. They saw the civil defense control center, print shop, telephone exchange, and IBM center. A leaflet that described the facilities to be seen and noted the use of atomic energy in industry and government was given each student prior to the tour. At its conclusion, the graduating seniors were offered copies of "Adventures Inside the Atom" and "Adventures in Jet Power".

Two members of the Richland Lions Club were trained in the technique of presenting the HOBSO program. The club plans to present HOBSO on the community level, and has been assured the full cooperation of the Company in this endeavor.

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Written material about Richland and the atomic energy program was gathered for distribution among wives who accompanied their husbands to an engineering convention in Richland. Approximately 300 of the wives toured the community during their stay in Richland.

The May Community NEWSLETTER was written and mailed to community leaders. Subjects discussed were isolation pay increase; the number of Nucleonics Division employees in the Armed Forces; the current employment situation; and Ralph Cordiner's letter to G-E share-owners about the steel issue.

A total of 11 papers were presented for clearance during the month.

The following presentations, in which Public Relations assisted, were given during the month: "Radiotoxicological Research at Hanford Works", by Dr. Leo K. Bustad, presented to the 6057th Research and Development Unit, U.S.A.R.O., Pasco Depot, May 5; "Industrial Applications of Atomic Energy", by W. K. MacCready, presented to the Northwest Electric Light and Power Association, Great Falls, Montana, May 7; "The Phase Transformation - Student to Metallurgist", by W L. Schalliol, to the Northwest Metals Conference, A.S.M., Spokane, Washington, May 8; "The Mechanical Engineer and Nuclear Energy", by Miles Patrick, presented to the Pacific Northwest Regional Conference, A.S.M.E., Moscow, Idaho, May 1; "Application of Atomic Energy in Agriculture and Plant Science", by A. A. Selders to the Yakima Chamber of Commerce, May 12; "Comparative Effects of B-Emitters on the Growth of Lactobacillus Casei", by Dr. H. A. Kornberg, presented to the Chemistry Seminar, Washington State College, May 14; "Establishing a Record Disposal Program", by S. B. Badgett, to the A.E.C. Records Management Conference, Albuquerque, New Mexico, May 15; "High Density Concrete", by H. S. Davis, presented to the Regional Meeting A.S.C.E., Richland, May 16; "Opportunities for Civil Engineers in the Nuclear Fields", by D. W. McLenegan, presented to the Regional Meeting of A.S.C.E., Richland, May 16; "Radiation Hazards and the Engineer", by H. M. Parker, to the Regional Meeting A.S.C.E., Richland, May 16; "Radiation Safety at the Hanford Works", by H. M. Parker to the annual conference of A.E.C , and Contractor Safety and Fire Protection, May 28.

HOBSO was presented by the Training Section to the Yakima Engineer's Club on May 2. The Manager of Employee and Public Relations also presented HOBSO to the Walla Walla Kiwanis Club on May 7.

A civil defense display was assembled and a give-away leaflet produced for use at a state meeting of women active in civil defense. The display concerned home preparations for protection against disaster. The leaflet described the safest locations in homes with, and homes without basements.

A local theatre manager was assisted in publicizing a showing of the Company-produced civil defense film, "And A Voice Shall Be Heard". A lobby display was assembled to tie-in with the film's showing, and stories about the film were released to local newspapers.

Publicity about an air raid siren test in Richland was prepared and released. News stories, radio spot announcements, and a letter to all Hanford Works supervisors served to acquaint residents and employees with the test.

1196798

Participation in a state-wide CD "red alert" test necessitated a hurry-up publicity program to acquaint residents with the fact that the air raid sirens would be sounded. Both local newspapers published a story on the subject, and the three local radio stations broadcast spot announcements.

CD movies were shown to 193 members of community clubs and organizations, and to 246 G-E employees.

Tours of the CD Control Center were completed by 95 people.

Civil defense news stories and pictures released to local newspapers concerned the visit of the State CD Director to Richland; showing of "And A Voice Shall Be Heard"; results of "red alert" test; acceptance of sirens as official warning system in Richland and North Richlqnd; and an air raid siren test (three stories).

The Chief Warden made six public appearances and talks on behalf of Civil Defense during the month. This included talks to wardens of Kennewick Civil Defense.

The Warden Service assisted in putting on the C.D. show at the Boy Scout Circus.

At the end of the month the assembling of names of all wardens was in the following form: District No. 1--all zone wardens and alternates turned in; about two-thirds of block wardens and alternates names on hand; District No.2 all zone wardens and alternates names are turned in; a few block warden alternates are missing; District No. 3--all zone wardens and alternates names are turned in for the roster; all block wardens are secured; missing is about one-half of the alternate block wardens; District No. 4--all zone wardens are secured; about three-fourths of the block wardens and alternates also are secured; District No. 5--all zone wardens were secured during absence of district warden; one zone warden already has completed naming block wardens and alternates.

Classified advertisements for stenographers were placed in the May 10-13 issues of the Yakima daily newspapers. Arrangements were made for spot announcements over the Yakima radio stations.

Employment posters produced during the month will be displayed in all Washington state employment offices.

PHOTOGRAPHIC SERVICES

A total of 5,922 prints were produced during the month. Of the total prints produced, 4,400 were for employee identification and area admittance badges.

See attached statistical report.

Forty-five requests to borrow projection equipment were filled during the month.

1196799

PROGRAM DEVELOPMENT

Kadlec Hospital Open House, held on May 7, was publicized through the Works NEWS, local newspapers and via radio spot announcements. Approximately 300 persons attended the affair. A vastly greater number were acquainted with the hospital and its modern facilities via newspapers and radio publicity.

A total of seven films were booked this month for showing to plant and civic groups.

The "Story of Empire County" radio series, produced for the Richland Public Health Section, is nearing completion. Eleven programs for the 13-week series have been broadcast and the series will be complete June 16.

Five of the series of "Council Talks" programs of the Richland Community Council have been recorded, edited, copied and released to the three local stations. This series is designed to acquaint Richland residents with the facts concerning the proposed sale of houses in Richland.

The first broadcast in the permanent "Science Forum" radio series, produced and recorded by Public Relations for use by radio station KWIE, went on the air during the month. A total of five programs were tape recorded, edited, and ready for release in proper sequence. The series is comprised of a different guest speaker each week who discusses briefly a phase of the work being conducted at Hanford. The speaker is followed by a 15-minute question and answer period. Appropriate newspaper publicity on the forthcoming broadcast is released to the local list and to the Works NEWS each week.

The motion picture "Radiation Hazards Control", being produced at the request of the Reactor Section, has been completed to within the final production stage, well within the prearranged schedule. Narration and script are complete, and a workprint developed from the footage exposed. A total of 3,900 feet of motion picture film was exposed in the making of this motion picture. Three weeks of filming were required for shooting. The exposed film was taken to Palmer Studios, Inc., San Francisco, California, for processing and printing of the initial work print.

A new format for the Works NEWS columns, "Can You Tell Me," and "Meet Your New Neighbor on the Job," were developed to increase readership and improve appearance.

Use of IBM time cards and clock cards was announced and explained in the Works NEWS.

To stimulate return of the Bureau of Census questionnaires from residents, the Hanford Works NEWS published a story requesting their return and announcing that a personal survey would be made.

1196800

Presentation of safety awards to the Nucleonics Division by the AEC and the National Safety Council was announced in the Works NEWS.

G-E mothers whose children also are G-E employees were honored in a special two-page Mothers' Day feature of the Works NEWS. The "G-E family" theme was stressed.

Past history of the Project area, based on information found by survey crews on the Rattlesnake slopes, made an interesting Works NEWS feature. Oldtime surveyors' notes revealed early settlers' impressions of this territory.

Unique ways that safety information is being presented by Separations Section people were reported in a Works NEWS safety feature. Individiual employee participation was stressed.

A form letter to be sent to Richland residents concerning the painting of houses was written at the request of the Housing Maintenance Unit.

Nucleonics Employees Good Neighbor Fund promotion activities included an employee news letter to all employees from the General Manager, three Works NEWS stories, and a questionnaire with accompanying fact sheet and return envelope.

Letters were written and distributed to all exempt employees on the testing of air raid sirens, and increasing the "Area Wage Differential for Exempt Employees."

Safety topic for the Month of June, "Accidents Cost Everybody", was written and produced.

Copy for a manual on handling of classified documents was re-edited at the request of 700 Area Classified files. Production of this booklet will be started in the near future, pending final approval.

Final approvals were obtained on page layouts and copy for the Nucleonics Division report entitled "1951 at Hanford Works." Printing was started and will take approximately four weeks.

A new 40-week series of Sheldon Claire employee relations posters were started during May.

See Space Report for News Bureau attached.

1196801

Hanford Works Photo House
Month of May, 1952

	2 x 2	2 x 4	5 x 7	8 x 10	Neg.	16MM	3½ x 4	11 x 14	Etka-Chrome
COMMUNITY REAL ESTATE & SERVICES									
Fire			6	8					
Parks & Recreation			6	5					
Police			58	14	15				
Municipal				38	4		5	20	
EMPLOYEE & PUBLIC RELATIONS									
Employment	866				222				
News Bureau			62	99	68				
Special Programs			65	86	49			10	
Radio & Special Events			24	6	15	3900ft.			
Works NEWS			166	6	137				
Photo House			3						
ENGINEERING									
Design & Construction				20					
Engineers				65	37				
Technical				120	30		10		
Pile Technology				64	34		27		4
MANUFACTURING									
Metal Preparation Section			39	47	2				
Separations Section			3	28	9				
RADIOLOGICAL SCIENCES									
Radox					75		74		
Instrument				30	19				
UTILITIES & GENERAL SERVICES									
Purchasing & Stores				133	27				
Security	3124	410							
Fire & Safety			8	10					
Transportation				20	3				
MISCELLANEOUS									
Civil Defense			20	35	22				
TOTAL	3990	410	460	1032	880	3900ft.	116	30	4

	March	April	May
Total Prints	5,575	6,782	5,922
Total Negatives	709	536	880
Total Assignments	156	146	155

1195802

NEWSPAPER SPACE REPORT
April, 1952
As compiled from the Nucleonics Division News Bureau clipping files

SUBJECT	NEWSPAPER	COL. IN.	PHOTOS
Recreation	Walla Walla Union Bulletin	19½	
	Tri-City Herald	35½	6
	Columbia Basin News	3½	1
Commercial Facilities	Prosser Record Bulletin	5	
	Tri-City Herald	5	
	Portland Journal of Commerce	6	
	Columbia Basin News	5½	
	Seattle Journal of Commerce	5	
Community Services	Tri-City Herald		1
	Columbia Basin News	1	
Fire Protection	Oregon Journal	6	1
	Tri-City Herald		1
	Columbia Basin News	5	1
Personnel General	Columbia Basin News	4½	3
	Spokane Chronicle	1½	
	Tri-City Herald	11½	1
	Walla Walla Union Bulletin	11	
Personnel Speakers	Walla Walla Union Bulletin	2	
Community General	Columbia Basin News	37	
	Tri-City Herald	23	4
Civil Defense	Walla Walla Union-Bulletin	2½	
	Tri-City Herald		3
	Columbia Basin News	8	2
	Seattle Journal of Commerce	1½	
Plant Hiring	Tri-City Herald	4	
	Columbia Basin News	2	
	Chronicle Dispatch, Dayton, Wn.	2½	
	Walla Walla Union Bulletin	3½	
Radiological Sciences (feature story on atomic power)	Dalles Chronicle, Dalles, Oregon	32	3
Plant Safety	Tri-City Herald	3½	
	Columbia Basin News	1	
	Walla Walla Union Bulletin	21	

more

1196803

Subject	Newspaper	Col. In.	Photos
Union Activities (retroactive pay)	Spokesman Review	2	
	Idaho Falls Post Register	2½	
	Oregon Journal	2½	
	Everett Herald	2½	
	Bremerton Sun	1	
	Yakima Republic	1	
	Portland Journal of Commerce	2	
	Lewiston Tribune	1½	
	Corvallis Gazette Times	1½	
	The Oregonian	3	
	Seattle Times	1	
	Walla Walla Union Bulletin	2½	
	Seattle Journal of Commerce	4	
	Free Press, Nampa, Idaho	1½	
	Couer D'Alene Press	3½	
GE turns over North Richland to Universal Foods	Post Intelligencer	5	
	Portland Journal of Commerce	5	
	Yakima Republic	2½	
	Tacoma News Tribune	2	
	Walla Walla Union Bulletin	5	
	Spokesman Review	4½	
	Seattle Times	3	
		332½ col. in.	27

1196804

Employee and Public Relations

Union Relations

UNION RELATIONS - OPERATING PERSONNEL

As previously reported, certain personnel in the North Richland Powerhouse had petitioned for a representation election. The Company, however, protested to the Board that since, in all probability, the responsibility for the North Richland Powerhouse was to be relinquished by the Company on or about July 1, 1952, a representation election seemed inappropriate. The Board scheduled a hearing for May 27, on this matter but an hour before the hearing was to be conducted, the petitioner, viz., the HAMTC, withdrew the petition, apparently convinced of the Company's position. The NLRB officially dismissed this action on June 2, 1952.

