HW 22875-DEL

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DECLASSIFIED WITH DELETIONS

HANFORD WORKS MONTHLY REPORT

FOR

NOVEMBER 1951

HW--22875-Del.

DE92 012294

Compiled By
Department Managers

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Classification Cancelled (Change to) 1992

By Authority of RLO 11-4
DS Lewis 3-19-92
By LD Kreiss 3-20-92
PM Jack 3-20-92

December 21, 1951

Classification [illegible]
by JPD [illegible]
Date 5-15-73

HANFORD WORKS

RICHLAND, WASHINGTON

INV SEP 14 '93

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

Route To	Read By	Date	Route To	Read By	Date
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HW 22875 [redacted]
December 21,1951

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HANFORD WORKS MONTHLY REPORT

NOVEMBER 1951

GENERAL SUMMARY

Production Operations

All production forecasts were met or exceeded during the month, and new high levels of operation were attained.

Operability tests using "cold" uranium were carried out in the Redox plant and in the UO_3 plant.

Although the number of ruptured slugs increased to 17 from 14 last month, the outage time for removal was reduced.

Engineering and Technology

The canning of 8-inch slugs was begun in preparation for their use in production.

Design and development work on the basic features of an improved Hanford-type pile point to a reduction in the lattice spacing and an increase in the number of tubes.

The technology of analytical control of the Redox and UO_3 processes, which has been under study for many months, was initially applied to those processes this month.

Expansion and Construction

Construction schedules continue to be adversely affected by difficulties in the procurement of critical materials and by shortages of certain crafts. For example the 100-C water plant is currently about five weeks behind schedule.

Work has begun on the Pile Technology and Radiometallurgy Buildings in the Works Laboratory Area.

An impending additional expansion of the plant, known as Program X, is being anticipated by increased effort in the direction of engineering design and development.

Personnel and Services

A substantial reduction, probably seasonal in nature, took place in the turnover rate, which was 1.17% for the month. The plant roll increased to 9,070. The number of employees liable to military service increased slightly.

There are 650 applications for housing pending.

The average daily census in Kadlec hospital was 105.5 vs. 92.0 a year ago. Six more patient rooms are still to be added to the hospital.

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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
Assistant to the General Manager, Salary Administration	J. R. Rue
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

FORCE REPORT NOVEMBER 1951

	EXEMPT		NON EXEMPT		TOTAL	
	10-31-51	11-30-51	10-31-51	11-30-51	10-31-51	11/30/51
GENERAL	24	24	37	34	61	58
LAW	2	2	17	17	19	19
ENGR. DEPT.						
General	2	2	1	1	3	3
Design & Const. Section						
Construction	13	13	26	26	39	39
Design	223	221	412	418	635	639
No. Richland Realty	18	18	113	114	131	132
Project Engr.	74	76	9	1	83	77
Technical Section						
Administrative	6	7	4	3	10	10
Pile Tech.	158	166	176	176	334	342
Separations Tech.	109	109	63	66	172	175
Technical Services	39	39	147	151	186	190
Analytical	113	113	264	260	377	373
MANUFACTURING DEPT.						
General	32	31	16	12	48	43
Reactor Section	170	188	895	897	1065	1085
Metal Prep.	65	67	338	358	403	425
Separations	225	240	1171	1206	1395	1446
MEDICAL DEPT.	40	41	234	234	274	275
RADIOLOGICAL SCIENCES DEP.						
General	3	3	2	2	5	5
Records & Standards	56	25	136	139	192	164
Biophysics	42	44	71	70	113	114
Biology	35	35	46	46	81	81
FINANCIAL DEPT.						
Engr. Acctg.	14	14	85	85	99	99
Mfg.- Acctg.	8	7	54	56	62	63
Gen.Acctg.(Inc.Med.Acct.)'	25	26	118	113	143	139
Gen. Acctg.-Payroll	11	11	117	115	128	126
Comm. Acctg.	6	6	22	20	28	26
EMPLOYEE & PUBLIC RELATIONS	36	38	77	73	113	111
UTILITIES & GENERAL SERVICES						
General	16	16	12	13	28	29
Elect. Dist.& Telep. Sect.	29	29	147	149	176	178
Transportation	40	39	461	470	501	509
Plant Sec. & Service						
Patrol & Sec.	57	57	591	600	648	657
Safety & Fire	41	41	109	109	150	150
Office Services	27	26	280	278	307	304
Purch & Stores Section	83	83	335	339	418	422
COMM. REAL ESTATE & SERV. DEPT.	188	190	377	372	565	562
TOTAL	2030	2047	6963	7023	8993	9070

*Includes 56 Comm. Fireman

PERSONNEL DISTRIBUTION - NOVEMBER 1951

	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 NonExempt	-	-	-	-	-	-	-	-	-	-	34	34
Total	-	-	-	-	-	-	-	-	-	-	58	58
LAW												
Exempt Personnel	-	-	-	-	-	-	-	-	-	-	2	2
Clerical	-	-	-	-	-	-	-	-	-	-	17	17
Total	-	-	-	-	-	-	-	-	-	-	19	19
ENGR. DEPT.												
GENERAL												
Supv.	-	-	-	-	-	-	-	-	-	-	2	2
Clerical	-	-	-	-	-	-	-	-	-	-	1	1
Total	-	-	-	-	-	-	-	-	-	-	3	3
DESIGN & CONST.												
CONSTRUCTION												
Supervisors	-	-	-	-	-	-	-	-	-	-	8	8
Inspectors & Analyst	-	-	-	-	-	-	-	-	-	-	5	5
Clerical	-	-	-	-	-	-	-	-	-	-	26	26
Total	-	-	-	-	-	-	-	-	-	-	39	39
DESIGN												
Supervisors	23	1	-	3	12	1	-	2	-	-	38	80
Other Exempt	11	7	-	8	11	-	30	4	-	13	57	141
Draftsmen & Designers	-	-	-	-	-	-	3	-	-	13	104	120
Clerical	36	-	-	2	-	-	4	-	-	12	114	168
Others	24	-	1	2	15	1	13	6	-	6	62	130
Total	94	8	1	15	38	2	50	12	-	44	375	639

	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
NORTH RICHLAND REALTY												
Supervisors	-	-	-	-	-	-	-	-	-	18	-	18
Janitors	-	-	-	-	-	-	-	-	-	60	-	60
Clerical	-	-	-	-	-	-	-	-	-	13	-	13
Others	-	-	-	-	-	-	-	-	-	41	-	41
Total	-	-	-	-	-	-	-	-	-	132	-	132
PROJ. ENGR.												
Supervisors	-	-	-	-	-	-	-	-	-	-	36	36
Engineers	-	-	-	-	-	-	-	-	-	-	40	40
Clerical	-	-	-	-	-	-	-	-	-	-	1	1
Total	-	-	-	-	-	-	-	-	-	-	77	77
TECHNICAL SECTION												
GENERAL												
Supervisors	-	-	-	-	-	-	-	-	-	-	7	7
Clerical	-	-	-	-	-	-	-	-	-	-	3	3
Total	-	-	-	-	-	-	-	-	-	-	10	10
PILE TECH.												
Supv.	2	-	-	-	-	-	-	5	-	-	-	7
Metallurgists & Engrs	17	6	1	5	22	-	3	39	-	-	1	94
Physicists	-	3	2	4	-	-	-	16	-	-	-	25
Engr. Assts.	15	3	2	4	8	-	-	8	-	-	-	40
Tech. Grads.	18	7	2	8	10	-	3	23	-	-	-	71
Technologists	11	1	1	3	-	-	-	1	-	-	-	17
Laboratory Assts.	19	11	-	6	-	-	1	19	-	-	-	56
Clerical	6	1	-	4	4	-	-	14	-	-	-	29
Engr. Assts.	-	2	-	-	-	-	-	1	-	-	-	3
Total	88	34	8	34	44	-	7	126	-	-	1	342

	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
SEPARATIONS TECH.												
Supv.	-	-	-	-	-	-	7	13	-	-	-	20
Chemists & Engrs.	-	-	-	-	-	-	34	55	-	-	-	89
Tech. Grads.	-	-	-	-	-	-	12	16	-	-	-	28
Clerical	-	-	-	-	-	-	6	12	-	-	-	18
Lab. Assts. & Tech.	-	-	-	-	-	-	4	8	-	-	-	12
Other Non Exempt	-	-	-	-	-	-	1	7	-	-	-	8
Total	-	-	-	-	-	-	64	111	-	-	-	175
TECH. SERVICES												
Supervisors	-	2	-	-	-	-	1	8	-	-	4	15
Other Exempt	-	7	-	-	-	-	1	13	-	2	1	24
Technologists,&Tech.Grad.	-	7	-	-	-	-	-	13	-	-	-	20
Lab. Assts.	-	-	-	-	-	-	6		-	-	-	6
Clerical	-	4	1	-	-	-	4	41	-	1	43	94
Others	4	2	1	-	-	-	6	17	-	-	1	31
Total	4	22	2	-	-	-	18	92	-	3	49	190
ANALYTICAL TECH.												
Supervisors	1	-	-	2	-	6	26	14	-	-	-	49
Chemists & Engrs.	7	1	1	-	-	-	12	43	-	-	-	64
Technologists,&Tech.Grad.	2	-	-	2	-	8	54	12	-	-	-	78
Laboratory Assts.	6	-	-	5	-	23	94	38	-	-	-	166
Clerical	-	-	-	1	-	2	5	8	-	-	-	16
Total	16	1	1	10	-	39	191	115	-	-	-	373
MANUFACTURING DEPT.												
GENERAL												
Supv.	-	-	-	-	-	-	-	-	-	-	14	14
Other Exempt	-	-	-	-	-	-	-	-	1	-	16	17
Clerical	-	-	-	-	-	-	-	-	-	-	12	12
Total	-	-	-	-	-	-	-	-	1	-	42	43