In April, 1952, the Company was advised of an unfair labor practice charge filed with the NLRB, incidental to the Company's discharge of Bus Driver Loren M. Taylor for fighting on the job. The Board advised the Company on May 26, 1952, that this case -- 19-CA-644 -- was being dismissed because of insufficient evidence.

Representatives of this office spent considerable time during the month of May collaborating with the Law Department in preparation of the case involving the Hanford Guards Union, Local 21, which is endeavoring to secure back wages for overtime allegedly worked by Guards and Patrolmen during lunch periods.

No decisions have been rendered by the NLRB with respect to the E. B. Brown discharge case, nor the decertification action involving the Hanford Guards Union, Local 21.

Grievance Statistics:

Status of Grievances

	1952 Unit	1952 Non-Unit
Received this month	20	0
Received this year	121	4
Settled at Step I this month	9	0
Settled at Step I this year	52	2
Pending settlement at Step I at end of month	3	2
Settled at Step II this month	5	0
Settled at Step II this year	27	0
Pending settlement at Step II at end of month	113*	0
Pending settlement by arbitration	5**	0
Total number pending settlement	121	2

*Includes 68 bargaining unit grievances brought to Step II by the Union prior to January 1, 1952, merely to avoid automatic settlement at Step I by time limits established by bargaining agreement. Most such grievances, after being reviewed by the Union, are never scheduled for Step II processing. Discussions are taking place with the Union to have grievances in this category withdrawn from Step II and thereby settled.

**Includes four grievances brought to the arbitration level by Union prior to January 1, 1952, to avoid automatic settlement at Step II by time limits established by bargaining agreement. In each of these cases, the Union has not taken any further action. Discussions intended to settle these cases are presently taking place with the Union.

Analysis of Grievances Received this Month

Department	Subject	Unit	Non-Unit	Total
Manufacturing Department				
Reactor Section	Overtime Rates	2	0	
	Health,Safety,Sani.	1	0	
	Jurisdiction	2	0	5
Separations Section	Continuity of Service	1	0	
	Jurisdiction	3	0	
	Wage Rates	1	0	5
Metal Preparation Section	Wage Rates	1	0	
	Hours of Work	1	0	2
Total for Department		12	0	12
Utilities & Gen. Serv. Dept.				
Transportation Section	Sick Leave	4	0	
	Jurisdiction	2	0	6
Total for Department		6	0	6
Community,Real Estate and Services Department				
Community Serv. Section	Jurisdiction	1	0	
	Wage Rates	1	0	2
Total for Department		2	0	2
Engineering Department		0	0	
Medical Department		0	0	
Law Department		0	0	
Financial Department		0	0	
Employee & Public Relations		0	0	
Radiological Sciences Dept.		0	0	
GRAND TOTAL		20	0	20

1196806

Employee and Public Relations

Continuity of Service	1
Sick Leave	4
Overtime Rates	2
Health,Safety,Sani.	1
Jurisdiction	8
Wage Rates	3
Hours of Work	1
Total	20

Three meetings were held during the month for the purpose of processing grievances at the Step II level.

CONSTRUCTION LIAISON

Atkinson-Jones received the decision of the National Joint Board in the jurisdictional dispute between Plumbers and Teamsters over the loading and unloading of piping material on the Project which precipitated work stoppages on March 13 and 14, and again on March 25 and 26. Herewith is the pertinent excerpt from that decision:

> "At its meeting on May 8, 1952, the Joint Board took the following action:
>
> > '...unloading from trucks in initial delivery to job site, or the unloading and loading of material on and off trucks in moving such material from one storage warehouse to another storage warehouse, job stock room or fabricating shop, is work of the Teamsters under decision of record dated October, 1923. Loading and unloading of material on and off trucks when used to deliver material from job stock room or from fabricating shop to approximate point of use is within jurisdiction of the United Association.'"

There remains a considerable difference of opinion between the two crafts regarding the loading and unloading of material from a warehouse to the job site. Several unsuccessful meetings were held in an effort to resolve the differences of opinion. AJ has indicated that Rice and Rushing are in accord and will make an assignment of work beginning Monday, June 2.

All Electricians (Wiremen) on Newbery-Neon Electric Service rolls in 200-East and West remained off the job on May 18, in protest over the failure of the employer to provide exclusive shuttle bus service to Electricians. A return to work was effected later in the day when Atkinson-Jones acceded to the demands for special concessions in the shuttle from 234-5 Building.

Approximately 200 men (all crafts except Plumbers and Electricians) were off the job at the 200-E Tank Farm on May 14, over delays being experienced by the men in checking out due to congestion in the clock alleys. Discussions with business representatives in Pasco during the day resulted in a return to work the following morning.

1196807

Employee and Public Relations

Atkinson-Jones and the Atomic Energy Commission received letters from the Plumbers' Business Agent threatening to pull all Plumbers off the job on Monday, May 26, unless the new piping superintendent was replaced by a man from the trade. On May 23, we were informed that the Business Agent had withdrawn this threat, purportedly as a result of meetings with Urban, Smyth and Warren representatives and discussions with the international representative.

By letter of May 8, 1952, the Plumbers' Business Agent released for installation in the C-Pile the cross-headers which had been the subject of dispute for several months. The letter stated: "...the terms agreed to by Mr. Thurston of Atomic Energy Commission and Mr. E. B. Skeels of Atkinson-Jones Company, if adhered to in the future have been reviewed by me and are acceptable to Local Union 598." The exact nature of the "terms" referred to are not known.

Atkinson-Jones received a decision of the National Joint Board relative to the dispute over rigging of concrete forms. This work was awarded to the Carpenters, contrary to past practice on the Project which assigned band rigging to Carpenters, and power rigging to Ironworkers.

In view of the inability of AJ and the Office Workers' Business Agent to agree on any of the five individuals furnished by the Federal Mediation and Conciliation Service, the parties on May 1, requested the Service to appoint an impartial committee chairman to arbitrate the dispute involving the reclassification of an employee-steward in the White Bluffs Area. Mr. John D. Regester was appointed and on Friday, May 9, heard the dispute in Dormitory W-10. In a decision dated May 17, Mr. Regester ruled that the reclassification and subsequent termination of the employee was in violation of the Agreement in three separate instances and that the employee is entitled under the Agreement to continuance in his job and job classification. Accordingly, AJ reinstated him and the matter of pay for time lost is currently a matter of dispute.

E. B. Skeels, General Manager of the Atkinson-Jones Company, accepted retirement effective May 15, 1952. He was replaced by W. A. Kettlewell, a vice-president of the Guy F. Atkinson Company.

Mr. Fred Smith started work on May 26, as a labor representative on AJ's payroll. Mr. Smith is on a one-year's leave of absence from the State Department of Labor and Industries.

Negotiations:

Representatives of the contractors and the Unions met on May 14, in Dorm W-10 to negotiate a revised Master Agreement. The Unions presented a document signed or concurred in by substantially all of the crafts except Plumbers and Electricians delegating authority to the Union Committee to negotiate an Agreement in their behalf but with respect to the shop crafts contingent upon incorporating their standard form of Agreement as a part thereof. This proviso was unacceptable to the contractors who insisted that negotiations would be futile unless a uniform agreement could be obtained. A joint committee composed of two union and three

contractor representatives was appointed and met with the Commission the following day to explore a course of action to be followed. It was generally agreed that the Plumbers Local represented the crux of the entire problem and that the success of obtaining a uniform Project-wide Agreement depended upon their willingness to become signatory thereto. Negotiations were temporarily recessed to obtain the concurrence of the Plumbers International with the principle of a uniform agreement on the Project and getting such concurrence transmitted to the Local level.

AJ is prepared to open the Schedules "A" of the Operating Engineers, Laborers and Teamsters (firm through 1952) to negotiate wage increase equivalent to the balance of the 10 per cent available, plus 15 cents per hour approvable under a recent Construction Industry Stabilization Commission pronouncement. We are informed that the Spokane Associated General Contractors and the Columbia Basin Contractors had previously agreed to do likewise.

WAGE RATES

Wage Stabilization Board approval was received on our petition for the modification of our overtime pay policy for employees classified as Supervisors-in-Training in Case N-16493.

Notification was received that the Wage Stabilization Board has approved the 1.03 per cent cost-of-living adjustment effective retroactive to March 15, 1952.

A petition soliciting approval of a modification of our holiday pay policy for employees classified as Firemen (Non-Area) was submitted to the Wage Stabilization Board.

Petitions were submitted to the Wage Stabilization Board for an increase in the isolation pay for members of the Hanford Guards Union, Hanford Atomic Metal Trades Council and nonbargaining unit.

Case No. N-16492 was assigned our Wage Stabilization Board petition for the modification of our plan for classifying stenographers and secretaries, but to date no ruling has been received.

Reimbursement authorization was received for the establishment of new classifications entitled "Public Relations Writer" and "Counting Room Assistants A, B, C and D."

A nationwide survey is under way to determine the prevailing rates paid individuals performing technical illustration work.

Visitations were made to the participants of the General Electric Company's annual Northwest Area Rate Survey.

A study was begun of the Engineering Assistant and Laboratory Assistant classifications in the Technical Section.

rk was continued on a review of the assignment of work by crafts.

1196809

Employee and Public Relations

Following meetings with supervision and Union representatives for the discussion of jobs in the 202-S Plant, job descriptions were prepared and accepted by the Union on May 14, 1952

As a result of a meeting with Manufacturing Department supervision and Union representatives, a study was started as a joint effort of the Manufacturing Department and the Wage Rates Unit to determine the assignment of work to Machinists and Instrument Makers.

During May, 1952, 179 job reclassifications were studied and approved, and 54 temporary reclassifications were checked and processed. Requisitions for 159 people were investigated. Seventy-six new hires and 15 reactivations were investigated concerning replacement, job, pay grade and qualifications. Ten merit raises and 513 automatic increases were reviewed and processed. Interdepartmental transfers for 132 employees involved a check as to job grade, type of transfer, replacement and seniority.

SUGGESTIONS AND INSURANCE

Suggestion System:

	April, 1952	May, 1952	Total Since 7-15-47
Suggestions Received	214	152	9009
Investigation Reports Completed	82	26	
Awards Granted by Suggestion Committee	37	68	
Cash Awards	$ 570.00	$ 1,070.00	
Estimated New Savings	5,168.71	9,474.08	

The highest award of $120 ($10 having been granted previously) was made to an employee in the Separations Section for his suggestion of improvement on a piece of secret processing equipment. This suggestion resulted in a considerable savings in labor and material, together with an increase in production.

The second highest award of $100 was made to an employee in the Technical Services Unit for his suggestion relative to using ball and socket joints instead of tapered ground glass joints between lower end of coulometer reductor column and delivery tube. Labor and material savings were realized from this suggestion.

Workmen's Compensation:

Four cases under litigation were closed during the month of May.

Life Insurance:

Code information which is known only to Home Office Life Underwriters Association has been furnished 64 insurance companies and investigation agencies during the month of May, 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.

1196810

Employee and Public Relations

Insurance Statistics:

	April, 1952	
	Long Forms	Short Forms
Claims reported to the Department of Labor and Industries	216	265
	May, 1952	
	116	1049

Total Since September, 1946 - 7697

	April, 1952	May, 1952
Claims reported to Travelers Insurance Co.	6	6 *

Total Since September, 1946 - 619

*Of the claims reported to Travelers Insurance Company during the month, all were property damage claims.

1196811

COMMUNITY REAL ESTATE AND
SERVICES DEPARTMENT
SUMMARY
MAY - 1952

ORGANIZATION AND PERSONNEL

Number of employees on roll:	Beg. of Month	End of Month
Administration	21	22
Community Services Section - (Total 216)		
Public Works	91	97
Recreation & Civic Affairs	9	9½*
Library	9	9½*
Police (Richland)	42	42
Fire (Richland)	49	49
Engineering	10	9
Community Real Estate Section - (Total 186)		
Housing and Maintenance	177	174
Commercial Property	12	12
700-1100-3000 Area Services Section - (Total 110)		
700-1100 Maintenance	58	56
Patrol (North Richland)	22	22
Fire (North Richland)	33	32
	533	534

There was an increase of one employee in the Department during the month of May, 1952.

* The fractions shown are caused by employees working only part time.

GENERAL

The Community Real Estate and Services Department participated in the State-wide practice Yellow and Red Civil Defense alerts on May 19, 1952.

The opinion of the Judge of the Federal District Court in Yakima in the case of Porter vs. General Electric Company has been received. As a result of the decision of the Court, decisions affecting the organization and operation of the Fire Units will be made in the near future.

We have been advised that Richland has won a first place tie in the International Chiefs of Police traffic law enforcement competition for cities in the 10,000 to 25,000 group.

Twice weekly trash collection from residences was begun on May 5, 1952, for the summer months.

Total housing applications pending - 685.

The following commercial establishments began operation during the month of May:

Mademoiselle Beauty Salon	Joseph Bldg. #2 (New location)
Lil-Dales Beauty Salon	1381 George Washington Way
V.F.W. Club of Post #7952	Kirkpatrick Bldg., Block 4
Johnny's Delicatessen	McVicker Bldg. #4, Block 1

1196812

CONTRACT SECTION

Contract No.	Contractor	Title and Status	Project N
AT-(45-1)-608	Associated Engineers, Inc.	Site Grading Irrigation, Landscaping Construction of Rest Room, Sewer Lines, Water Lines and Shelterbelt. Contract is approximately 68% complete.	C-425 C-408 L-262 K-562
AT-(45-1)-613	Anderson Brothers, Inc.	Exterior Painting 329 Conventional Houses, Two Tract Houses and Three Non-Commercial Buildings. Contract is approximately 66% complete.	S-909 K-918
AT-(45-1)-617	Associated Engineers, Inc.	Additional Fire Protection Desert Inn and Ricland Theater; Fire Hydrant Installation Birch Avenue; Sewer Line Installation Along Gillespie from Duane Avenue to Gillespie Property Line. Contractor started work May 26, 1952.	S-552 L-641 AEC W/O 0219
AT-(45-1)-618	Sprague McDowell Co.	Site Grading, Top Soiling, Lawn Seeding and Related Work. Contract is approximately 94% complete.	C-426
AT-(45-1)-619	--	Elimination of Odors at Sewage Lift Station. Final specifications and drawings completed. Invitation of bids will be delayed until AEC approval of additional funds is obtained.	L-608
AT-(45-1)-620	Cecil C. Hill	Repair of Fire Damaged Prefab and Repair of Damaged "A" Type House. Contract is approximately 89% complete.	S-922 L-921

There were no payments made to contractors during the month.

1196813

COMMUNITY SERVICES SECTION

SUMMARY

MAY, 1952

ORGANIZATION & PERSONNEL:

	BEGINNING OF MONTH		END OF MONTH	
	Exempt	Non-Exempt	Exempt	Non-Exempt
ENGINEERING	7	3	7	2
FIRE	49	0	49	0
LIBRARY	4	5	4	5.5
POLICE	16	26	16	26
PUBLIC WORKS	15	76	15	82
RECREATION & CIVIC AFFAIRS	5	4	5	4.5
	96	114	96	120

The Community Services Section participated in the State-wide practice Yellow and Red Civil Defense alerts on May 19, 1952. All functions were successfully carried out in a minimum of time. Calls of inquiry to theRichland Police Sergeant during the Red Alert were so numerous that it was found difficult to complete call lists.

The opinion of the Judge of the Federal District Court in Yakima in the case of Porter vs. General Electric Company has been received. As a result of the decision of the Court, decisions affecting the organization and operation of the Fire Unit will be made in the near future.

We have been advised that Richland has won a first place tie in the International Chiefs of Police traffic law enforcement competition for cities in the 10,000 to 25,000 group. This is the third year we have either won or tied for first place in this competition.

1196814

COMMUNITY REAL ESTATE AND SERVICES DEPARTMENT
PUBLIC WORKS UNIT
MAY 30, 1952

ORGANIZATION AND PERSONNEL

	Exempt	Non-Exempt
Employees Beginning of Month	15	76
Transfers In	--	7
Transfers Out	--	3
New Employees	--	2
Terminations	--	-
Total - End of Month	15	82

SANITATION

Twice weekly collections from residences was inaugurated on 5-5-52 and will be continued through 9-27-52. Total weight of garbage and trash collected during May was 1407 tons.

ROADS AND STREETS

Patching, grading and miscellaneous repair of about 5 miles of streets in the south part of Richland has been completed in preparation for "Seal-Coat" application which will be done during the second week of June. Approximately 1200 Cu. Yds. of 5/8" minus rock has been screened to obtain 5/8" to 1/4" rock for use on this Seal-Coat work. The streets involved are Cullum, from Gillespie to Benham; Endress, Barth to Davenport; Delafield, Gillespie to Benham; Davenport, Goethals to George Washington Way; Comstock, Duane to Casey; Casey, Comstock to Adams; Atkins, Comstock to Benham; Douglas, Gillespie to Davenport; Armistead, Davenport to Abbott; Knight, Stevens to Goethals; and Symons, from Potter to Wright.

A catch basin at Cottonwood and Pullen which has frequently caused flooding of the adjacent area through plugging of the grill has been converted to provide a curb inlet opening. If this conversion solves the problem, other catch basins on Cottonwood will also be treated similarly.

Routine maintenance of streets, street drainage systems, and street marker signs has been continued.

Repair of lawns which were disturbed during project C-426 Street Construction are now being repaired by a sub-contractor, and this work will be completed about 6-4-52.

Letters have been sent to all residents who will be affected by street improvement work on Thayer Drive from Swift to Van Giesen, notifying them of the work, and how it may affect their lawn areas and other leased property.

1196815

ROADS AND STREETS (Continued)

A policy determination which places public sidewalk maintenance responsibility with the unit having proprietary interest in the adjoining property was placed in effect during the later part of April.

PUBLIC GROUNDS MAINTENANCE

The irrigation and mowing of all grassed areas of the Community Real Estate and Services Department, and the maintenance of the equipment used in this work has been assigned to and is being performed by this sub-unit. The work is charged to "master" work orders and the accrued costs are distributed to the proprietary groups on an acreage percentage basis.

The performance of a completely satisfactory job has been hindered by a lack of sufficient personnel - employees requisitioned for May 1 were not received until the end of May, and from present indications, additional employees requisitioned for June 2 will not be received on schedule.

Routine maintenance of parks, shelterbelts, and open areas was continued.

DOMESTIC WATER

Normal operations and maintenance were continued. The average daily water consumption for May was 13.86 million gallons, and peak use occurred on the 26th when 19.76 million gallons were consumed.

The river pump at the Columbia Field recharge basin was placed in operation on May 28 to relieve the load on the canal system.

Production and consumption recordings for May are as follows:

Domestic Water

	Well Production Million Gallons	Avg. Daily Production	Total Consumption Million Gallons	Avg. Daily Consumption
Richland	161.8750	5.222	330.3201	10.656
North Richland	148.5550	4.792	70.3170	2.268
Columbia Field	119.1822	3.845		
300 Area			27.9000	0.900
TOTAL	429.6122	13.859	428.5371	13.824

SEWERAGE

Normal operations and maintenance of the collection system and treatment plants were continued and average daily flow through the plants was 3.09 million gallons.

No. 2 Clarifier at #1 Treatment Plant had become quite rusted and all metal parts have been sand blasted and treated with acid resistant paint.

1196816

SEWERAGE (Continued)

Flow records for the month are as follows:

SEWERAGE

	Total Sewage Flow Million Gallons	Average Daily Flow Million G. P. D.	Average Rate of Flow Gals. per Min.
Plant No. 1	25.590	0.825	573
Plant No. 2	70.243	2.266	1574
TOTAL	95.833	3.091	2147

IRRIGATION SYSTEM

Normal operation and maintenance of the irrigation canals, pump houses and distribution grids was continued during May.

Liquid Chlorine was induced into the canal system to control weed growth at the penstock on 5-26-52 and at the By-pass flume on 5-29-52. Indications are that the results are good and if borne out, this method will be continued since it does not require the shutting down of the canal system.

1196817

RECREATION AND CIVIC AFFAIRS UNIT
MONTHLY REPORT

May, 1952

ORGANIZATION AND PERSONNEL

	Exempt	Non-Exempt
Beginning of Month	5	4.0
New Hires	0	.5
Terminations	0	.0
Transfers - IN	0	.0
OUT	0	.0
	5	4.5

SCHOOLS

The following is a tabulation of full-time paid School District #400 personnel as of May 31, 1952:

Administration	6
Principals & Supervisors	14
Clerical	24
Teachers	278
Health Audiometer	1
Cooks	42
Nursery School & Extended Day Care	12
Bus Drivers	1
Maintenance	9
Operations	46
	433

CLUBS AND ORGANIZATIONS

As of May 31, 1952, the employeesof 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 Saturday, May 3, 1952 the Richland Little League Baseball Association held a Jamboree at the Memorial Softball Field. Our Unit made arrangements to have the facilities at the Field ready for use and provided an amplification system for use during the Jamboree.

1196818

The Richland Kennel Club sponsored a Dog Show on the grassed area north of the Desert Inn on Saturday, May 3, 1952. Our Unit arranged for the loan of nine sections of portable-type bleachers to be used during the Show.

On Sunday, May 11, 1952 the Richland Riders Club sponsored a Horse Show at the Riders Club show grounds. Our Unit arranged for the loan of eight sections of portable bleachers and a Government water tank truck for use during the Show.

On Sunday, May 11, 1952 the Richland Softball Association inaugurated the 1952 Softball Season in Richland with a double-header softball jamboree at the Memorial Softball Field.

The Boy Scouts and Cub Scouts of Richland held their annual Scout Circus at the Bomber Bowl on Saturday, May 23, 1952.

The School Boy Patrol picnic, an annual affair sponsored by the Richland American Legion Post 71 and the Richland Police Department, was held at Riverside Park on Thursday, May 29, 1952. Our Unit made arrangements for the use of an amplification system during the event.

The Parks and Recreation Board held its regular monthly meeting on Thursday May 8, 1952 at the Community House. The Board passed a motion that the Richland Yacht Club be granted a one year lease, subject to final Board approval on the area east of the existing fence along the river bank at Riverside Park and extending from the foot of Lee Boulevard north to Newton Street extended. It was moved and seconded and motion carried that the resignation of Mr. Paul Allen, Parks and Recreation Board member, be accepted. A special meeting of the Board was called on May 22, 1952, at which time a list of prospective names was submitted to the Council for selection of a person to fill the remainder of Mr. Allen's unexpired term. The next regular meeting of the Board is scheduled for June 5, 1952 at the Community House.

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, Theatre	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 organizations		15
		317

1196819

RECREATION

Summer Playground Program talks were given at the May P.T.A. meetings of John Ball Grade School, Marcus Whitman Grade School and Columbia High School.

An organizational meeting was held and plans were well established for the formation of a Play-For-Fun Baseball League for juniors, ages 8 through 12 inclusive. The League will be under the supervision of this Unit and League play will be scheduled at Riverside Park this summer.

The Triple-O-League softball season started play on May 14 with nine teams participating.

Two indoor Baseball Clinics were held at Community House and one outdoor session for junior youth at Memorial Softball Field on May 10 and May 24 respectively.

The V.F.W. Marble Tournament City Championship and the District Tournament were held at Riverside Park on May 17 and May 24 under the direction of the Unit.

Summer Playground Program plans were completed and publicity for same released to the local newspapers on May 29, 1952.

Attendance figures for May, 1952, for the Athletic and Playground Program, sponsored by the Unit, are as follows:

	Children	Adults	Totals
General Attendance	7,250	3,295	10,545
Special Events - Participants	479		479
Spectators		50	50
Totals for Month	7,729	3,345	11,074

Indoor to Date - 9,157
Outdoor to Date - 94,733

Organized groups and classes conducted during May by this Unit were as follows:

	Children	Adults	Totals
Marble Tournament (May 5 - 24)			
All City Schools	368		368
City Finals	36	22	58
District Finals	19	15	34
Baseball Clinic - May 24 - Memorial Field	56	13	69
Triple-O-Softball		400	400
Wellsian Lake Fishing - May	3,875		3,875
Totals	4,354	450	4,804

COMMUNITY HOUSE

On the First of May two men were hired on a part-time basis, working 12 and 13 hours a week respectively, to handle the evening hours at the Community House. This enabled a rotational shift for the Community House Supervisor, which will provide a closer contact with all the programs conducted at the center.

1196820

On May 26, due to reorganization, one General Clerk B was transferred to the Public Library for temporary assignment.

Two Girl Scout groups used the Social Hall of the Community House for programs that enabled them to advance a step in merit fashion. One program was a dance and the other one was in the form of dramatics. Attendance at both programs was approximately 100 persons.

The Instrument Society of America held a vendor's display in the Games Room of the Community House, May 15, 1952. Approximately 1,400 people attended the afternoon and evening display.

The American Society of Civil Engineers held a Convention on Saturday, May 17, 1952 and the purpose was to provide information about McNary Dam. The attendance figure was around 400 persons for this meeting.

Attendance - Community House

	Children	Adults	Total
General Attendance	3,011	5,395	8,406
Special Events - Participants	72	97	169
Spectators	494	1,878	2,372
Assisted Activities	125	2,159	2,284
Totals for Month	3,702	9,529	13,231
At end of Previous Month	64,046	56,501	120,547
Fiscal Year Totals to Date	67,748	66,030	133,778

Indoor to Date - 133,778

1196821

RICHLAND PUBLIC LIBRARY

MAY 1952

ORGANIZATION AND PERSONNEL	Exempt	Non-Exempt
Employees - Beginning of Month	4	5
Transfers In	0	0
Transfers Out	0	0
New Hires	0	.5
Terminations	0	0
End of Month	4	5.5

GENERAL

Circulation

Books	13,259	(Adult - 7,504; Juvenile - 5,755)
Magazines	363	
Pamphlets	3	
Records	715	
Special Loans	55	
Interlibrary Loans	54	
Grand Total	14,449	

Current Book Stock

Books added this month	24	(Adult)
Books dropped this month	14	(Juvenile)
Grand Total	19,785	

Registration

Adult	164
Juvenile	66
Total	230
Total Registered Borrowers	10,004

Children's Story Hour Attendance 290 (Includes attendance of 75 at Library Birthday party, May 31, 1952 and a visit of 15 children in the Spaulding School Library Club.)