	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
REACTOR												
Supv.	26	47	35	33	-	-	-	-	-	-	-	141
Other Exempt	13	8	6	16	-	-	-	-	-	-	4	47
Supv. in Train.	-	-	-	-	-	-	-	-	-	-	4	4
Operators	35	59	33	35	-	-	-	-	-	-	-	162
Craftsmen	136	212	157	119	-	-	-	-	-	-	-	624
Inspectors & Lab.Assts.	7	11	5	6	-	-	-	-	-	-	-	29
Clerical	7	11	8	14	-	-	-	-	-	-	2	42
Others	2	4	2	4	-	-	-	-	-	-	-	12
Tech. Grads.	7	5	4	6	-	-	-	1	-	-	1	24
Total	233	357	250	233	-	-	-	1	-	-	11	1085
METAL PREPARATIONS												
Supv.	-	2	-	-	-	-	-	40	-	-	1	43
Other Exempt	-	-	-	-	-	-	-	24	-	-	-	24
Supv. in training	-	-	-	-	-	-	-	3	-	-	-	3
Operators	-	-	-	-	-	-	-	162	-	-	-	162
Craftsmen	-	26	-	-	-	-	-	108	-	-	10	144
Clerical	-	1	-	-	-	-	-	24	-	-	-	25
Others	-	2	-	-	-	-	-	13	-	-	-	15
Inspectors & Lab.Assts.	-	-	-	-	-	-	-	1	-	-	-	1
Tech. Grads.	-	1	-	-	-	-	-	7	-	-	-	8
Total	-	32	-	-	-	-	-	382	-	-	11	425
SEPARATIONS												
Supv.	-	-	-	-	-	31	134	-	-	-	-	165
Non Supv. & Engrs.	-	-	-	-	-	6	65	-	-	-	4	75
Operators	-	-	-	-	-	219	519	-	-	-	-	738
Craftsmen	-	-	-	-	-	57	266	-	-	-	-	323
Inspectors & Lab. Assts.	-	-	-	-	-	10	32	3	-	-	-	45
Clerical	-	-	-	-	-	7	47	-	-	-	1	55
Others	-	-	-	-	-	3	17	-	-	-	-	20
Supv. In Training	-	-	-	-	-	-	8	-	-	-	-	8
Tech. Grads.	-	-	-	-	-	1	16	-	-	-	-	17
Total	-	-	-	-	-	334	1104	3	-	-	5	1446

	100-B Area	100-D Area	100-F Area	100-H Area	101 Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Area	Total
MEDICAL												
Supervisors	-	-	-	-	-	-	-	-	-	-	22	22
Physicians	-	-	-	-	-	-	-	-	1	3	8	12
Other Exempt	-	-	-	-	-	-	-	-	-	-	7	7
Technicians	-	-	-	-	-	-	-	-	1	3	13	17
Nurses	6	4	4	1	1	4		1	-	3	66	97
Clerical	1	-	-	-	-	-	-	-	2	7	38	48
Others	-	-	-	-	-	-	-	-	-	1	1	72
Total		4	4	1	1	4	7	1	4	17	225	275
RADIOLOGICAL SCIENCES DEPT.												
STAFF												
Supv.	-	-	-	-	-	-	-	-	-	-	2	2
Other Exempt	-	-	-	-	-	-	-	-	-	-	1	1
Clerical	-	-	-	-	-	-	-	-	-	-	2	2
Total	-	-	-	-	-	-	-	-	-	-	5	5
RECORDS & STANDARDS												
Supervisors	-	-	-	-	-	-	-	10	-	-	3	13
Other Exempt	1	-	1	-	-	-	2	4	-	-	4	12
Clerical	-	-	-	-	-	-	-	2	-	-	1	3
Others	15	4	5	4	-	10	31	49		-	11	136
Total	16	4	6	4	-	10	33	65		-	19	164
BIOPHYSICS												
Supervisors	-	-	-	-	-	1	6	1	-	-	-	8
Other Exempt	-	-	-	-	-	3	20	12	-	1	-	36
Clerical	-	-	-	-	-	-	2	2	-	-	-	4
Other non exempt	-	-	-	-	-	18	43	5	-	-	-	66
Total	-	-	-	-	-	22	71	20	-	1	-	114

	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.	-	-	4	-	-	-	-	-	-	-	-	4
Other Exempt	-	-	31	-	-	-	-	-	-	-	-	31
Clerical	-	-	5	-	-	-	-	-	-	-	-	5
Others	-	-	41	-	-	-	-	-	-	-	-	41
Total	-	-	81	-	-	-	-	-	-	-	-	81
FINANCIAL DEPT.												
Supv.	-	-	-	-	-	-	-	-	-	18	46	64
Clerical	-	-	-	-	-	-	-	-	4	103	282	389
Total	-	-	-	-	-	-	-	-	4	121	328	453
EMPLOYEE & PUBLIC REL. DEPT.												
Supervisors	-	-	-	-	-	-	-	-	-	-	24	24
Empl. Rel. Counselor	-	-	-	-	-	-	-	-	-	-	1	1
Other Exempt	-	-	-	-	-	-	-	-	-	-	13	13
Clerical	-	-	-	-	-	-	-	-	-	-	60	60
Others	-	-	-	-	-	-	-	-	-	-	13	13
Total	-	-	-	-	-	-	-	-	-	-	111	111
UTILITIES & GENERAL SERVICES												
GENERAL												
Supv.	-	-	-	-	-	-	-	-	-	-	16	16
Clerical	-	-	-	-	-	-	-	-	-	-	13	13
Total	-	-	-	-	-	-	-	-	-	-	29	29
PLANT SEC. & SERVICES												
SECURITY & PATROL												
Supervisors	6	6	6	5	-	5	9	7	5	-	4	53
Other Exempt	-	-	-	-	-	-	-	-	4	-	-	4
Patrolmen	75	47	65	47	-	75	154	82	5	-	28	578
Clerical	-	-	-	-	-	-	-	-	19	-	1	20
Seamstress	-	-	-	-	-	-	-	-	-	-	2	2
Total	81	53	71	52	-	80	163	89	33	-	35	657

	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
SAFETY & FIRE												
Supervisors	14	-	-	-	4	-	4	4	7	-	-	33
Engineers	-	2	-	1	-	2	-	2	-	-	1	8
Firemen	54	-	-	-	8	-	16	15	9	-	-	102
Clerical	-	1	-	1	-	1	-	2	-	-	2	7
Total	68	3	-	2	12	3	20	23	16	-	3	150
OFFICE SERVICES												
Supv.	-	-	1	-	-	1	3	1	2	-	16	24
Procedures Analysts	-	-	-	-	-	-	-	-	-	-	2	2
Laundry Operators	-	-	-	-	-	-	2	-	-	-	1	3
Janitors & Servicemen	9	5	6	7	-	6	24	14	2	-	38	111
Clerical	-	-	-	-	-	-	1	-	-	-	42	43
Others	-	-	-	-	-	-	43	-	-	-	78	121
Total	9	5	7	7	-	7	73	15	4	-	177	304
PURCHASING & STORES												
Supervisors	1	-	-	-	-	-	-	-	-	2	28	31
Other Exempt	-	-	-	-	-	-	-	-	23	-	29	52
Clerical	12	-	-	-	-	-	-	-	-	28	146	186
Others	21	-	3	-	-	-	2	1	-	23	83	133
Rotational Trainees	-	-	-	-	-	-	-	-	19	-	1	20
Total	34	-	3	-	-	-	2	1	42	53	28	422
ELECT. DIST. & TELEPHONE												
Supv.	-	-	-	-	-	-	-	-	15	-	8	23
Other Exempt	-	-	-	-	-	-	-	-	3	-	3	6
Craftsmen	-	-	-	-	-	-	-	-	62	-	32	94
Clerical	-	-	-	-	-	-	-	-	3	-	23	26
Operators	4	4	4	4	-	-	-	-	12	-	-	28
Others	-	-	-	-	-	-	-	-	1	-	-	1
Total	4	4	4	4	-	-	-	-	96	-	66	178

	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
TRANSPORTATION												
Supv.	2	-	3	2	-	1	1	-	3	-	25	37
Other Exempt	-	-	-	-	-	-	-	-	-	-	2	2
Bus Drivers	-	-	-	-	-	-	-	-	-	-	167	167
Journeymen	4	1	1	7	-	-	3	-	6	-	63	85
Trainmen	-	-	-	-	-	-	-	-	26	-	-	26
Servicemen	7	-	2	-	-	-	-	-	1	-	21	31
Equip. Oper.	7	1	15	-	-	-	-	-	-	-	28	51
Clerical	-	-	1	1	-	-	-	1	-	-	26	29
Others	7	-	8	13	-	11	3	1	1	-	37	81
Total	27	2	30	23	-	12	7	2	37	-	369	509
COMM. REAL ESTATE & SERVICES DEPT.												
Supervisors	-	-	-	-	-	-	-	-	-	14	110	124
Other Exempt	-	-	-	-	-	-	-	-	-	-	10	10
Firemen	-	-	-	-	-	-	-	-	-	24	32	56
Patrolmen	-	-	-	-	-	-	-	-	-	17	22	39
Journeymen	-	-	-	-	-	-	-	-	-	-	142	142
Servicemen	-	-	-	-	-	-	-	-	-	-	23	23
Truck Drivers	-	-	-	-	-	-	-	-	-	-	25	25
Power Operators	-	-	-	-	-	-	-	-	-	-	32	32
Clerical	-	-	-	-	-	-	-	-	-	-	64	64
Others	-	-	-	-	-	-	-	-	-	-	47	47
Total	-	-	-	-	-	-	-	-	-	55	507	562
GRAND TOTAL	681	529	468	385	95	513	1810	1058	244	426	2861	9070

MANUFACTURING DEPARTMENT

NOVEMBER 1951

METAL PREPARATION SECTION

The forecasted total of 110 tons of acceptable canned pieces was exceeded by 2.7 percent resulting in 113 tons produced. The machining yield was 73.2 percent, an increase of approximately 2 percent over last month. This increase was attributed to the improved surface quality of the rods, however, there is still considerable improvement to be desired. Rough ends averaging six inches in length still persist.

The canning yield was 77.4 percent, an increase of 2 percent over last month. The increase was attributed to improved operator techniques and supervisory follow-up. However, a substantial variance in yield exists when cans from different vendors are used.

The Melt Plant produced 35 tons of billets at a yield of 90.8 percent and a solid yield of 94.5 percent. The machining of 8-inch bare slugs was started with approximately 3,000 pieces produced.