1196822

.he Allied Arts spring exhibit was held in the North Hall of the Library, May 4-May 18. The exhibit was attended by approximately five hundred people. In addition to the exhibit, ten meetings were held in North Hall this month.

The American Heritage Committee met Monday, May 26 to discuss future planning for "This is the American Way" program. It was decided since the participants in the discussion group wished to continue during the summer and that the discussion leader, Miss Lucile Lomen, was willing to meet with them, that the meetings would be continued. Two more meetings will be devoted to discussions based on Johnson's "This American People". The Supreme Court decision on the steel situation will be discussed at one meeting. After the political party conventions have met and established their platforms, the group wishes to make a nonpartisan study of the platform issues. Another meeting of the committee will be held in July to plan the fall and winter program.

May was celebrated as birthday month by the children's department and, in connection with this theme, the children's room featured a display of books suitable for birthday gifts for various ages and also the CARE packages of children's books which can be ordered and sent abroad. A large decorated birthday bank called attention to the fact that pennies were asked for as contributions towards this package from the Library which is to be sent abroad to the country of the children's choice. A total of $6.15 was collected, and in the balloting to choose the country which is to receive the book package, Japan received the most votes. The majority of ballots were cast for a package suitable for older children. The best reasons advanced for their choices were those submitted by Barrett Tomlinson and James Mattison, both ten years old, who liked the idea of teaching the Japanese "to swap ideas" and to take part in "world sharing" by being the recipients of the books from Richland.

The Library birthday party for children was held Saturday afternoon, May 31. Movies were shown and games of musical chairs and pinning the candles on paper cakes were enjoyed by the crowd of 75, including some parents. Cupcakes tipped with tiny candles were served and fancy paper hats given as souvenirs. The birthday bank was cut open at the party.

During May, the children's librarian visited each of the six elementary schools in Richland and spoke to all the classes from second grade through sixth, either singly or in groups, about the plans for the Circus Reading Club which is the Library's summer reading program for boys and girls entering third grade up to those in junior high school. The Club will run for ten weeks, from June 6 through August 23. In order to qualify as a winner, each contestant must read a total of ten books on diversified subjects and make short reports on each book read for the club in a souvenir booklet which is given to each contestant to keep. The program of events was taken from the Ringling Brothers circus program of last year and covers the field of children's literature from animal stories to biographies and fairy tales as well as "learn how" books. Winners will receive prizes and be treated to a party to be given at the Library on Saturday, August 30.

1196823

RICHLAND POLICE DEPARTMENT

MAY 1952

ORGANIZATION AND PERSONNEL	Exempt	Non-Exempt
Employees - Beginning of Month	16	26
Transfers In	0	0
Transfers Out	0	0
New Hires	0	0
Terminations	0	0
Total - End of Month	16	26

GENERAL

Captain J. S. Johnson and Sgt. W. H. Gordon of the Richland Police Department attended a two weeks basic police training school sponsored by the F.B.I. at Fort Lewis, Washington this month.

We have been advised that Richland has won a first place tie in the International Chiefs of Police traffic law enforcement competition for cities in the 10,000 to 25,000 group. This is the third year we have either won or tied for first place in this competition.

We also were voted awards in the 1951 National Traffic Safety Contest for outstanding achievement in Public Information and Safety Organization.

During the month of May, 125 new traffi-cones were received for use in barricading streets when necessary. Three new patrol car plexi-glass partitions were also received and installed in three of our police cars.

The annual School Boy Patrol Picnic was held May 29th which was jointly sponsored by the Richland Police Department and the American Legion Post #71, at which time a trophy was awarded to the most outstanding school, medals awarded to the outstanding boy from each school, along with certificates to each School Boy Patrolman.

The Police Department participated in the Civil Defense Yellow and Red test alerts of May 19.

During the month, 130 letters of inquiry were received along with 3 requests for assistanc

During the month of May, 51 prisoners were processed through the Richland Jail. Twenty-four of these were from North Richland and one from Heminger City.

During the month, 5 gun registrations were recorded and 618 bicycle registrations recorded The large number of bicycle registrations was due to the April Bicycle Safety campaign.

A total of 405 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.

1196824

e were 17 reportable accidents in Richland this month as compared to 22 last month and 18 for the same month last year. This brings the total this year to 131 as compared to 94 for the same period last year or an increase of 39.3%.

There were 4 persons injured in 2 injury accidents, however, none of these were seriously injured. There has been a total of 24 injuries and one fatality this year as compared to 25 injuries for the same 5 months last year.

Property damage as a result of automobile accidents this month totaled $5,590.00 or an average of $328.82 as compared to last month's average of $207.73. This great increase is mainly caused by one accident in which the damages were estimated at $1800.00.

Six of the above accidents occurred in the business districts of Richland and the remaining 11 were in the residential districts or open areas surrounding the city.

Of the above accidents, 12 were investigated by members of the Richland Police Department and these investigations resulted in criminal complaints being issued against 10 drivers for traffic violations.

It appears that women drivers are becoming more numerous in Richland or more careless in their driving habits. For the past month 35% of the drivers involved in accidents were women as compared to 22.2% for the month of May in 1951.

Traffic violations which contributed to the above accidents were:

Failure to yield right-of-way	7	Drunk driving	1
Unsafe speed	3	Hit and run	1
Disregarding stop sign	2	Wide right turn	1
Negligent driving	2	Following too close	1

There were 5 traffic safety meetings conducted this month by members of this department which were attended by 205 employees of various G. E. departments. One was conducted for the Pre-School P.T.A. at Kennewick.

There were approximately 17.3 miles of centerlines painted this month. A new attachment for the paint truck was tried for painting curbings and found to be very successful.

Channelizing was changed for south bound traffic at the Coordinate Club, which now permits 2 lanes of traffic to make the turn south of Lyman Road simultaneously. This has corrected the bottleneck and improved the flow of traffic considerably.

The south side of the Goethals and Williams intersection was divided into 5 equal lanes to provide a left turn lane and chatter bars were installed to separate north and south bound vehicles. The motoring public voluntarily fell into the intended pattern in spite of the fact that it was not possible to label them with pavement stencils; however, this will be done in the near future. This change has greatly improved traffic movement and speeded up dispersion of vehicles during the evening peak.

Two new signs were constructed and installed which read "Richland traffic laws enforced". These signs were made on Scotchlite for night visibility and one installed on George Washington Way near the location where the large sign was destroyed by wind and the other Van Giesen east of the by-pass.

1196825

TRAINING

Due to a shortage of ammunition, no range training took place during this month.

ACTIVITIES AND SERVICES

	March	April	May
Doors and windows found open in facilities	53	127	50
Children lost or found	26	25	25
Dogs, cats reported lost or found	29	16	32
Dog, cat, loose stock complaints	29	28	21
Persons injured by dogs	5	3	7
Bank escorts and details	0	0	0
Fires investigated	18	11	10
Miscellaneous escorts	19	8	6
Complaints investigated (no enforcement action)	12	66	56
Deaths reported	0	1	1
Property lost or found	47	53	50
Records inquiries	115	110	133
Law enforcement agencies assisted	4	12	5
Private individuals assisted	11	37	23
Plant departments assisted	53	26	36
Emergency messages delivered	47	24	25
Street lights out reported to Electrical	65	76	161
Totals	533	623	641

1196826

MONTHLY REPORT
RICHLAND POLICE DEPARTMENT
MAY 1952

OFFENSES	KNOWN	UNFOUNDED	CLEARED OTHER*	CLEARED ARRES
ART I				
1. Murder				
2. Rape				
3. Robbery				
4. Aggravated Assault				
5. Burglary - Break & Ent.	1	-	1	
6. Larceny - Over $50.00	1			
Larceny - Under $50.00	33		3	2
Bicycle Theft	20		17	
7. Auto Theft				
TOTAL PART I CASES	55		21	2
ART II				
8. Other Assaults				
9. Forgery & Counterfeit				
10. Embezzlement & Fraud	1			1
11. Stolen Prop:Buy:Rec:Poss.				
12. Weapons:Carrying:Poss.				
13. Prostitution				
14. Sex Offenses				
15. Offense Ag.Fam.& Child				
16. Narcotics - Drug Laws				
17. Liquor Laws				
18. Drunkenness	8	-	-	8
19. Disorderly Conduct	1	-	-	1
20. Vagrancy				
21. Gambling				
22. Driving while Intox.	6	-	-	6
23. Violation Rd. & Dr. Laws:				
Speeding	34	-	-	34
Stop Sign	19	-	-	19
Reckless Driving	1	-	-	1
Right of Way	6	-	-	6
Negligent Driving	16	-	-	16
Defective Equipment	4	-	-	4
24. Parking	34	-	-	34
25. All Other Traffic Viol.	22	-	-	22
26. All Other Offenses:				
Malicious Mischief	3	-	3	
Vandalism	14	1	7	
Dog Nuisance	2	-	1	
Disturbance	4	-	1	
Dest. of Pers.Property	4	-	-	1
Prowler	3	1	1	
Public Nuisance	2	-	2	-
Arson	1	-	-	1
Dest. of Govt. Property	2			
Tampering with U.S.Mail	1	-	-	-
Pickup for outside agency	1	-	-	1
Suspicion				
TOTAL PART II CASES	189	2	15	155

1196827

PART III	KNOWN	UNFOUNDED	CLEARED OTHER*	CLEARED ARREST
28. Missing Persons	1	-	1	
Lost Persons	10	-	10	
Lost Animals	3	-	1	
Lost Property	2	-	1	
29. Found Persons				
Found Animals	5	-	2	
Found Property				
TOTAL PART III CASES	21	-	15	

PART IV				
30. Fatal Mot. Veh. Traf. Acc.				
31. Pers.Inj.Mot.Veh.Traf.Acc.				
32. Prop.Dam.Mot.Veh.Acc.	17			
33. Other Traffic Accid				
34. Public Accid.				
Home Accidents				
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	17			
COMPOSITE TOTALS PARTS I,II,III,IV CASES	282	2	51	157

* 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 were no arrests.

Property reported stolen	$862.26	(including 20 bikes)
Property recovered	$477.01	(including 17 bikes)

1196828

...ber of offenses known to police per 25,000 inhabitants in cities of 25,000 persons:

Wash.Ore. & Calif. ...x months (Jan.-June 1951)		One month average	Richland January - June 1951	Richland April - May 1952	
Murder	1.36	.23	-	-	-
Robbery	37.4	6.2	-	-	-
Agg. Assault	26.6	4.4	1	-	-
Burglary	259.5	43.2	17	1	1
Larceny	823.9	137.3	141	22	34
Auto Theft	128.5	21.2	8	1	-
Bicycle Theft			158	23	20

Number of offenses known to police per 25,000 inhabitants regardless of whether offenses occurred in cities or rural districts:

State of Washington ...x months (Jan.-June 1951)		One month average	Richland January - June 1951	Richland April - May 1952	
Murder	.34	.056	-	-	-
Robbery	9.35	1.56	-	-	-
... Assault	6.65	1.10	1	-	-
...glary	64.87	10.81	17	1	1
Larceny	205.9	34.3	141	22	34
Auto Theft	32.12	5.35	8	1	-
Bicycle Theft	-	-	158	23	20

...e 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 April - 1952	May 1952
Robbery	53.6	-	-	-
Burglary	61.7	4	-	1
Larceny	45.2	25	1	2
Auto Theft	69.7	-	1	-

...ote: 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."

1196829

MONTHLY REPORT RICHLAND POLICE DEPARTMENT JUVENILES INVOLVED MAY, 1952

OFFENSE	NO CASES	JUVENILES	SEX	7	10	12	13	15	16	17	TOTAL
Malicious Mischief	2	4	M		1	2	1				4
Vandalism	3	5	M	2				1	1	1	5
Petit Larceny	2	5	M						2	3	5
Arson	1	2	M						1	1	2
Dest. Personal Property	1	1	M					1			1
TOTALS	9	17		2	1	2	1	2	4	5	17

1196830

RICHLAND POL DEPARTMENT
RICHLAND JUSTICE COURT CASES
MAY 1952

VIOLATION	NO OF CASES	NO OF CONV.	NO OF FORF.	CASES CONT.	CASES DISM.	WARR. ISS.	SENT JAIL	SENT SUSP.	LIC. REV.	CASES ORIG. PREV. MON.	CASES INCL. OTHER VIOL.	BAIL FORF.	FINES	FINES SUSP.
DEFECTIVE EQUIPMENT	10	8		2						2	1	$	$ 36.50	$ 22.50
DRIVERS LICENSE	31	15	8	4		4				5	13	42.50	77.50	35.00
DRUNKEN DRVG	7	6			1				6				382.50	
DRVG WHILE LIC. REV.	1			1										
F.T.S. & I.	1			1						1				
F.T.Y.R.O.W.	7	3	3		1					1		42.50	37.50	37.50
HIT & RUN	1	1												
ILLEGAL PARKING	23	4	14	5								45.50	17.50	7.00
ILLEGAL PASSING	1		1									5.00		
IMPR. PLATES	2		2								2			
NEGLIGENT DRVG	17	15	1		1				3	5		15.00	217.50	90.00
NO REGISTRATION	1		1								1			
OPERATING MOTOR VEH. W/OUT BEING OF AGE TO OBTAIN A DR. LIC.	1	1											7.50	
OPERATING MOTOR VEH. WITH TEMPORARY PERMIT WHILE NOT ACCOMPANIED BY A LICENSED OPERATOR	1			1										
SPEEDING	43	16	21	1		5				10		199.00	133.50	22.50
STOP SIGN	21	8	11	1		1				4	2	57.50	72.50	13.50
DISORDERLY CONDUCT	1		1									17.50		
FORGERY	1			1										
INJURY TO PERSONAL PROP	1				1					1				
LARCENY BY CHECK	1	1					1							
MALICIOUS MISCHIEF	1			1										
PETIT LARCENY	2	1		1									27.50	
PUBLIC INTOXICATION	12	7	4		1		1					50.00	92.50	
PUBLIC NUISANCE	3	1	2									35.00	27.50	27.50
THIRD DEG. ASSAULT	2	2											85.00	50.00
VAGRANCY	1	1					1							
TOTAL	193	90	69	19	5	10	3		9	29	19	$509.50	$1215.00	$305.50

THREE RECKLESS DRIVING CASES AMENDED TO NEGLIGENT DRIVING.
ONE SECOND DEGREE ASSAULT CASE AMENDED TO THIRD DEGREE ASSAULT.

+196831

POLICE DIVISION - TRAFFIC CONTROL STATISTICS
MAY, 1952

MOTOR VEHICLE ACCIDENTS:

	Total Number		Fatilities		Major Injuries		Minor Injuries	
	Apr.	May	Apr.	May	Apr.	May	Apr.	May
Richland	22	17	0	0	1	0	5	2

ACCIDENT CAUSES:

	Negligent Driving		Failure to Yield Right of Way		Reckless & Drunken Driving		Other Cases	
	Apr.	May	Apr.	May	Apr.	May	Apr.	May
Richland	4	2	7	7	2	1	9	9

PLANT WARNING TRAFFIC TICKETS ISSUED:

Richland: NO WARNING TICKETS ISSUED FOR APRIL AND MAY, 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	
	Apr.	May	Apr.	May	Apr.	May	Apr.	May	Apr.	May	Apr.	May	Apr.	May	Apr.	May	Apr.	May
Richland	40	33	22	17	3	7	4	1	5	6	31	11	56	23	38	42	199	140

TRAFFIC VOLUME: Average 24-Hour Traffic Volume Count for week ending May 28, 1952, Williams Boulevard east of Goethals - 9,136 cars.

NOTE: Traffic Control Statistics show ORIGINAL CHARGES ONLY.

1196832

COMMUNITY SERVICES

RICHLAND FIRE DEPARTMENT

MAY 1952

Organization and Personnel

	Exempt	Non-Exempt
Employees - Beginning of the Month	49	0
Transfers In	0	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	$232.50	$408.50
	Personal	0.00	392.50
	Total	$232.50	$801.00
Response to Fire Alarms		18	71
Investigation of Minor Fires and Incidents		13	63
Ambulance Responses		36	215
Inside Schools or Drills		42	195
Outside Drills		44	85
Safety Meetings		8	40
Security Meetings		4	22
Fire Alarm Boxes Tested		180	952
Airport Standby		3	12
Fire Hydrants Tested		24	29
Burning Permits		26	517

Tank Truck was dispatched May 3rd to protect nearby exposures while remnants of an old shed were burned on Kadlec Road.

On May 15th eight Cub Scouts and two den mothers were given a conducted tour of No. 1 Fire Station.

On May 19th the Fire Department participated in a practice alert by dispatching five fire trucks to outlying dispersal points and manning reserve pumpers in each fire station.

Two-way radio was installed in Engine 4, rural pumper, on May 21st.

Fire Prevention

A total of 290 building and 9 exterior hazard inspections were made during May, resulting in 9 hazard reports.

A total of 273 fire extinguishers were inspected during the month, 7 refilled, 9 replaced and 1 removed.

1196833

Richland Fire Department May 1952

At the request of Plant Safety, a survey was made to determine the number of fire extinguisher purchases necessary to replace all carbon tetrachloride extinguishers in Richland.

Fire Marshal B. G. Pigg was sent to Washington D. C. to accept Richland's first place award in the United States Chamber of Commerce Fire Waste Contest. On May 13th he exhibited the trophy at the Richland Chamber of Commerce meeting and described the trip to the annual meeting of the national organization.

Investigation of a fire alarm May 10th at Campbell's No. 1 Market revealed that lightning knocked out two of three phases of electrical power serving motors in the building.

Investigation of a May 11th alarm at the Uptown Thrifty Drug revealed that electrical wiring to music boxes, non-code conforming, had short circuited.

Investigation made jointly by the Fire and Police Departments of a trash wagon fire at Columbia High School on May 12th resulted in the apprehension of two students who admitted setting the fire. The perpetrators were cited before the Juvenile Court.

At the instigation of the Fire Marshal's office, several hazards were eliminated in the Community Maintenance section of Warehouse No. 6.

Following up on recommendations previously made for overhauling electrical connections in all original residences, it was learned that the recommendations had been approved by the AEC Safety Office and work started on a continuous basis.

The Fire Marshal's office instigated replacement of defective fire hose standpipe valves in the American Legion Hall, flush testing these lines after replacement was completed.

Recommendation was made through AEC Community Management for the removal of trash, weeds and dry grass at the housing contractor headquarters site at Duportail and Wright.

On invitation of AEC Safety, the Fire Marshal assisted on final acceptance inspection of completed portions of Kadlec Hospital "C" Wing addition. Ten potential hazards and code violations were reported to AEC Safety.

Arrangements were made with Space Allocation Committee for the Fire Marshal to be notified prior to the sale or removal of any field buildings to make possible the reclaiming of installed fire extinguishers in those buildings.

On the Fire Marshal's request, Transportation and Community Services agreed to use non-flammable weedicide around wooden buildings and combustible storage. Use of oil-base weedicide is to be limited to open areas only.

Recommendation was made to Real Estate that overcrowded storage, improper aisle spacing and replacement of broken windows on railside be corrected in C. C. Anderson's warehouse on South Stevens Drive.

1196834

At the owner's request, Fish and Chips restuarant in Uptown District was inspected prior to formal opening.

In an effort to alleviate blocked service and emergency access driveway at rear of Desert Inn by private vehicles, the matter was discussed with the Desert Inn manager.

The Fire Marshal and Chief of Police investigated parking of private vehicles in front of residential area fire hydrants.

Following an inspection of incompleted electrical service separations in the Recreation Hall - Community House, recommendations were made for certain tests and changes before the job is closed out.

Inspection of horse corrals inside the city limits revealed hazardous dry hay, flimsy lean-to and shack type shelters with strong possibility of smoker caused fires.

Suspension of spray painting was requested in the 722 Building during a recent temporary shutdown of installed fire protection facilities.

Following the Fire Marshal's recommendation, accumulated grass clippings were raked away from most of the foundations of 1100 Area frame buildings.

The Fire Marshal's office assisted a representative of the Washington Surveying and Rating Bureau inspect Kadlec Hospital.

1196835

COMMUNITY REAL ESTATE AND SERVICES DEPARTMENT

ENGINEERING UNIT

MAY 1952

PERSONNEL	Exempt	Non-Exempt	Total
Employees - Beginning of Month	7	3	10
Employees - End of Month	7	2	9

The Status of Active Projects is as follows:

K-562 - Automatic Irrigation Levee 2-C - Job started. Anticipate completion about June 20,1952.

L-262 - Water and Sewer - Assembly of God Church - Project complete. Physical completion notice posted.

L-608 - Odors Emanating from Sewage Lift Station - Plans and specifications 100% complete.

L-911 - Resurfacing of Parking Lot at Village Drugstore and Campbells Food #2 - Plans and specifications 100% complete. Ready for Contract Section. To be included with bid package on C-486.

S-405B- Street Tree Planting - Additional Erosion Control - Project complete. Physical completion notice posted.

S-552 - Additional Fire Protection - Desert Inn and Richland Theater - Notice to proceed given. Construction scheduled for June 1952.

C-408 - Additional Erosion Control - Job complete. Physical completion notice posted.

C-425 - 1951 Park Development Program - Sanitary sewer line, site grading, tree and shrub planting and parking lots completed. Restroom and equipment storage building 80% complete, Irrigation system 80% complete, Lawn seeding not started.

C-426 - Street Improvement Program 1951 - Top soil and seeding 90% complete.

C-486 - 1952 Street Improvement Program - Plans and specifications 100% complete. Ready for Contract Section.

Status of Active ESRs

369-CA Site Map CAP Field - Deferred for other work

473-M West Side United Protestant Church - Major roof structure corrections made by church when final inspection revealed structural deficiencies.

510-M Roads and Streets Drawings - 1950 Construction - Deferred for other work.

5[illegible]-SD Tree Planting for Schools - Spring planting complete. Additional work programmed for fall 1952.

547-MD Fixed Irrigation System - Design in progress. Preliminary estimate made. Redesign required to meet limited funds.

1196836

Engineering Unit

561-SD Chief Joseph Grounds - Irrigation System 90% complete, site grading and rock removal 90% complete, lawn seeding in progress.

565-RC Site South of Tract House 0-1224-Deferred for other work.

572-M First Baptist Church - Work 52% complete.

579-MS Goethals Drive to Williams - Study of Intersection - Deferred for other work.

581-RC "As Built" plans for LDS Church - Awaiting further action by the Church.

585-M Anderson Motors Addition - Work complete. Exceptions to be cleared before final acceptance.

591-M Preparation of Advise Pamphlet for Contractors - Rough completed. Temporarily delayed for other work

596-M Store Building #3 - C. D. Joseph - Materially complete. Portions of store occupied for business.

603-RC Legal description - McVicker Building #3 - Completed.

605-PR Erosion Control - Preliminary work complete. Work started on project.

609-M Plan Checking - Store Building #4 - C. D. Joseph - Construction work progressing. Work 98% complete.

-RC "As Built" plans for Richland Thrifty Drug - Returned to Architect for correction.

615-M Plan Checking - McVicker Bldg. #4 - Construction progressing. Work 99% complete.

616-M Level Control Valve - Sewage Treatment Plant - Deferred for other work.

617-RC "As Built" plans for theater building - Deferred for other work.

619-M Alteration of Greenway for Parking Area - Design complete. Quantity take off and check estimate being prepared.

620-M Fire Hydrant Installation - Birch Street between Kuhn Street and Swift Blvd. - Contract awarded. Construction scheduled for June 1952.

623-M Request for preliminary Engineering on Additional Erosion Control - FY 1952 - Preliminary work complete.

624-M Landscaping Estimate for Central Fire Station - Preliminary work is completed. Design to follow completion of building.

625-M Kirkpatrick Building #2, Block 4, - Work progressing - 99% complete.

628-M Prepare "As Built" plans for Richland Fire Alarm System - Temporarily delayed.

629-M Temporary loan of employees to Design - 100% complete.

-M Correction of Master Plan - Temporarily delayed.

631-M "As Built" Plans for Sewer System - To be developed as time permits.

1196837

Engineering Unit

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 - Prepared and submitted data as requeste by AEC. Work continuing.

637-M Engineering - Parking Lots- Chief Joseph School - Design 100% complete.

639-RC Legal Description - Bus Depot - 50% complete.

640-RC Anderson Motors - "As Built" plans - Deferred for other work.

641-RC Sewer Service to Gillette Property - In project form. Construction progressing.

643-RC Legal Description for McVickers Building - 50% complete.

644-RC Legal Description for Safeway Store Site on Harding and Cullum - 100% complete.

646-M Engineer Liaison - Central Fire Station - Progressing.

647-RC Parish - All Saints Episcopal - Extend Utilities - 100% complete.

650-M Addition to Spencer-Kirkpatrick Building - Work 98% complete.

651-M Estimate for Dog Pound - Completed one proposal and alternate proposals. Estimates 100% complete.

653-M Willard Parker Building Addition - Work progressing - 99% complete.

654-M Elmer J. Hansen Building Addition - Plans not received.

655-M Ground Lease - Kidwell-Gerdes Service Station - 50% complete.

656-M Plan Checking - Kidwell-Gerdes Service Station - Plans not received.

657-M Review Richland Fire Station - Work progressing.

658-M Grounds Maintenance Report - Report submitted and reviewed.

659-RC R. H. Gillette Site (Add.) - 50% complete.

660-RC Rex L. Jensen Proposed Site - 50% complete.

661-RC Richland Development Co. Site - Block 5 - Uptown Area - 50% complete.

662-M Extension to Mansfield Drive West - Design 75% complete.

663-M Richland Development Co., Block 5 - No. Comm. Area, Plan Checking- Partial permit issued. Construction 10% complete.

664-M Sprinkler System - Jason Lee School - Not started. Design will follow survey for future street pattern of adjoining area.

665-RC Richland Labor Temple- Plans not received.

1196838

Engineering Unit

-BC "As Built" plans for Spencer-Kirkpatrick Building Addition- Completed.

667-BC Revised Legal Description - McVicker Building No. 3 - 50% complete.

668-BC Legal Description - American Legion Post No. 71 - Awaiting further information.