REACTOR SECTION

Total maximum pile operating levels was 35 MW above the previous high of last month. A total of 84.3 tons of metal was discharged during the month of November. The input was 107.8 percent of forecast, and the production output was 83.2 percent of forecast as a result of rescheduling material discharge at F reactor to December. The operating efficiency was 90.1 percent for this period. There were 17 Uranium jacket failures during November which required 238.7 hours of outage time for removal operations. On five occasions the ruptured slugs were removed within the scram recovery time, resulting in approximately 140 hours of potential outage time saved. Water in the graphite moderator from the ruptured tube during October coupled with the finding of several leaks in the rear portion has restricted the levels of the F reactor. Increase in the process water pressure resulted in approximately 6 percent increase in production of the H reactor.

SEPARATIONS SECTION

A total of 153 runs and one acid wash was started in the Canyon Buildings, and was 104 percent of the amount forecasted. The 153 runs started and the 80 runs started in the T Plant are new records. A total of 152 runs was completed in the Concentration Buildings, resulting in 103 percent of forecast. This total and the 78 runs in the T Plant are new records. Isolation Building production was 150 completed runs - also a new record. This was 106 percent of forecast.

The average cooling time was 49 days with a minimum of 42 days being used. The average purity of completed charges was 99.0 percent.

[redacted]

SEPARATIONS SECTION (Cont'd.)

The Redox Plant received 21.6 tons of "cold" Uranium metal. The dissolver (A-2) was charged on November 19, 1951 and coating removal started. Uranium dissolving followed on November 20, 1951, however, mechanical trouble in H cell held up the dissolving process in the other dissolvers.

Operability tests were run on UO_3 Plant equipment in the accepted portion of the building. Included in these tests was the boil-up of 62 percent UNH in the pots.

GENERAL

Process

Good progress was made in discussions with the Technical Section relative to the planned transfer of plant analytical control functions to Manufacturing. It has been agreed that all of the well-established laboratories in this category will make this move as soon as the required organizational arrangements can be completed.

Personnel

E. W. O'Rorke was appointed Superintendent-Process in the Metal Preparation Section, effective November 1, 1951.

Personnel changes were as follows:

Total on Roll October 31	2961
Accessions	89
Separations	56
Total on Roll November 30	2994

C. N. GROSS, MANAGER
MANUFACTURING DEPARTMENT

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HW-22875

MANUFACTURING DEPARTMENT

PATENT REPORT SUMMARY
FOR
MONTH OF NOVEMBER, 1951

Richland, Washington
December 7, 1951

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
T. H. Quinn (Reactor Section)	Remote Cut-off Non-saturating Amplifier for Radiation Counting
R. R. Skinner (Separations Section)	Specific Gravity Indicator (This unit consists of two strain gage elements prepared and spaced at known locations in the vessel. A compensating resistance is installed in the bridge to balance the resistance of the two elements. A change of specific gravity causes an unbalance in the measuring bridge which can be converted to specific gravity reading.)
G. R. Moore (Staff Services)	Chart File and Display Cabinet
G. R. Moore (Staff Services)	Automatic "Open" Indicator for Security File

C. N. GROSS, MANAGER

MANUFACTURING DEPARTMENT

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V. D. Donihee
Accountability Representative

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MANUFACTURING DEPARTMENT
METAL PREPARATION SECTION
NOVEMBER 1951

I. RESPONSIBILITY

A Process Unit was established effective November 1, 1951. The functions of process control and improvement have been assumed by this Unit.

Responsibility for operation of water supply facilities in White Bluffs was transferred from the Plant Engineering Unit to Minor Construction Management on November 23, 1951. Operation of the Ice House will continue on an intermittent basis, pending further studies on disposition.

Maintenance of radiation monitoring equipment in Benton City was transferred to the Separations Section Instrument group.

II. ACHIEVEMENT

Operating Experience

1. Statistics

	October	November	To Date 1951
Billets Produced (Tons)	28	35	243
Bare Pieces Machined (Tons)	97	122	989
Briquettes Produced (Tons)	15	19	148
Oxide Burned (Weight Out Tons)	4	3	34
Acceptable Pieces Canned (Tons	109	113	1025
Acceptable Pieces Canned (% of Forecast)	100.9	102.7	
Melt Plant Billet Yield (%)	89.9	90.8	89.5
Melt Plant Solid Yield (%)	94.9	94.5	94.5
Machining Yield (%)	71.3	73.2	76.7
Chip Recovery Yield (%)	88.1	86.2	87.7
Canning Yield (%)	75.5	77.4	80.3
Autoclave Frequency (No./M.)	.02	.02	.07

Statistics (contd)

	October	November
Maximum steam generated (lb./hr.)	25,500	31,000
Total steam generated (lbs.)	11,640,000	17,056,000
Steam generated (average rate, lb/hr.)	15,645	23,690
Coal consumed (Total Tons)	815	1,004
Sanitary water from 3000 Area (gals)	25,002,900	23,205,600
Well Water pumped (Total gal. to construction)	1,104,000	24,000
Total Water (Average rate, gpm)	585	537
Chlorine residual (ppm)	.49	.49
Ice manufactured (lbs.)	126,000	42,000

Machine Shop Backlog	Man Hours	Man Weeks*
Instrument Machine Shop	3758	5½
Electronic Fabrication Shop	3289	10
Mechanical Development Shop	2900	3

*Based on a 48-hour work week.

2. Activities

The uranium machined during the month was predominantly "U" and "X" type material which had been rolled during August and September. The slightly higher yield is attributable to improved surface quality of the September rolled rods. Despite this significant improvement, rod quality remains poor. Defects consist of rough ends averaging six inches in length, irregular surfaces, seams and cracks. Random samples of material rolled in October indicated some further improvement in quality over material rolled in September.

The increased canning yield which is attributable to a reduction in marred surfaces, wrinkled cans, and bad weld rejects, resulted generally from improved operator techniques and closer supervisory follow-up, in conjunction with the use of a back order of 29,000 Alcoa cans.

None of the slugs tested for penetration during the month were found to be penetrated to within .010" of the outer surface of the can wall.

There was one autoclave failue during the month, resulting from a minute pinhole in the weld, leading to an unbonded AlSi section.

In preparation for the 8" slug program, the machining of 8" bare slugs has been started. Approximately 3,000 pieces were completed at month end.

Sixty-three routine and 282 special tests were run in the 305 test pile.

3. Special Operations

During the month 6,961 B pieces and 4,311 poison pieces were canned. Fabrication and handling of special request materials required 91 man hours.

4. Schedule Variance

The production of machined bare slugs was 110.9 percent of tonnage forecast. Canning production was 102.7 percent of tonnage forecast, attributed chiefly to the increased canning yield.

B. EQUIPMENT EXPERIENCE

As a result of increased duty cycle, transformers failed on two slug cap welders. Timer delay relays have been installed on all welders to reduce the duty cycle within capacity of these transformers, resulting in approximately 25% welding capacity reduction. Procurement of replacement transformers has been slow due to the nation-wide materials situation. Four new transformers and accessories of 200 ampere capacity are on order to replace all present equipment.

A leak in the 200,000 gallon concrete ground storage tank was repaired by draining, chipping out a 20 foot horizontal crack and filling the crack with sealing compound.

C. IMPROVEMENTS

1. Adoptions

Increased Melt Plant crucible life estimated to show an annual savings of approximately $1200 resulted from adoption of a new procedure for re-seating the stopper rod in the pouring hole after the pour is completed.

A method was developed for expanding undersized used canning sleeves to their former dimension. It is expected this will result in essential material savings.

A logarithmic type counting rate meter of ORNL design was fabricated, tested and delivered to the Technical Analytical Research group. This is the first instrument of this type to be utilized at Hanford Works.

2. Inventions and Discoveries

All people in this 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.

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D. PLANT DEVELOPMENT AND EXPANSION

1. Project Status

Project C-199, 300 Area Sanitary Sewage Disposal System. Bids for construction of the project were opened on November 7, 1951.

Project C-433, Additions to 300 Area Power Plant. The construction area fence was completed on November 20. Start of building construction is pending final approval of architectural drawings.

2. Industrial Engineering and Studies

Accuracy and reliability of instrument equipment used with the thermal analysis determination of alloys, as used in the canning operation, was investigated. The equipment indicated a freeze point of 2S aluminum in successive tests to within $\pm$ 0.2°C, demonstrating ability to properly indicate alloy discrepancies.

E. REPORTS ISSUED

Number	Title	Author	Date
HW-22594	Essential Material Requirements Production Unit - Metal Preparation Section - 300 Area	W. Windsheimer	11-1-51
HW-22608	Monthly Report - Chemical 68-56. Month Ending October 31, 1951	J. S. Shipp	11-2-51
HW-22621	Instrument Development Report for October, 1951	M. T. Slind	11-5-51
HW-22691	Production and Manpower Forecast-November, 1951. Operations Unit, Metal Preparation Section	W. Windsheimer	11-12-51
HW-22838	Metal Preparation Process Committee, Minutes of Meeting	E.W. O'Rorke	11-28-51

III. PERSONNEL

A. Organization Changes

Effective November 1, 1951 in accordance with establishment of the Process Unit, Metal Preparation Section, E. W. O'Rorke was appointed Superintendent, Process.

B. Force Changes

	Monthly	Weekly	Total
Beginning of month	66	340	406
End of month	69	351	420
Net Increase	3	11	14

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C. Safety Experience

There were no major or sub-major injuries during the month.

D. Radiation Exposure

Two exposures in excess of the operating limit of 300 mrep per week were recorded on the weekly film badges of uranium facing lathe operators, in the amounts of 310 and 350 mrep. The exposure was attributed to inexperience and deviation from standard operating practices.

W. M. Mathis
Manager
Metal Preparation Section

MANUFACTURING DEPARTMENT
REACTOR SECTION
NOVEMBER, 1951

I. RESPONSIBILITY

A definite division of responsibility for area electrical services was placed in effect on November 1, 1951. Details of these responsibilities are given in a report, "Division of Responsibility - Electrical Distribution Unit and Area Electrical Groups", dated October 17, 1951. In general, this agreement continues responsibilities in line with past practices except that maintenance of outside substations at building service entrances is transferred to Utilities and General Services Department, Electrical Distribution Unit.

II. ACHIEVEMENT

Operating Experience

The total reactor production (input) was 7.8% over the forecast and 0.8% greater than the production for October. The total per diem production was the highest yet attained, exceeding that of March, 1951, by 22 units per day. Practically all of this production went to the manufacture of plutonium, whereas during March an appreciable portion was devoted to the H-10 Program. A total increase of 35 MW over previously established maximum reactor operating levels was achieved during the month due principally to improved temperature distribution control techniques, continued annealing of the graphite and increasing the process water pressure in 100-H Area to the maximum recommended by the manufacturer of the secondary pumps. The reactor output production was only 83.2% of forecast resulting from rescheduling of material discharged at F Reactor.

There were 17 uranium slug jacket failures during November. Six were discharged within the scram recovery time limitation and thus reduced the total potential outage time by approximately 140 hours. "Fast" discharges of ruptured slugs have now been accomplished at all reactors.

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Manufacturing Department
Reactor Section
November, 1951

Production Summary

	B	D	DR	H	F	Total or Average
Reactor Time Operated Efficiency (%)	87.1	71.9	85.8	96.0	99.8	90.1
Reactor Outage Time (Hrs.)						
Plutonium Production	87.2	126.4	96.0	16.9	1.3	327.8
Production Tests	6.0	4.0	6.0	12.0	-	28.0
Total	93.2	130.4	102.0	28.9	1.3	355.8
Reactor Unscheduled Outage Time (Hrs.)	61.7	101.3	76.1	-	1.3	240.4
Metal Discharged (Tons)	28.60	20.46	21.58	13.42	0.25	84.31
Water Pumped - Bldg. 181 (GPM Average)	43,382	84,259	54,702	44,966		227,309
Steam Generated (M lbs.)	119,089	196,195	96,314	133,280		544,878
Coal Consumed (Tons)	7,738	13.166	6,212	9,126		36,242

The operating level of the F Reactor was restricted to relatively low levels during the early part of the month as a result of the water that entered the graphite moderator from a ruptured tube during October. An additional leak of undetermined origin appears to be increasing in severity at month end. The leak, or leaks, appear to be in the rear portion of the reactor, since most of the water removed is being drained from the rear gas duct; no apparent reduction in reactivity has been encountered.

Shipment from 100-H Area to Arco, Idaho, of the H-10 Program irradiated enriched fuel slugs was begun during the month. Ten casks were loaded and shipped without incident.

Aluminum sulfate coagulation at the 100-F Area Filtration Plant (P.T. No. 105-473-P) progressed in a satisfactory manner during the month. Alum feed was reduced from 24 ppm at start of month to 7 ppm at the end of the month without adversely affecting water quality. Although the activity of the water at the retention basin inlet was high due to short-lived isotopes of aluminum, the activity at the retention basin outlet was no greater than that observed before changing the coagulant.

Analytical results of water samples from all Building 107 retention and Building 105 storage basins indicate that contamination from ruptured slug occurrences is settling out and that no detectable material is discharged to the river. This contamination will hinder future repairs to these basins and is causing equipment stored to become highly radioactive.

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Manufacturing Department
Reactor Section
November, 1951

Equipment Experience

The general mechanical condition of the reactor components and equipment continued good throughout the month. A total of 0.7 hours of unscheduled reactor outage resulted from equipment failures.

At B Area, the No. 7 horizontal safety rod thimble was pressure tested and found to be leaking. The rod was withdrawn from the reactor and the thimble was blanked off in preparation for replacement during a subsequent outage.

The "B" test hole assembly of the 105-DR Reactor was removed from the unit and taken to the burial ground. A shield plug has been installed until such time as a new thimble and test assembly can be replaced.

Difficulty has been experienced with the pressure monitor gauges at the B and DR Reactors due to excessive pressure build up. Approximately 250 gauges at DR were recalibrated during the month and all B Reactor 25-125 psi gauges have been changed to 50-150 psi range.

The brine tank of the water softener regeneration system, at Building 184-H, was permanently removed from service and a brine meter was installed. This revised system essentially conforms with the other 100 Area boiler house systems.

The controls of six turbine governors at 190-DR Process Pump House again failed during November routine checks. The Worthington Pump and Machinery Company's service engineer is currently on the plant investigating the difficulty.

Improvements

Use of a radiation exposure record card was started in all 100 Areas on November 1, 1951. This card replaces the time sheet portion of the Special Work Permit and provides the employee with his cumulative exposure on danger zone work each day, thus minimizing the possibility of inadvertently exceeding the permissible exposure.

In the 105-B Reactor near stairwell, a Motoair pump was installed to permit sampling air in the discharge area at any desired location. This will reduce the danger of contaminating the sampling pump.

The following inventions or discoveries by Reactor Section personnel were reported during November:

Inventor	Invention
T. H. Quinn	Remote Cut-off, Non-saturating Amplifier for Radiation Counting.

Manufacturing Department
Reactor Section
November, 1951

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Plant Development and Expansion

Projects in which the Reactor Section had a significant part during the month were:

C-472 (Thermocouple Equipped VSR Thimbles - B and D Areas)
The electrical work on two thimbles installed in each of Buildings 105-B and 105-D was completed during the month.

C-475 (Cross-Header Pressure Monitoring - B, D, F, DR and H)
This project was approved by the Atomic Energy Commission during the month. Management responsibility was assigned to the Manufacturing Department.

C-438 (Ball 3X Facilities for B, D, DR, H and F Piles)
A project proposal which includes construction of the facilities was approved by the A & B Committee on November 12, 1951, and forwarded to the Atomic Energy Commission. Two meetings were held during the month to plan the development of special equipment and procedures to expedite the facility installation.

C-431 (100-C Plant)
The design of the 100-C Plant is approximately 85% complete. Construction of the water plant is approximately 13% complete at month end compared to a scheduled 29%. Reactor construction is approximately 19% complete compared to a scheduled 21%.

Development studies by Reactor Section personnel during November were directed toward improved equipment and/or methods for reactor charge-discharge, ruptured slug detection and removal, increased water filter capacity, improved steam economy of Building 190 pump turbines and determination of Power Plant operating conditions for maximum boiler efficiency. Of major significance was the initiation of a general program to test existing ruptured slug removal and associated maintenance equipment. These studies are being conducted to reduce downtime due to slug ruptures. Further details regarding Reactor Section development studies are contained in Document HW-22893.

The only production test having plant development significance is as follows:

PT-105-502-A (Fringe Tube Enrichment)
Tube 0674-H was charged with unbonded enriched uranium slugs on November 21 for observation of the exposure behavior of this material and to accumulate data for a possible fringe enrichment program.

Manufacturing Department
Reactor Section
November, 1951

Reports Issued

Significant reports issued in the Reactor Section during November were:

"Monthly Report Reactor Section - Operations, October, 1951" - HW-22368.

"Monthly Report, Reactor Section - Process Unit, October, 1951" - HW-22417.

"Reactor Section - Radiation Monitoring Technical Report for Month of October, 1951" - HW-22729.

"Ruptured Slug Data" - HW-22730. (This document contains a discussion of some of the aspects of the ruptured slug problem.)

"Possible Methods of Reducing Pile Discharge Time Requirements" - HW-22694.

"Process Tube Effluent Activity Monitoring" - HW-22508.

"Temperature Monitor Thermocouple Replacement - 100-B, D, and F Areas" - T. M. Clement to E. E. Weyerts, November 1, 1951.

"107 Basin Exit Water Gamma Monitor" - T. M. Clement to E. E. Weyerts, November 21, 1951.

"Instrumentation for Corrosion Test, 105-D Flow Lab" - A. G. Dunbar to R. V. Andrews, November 14, 1951.

"Remote Control Facilities" - E. J. O'Black to H. A. Carlberg, November 7, 1951. (Summarizes a method of remote control for 100 Area water supply and distribution facilities.)

A discription of slug failures experienced during November is contained in Document HW-22859, to be issued early in December.

III. PERSONNEL

Organization Changes

Effective November 30, a reorganization of Power supervision of the Plant Engineering Unit was put into effect. Changes included replacement of four shift supervisors with one day supervisor in each boiler house and re-assignment of Area Supervisors from line to staff positions. This change will result in a net reduction of 12 supervisors for five-reactor operation.

Manufacturing Department
Reactor Section
November, 1951

Organization Changes (Continued)

Effective November 26, Radiation Monitoring shift personnel changed from a six-day to a five-day work week schedule.

Force Changes

	Section General	Plant Engineering	Operations	Radiation Monitoring	Process	Section Total
Beginning of Month	3	768	238	51	26	1086
End of Month	3	773	235	51	28	1090
Net Change	0	+ 5	- 3	0	+2	+ 4

The changes during the month consisted of 5 terminations, 10 new hires, 3 deactivations, 2 reactivations, 11 transfers into and 11 transfers out of the Section.

Safety Experience

There were no injuries classified as major or sub-major sustained by Reactor Section personnel during November. However, a near-serious accident occurred on November 1 when a pickup truck driven by a Section employee ran off the road and overturned. A formal investigation of the incident was held and has been reported separately.

A Section employee was hospitalized due to a back injury received in an accident involving a Hanford Works bus and a U. S. Army vehicle. The accident occurred on November 24 outside 100-H Area while the employee was coming to work.

Radiation Exposure

No employee received a known radiation exposure in excess of 300 mrem/week at the Reactor Section facilities during the month of November. However, a Reactor Section Plant Engineering Unit craftsman received an overexposure at the P-11 Project on November 16. The employee was restricted to work outside radiation danger zones for two weeks.

Security Experience

A discrepancy in the uranium inventory detected on the 4-12 shift, October 25, 1951, was established as a security violation on November 2. An employee who terminated on October 26, 1951 was found to have removed an unirradiated uranium slug from Building 105-D for his personal use. Appropriate action has been taken subsequently.

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Manufacturing Department
Reactor Section
November 30, 1951

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Training

The program for obtaining and training qualified engineering and supervisory personnel to meet future requirements was continued during November. At month end, 19 individuals are receiving on-the-job training. This number includes 9 technical graduates on assignment under the Rotational Pool Program.

E. P. Lee
Manager
REACTOR SECTION

EP Lee:ges

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Richland, Washington
December 4, 1951

MANUFACTURING DEPARTMENT

SEPARATIONS SECTION

NOVEMBER, 1951

I. RESPONSIBILITY

The operating responsibility for the ventilation system in the UO_3 building was assumed by Separations Section personnel on November 23, 1951. All work has been completed except balancing and testing.

The maintenance of the monitoring equipment at Benton City was taken over by the Separations Section - Power and Maintenance Unit. This responsibility formerly resided with the 700 Area Instrument Group.