669-M Alterations for Frank Berry Sporting Goods Store - Permit issued. Work progressing.

670-GS Annual Coal Pile Survey - 50% complete.

671-M Addition to Ernie's Restaurant - Work Complete - Final Inspection made.

1196839

COMMUNITY REAL ESTATE SECTION

SUMMARY

MAY
1952

ORGANIZATION AND PERSONNEL:

	BEGINNING OF MONTH		END OF MONTH	
	Exempt	Non-Exempt	Exempt	Non-Exempt
Commercial Property Unit	7	5	7	5
Housing & Maintenance Unit	22	155	21	153
	29	160	28	158

Decrease in Employees for month of May 3

GENERAL

The following commercial establishments commenced operation during the month of May:

Mademoiselle Beauty Salon	Joseph Bldg. #2	May 1, 1952 (New Location)
Lil-Dales Beauty Salon	1381 George Wash. Way	May 1, 1952
V.F.W. Club of Post #7952	Kirkpatrick Bldg., Block 4	May 16, 1952
Johnny's Delicatessen	McVicker Bldg. #4, Block 1	May 23, 1952

An A-J housing unit located at 1733 Davison, which represented the more severe condition of exterior siding deterioration, was selected as an experimental unit to be painted by Project forces. The preparation sanding, primer coat and finish coat was done in stages to determine by actual field conditions, the most suited method of preparing the surface and painting the exterior.

An important point established by the experiment was that belt power sanders should be used in order to cut flat-grained, feathered siding. It is concluded that: each house will require individual preparation; control primer must not be diluted; and that it will not be necessary to apply more than two (2) coats of paint to the exterior siding.

1196840

HOUSING AND MAINTENANCE UNIT

May, 1952

ORGANIZATION AND PERSONNEL

Number of employees on payroll:

Beginning of month	22	Exempt	
	155	Non-Exempt	
	177		177
End of month	21	Exempt	
	153	Non-Exempt	
	174		174

1196841

RICHLAND HOUSING

HOUSING UTILIZATION AS OF MONTH ENDING MAY 31, 1952

HOUSES OCCUPIED BY FAMILY GROUPS

	Conventional	A&J	T	Precut	Ranch	Prefab	Dorm Apt	A&J Apt	2BR Apt	Fourth Housing	Tract	Total
G.E.Employees	2212	259	9	381	816	1161	10	45	62	201	38	5194
Commercial Facilities	93	11	1	36	80	57		8	2	7	5	300
Community Activities	9				5	5					1	20
Medical Facilities	3	16			2	1				3		25
Post Office	5				3	12				1	3	24
A.E.C. and other government	103	29		19	57	23		4	3	15	3	256
Schools	50	1		5	10	52		1	1	1		121
Atkinson and Jones	7	13		3	9	5		4		1		42
Nitro Corporation	6	3		2	9	3						23
Charles T. Main	1			3	3	11						18
Newberry Neon	3	1		1				1		1		7
Vernita Orchards											5	5
Urban-Smythe-Warren					3				1			4
Universal Foods						3						3
W.S.Jenkins					1							1
Robert's Filter	1											1
House Exchanges	1				1							2
Turnovers					1	1		1				3
TOTAL	2494	333	10	450	1000	1334	10	64	69	230	55	6049
Houses assigned Leases written	2					2						4
Houses assigned Leases not written	2					4			1			7
Hou[illegible] available for assignment	2					2						4
TOTAL	2500	333	10	450	1000	1342	10	64	70	230	55	6064

	Begin Month	Moved In	Moved Out	Month End	Difference
Conventional Type	2493	26	26	2493	---
A&J Houses	333	2	2	333	---
"T" Type	10	—	—	10	---
Precut Type	449	3	2	450	Plus 1
Ranch Type	999	13	14	998	Minus 1
PreFab Type	1340	15	21	1334	Minus 6
Dorm Apts	10	—	—	10	---
A&J Apts	63	1	1	63	---
2BR Apts	69	3	3	69	---
Fourth Housing	227	3	1	229	Plus 2
Tract	55	—	—	55	---
TOTAL	6048	66	70	6044	Minus 4

1196842

MAY 1952

DORMITORY STATISTICS

Dormitories:

		Occupants	Vacancies	Total Beds
Men Occupied	15	616	----	616
Women Occupied	12	481	1	480*
		1097	1	1096*

Women's Dormitories occupied by:

G. E. Office	2
Education	1
Apartments	1

*This includes space of 2 beds in W-9 used for supply rooms and dormitory offices.

There are 129 men waiting for rooms in Richland.
There are 0 women waiting for rooms in Richland
There are 42 men waiting for single rooms.
There are 77 Women waiting for single rooms.

GENERAL

Houses allocated to new tenants	26
Exchange Houses	17
Moves (within the village)	13
Turnovers	5
Total leases signed	66
Terminations	35
Total cancellations	70
Applications pending	685

ALLOCATION SECTION STATISTICS

Voluntary terminations	17
R. O. F.	1
Discharge	0
Transfers	5
Retirement-Divorce-Death-Misc.	1
Houses assigned "As Is"	30
Move off project	10
Houses sent to renovation	20

1196843

DORMITORY REPORT FOR MAY 1952

197 MINOR REPAIRS TO FUSES, PLUMBING, ETC.

7 WORK ORDERS STEAM, GLASS, EQUIPMENT, ETC.

92 PIECES OF FURNITURE REPAIRED.

LINENS LAUNDERED

8,468 SHEETS

4,396 PILLOW CASES

123 BED SPREADS

59 BED PADS

298 SHOWER CURTAINS

158 PAIRS DRAPES

1196844

MISCELLANEOUS STORES WAREHOUSE INVENTORY SUMMARY
MONTH ENDING MAY -- 1952

	EXPENDABLE ITEMS	FURNITURE (GEN. LEDGER)	FURNITURE (KARDEX CONT.)	PLANT ITEMS	TOTAL
BEGINNING BALANCE	$ 8,014.61	$ 10,966.06	($ 10,155.14)	$ 36,332.89	$55,313.47
RECEIPTS:					
On Purchase Orders	78.80			265.68	
On Store Orders	340.30				
From Housing	20.55		832.98	2,119.58	
From Dormitories	39.21		1,389.14		
TOTAL RECEIPTS	$ 478.86	$	$ 2,222.12	$ 2,385.26	$
TOTAL AVAILABLE DISBURSEMENTS:	$ 8,493.47	$ 10,966.06	$ 12,377.26	$ 38,718.06	$
Cash Sales (Backcharge)	39.19				
To Salvage	67.93		2,184.95	1,104.87	
To Housing	967.00		12.56	3,183.64	
To Dormitories	672.79		861.71		
Dorm-Shades & Reflectors	10.03				
To Warehouse Supplies	135.21				
Grass Seed				389.60	
To Other (Misc.)	107.50		.96	898.46	
TOTAL DISBURSEMENTS	$ 1,999.65	$	($ 3,060.18)	$ 5,576.57	$
ENDING BALANCE (1) (2) (4)	6,493.82	10,966.06	($ 9,317.08)	$33,141.49	$ 50,601.37
	(1)	(2)	(3)	(4)	
NET CHANGE	$ 1,520.79	$ 10,966.06	$ 838.06	$ 3,191.31	$ 4,712.10

ENDING BALANCE GENERAL LEDGER (BALANCE-COL. 1 PLUS COL.2) $ 17,459.88

COLUMN 3 FOR LOCATION CONTROL ONLY-COLUMN 4 MEMO ACCOUNT ONLY

EXCHANGED:	PIECES
Dorm. Furniture	35
Ranges	3
Refrigerators	7
Prefab Heaters	5

1196845

[illegible] RELATIONS WORK ORDER AND PROGRESS REPORT - MONTH OF MAY, 1952

Processing of Service Orders, Work Orders and Service Charges

	Orders Incomplete as of April 30, 1952	Orders Issued 4-30 to 5-31	Total Orders Incomplete as of May 31, 1952
Service Orders	59	1636	72
Work Orders	1536	445	877
Service Charges		245	

Principal Work Order Loads

	Incomplete as of April 30, 1952	Incomplete as of May 31, 1952
Laundry tub replacements	14	18
Bathroom Reno's (tub, tile, lino)	48	31
Tileboard only (Bathroom)	1	1
Kit. Cabinet Linoleum	10	19
Kit. Floor Linoleum	28	28
Shower Stall	8	10

Alteration Permits Issued During the Month of May totaled 75 compared to 90 issued in April

Install air conditioner	17	Glaze porch	1
Install concrete sidewalk	1	Install back door	2
Install clothes poles	5	Basement excavation	4
Install oil burner	3	Install toilet in basement	1
Install fence	14	Sand floors	1
Install auto. washer	7	Construct toolshed	1
Install cooler pads	1	Construct fireplace	2
Raise threshold	1	Construct patio	2
Install water softener	7	Install garbage disposal unit	2
Change range receptacle	1	Construct dog pen	1
Remove shelves	1		

1072 Inspections were made during the Month of May compared to 1174 made during April

Alteration Permits	14	Shower stalls	8
Bathtubs	30	Sidewalks	31
Cupboards	2	Sinks	21
Drainage	9	Tileboard	16
Driving on grass	3	Toilet seats	12
Floor boards	14	Topsoil	27
Grass seed	77	Laundry trays	3
Jack and Shim	6	Walls	6
Leaking basements	4	Windows	6
Linoleum	84	Cancellations	81
Lot lines	10	Renovations	66
Paint	141	Shows (new tenants)	51
Porch and Steps	30	Miscellaneous	264
Screen doors	56		

1196846

I. HOUSING MAINTENANCE BACK-LOG REPORT

TYPE OF WORK	OLDEST ISSUE DATE	BACK-LOG	RATE OF REPLACEMENT
Bathtubs, including Tile board (bath) Floor lino (bath) Painting (bath)	3-19-52	21	10 per week
Tile Board - A & J (Other than tub installation)	5-15-52	3	2 per week
Painting (Misc.)	Orders ready 4-26-52	26	20 per week
Kitchen floor lino (Prefabs)	3-28-52	3	1 per week
Kitchen floor lino (Conventional)	3-19-52	25	None
Bathroom floor lino (Prefabs)	4-14-52	4	None
Bathroom floor lino (Conventional)	11-28-50	2 ("D" houses)	When shower is installed
Kitchen sink lino (Prefabs)	5-9-52	5	4 per week
Kitchen sink lino (Conventional)	3-24-52	15	5-6 per week
Shower stall installations	12-7-50 D houses 5-29-52 Tract 3-19-52 Prefabs	20	None
Laundry Trays	4-17-52	17	2-3 per week

1196847

II. MAINTENANCE TRANSPORTATION EQUIPMENT

TRUCK TYPE	NO. IN POSSESSION	CRAFT
1½ ton Flatbed	8	Carpenters
1/2 ton Pickups	6	Carpenters
1/2 ton Pickups	2	Sheetmetal
Panels	3	Millwrights
3/4 ton Walkin	1	Millwrights
Panels	2	Painters
1½ ton Flatbed	3	Painters
1/2 ton Pickups	4	Painters
1/2 ton Pickups	5	Plumbers
3/4 ton Pickups	3	Plumbers
Subtotal:	37	
SERVICE ORDERS:		
3/4 ton Pickups	2	Plumbers
1/2 ton Pickups	2	Plumbers
1/2 ton Pickups	4	Electricians
1/2 ton Pickups	2	Carpenters
1/2 ton Pickup	1	Locksmith
1/2 ton Pickup	1	Glazier
Subtotal:	12	
RENOVATIONS AND LABOR:		
Chevrolet Carryall	1	Painters & Janitresses
1/2 ton Pickups	2	Carpenters
3½ ton Dumps	2	Labor
3/4 ton Power Wagon	1	Labor
Subtotal:	6	
GENERAL:		
Sedans	2	Supervision
Subtotal:	2	
GRAND TOTAL:	57	

1196848

III. PROGRESS REPORT

A. INTERIOR REDECORATION PROGRAM:

There were 140 housing units completely redecorated during the month of May. Of this number thirty-three (33) A & J houses were completed.

One paint crew was pulled off the Precut houses and started the A & J houses during the month of May, due to the general condition found on the Precut exterior doors. These doors could not be processed through the carpenter shop fast enough to keep ahead of the Interior Painting crews. It is to be noted that the general condition found in the A & J houses are probably more severe from the Interior Carpentry Cycle Program, than any other houses. This is due to wood shrinkage, molding pulling away from ceilings and base board, and general warped condition found in these houses.

There was a total of 130 houses processed by the Interior Cycle Carpentry Crew.

Experimental House:

The housing unit located at 1733 Davison, which represents the more severe condition of exterior A. & J. siding deterioration, has been selected as an experimental unit to be painted by Project forces. This house is being prepared and painted in stages; such as, preparation sanding, prime coat and finish coat. The object of this experiment is to determine by actual field conditions, the most suited method of preparing the surface and painting the exterior. The most important point picked up by this experiment purpose, was establishing the fact that belt power sanders have to be used in order to cut flat-grained, feathered siding. It is felt at this point that it will not be necessary to apply more than two (2) coats of paint to A & J houses siding, but that each house will require individual preparation and that control primer must not be diluted.