II. ACHIEVEMENT

A. Operating Experience

1. Production Statistics

a. Operations

	B Plant		T Plant		Combined	
	Normal	Acid Wash	Normal	Acid Wash	Normal	Acid Wash
Charges started in Canyon Bldgs.	73	0	80*	1	153*	1
Charges completed in Conc. Bldgs.	74	1	78	1	152	2
Special charges - Conc. Bldgs.	0		0		0	
Charges completed-Isolation Bldg.	74	1	76	1	150**	2
Average Waste Losses	2.6		2.7		2.7	
Average MWD/Ton	590		579			
Special Charges-Isolation Bldg.					12	
Average purity completed charges					99.0	

Separations Section

	B Plant		T Plant		Combined	
	Normal	Acid Wash	Normal	Acid Wash	Normal	Acid Wash
Material balance thru Isolation					100.1	
Yield through process					98.5	
Average cooling time (days)					49	
Minimum cooling time (days)					42	

* 80 charges started in T Plant represent an all-time record, as does the total of 153 runs for both plants.

** 150 charges completed in the Isolation Building represent an all-time record.

b. Power

	October	November
Raw water pumped, gpm	6,312	6,541
Filtered water pumped, gpm	1,094	1,118
Steam generated, lbs/hr	101,323	149,034
Maximum steam generated, lbs/hr	158,000	197,000
Total steam generated, M lbs.	75,384	107,305
Coal consumed, tons (est.)	4,478	6,264
Lbs. steam per lb. coal	8.42	8,57

c. Waste Evaporation

	November	To Date
Gallons Processed	562,230	3,229,181
Percent volume reduction	74.4	73.5

d. Waste Storage

	Batches
Metal Waste reserve storage capacity-T Plant	477
1st Cycle reserve storage capacity-T Plant	1276
Metal Waste reserve storage capacity-B Plant	868
1st Cycle reserve storage capacity-B Plant	281

2. Activities

a. Run Decontamination

Run decontamination has been improved as a result of double precipitation and centrifugation in the first

cycle by-product step as well as in the lanthanum fluoride by-product step and the addition of barium sulfate scavenger to the bismuth phosphate by-product step in the Concentration Building. The purpose of the barium sulfate is to help remove radioactive barium which is in greater concentration in slugs cooled 40-50 days than slugs with a longer decay storage period.

b. Rework of High Waste Solution - Run T-11-11-HD-54

A high first decontamination cycle product waste resulted from the inadvertent jetting of the product cake dissolving acid from the precipitator to the centrifuge and its subsequent overflow into the catch tank. The waste, with an original assay of 43.12 percent, was reworked with a final product waste loss of 0.66 percent.

3. Special Operations

a. Acid Washes

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

Run	Extraction	Section 12 and First Cycle	2nd Cycle	Total 221 Bldg.	Total thru Process	Preflush B, E & F Cells
B11-10-AW-1	10.8	27.4	0.6	38.8	49.4	27.6
T11-10-AW-1	9.2	24.9	9.3	43.4	54.5	27.5

4. Schedule Variance

Actual production of regular material through the Isolation Building was 106 percent of the forecasted amount. Material actually started in the Canyon Buildings was 104 percent of the amount forecasted. November's production established records for separations plant operations and was outstanding in view of the 29 day operating month.

B. Equipment Experience

1. Operating Continuity

a. T Plant, B Plant and the Isolation Building were placed in standby status on the Thanksgiving holiday.

b. On November 17, 1951, the main power line into T Plant failed. This failure momentarily interrupted operations

until power was restored by switching to another feeder.

2. Inspection, Maintenance and Replacement

a. Derailed Cask Car in Tunnel

On November 2, 1951 during the charging operations in the Canyon Building, an empty Cask Car was derailed in the tunnel when it inadvertently struck the rail stop too violently. The car was rerailed and returned to Riverland for inspection and repairs. Steps have been taken to prevent a recurrence.

b. 8-3 to 9-1 and 9-1 to 241 Trench Connectors-T Plant

Visual inspection of the trench revealed leaks in the 8-3 to 9-1 and the 9-1 to 241 trench connectors in the T Canyon. New connector assemblies were installed.

c. Centrifuge Skimmer - T Plant

The left-hand skimmer of the Section centrifuge in T Canyon, which has been inoperative for several months, and the right-hand skimmer, which was getting so stiff that it would hardly move, were restored to normal operation by the installation of a new hydraulic connector in the 7-R cell.

d. Waste Evaporator Mechanical Difficulties

The 80 g.p.m. pump failed midway in the pumping of first cycle waste effluent from 110-TX to 118-TX tank. Investigation revealed that the bearings of the impeller section were badly worn and the impeller was in very poor condition. This pump had transferred approximately 3,000,000 gallons of waste effluent with no major failure prior to this incident. A new impeller section was installed. The operation of the pump was satisfactory during the transfer of the remaining effluent from 110-TX tank.

e. Agitator Failure

The A-1 agitator in T Concentration Building failed on 11-8-51 while processing Run T-11-11-F-9. Reversing the direction returned it to service for only two runs. Replacement was satisfactorily completed but with difficulty due to the extremely short permissable exposure limits resulting from high level radioactivity,

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requiring the total services of approximately 60 maintenance personnel. In the interim, a C-4 to A-2 jumper was installed, making it possible to continue operations using the C-4 tank as a precipitator. An inoperative oil pump is believed to have been the cause of failure of the agitator which, however, was an original installation. Operation of the replacement unit is satisfactory.

f. Hydrofluoric Acid System

The investigation of unsatisfactory HF addition rates in B Concentration Building revealed that the Teflon plug of the main one inch Chapman addition valve was adhering to the valve seat when the valve was opened. Purging of the entire E-1-Y system was found to be necessary to permit replacement of the valve after it was discovered that the bottom outlet valve on the E-1-Y tank was also defective and leaking through. In order to maintain process continuity a modification in the HF addition manifold was made to permit acid additions directly from HF cylinders. All key valves and valves known to be sticking or leaking were replaced.

A preliminary examination of the valves which were taken out of service revealed design and/or material weaknesses as evidenced by fracturing of the metal base and cap screw which secures the Teflon plug to the base. A study of the valve failures is being conducted by the Plant Engineering Services Unit. Meanwhile, spares are being made according to the present design.

C. Improvements

1. Adoptions

a. S-1 Tank Cooling Time Reduction

The cooling time of the Still in the Isolation Building, after concentration, was reduced from 60 minutes to 15 minutes. This process modification results in a savings of chilled water and lowers the over-all Isolation Building time cycle.

b. Plastic sampling equipment

The use of plastic Sampling Equipment for both bayonet and trombone types of samples was placed in effect on 11-15-51. Previous equipment was stainless steel.

c. Process Change

In order to reduce the time cycle of the first cycle bismuth phosphate by-product precipitation in the Canyon Buildings, the following changes have been adopted in Sections 13 and 16:

1) Digestion has been reduced from 1 hour at 55°C. to 30 minutes at 65°C. during oxidation.

2) The bismuth subnitrate addition is made with the solution at 65°C. instead of 75°C., and the digestion following the addition has been reduced from 1 hour to 15 minutes.

The reduction in time cycle for the first decontamination cycle by-product sections has been approximately two hours, resulting in a reduction in over-all building cycle of one hour.

2. Inventions or Discoveries

R. R. Skinner — Specific Gravity Indicator

(Two strain gage elements are prepared and spaced at known locations in the vessel. A compensating resistance is installed in the bridge to balance the resistance of the two elements. A change of specific gravity causes an unbalance in the measuring bridge which can be converted to specific gravity reading.)

D. Plant Development and Experience

1. Project Status

a. Redox

1) Dissolution and Metal Solution Preparation

10993 canned slugs (21.6 Tons Uranium) were transferred from 300 Area to storage in the 202-S Remote Shop on 11-14-51 for use in cold and tracer runs in the building. 8,800 lbs. of slugs were charged into A-2 dissolver (Run CR-1) on 11-19-51 and coating removal was started the next day. The first three uranium cuts were commenced on 11-20-51, 11-21-51 and 11-24-51, respectively. The initial charging of cold slugs into the remaining two dissolvers took place by month end; however, due to mechanical difficulties in H cell, only the coats were removed from CR-2.

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The initial Feed Preparation cold run, H-1, was started on 11-24-51 and completed successfully. Centrifuge and agitator failures in cell H forced the abandonment of cold run H-2 during the centrifugation period.

2) Dissolution and Metal Solution Preparation

During the replacement of 1" connector screws in J Cell, a rather large amount of a greasy material was found to be deposited in the C-4 off-gas lines and traces were also located in the A and B dissolver systems. Investigation to determine the source of the material was not conclusive; however, evidence pointed toward origin in the off-gas filters, (possibly residual binder from the fiber glass manufacturing operation). No apparent damage was caused to the filters as determined by visual inspection and subsequent normal operation, and the material was readily steamed out of the affected lines.

Boil-up tests in the dissolver sections were completed during the month and all major deficiencies uncovered during these tests were corrected. Added difficulty was experienced with the burn out of heaters associated with the H-2 centrifuge motor thermoguard; however, this now appears to be corrected.

3) Extraction

Operation of columns on water continued during the past month as screw replacement and other equipment work permitted. Operational checks of the nitric acid - organic blending systems continued and characteristics of the Hammel-Dahl control valves were further verified. Organic rotameters were calibrated on water and are currently undergoing calibration with hexone.

The remaining boil-up tests were successfully completed during the month and all equipment was found to be functioning in an acceptable manner.

Tests were carried out on the salt waste header to determine blow back characteristics during jet gassing at flow rates corresponding to 4 and 9 ton uranium thruput. Some blow back was experienced even at the 4 ton rate; however, it is believed that this can be circumvented by proper operating procedures.

A final inspection of cells E, F, and the silo was made on 11-23-51 with all areas found to be in acceptable operating condition. Except for minor adjustments and alterations, the PR cage is considered ready for operation. Water runs through the PR cage equipment were carried out on all shifts during the month for training purposes.

Temporary screens installed upstream from the Hammel-Dahl let-down valves were removed and replaced with new screens on 11-26-51. The old screens showed a collection of fine fibrous material from unknown sources. The new screens will be removed for inspection following the cold run period.

(Some of the operational troubles associated with the start-up of the Redox Plant are described below. Reference should be made to the Redox section of the Operations Unit report, HW-22881 for further details.)

4) Silver Reactor Heater Capacities

Abnormally long dissolving cycles were experienced on the first three cold uranium cuts made in the A-2 dissolver because of the tendency for the silver nitrate reactor inlet gas temperature to drop under conditions of large gas flow during the reaction period. An investigation to determine the cause of the difficulty (i.e. underdesigned heater capacity, instrument adjustment, etc.) is being undertaken as additional metal dissolution is carried out in the three plant dissolvers.

5) ANN Loss - 211-S

Three of four Type 416 stainless steel bolts holding the cleanout (blind) flange of the SS-112 ANN storage tank failed completely on 11-26-51 allowing the flange to open and release approximately 103,700 lbs. of 72% ANN solution to the sewer before the failure was discovered. Inspection of the bolt halves indicated that all three failed bolts had apparently been pulled apart at installation or had failed shortly thereafter since none of the breaks were fresh. Unfortunately the tank plug valve had been inadvertently left open following the last use of the line, however, there is no way of determining when such leakage would have been discovered under

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normal pumping procedures, particularly since the trench restricts visual observation. The failed bolts are now undergoing metallurgical examination, and all other flange bolts in the 211-S trenches are being checked and will be inspected on a routine basis in the future. A study will be made of the 211-S Tank Farm to determine what preventive measures can be taken to prevent a recurrence.

6) Hold Down Stud Failure

During final cell inspections, two cases of hold down stud breakage were discovered, one involving a stud of the H-2 centrifuge Y pad, and the other a dunnage stud associated with the Cell A dissolver off-gas filter (A-4) foot. Both breaks, exhibiting characteristics of a brittle fracture, had apparently existed for some time, since no impacting had taken place since construction completion and thread grease was distributed over the larger area of both fractures. Metallurgical investigations were carried out and the failures were thought to be peculiar to a group of some eighty studs fabricated of questionable material by Construction in the White Bluffs shop. To locate any additional fractures, a program of loosening and reimpacting (using the Variac at 220 Volts) was then undertaken on the eighty odd studs in the building (identifiable by black top and lathe dead center mark) and a third failure involving a dunnage stud at the Cell B filter foot was found.

The position of the questionable studs in the Y pads and tank flanges has been charted for future reference. No replacement of either broken or questionable Y pad studs is contemplated since:

a) Extensive damage to cell floors would be entailed in Y pad stud replacement and,

b) Y pad studs are not considered critical in the locations in question.

Likewise, replacement of questionable studs in vessel flanges is not planned since vessels are replaceable and the delay in building schedules caused by such a program would be appreciable.

An additional failure involving a stud atop the D-12 tower (hold down for 8" vapor line) was experienced earlier in the month when the stud literally pulled

apart at the weld during impacting, due probably, to faulty material. This has been repaired.

7) Water Accumulation Under Sump Liners

An accumulation of water has been found under nearly all stainless steel sump liners in the cells. It is not known whether this leakage is a function of normal liquid levels in the sumps or of the abnormal levels experienced in the past during flushing and testing operations. Specific leaks involved have been almost impossible to locate using existing methods in the time available, and it has been decided to leave the water under the liners as a diluent for any process leakage which may find its way through the same leak points.

8) The #2 Ingersol Rand air compressor in the Redox Canyon Building was removed from service because of badly scored connecting rod bearings and a burned out motor bearing. The main bearing was also slightly scored. An Ingersol Rand representative was called in to determine the cause of the trouble. His conclusions agreed with what plant forces had already decided; that it was due to sand being introduced into the oil system from improperly cleaned lines at the time of installation. The #1 compressor was removed from service and thoroughly flushed and cleaned as preventive measure. Smaller amounts of sand were also present in this machine. It is now returned to service and is operating satisfactorily.

9) Other Equipment Failures

Equipment troubles in addition to those listed above include agitator water seals, centrifuge, pump and condensate leakage into the 291-S encasement.

b. TBP - Project C-362

1) Schedule

A schedule presented on November 19 establishes a beneficial occupancy date for 221-U of January 19, 1952, and a completion date of March 1, 1952 for the "C" farm of Phase II, for Phase III, for all of Phase IV and for Phase VI; the above are the facilities required for full scale production.

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Remaining portions of Phases I and II are scheduled for completion by April 1, 1952. This schedule was issued to the Atomic Energy Commission as the new construction schedule.

2) Ventilation System

After spending two weeks unsuccessfully attempting to balance the ventilation system at the 244-UR vault, construction forces have made changes as recommended to the architect engineer by the operating group. The system was inoperable the way it was constructed. Although the original scope was correct, detail construction prints eliminated certain critical dampers on the system making it impossible to balance the air flow according to operational requirements. The process vent filter is now eliminated and dampers are being installed. Final balancing of the air system was underway at monthend.

3) Connector Heads

To date five connector cross heads on jumpers associated with the process vaults and the first cascade have been found to be broken. These cross heads are manganese bronze castings. One of the failures occurred on a four inch process jumper in the cascade diversion box and the other four were on two inch instrument air or lubrication jumpers in the process vault. An intensive study has been made here and at the vendor's factory in order to ascertain the reason for these failures. It appears conclusive that the castings are faulty.

Since a correlation exists between Brinell hardness and casting strength, at the vendor's recommendation construction forces will remove all connector heads from the process vault and first cascade and check them for hardness; any head with a Brinell hardness greater than 80 will be replaced. There are 32 two inch, 38 three inch and 86 four inch connector heads to be tested at 241-UR.

c. UO_3 - Project C-361

1) General

During November operability tests of accepted portions of UO_3 processing equipment were performed. In the initial stages normal pre-start-up equipment visual

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and operability checks were made. Where equipment was found incomplete or inadequate it was brought to the attention of the Design Section and all exceptions were either corrected or scheduled for correction. Preparation for building operation was begun. Responsibilities were established, operating materials were obtained and initial run-in of equipment was undertaken.

2) Pot Room and Dry Product Handling Operation

Pot water boiling tests conducted at various levels of heat input were run to determine equipment operability and boiling rates. Following these tests, approximately 1800 gallons of 62% UNH solution were transferred from the 321 Building in the 300 Area to the C-1 tank and processing of this material through the pot equipment began the last week of the month.

Pot run data accumulated to date indicates that correction of equipment difficulties encountered during shakedown runs will permit attainment of designed throughput rates. The first two pot runs were carried out under run plan conditions. Experience gained during this and subsequent operation indicated the desirability of changing pot temperature control settings to improve operability and time cycle requirements. These changes were made with the desired results. Further refinement of temperature control may be indicated after a study of pot product (UO_3) analyses has been made.

E. Pertinent Reports Issued

Document	Title	Author
Unclassified	November Monthly Report - Separations, Plant Engineering	R.T. Jessen
HW-22884	November Monthly Report - Separations, 234-5 Building, Operations	V.R. Chapman
HW-22881	November Monthly Report - Separations, Operations	V.R. Chapman
HW-22882	November Monthly Report - Separations, Radiation Protection	A.R. Keene

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III. PERSONNEL

A. Organization Changes

Effective October 1, 1951, R. C. Grant, Assistant Superintendent of the Operations Unit, was transferred to Salary Administration.

B. Force Changes

1. Number of employees on Roll

	Monthly Roll	Weekly Roll	Total
Beginning of month	263	1161	1424
End of month	260	1191	1451
Net Increase	-3	30	27

2. Personnel Changes

	Monthly Roll	Weekly Roll	Total
Transfers in	0	19	19
Reduction of Force	0	0	0
Transfers out	-2	-6	-8
Reactivates	0	3	3
New Hires	0	28	28
Terminations	-2	-12	-14
Weekly to monthly	1	-1	0
Removed from Payroll		-2	-2
Other		1	1
Net Increase	-3	30	27

3. Work Schedule

The UO_3 Plant scheduled operations on a 24 hour a day, seven day per week basis on November 19, 1951 and will continue until current shakedown runs are completed. The Redox Plant was similarly organized for operation.

Other schedules remained essentially the same with about 45% of Power and Maintenance personnel working overtime because of extra workload imposed by start-up of new facilities.

C. Safety Experience

On November 28, a recently employed member of the Operations Unit received a sub-major injury involving the fracture of two toes on the right foot, when a drum of acid fell on his foot. Safety shoes were not worn.

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D. Radiation Exposure

1. Uranium in Redox Plant

By agreement between the Operations and Radiation Protection Units, special hazards control in the Redox Building during the period of cold uranium runs is being limited to informal procedures designed to control the spread of uranium contamination through the building. No significant radiological hazard is considered to exist; however, as an aid in detecting plutonium contamination at a later date, it is important that the spread of uranium be avoided.

2. Incidents

There were three Class I and four Informal radiation hazard investigations held by the Separations Section. Two of the Class I investigations were of considerable potential and involved (1) an employee taking home microgram amounts of product on his clothes although little spread resulted and, (2) a violent reaction in a process hood spreading gross amounts of plutonium concurrent with mechanical damage of hood equipment, but fortunately involving no injuries to personnel.

In all cases prompt measures were taken to minimize, if not entirely prevent, recurrences.

3. I^{131} Emission

Stack emission of I^{131} from T and B facilities continued at total average rate of approximately 3.5 curies per day.

Manager
SEPARATIONS SECTION

RS Bell:OVS:mvk

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TECHNICAL SECTION 12/10/51

November 1951

SUMMARY

Pile Technology Division

The total force of the unit has increased from 334 to 345. This increase of 11 includes four laboratory assistants and one chemist who were hired during the month; an additional 12 transferred in from other units or sections and six transferred out or terminated.

Critical mass data have been obtained for the 16 and 18-inch spheres. The work was curtailed by an accidental radiation burst which resulted in gross contamination of equipment.

Studies are continuing to investigate the decrease of the cadmium ratio with increasing distance from the source layer and to determine the discrepancy among the values of buckling obtained by different methods.

Pulse-height distribution curves were obtained with the scintillation gamma ray spectrometer equipment; preliminary measurements with Au^{198}, Cs^{137}, and thorium indicate satisfactory resolution may be obtained with this instrument.

Calculation of the assured production and control rod requirements have been made for piles of different sizes. The values for the calculated assured production increase from 575 MW for a pile with the same face area as H Pile with a lattice spacing of 8-3/8 inches to 1070 MW for a face area 1.5 times as great as H Pile with a lattice spacing of 7-1/2 inches.

Additional study has shown that there is a real discrepancy between neutron attenuation data obtained at D and DR Piles; some correction for this lack of uniformity will be made.