The interior painting in Dorm W-5 has been completed, and the painting in Dorm W-6 is 75% complete.

B. FIELD CARPENTRY - LINOLEUM & TILE:

The following units of work were completed by this group during the month:

Installed Tile board:	45
Installed sink lino:	57
Installed kitchen floor lino:	15
Installed bathroom floor lino:	44
Chempointed bathtubs & sinks:	128
Applied roof coating:	14
Repaired roofs:	20
Jack & Shim houses:	22
Raised rear door slabs:	10
Miscellaneous	32

1196849

C. CARPENTER SHOP:

The Carpenter Shop in 722 Hangar completed the following units of work during the month of May.

Outside doors repaired:	(Precut houses)	133
Screen doors repaired:	(Conventional houses)	20
Screen doors replaced:	(Conventional houses)	24
Painting touch-up jobs:		160

Exterior Carpenter Repair:

Work was completed on Exterior repairs to all A & J houses; such as, replacing siding, shakes; repair to screens, doors, soffits and porch posts, etc.

Precuts are approximately 70% complete. The major item of repairs is to the front and back doors and screen doors. The front doors require being removed and brought to the shop for re-doweling and glueing; then a prime coat of paint is applied over exposed wood. Approximately 70% of all front and back doors on Precuts must be repaired this way.

B.O.Q. Dorms are 100% complete in exterior repairs to siding, window screens, door jambs, trim, casing, etc. Doors are being replaced on Dorms where doors are beyond repair. Originally 20 doors of plywood, slab construction were made up in the shop for replacement on the west end of Men's and Women's Dorms as required. This work is approximately 70% complete.

D. PLUMBING:

The Plumbing group accomplished the units of work listed.

Installed bathtubs:	44	Installed water heaters:	20
Installed laundry tubs:	25		

Opened 22 stopped up sewer lines clogged with tree roots.
Completed 33 plumbing Work Orders, consisting of removing and replacing toilet bowls for bathroom linoleum installations.
Completed 9 steam Work Orders, consisting of repairing steam leaks and replacing rusted-out piping.
Overhauled P. R. V. Stations in 28 Dorms.
Overhauled 3 Dorms; replacing worn out, wartime radiator valves and traps.
Steam inspection on Dorms and Commercial Buildings were made once a week.
Turned off heating steam on Dorms and Commercial Buildings.
Re-laid new sewer line for Tract house K-780.
Turned water on for coolers in Dorms.
Repairing National Water heaters in Hangar.

1196850

E. MILLWRIGHTS: 5 men.

1. Routine inspection and lubrication was completed on all ranch type houses and Geo. Washington Way Apts.

2. A machine was obtained and has been adapted for use in cleaning the duct work on all types of furnaces.

3. Numerous calls on cooler troubles have been taken care of during past month.

F. SHEETMETAL: 3 men.

1. Flashing was made and installed on eight (8) A & J houses.

2. Gutters were made and installed on twenty-five (25) houses.

3. Sheetmetal ducts, and duct collector work was done for furnace cleaning machine.

4. Six hundred (600) metal signs were made for Public Works.

5. New sheetmetal scrapers were made for sewage disposal plant.

6. Shower stalls are now being made and installed in Dorm. W-2.

G. RENOVATION:

During the month of May there were 21 houses processed by the Renovation Group. Of these 21 houses, two (2) units were completely painted in the interior and cleaned. Nineteen (19) houses were cleaned only and all 21 houses received necessary carpentry work.

There were 34 trash pick-ups made from houses.

H. SERVICE ORDERS:

The following is a status report on Service Orders:

A.	On hand at the beginning of the month:	59
B.	Received during the month:	1686
C.	Completed during the month:	1649
D.	On hand at the end of the month:	72
E.	Time spent on Work Orders:	480 hrs.
F.	Craft backlog:	

Locksmith:	260 hrs.
Carpentry:	150 hrs.
Glazing:	40 hrs.
Electrical:	0 hrs.
Plumbing:	0 hrs.

(Service Order, Cont'd)

NOTE: The electrical inspections being carried on in the Conventional houses in Division I, has turned up many deficiencies, and these findings have been turned over to Housing for checking as to whether they are the Tenants' responsibility or the Companys' responsibility. Those that are the Company's responsibility are being corrected by the craftsmen.

Pennywise Drug Store: The job of replacing division bars, which were not adequate to hold the large plate glass windows, and replacing six (6) broken windows is 100% complete.

I. LABOR:

1.	Pumped waste oil (7 stations) semi-monthly.	
2.	Prepared ground and seeded three areas.	
3.	Sewers excavated and backfilled:	13
4.	Loads of topsoil delivered:	13
5.	Steps filled with blacktop:	42
6.	Removed dirt from Dorm areas:	3
7.	Repaired Commercial compounds:	6
8.	Removed trees from village:	8
9.	Repaired driveways and compounds:	15
10.	Repaired walks with blacktop:	17
11.	Backfilled around new apartments:	3
12.	Delivered sanitary water to Tract house K-734	
13.	Oiled roads around Richland Concrete Company.	
14.	Removed concrete and filled holes at 2119 Symons.	
15.	Hauled trash from 700 Area for General Services.	
16.	Repaired bumper logs in Men's Dorm Area.	
17.	Cleaned out boiler room at Recreation Hall.	
18.	Installed barrier posts at Campbells #2.	
19.	Installed bumper logs in three (3) compounds in village.	
20.	Excavated and backfilled for drain at M-9.	
21.	Excavated and backfilled for drain at 1503 Wright.	
22.	Cut hole in concrete floor at Hospital.	
23.	Removed cat odor from basement at 1008 Fitch.	
24.	Filled cave-in and repaired lawn at 1208 Gowan.	
25.	Filled retaining wall at 302 Goethals.	
26.	Hauled excess materials from 700 Area to 3000 Area.	

****

Minor Organization changes were made, effective June 1, 1952, as follows:

H. W. Persons relieved M. E. Tappan as Interior Redecorating Foreman.
B. C. Bain relieved H. W. Persons as Relief Foreman.
M. E. Tappan relieved B. C. Bain as Carpenter Shop Foreman.

The Interior Redecorating Field offices are being closed down by moving these offices into the 722 Hangar building.

REAL ESTATE ENGINEERING UNIT
MAY 29, 1952

Following is the status of active projects being handled by this unit:

K-918, Exterior Painting - Three Government-owned Buildings

Field Release No. 2 issued April 2, 1952. Construction scheduled for June.

L-911, Resurface Parking Lot Between Campbell's Food Store No. 2 and Village Pharmacy

Plans and drawings approved March 26, 1952. To be sent out for bid with Project C-486, Improvements to Existing Streets-Fiscal Year 1952.

L-921, Repair of Fire Damaged Prefab - 1004 Wright Avenue

Work began May 6, 1952. Approximately 85% complete.

S-909, Exterior Cycle Painting-331 Houses - Divisions II and III

Work began April 7, 1952, and is approximately 47% complete.

S-922, Damaged "A" House - 1311 Swift Boulevard

Construction was started May 5, 1952, and is approximately 55% complete.

S-924, Exterior Painting - Richland Housing 1953

Field Release No. 1 issued May 19, 1952. Drawings complete. Specifications awaiting completion of experimental work.

C-930, Concrete Walks and Steps - 552 Houses

Project Proposal and supporting documents to Department A & B Committee for approval.

Following is the status of active ESRs being handled by this unit:

903-RH, Alteration Inspections

Deferred for other work.

904-RM, Procurement Aid and Material Studies

Routine duties performed as required.

910-RC, Approval of Pasture Land Permits

Routine work.

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917-RH, Drainage of Inner Block Areas

Recommendations made for area east of 1736 Davison Street.

919-RC, Approval of Alterations - Desert Inn Hotel

Installation of additional wall receptacles complete.

929-RH, Study-Possible Alterations - 413 George Washington Way

Recommendations made.

933-RM, Electrical Alterations - The Mart

Awaiting delivery of material.

935-RM, Map 113 - Domestic Irrigation Corrections and Additions

Corrections made to original tracings.

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COMMERCIAL PROPERTY - REAL ESTATE SECTION

May, 1952

PERSONNEL - COMMERCIAL PROPERTY:

	May
Beginning of month	12
End of month	12
Net difference	0

PERSONNEL - COMMERCIAL AND NONCOMMERCIAL FACILITIES:

	Commercial	Noncommercial	Total
April	1,387	118	1,505
May	1,398	120	1,518
Net increase	11	2	13

SUMMARY OF ROUTINE ITEMS PROCESSED:

Work Orders	39	7	46
Back Charges	3	0	3

CONTRACTS AND NEGOTIATIONS:

A. Commercial:

1. Lease:

a. Richland Development Company, Inc. — covering the construction, operation and maintenance of a two-story commercial building, Block 5, Uptown Business District.

2. Letters of Approval:

a. Virgil O. McVicker's request to sublease "Ernie's Restaurant" to Ernest McVicker and C. E. Leavitt.

3. Award Cancellations:

a. Virgil O. McVicker — cancelled proposal for construction of commercial building in Block 2, Uptown Commercial Area.

b. Rex L. Jensen — cancelled proposal for construction of a cocktail lounge in the Light Industrial Area.

4. Letter of Award:

a. John L. Miller — to construct, operate and maintain a building for a radio repair shop on the plot between Hurt's Apparel and Village Theatre.

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5. Bid Openings:

a. The following number of Bidders submitted proposals on plots recently advertised:

(1) Drive-In Theater Site - 5

(2) Light Industrial Area Site - 4

(3) Medical-Professional Site - 1

(4) Downtown Business District Plot - 1

(5) Heavy Industrial Area Site - None

B. Noncommercial:

1. Assignment of Lease:

a. Church of Christ The King — from the Corporation of The Catholic Bishop of Spokane, to the Corporation of The Catholic Bishop of Yakima.

2. Supplemental Agreement No. II:

a. Church of Christ The King — to cancel a former amendment.

3. Letter of Award:

a. Richland Labor Temple Association, Inc. — for the construction, operation and maintenance of a union hall.

SUMMARY OF OCCUPANCY AND EXPANSION STATUS:

A. Commercial:

	April	May
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	16	16
c. Total businesses operating in Government-owned buildings	57	57
2. Doctors and dentists in private practice, leasing space in Government-owned buildings	22	22
3. Number of privately-owned buildings	45	45
a. Number of businesses operated by prime lessees	39	38
b. Number of businesses operated by sublessees	43	47
c. Total businesses operating in privately-owned buildings	82	85

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	April	May
4. Privately-owned buildings under construction	4	5
5. Total number of businesses in operation	139	142
B. Noncommercial:		
1. Government-owned buildings		
a. Churches	4	4
b. Clubs and organizations	9	9
c. Government agencies	3	3
Total	16	16
2. Privately-owned buildings		
a. Completed and in use	6	6
b. Under construction	7	7
3. Sites tentatively allocated or leases in process of negotiation.	1	2
Total	14	15
4. Pasture Land Permits	79	81

GENERAL:

A. Commercial:

1. Mademoiselle Beauty Salon moved to a new location in C. D. Joseph Building #2, on May 1, 1952; terminated lease with Lil-Dale's on April 30, 1952.

2. Lil-Dale's Beauty Salon opened for business at 1381 George Washington Way, May 1, 1952.

3. Richland Development Company, Inc., commenced construction of a two-story commercial building in Block 5, Uptown Business District, May 6, 1952.

4. The V.F.W. Club of Post #7952 was opened on May 16, 1952, in the M. L. Kirkpatrick Building in Block 4, Uptown Business District.

5. Johnny's Delicatessen opened for business on May 23, 1952, in Virgil O. McVicker Building #4, Block 1, Uptown Business District.

6. Virgil O. McVicker subleased "Ernie's Restaurant" to Ernest McVicker and C. E. Leavitt.

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B. Noncommercial:

1. Pasture Permits — three new permits were issued and one permit was cancelled.

COMMERCIAL PROSPECTS:

Inquiries were received during the month concerning the establishment of the following types of commercial enterprises:

Auto Accessories	Building Material & Fuel Yard
Auto Agency	Drive-In Theater

NONCOMMERCIAL PROSPECTS:

None

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MONTHLY REPORT
700-1100-3000 AREA SERVICES SECTION
MAY 1952

700-1100 MAINTENANCE AND STEAM UNIT

General Maintenance:

The heating steam was shut off for practically all buildings by the end of the month. Routine summer inspection and repair of systems started immediately.

Eighty-four valves and regulators were repaired and tested for other Sections.

Steam booster coils were removed from cooling ducts in 702 and 762 Buildings to permit greater air flow for summer cooling.

Twenty-two tubes were replaced in No. 4 boiler at 784 Building. Overhaul is 75% complete.

A total of approximately 250 feet of Hauserman partition was installed in buildings 703, 761 and 762, with 125 feet of filler plate to extend walls to ceiling where necessary.

A number of cabinets, book cases and shelves were made up, most of which were required because of changes in office occupancy.

Saw filing and tool sharpening involved seventy hours of work.

The excessing program remained steady with two men shoring, crating and banding material for shipment.

Spot-patched walls and repainted several rooms at Kadlec Hospital.

Continued road striping and curb painting program.