A study of the effect of tube length and annulus size on tube power has been completed. The results are summarized and the conclusions will be given in detail in a report soon to be issued. Additional work is continuing on other problems including pressure drop film studies, C Pile insulating layer, and new methods of experimentally heating slugs.

Mechanical development work on charging and discharging machines, horizontal control rods, and safety systems is continuing. Tests show that the silicone sphincter seal is not affected by temperatures up to 700°F.

Flow laboratory studies indicate that the film formed at higher temperatures is more compact and difficult to remove. The presence of sodium dichromate in the concentration in which it is present in the treated water normally supplied to the piles does not appear to have any appreciable effect upon the film formation rates and pressure drop recovery due to purging. Planning and construction are continuing on experimental facilities for the water recirculation and water quality studies and for the activated silica addition.

Metallographic examinations and borescopic evidence indicate no over-protection of tubes due to magnesium dummies. Tests are being planned to study the corrosion and mechanical properties of zirconium and aluminum. Corrosion studies on other structural materials are continuing.

During the past month 109 eight-inch slugs were canned; of these, 32 were loaded in DR Pile. The diameters varied from 1.331 to 1.336 inches, no decrease in general quality being noted in the case of the largest slugs. Other work included studies on welding, sleeveless canning, bonding layer, and methods for protection against corrosive attack of Al-Si.

Studies with the General Electric Metal Comparator have shown that it is not possible to use this instrument to determine the degree of transformation of bare slugs picked at random unless rigorous standards are set. The Comparator may be of value for checking voids and unbonded areas of the can walls of four-inch slugs.

Techniques for various phases of metallurgical studies of plutonium are being developed. Although construction work on the laboratory was discontinued for lack of funds, it is expected that the work will be resumed in the near future.

The abrasive properties of irradiated graphite have caused some difficulties in obtaining samples from one of the channels in H Pile by means of core saws. Carbon obtained by the thermal decomposition of graphitic oxide has some characteristics similar to those of graphite damaged by irradiation; this may be valuable for comparative studies.

The equipment for the controlled gas atmosphere experiment is being assembled and tested. The slug assembly to test the heaters for the graphite thermal conductivity experiment has been received. All other special irradiations including the behavior of materials under STR conditions are proceeding routinely.

Refinements in flux distribution and an increase in header pressure have resulted in new maximum power levels at B and H Piles. Although there were 17 ruptured slugs during November, nine of these did not cause long shutdowns; the type of failure was divided about evenly between cap and side failures. Radiometallurgical examinations of ruptured slugs are continuing; other radiometallurgical studies include examinations of process tubes for leaks and evidence of [illegible]r corrosion.

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The plant service work included a study of the effects of scarfing stainless steel sheet by using compressed air and carbon electrodes and an investigation of the failure of type 420 stainless steel screws from the Redox Building.

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Separations Technology Unit

Modifications to decontamination steps in 221 and 224 Buildings continue to show improved decontamination factors and consequently lower PR can readings. Studies to reduce the time cycle in the Isolation step are now underway. In order to avoid premature reduction reactions in the Purification Building, the crucibles are being purged with argon and arrangements are being made for a helium blanket in the reduction hoods. Most of the fabricated pieces were processed by "final shape machining" during the period. Because of the improved surface formed in this manner, coating rejections dropped by about 50%.

In the Redox plant, studies of the feed preparation steps including MnO_2 scavenging are under way with cold uranium. Preliminary results indicate better than expected cake removal by centrifugation and low uranium losses. Ventilation balancing and remote connector repair have been completed and arrangements are made for final leak testing and cold uranium single cycle runs.

Approximately 1900 gallons of 60% UNH have been transferred to the Separations Section for preliminary shakedown of the UO_3 conversion step in the 224-U Building. The Uranium Recovery Technical Manual was issued during the period as HW-19140.

Redox engineering development studies were directed mainly toward the procurement of pulse column contactor and silica filter specifications for the Recuplex process. Preliminary specifications indicate pulse columns about 30 feet in length. Studies of the Fenske stacked extractor with simulated Recuplex solutions continue to indicate variable capacity due to air binding and attempts are being made to correct this condition. The construction of the Hot Semiworks was carried to 41% completion during the period.

In the Research Laboratory, the effect of alpha bombardment on TBP decomposition has indicated no serious problem in Recuplex solutions. Very high stage efficiencies are being obtained with fluorothene coated pierced plates in the one inch diameter pulse column with Recuplex solutions. Additional studies of ruthenium scavenging with

copper sulfide from dissolver solutions continue to show decontamination factors between 100 and 1000. A 12 ft. pulse column for study of the Recuplex process is nearing final stages of completion in the 222-S laboratory.

In 234-5 development, a temperature reduction to 2°C. during the peroxide strike has resulted in cake densities as high as 0.65 gm Pu/cc. A feasibility report for the Recuplex process was issued during the period. Dissolution studies of slag and crucible residues indicate satisfactory rates with 10 M HNO_3 and excellent recovery of plutonium. The crucible shop and the experimental coating hood are in the final stages of completion.

Analytical Unit

Analytical control service for cold Redox and UO_3 Process operations was initiated this month. Some difficulties were encountered, as expected, but these should be eliminated shortly. Development was completed and/or procedures written up for a number of the analytical methods for the UO_3 Process, namely, methods for determination of water, plutonium, nitric acid, U_3O_8 and a group of impurity elements in UO_3; for particle size and bulk density of the UO_3; and for determination of chloride in recovered nitric acid.

A new, compact, automatic coulometer was designed, constructed, and tested and was ready for transfer to the Redox laboratory at month's end. It incorporates the newly tested deadstop endpoint detector which eliminates the most serious inconvenience with the previous model, namely that of maintaining a calomel reference electrode in continuous operation in the hot sample solution. The instrument and associated procedure allows the determination of 0.5-7 mg. of uranium with a precision of ± 1.5% and is subject to no serious interference from any expected constituents of Redox or Metal Recovery Process solution samples.

A method developed at Los Alamos for determination of carbon in plutonium has been modified and adapted to the determination of carbon in uranium metal. It allows a single determination in 20 minutes, whereas the previous procedure required 60 minutes, and it offers appreciably greater sensitivity.

The chemical group, barium, strontium, and calcium, was studied as part of a long range program for developing universally applicable procedures for separating unknown mixtures of trace quantities of radioactive isotopes. Radioisotopes of the three elements were found to be completely removed from solution by precipitation of carrier quantities of barium carbonate. It was observed that the conditions and carriers which give most complete recovery are those that would be predicted by applicable theory.

Two separate analytical discrepancies between Hanford and vendors of process reagents were encountered during the month. In one case it was found that the Hanford method for assay of phosphoric acid was subject to error due to use of an inappropriate colorimetric indicator. In the other case the vendor was made aware of an error in his procedure for determination of aluminum in aluminum nitrate solution. Correction of the error in both cases eliminated the disagreements.

In the 234-5 and 3706 Building laboratories improvements in accuracy and sensitivity were made in the methods for spectrographic analysis of plutonium and uranium. Data indicate the accuracy of the determination of iron in plutonium will be improved from a factor of 2 to ±10%, thus improving the reliability of the correction for this element in the chemical assay of plutonium. The limits of detection of Bi, Cd, Co, Cr, Cu, Mg, Mn, Mo, and Sn in uranium have been lowered by factors ranging from two to 50. Efforts in this direction will continue and may ultimately provide a greatly improved basis for correlating pile reactivity loss with uranium impurity content.

A statistical study of analytical results for the P-1, F-10-P and D-1-O samples of the Separations Process showed that the correlation between P-1 and F-10-P is better than between P-1 and D-1-O. This made possible a revision of the basis for analytical reruns of the P-1 sample which should reduce the number of reruns by 60%.

Analytical data for carbon, boron, and fluoride content of the September castings were reviewed statistically. It was found that analysis of either the MC-1 or MC-2 cutting alone could replace the present analysis of both cuttings without sacrifice of analytical control. The revision was adopted and is expected to result in savings of ca. 400 man-hours per month.

Technical Services Unit

Laboratory Equipment Design activities continued primarily in outfitting the analytical line equipment and multicurie cells in the Redox Analytical and Plant Assistance Laboratory - Bldg. 222-S. Installation of the first analytical line is nearing completion. One painter was assigned full time to the application of strippable coatings and baked enamels on laboratory apparatus in Bldg. 222-S. Outfitting of the decontamination chamber and miniature sand blaster for decontamination of gloved boxes and remote chemical assemblies is underway. Revisions of the Hanford Slave manipulator are almost completed.

Development work on methods for fabrication of Teflon was started in the Technical Shops. Preliminary results indicate that Teflon may be successfully bonded to Teflon if pressure, time, and temperature conditions are properly selected. Several successful bonds were completed during the month. Subsequent work will explore the relationship between pressure, time, and temperature. Special heating shoes have been designed and are being fabricated for this work. An induction furnace heating coil has been fabricated in the Technical Shops to facilitate developmental work on metal to ceramic brazing. Work on this program has been delayed pending receipt of active metal hydrides.

Negotiations have been completed with Atkinson-Jones for Phase II construction of the Redox Analytical and Plant Assistance Laboratory, Building 222-S. Procurement of materials has been started.

The contract for A-E services for Phase II of Mechanical Development Bldg. in the Works Laboratory Area was forwarded to Dix Steel Building Co. for final approval but has not been returned. Confirmation of the returned contract by the AEC must be obtained before final notice to proceed can be given.

Concrete work on the Radiochemistry Building in the Works Laboratory Area is progressing but actual structural work is delayed temporarily awaiting the receipt of steel. The floor of the half-height basement at the front of the building has been poured.

Bids on the Plot Plan and Utilities (exclusive of the Badge House) and the additional sewage disposal facilities for the Works Laboratory Area were opened on November 7. The L. H. Hoffman Co., Portland, Oregon, was apparent low bidder on this work with a bid of $810,000. Final notice to proceed was issued to the Hoffman Company on November 26. Footings for the Badge House for the Works Laboratory Area have been poured. This work is being done as a part of the contract covering the Library and Files Building.

Formal notice to proceed with construction of the Pile Technology and Radiometallurgy Buildings in the Works Laboratory Area was issued on October 31 to the L. H. Hoffman Co., whose bid was $2,840,000 for this work. Clearing the building site of all debris and objectionable material has been completed and the necessary footing and foundation excavations for these Works Laboratory Area buildings is underway. Purchase orders have been issued to Farrell-Birmingham Co. for the special "hot" cell equipment required for the Radiometallurgy Bldg. The total cost of this equipment is $376,413, and comprises the Dry Storage Cell, Decontamination Cell, Intermediate Level Cells and the High Level Cell.