The Utilities and General Services Department cancelled all blanket-type routine orders and reissued more detailed work orders to replace them, incorporating service orders for all routine type work. Object of the change is to provide a more detailed maintenance cost for future budget purposes.

Steam Operation:

The decreasing heating load permitted withdrawal from service of No. 3 boiler on May 13, with No. 1 boiler remaining on the line. Single-boiler operation was achieved 4 days earlier than last year.

The quantity of steam generated at 784 Heating Plant was 10.3% less than that for May of last year.

On May 8 operations were suspended for the summer at 1131 Heating Plant and the remaining two Miscellaneous Power Operators were officially transferred to the Public Works Unit on May 12 for seasonal assignment.

The usage of soft water at Kadlec Hospital increased as compared to the previous month, although peak daily consumption did not appreciably exceed that experienced in the latter part of April.

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700-1100-3000 AREA SERVICES SECTION

Steam Statistics:

Steam Generated	12,337.9	M. Lbs.
Steam Leaving Plant	10,487.1	M. Lbs.
Steam Delivered	8,255.1	M. Lbs.
Coal Consumed	949.05	Net Tons
Total Water Softened	3,435,100	Gallons
Soft Water Sent to Kadlec Hospital	1,895,730	Gallons
Soft Water Used at 784 Heating Plant	1,539,370	Gallons
Soft Water Served to Kadlec Hospital	743.5	Hours

Maintenance Backlog:

Foreman	Type of Work	Manhours	No. Crew Days	Men on Routine	Total
Bennett	Electrical	567	23.5	4	7
McCartney	Machinist	28	7	.5	1
	Welder	45	9	.5	1
	Sheetmetal	94	8	.5	2
	Millwright	77	9	4	5
Vaught	Painting	475	30		2
	Sign Painting	130	16		1
	Carpenter	860	24	4.5	9
Marzyck	Plumber & Pipefitter	279	17	2	4
	Serviceman			2	2

NORTH RICHLAND COMMERCIAL FACILITIES UNIT

Sixteen commercial facilities were in business during the month, nine in Government-owned buildings and seven in privately-owned buildings.

Twenty-seven Work Order Requests were written during the month, nine of these affecting work performed in Building #2, Cafeteria.

The operator of Cannon Service Company has requested authorization to sell its coin-operated laundry service. Our letter of recommendation was forwarded to the Commission requesting approval of the operator's proposed sale.

NORTH RICHLAND FIRE UNIT

There were two safety and security meetings; 5 inside drills and schools and 19 outside drills during May.

Eighty-six fire alarm boxes and 2450 feet of 2½" hose were tested.

Protecto wire system in Hanford barracks was checked, also scrap lumber pile at barracks 414-B.

Engine 2609 was used to remove a cat from a pole near barracks 212-A.

Auxiliary boxes, sprinkler circuits and system, and evacuation horns at 2104 Stockade Building were tested.

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700-1100-3000 AREA SERVICES SECTION

Street box 335, between 2nd and 3rd Streets on "Q" Avenue, was put in service.

A movie on "Fire Extinguishment" was shown to all members of "A" and "B" shifts.

Yellow Alert was received at 5:49 p.m. on May 19. Apparatus and personnel were dispatched to pre-arranged dispersal points. Off duty personnel were contacted and notified of Yellow Alert.

The hospital alarm system was checked.

John Ball School kindergarten children visited and were shown through the Fire Station.

A list of Army building identification numbers were mimeographed and distributed to each officer; they were also posted in alarm room and put on each fire apparatus.

A Tanker was dispatched to wet down the Army Ball Park.

All Master Fire alarm boxes were tested to the Fire Station. Buildings were tested for wiring, evacuation horns, fan trips and alarm signals.

All alarm boxes in Army warehouse area were checked.

Various area inspection tours were made.

Engines # 2609 and 2513 were reloaded with tested hose.

Alarm No.	Response to Alarms	Cause for Alarms	How Received
82	Barracks at 4th & "Q".	Unknown, activated auxiliary.	Box
83	Barracks 169.	Bks. door slammed against panel.	Box
84	Barracks 2104-D.	Overheated fan room.	Phone
85	Barracks 214-A, Rm. 21.	Smoker's carelessness.	Phone
86	Barracks 3104.	Unknown, activated Protecto wire.	Box
87	Eight miles west of 3000 Area.	Unknown, grass fire.	Phone
88	Building 1236, Ordnance Warehouse.	Wiring short in switch box.	Phone
89	Barracks 3309.	Accidental alarm	Box
90	Barracks 3308.	Box activated by slamming door.	Box
91	Barracks 2203.	Box activated by slamming door.	Box
92	Barracks 2208.	Accidental alarm.	Box
93	Barracks 2208.	Smoke odor.	Box
94	Barracks 3102-D.	False alarm.	Box
95	Barracks 2202.	Probably from slamming door.	Box
96	Barracks 2315.	Accidental alarm.	Box
97	Northeast of 13th & "C".	Boys playing with matches.	Box
98	Barracks 2208-D.	Malfunction of Protecto wire.	Box
99	Barracks 404-D.	Excess steam activated box.	Box
100	Barracks 181.	Accidental alarm.	Box
101	Barracks 3110.	Smoker's carelessness.	Box
102	Snyder Rd. between G.W.W. & Stevens	Careless burning of weeds.	Radio
103	Barracks 156.	Accidental alarm.	Box
104	Barracks 3107	Unknown, tripped Protecto relay.	Box
105	Barracks 2314.	False alarm.	Box
106	Barracks 2330.	Cause unknown.	Box
107	Barracks 2344.	Cause unknown.	Box
108	Barracks 3302-B.	Cause unknown.	Box

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7CC-11CC-3CCO AREA SERVICES SECTION

Alarm No.	Response to Alarms	Cause for Alarms	How Received
109	Barracks 2204-A	Faulty Protecto wire.	Box
110	Barracks 2351.	Faulty Protecto wire.	Box
111	Barracks 2209-A.	False alarm.	Box
112	Barracks 3104.	Accidental alarm.	Box
113	Barracks 159.	False alarm.	Box

Investigations:

Date	Location and cause	H. W. Loss	Personal Loss	Total Loss
5/15/52	Bks. 214-A, rm. 9. Smoker's carelessness.		$ 22.95	$ 22.95
5/19/52	Bathhouse 11. Smoke scare			
5/24/52	Hospital. Smoke odor.			
Alarm No. 101		$ 5.00		5.00
		$ 5.00	$ 22.95	$ 27.95

NORTH RICHLAND PATROL UNIT

Thirty-two traffic warning tickets were issued this month. These tickets were mainly for minor traffic violations.

Thirty-six traffic citation tickets were issued - 15 for Speeding, 12 for Stop Sign Violations, 3 for No Operator's License, 2 for Defective Equipment, 2 for Illegal Parking, 1 for Failure to Yield Right-of-Way, and 1 for Negligent Driving.

Nineteen persons were incarcerated in the Richland Jail - 12 for Public Intoxication, 3 for Driving While Under the Influence or Affected by Use of Intoxicating Liquor, 3 for Public Nuisance, and 1 for Possession of Stolen Property.

Thirty-nine inquiries regarding formerly employed General Electric and construction personnel were answered by this office.

All fire, safety and traffic hazards observed by this Department were reported to proper authorities.

Four firearms belonging to persons living in the Trailer Camp were registered with the Arsenal Officer.

All facilities, warehouses, buildings and the John Ball School were checked daily on the No. 1 and 3 shifts, and on all shifts on Sundays and Holidays.

The following time was spent on bank escort service from Pasco - 30 hours Weekly Payroll and 10 hours Monthly Payroll.

An Appearance Officer was assigned to Judge E. W. Brown's court, on Thursdays at 7:00 p.m., to appear against persons cited to court by North Richland Patrol.

Nine firearms were checked out and 11 checked in the Contraband Room during May.

North Richland population is as follows: Bremerton Houses - 634; Trailer Camp - 3,601; Men's Barracks - 981; Women's Barracks - 56; Total population - 5,272. Total occupied lots in Trailer Camp - 1,275; Total Bremerton Houses occupied - 185.

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7CO-11CO-3000 AREA SERVICES SECTION

Unusual Incident Reports

Public Intoxication	8
Public Nuisance	5
Petit Larceny	2
Horse Struck by Car	1
Driving While Under Influence of Liquor	8
Negligent Driving	1
Negligent Driving Liquor Involved	2
Accident (2 Private Cars)	1
Accident (Car and Telephone Pole)	1
Accident (Truck and Steam Line)	1
Malicious Mischief	1
Investigation of Complaint	1
Accident (2 Gov't. Vehicles)	1

Special Services Performed:

Emergency Messages Delivered	68
Emergency Long Distance Telephone Calls	102
Western Union Telegrams	5
Fires (Sig. 12)	4
False Fire Alarms	23
Unusual Conditions Reported to Maintenance	11
Escorts to First Aid	1
Children Bitten by Dogs	1
Billfolds Turned Into Patrol	1
Billfolds Returned to Owners	1
Soldiers Turned over to M. P. Detachment	5
Suspicious Persons Investigated	9
Personnel Locked out of Rooms	3
Bicycles Reported Lost or Stolen	1
Bicycles Returned to Owners	2
Bicycles Found	4
Cars Impounded at Patrol Headquarters	2
Children Lost	2
Children Returned to Parents	2
Children Struck by Car	1
Pick up for Benton County Sheriff	1
Stolen Car	1
Recovered Car	1

ORGANIZATION AND PERSONNEL

Number of Employees on Roll	Beginning of Month			End of Month		
	Exempt	Non-Exempt	Total	Exempt	Non-Exempt	Total
Maintenance & Steam	8	50	58	8	48	56
North Richland Patrol	6	16	22	6	16	22
North Richland Fire	33	—	33	32	—	32
North Richland Commercial Facilities	1	2	3	1	2	3
Total Employees	48	68	116	47	66	113

Transfers to Community Services - 2 Non-exempt Employees.

Removal from Payroll due to illness - 1 Exempt Employee.

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NORTH RICHLAND COURT CASES

MAY 1952

VIOLATION	NO. OF CASES	NO. OF CONV.	NO. OF FORF.	CASES DISM.	CASES CONT'D.	SENT. JAIL	LIC. RVKD.	TOTAL FINES	TOTAL SUSP.	TOTAL BAIL FORFEITED
Speeding	23	12	10		1			$142.50	$	$125.00
No Driv. Lic.	7	4	1		2			30.00	15.00	5.00
Def. Equipment	2		1		1					7.50
Ran Stop Sign	14	2	9	1	1			20.00		47.50
Neg. Driving	8	4	3		1			45.00		75.00
F. to Yield Right-of-way	6	4	1		1			55.00	27.50	15.00
Illegal Parking	1		1							3.50
Drunken Driving	8	5			3		3	260.00		
Reckless Driving	4	3			1		2	87.50		
Pub. Intoxication	11	1	10					12.50		155.00
Pub. Nuisance	7	3	4			*3				75.00
Poss. of Stolen Property	1	1						27.50		
Carrying concealed Weapon	1				1					
Totals	93	39	40	1	12	3	5	$680.00	$ 42.50	$508.50

* Jail sentences suspended, pending good behavior.

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PROJECT & RELATED PERSONNEL
MAY 1952

	4-30-52		5-29-52	
GOVERNMENT EMPLOYEES				
Civilian Personnel-Atomic Energy Comm.	447		454	
Civilian Personnel G.A.O.	5		5	
Total		452		459
RICHLAND VILLAGE PERSONNEL				
Comm. Facilities (Inc. North Richland)	1387		1398	
Govn. Agencies, Churches, Clubs Etc.	118		120	
Schools	431		433	
Organizations	11		11	
Total		1947		1962
CONSTRUCTION SUB-CONTRACTORS				
Atkinson & Jones	3977		3601	
Newberry Neon	389		385	
Urban Smyth Warren Co.	1111		1025	
Virto Corp. of America	94		89	
V. S. Jenkins	31		33	
J. G. Shotwell	10		0	
Elect. Smith Inc.	7		7	
L. H. Hoffman	6		4	
Stier, Shelton & Schick	1		7	
Charles T. Main	24		76	
The Bay Company	64		42	
Puget Sound Naval Shipyard	415		106	
Anderson Decorating Co.	3		6	
Pittsburg Des Moine Steel Co.	36		34	
Chicago Bridge & Iron Co.	33		12	
Automatic Sprinkler Co. Of America	0		2	
National Blower & Sheetmetal Co.	2		1	
Associated Engrs.	19		27	
Haughton Elevator Co.	6		9	
Bumstead--Woolford	16		21	
Dix Steel Bldg. Co.	5		5	
Portland Wire & Iron	4		0	
American Pipe & Const. Co.	6		0	
Arthur Forsyth Co. (Thermostatic Installation Co.)	1		0	
Day Brothers Lathing & Plastering Co.	3		0	
Coates Electric Co.	2		2	
Minnis & Schilling	8		23	
Anderson Brothers Inc.	19		47	
Sprague--McDowell	5		9	
John Williams	0		4	
E. A. Robertson	0		4	
Cecil C. Hill	0		4	
Swedes Color Bar	0		3	
Total		6297		5588
General Electric Total		8839		8804
GRAND TOTAL		17,535		16,813

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