The concrete of the lower buildings walls and vault has been poured for the Library and Files Building.

An experiment was designed for the Metal Preparation Section of the Manufacturing Department to determine the effects of acid concentration, deoxidizing time, position of pieces in the bath, type of uranium metal, length of storage time between machining of the pieces and deoxidizing on the average loss of uranium per piece in the deoxidizing bath. Analysis of data submitted by the Metal Preparation Section indicated that aluminum-silicon rejects may be caused by excessive distance between the outside diameter of the aluminum cans and the inside diameter of the steel sleeves used in the canning process. Further studies are being made to determine what tolerance limits should be maintained to minimize aluminum-silicon rejects.

Analysis of Pu distribution data relating to the Recuplex process was begun for the Separations Technology Unit to obtain mathematical relationships giving Pu concentration in the organic phase as functions of Pu, HNO_3, SO_4^{--}, and TBP in the aqueous phase. In cooperation with Chemical Research and Analytical Research, a program of theoretical computations of the quantities of plutonium isotopes, Am^{241}, and Cm^{242} expected in pile irradiated uranium was launched, as an extension of the previously reported work on the calculation of Am^{241} and Cm^{242}. For the Separations Technology Unit, programming has been completed for solving sets of simultaneous equations up to order 20 where the sets are of diagonal type. Several cases have been calculated. Programming has also been completed for calculating ratios of numbers obtained from Redox production data and printing the ratios in the order of the stages they represent.

Analysis was performed to derive the curves of optimum fit to data supplied by Wage Administration. The data, which was obtained from a national wage survey and represented the average monthly salary based on years since receiving degree, was found to fit a logarithmic type curve. Tests were run to measure the goodness of fit of these curves for the first twenty-five, thirty, and thirty-five years.

O. H. Greager
Manager, Technical Section

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December 7, 1951

PILE TECHNOLOGY UNIT

NOVEMBER, 1951

VISITORS AND BUSINESS TRIPS

Visitor	Date	Address	Purpose
J. E. Draley	11-1/2-51	ANL	Obtain information on the corrosion of aluminum alloys in process water

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Visitor	Date	Address	Purpose
A. M. Bounds	11-1/13-51	Superior Tube Co.	Consultation on zirconium
L. H. Duff	11-1/17-51	GEL	P-10 consultations
C. G. Kruse	11-7-51 11-12-51 11-27-51	IBM Repairman	Repair IBM machines
M. J. Gross J. Marsden	11-13-51	KAPL	Inspection of Canning Line
H. L. Penberthy	11-20-51	Penberthy Instrument Co., Spokane	Exhibit lead glass
R. C. Warren D. F. Crumb	11-26-51	IBM Repairmen	Repair IBM machines

Name	Date	Place Visited	Purpose
L. P. Bupp	11-5/9-51	Carnegie Tech. (Wisc.)	Recruiting Trip
W. M. Harty	11-5/9-51	Dana-Plant DuPont Co.	Technical consultation as requested by DuPont
R. H. Leyse	11-1/19-51	GEL & KAPL	Follow shop construction C-410 at GEL and to discuss in-pile experiments at KAPL
J. F. Music	11-1/2-51	Univ. of Minnesota & Univ. of Chicago	Ph.D. recruiting trip
E. B. Montgomery	11-13/16-51	Mich. State College & Univ. of Mich.	Recruiting trip
A. B. Carson	11-15/16-51	AEC:ORNL	Meeting for discussion of production problems
W. L. Schalliol	11-19/23-51	Research Welding & Engr. Co., & Bureau of Mines	Consultation on vacuum tanks and consultation on zirconium metallurgy

Name	Date	Place Visited	Purpose
W. T. Kattner	11-17/20-51	Allegheny-Ludlum, AEC:NYOO, Simonds Saw and Steel	Discuss metal fabrication development program
P. H. Reinker	11-20	National Carbon Co.	Graphite Consultation.
J. H. Bach	11-23	Bureau of Mines	Discussion on zirconium
W. K. Alexander G. E. McCullough	11-26/27-51	Univ. of Idaho, & Wash. State College	Recruiting trip
M. J. Sanderson	11-21/25-51	Simonds Saw & Steel Company	Observe metal fabrication
	11-26/27-51	Brookhaven National Laboratories	Inspect neutron spectrometer for metallurgical uses
	11-28/30-51	Ninth Annual Pittsburgh Diffraction Conference	Attend conference
R. B. Socky F. B. Quinlan	11-26/30-51	KAPL, Works Lab., and GEL	Consultations on non-destructive testing techniques
G. E. McCullough	11-12/13-51	Univ. of Utah	Recruiting trip
J. M. Atwood	11-29-51	Exposition of Chemical Industries, N.Y.	Attend exposition
J. A. Ayres	11-27/28-51	American Institute of Architects	Attend Institute
J. J. Cadwell	11-26/27-51	ASME Convention	Attend convention and consultation on thermal stresses in slugs
	11-28-51	SESA Convention	Attend convention
	11-29/30-51	ORNL	Consultation regarding slug failures
R. S. Dalrymple	11-30-51	Kaiser Aluminum and Chemical Corp.	Consultation on metallurgical research

ORGANIZATION AND PERSONNEL

	October	November
Physics	41	45
Engineering	74	77
Metallurgy	63	64
Pile Applications	71	71
P-10	71	74
Administrative	14	14
	334	345

Physics: One laboratory assistant was hired and three technical graduates transferred in from the Reactor Section, Operations Unit. A physicist transferred in from Pile Applications and one physicist transferred to Pile Applications from Physics. One technical graduate transferred to Pile Applications and a technical graduate transferred from Engineering to Physics.

Engineering: A mechanical engineer transferred to Design and Construction Management Section, Reactor Unit, and a chemist was hired. One technical graduate transferred to Physics, one transferred in from Management-General, one from Separations Section, Plant Engineering Unit, and one from Design and Construction Management Section. A steno-typist transferred in from Utilities and General Services Department, Transportation Section.

Metallurgy: A laboratory assistant was hired. One technical graduate terminated, one transferred in from Pile Applications, one transferred to Separations Section, Operations Unit, and one transferred in from Utilities and General Services Department, Transportation Section.

Pile Applications: A physicist transferred in from Physics and one transferred to Physics. One physicist terminated. A technical graduate transferred to Design and Construction Management Section, Reactor Unit, one transferred to Metallurgy, one transferred in from Reactor Section, Operations Unit, one transferred in from Physics, and one transferred in from P-10.

P-10: Two laboratory assistants were hired, two technical graduates transferred in from Separations Section, Operations Unit, and one technical graduate transferred in from Radiological Monitoring Unit. A technical graduate transferred to Separations Section, Operations Unit, and one transferred to Pile Applications.

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CRITICAL MASS

Criticality determinations for the untamped 16 inch sphere were completed this month, with a series of measurements made at increasing nitrate ion concentrations for comparison with similar measurements in larger assemblies.

An attempt to obtain criticality in an untamped hemisphere by half filling a 20 inch sphere indicated that more than 2 Kg of Pu would be required. Criticality was then obtained by addition of water to the reactor, resulting in a spherical segment with a height of eleven inches.

An accidental radiation burst occurred on November 16, during momentary high level operation. No physical damage was done to the equipment, but gross contamination resulted from plutonium which was forced out of the reactor. A complete report of the incident is being prepared. When decontamination has been completed, tests on the untamped spherical reactors will be resumed.

Critical mass data for which complete analytical results have been received are listed below:

18" Stainless Steel Sphere, Untamped
49 Liters, 577 MWD/t, 75°F

Critical Mass	Total NO_3/liter	Total H/liter	Total EV(atom barns)	Li
1173	125.6	105.9	1.10×10^{27}	0.0
1242	123.3	106.1	1.17×10^{27}	0.221
1386	132.7	105.7	1.30×10^{27}	0.680
1459	141.4	105.0	1.36×10^{27}	0.880

Graphite has been procured and is being machined for the test to determine the effect of a graphite reflector on the critical mass of plutonium solutions.

IMPROVED PILE STRUCTURE

Exponential Pile Experiments

The cause of the discrepancy observed among values of buckling for the seven inch lattice determined by different types of neutron flux detectors is still undetermined. The BF_3 counting equipment was checked for the effects of chamber and preamplifier design, and of amplifying and counting equipment dead time, but the corrections indicated by these tests cannot account for the observed discrepancy. The determination made with gold foils has a much larger uncertainty on account of lower counting statistics than that made with BF_3 chambers or indium foils, but the general agreement of the gold foil and BF_3 chamber results suggests that there are some neutron energy effects or that there is some difficulty in the technique used with the indium foils. The latter was investigated by varying the size and shape of the foils used, but the results obtained still did not agree.

The observed decrease of the cadmium ratio with increasing distance from the source layer is also being investigated. The decrease begins too far from the top of the pile to be attributed to edge effects and is much larger for indium foils and the one inch BF_3 chamber than for the gold foils or the three inch BF_3. The use with the one inch chamber of the large cadmium head designed for the three inch chamber did not alter the trend in the cadmium ratios. These results indicate that a very careful investigation of the measurement and interpretation of cadmium ratios is in order.

Calculation of image corrections for diffusion length measurements in the Savannah River graphite have been completed and applied to the data obtained by the Exponential Pile group. The diffusion lengths for five different traverses ranged from 61.7 to 64.1 cm. with an average of 62.5 cm. There is an anomalous point on two of the traverses and these points are being investigated.

Exponential Pile experiments have been interrupted in order to move the experimental facilities from the pad room in 101 Area to the 189-D Building. All laboratory facilities have been moved, and erection of the standard pile begun. The offices will be moved to the 1704-D vault as soon as necessary revisions there have been made.

General Lattice Design

A production test for the small scale production of Xe^{135} in the test pile has been prepared. The design of the separation apparatus for this experiment is complete, and construction will be carried out as soon as necessary materials now on order have been received. The electrical control system has been completed and tested. A detailed test program to determine the adequacy of the charcoal traps has been planned. Testing of counting procedures will require additional operation of the separation apparatus, but no detailed program had been decided upon.

Preliminary study of the problems involved in designing an apparatus for large scale operation has been made. The separation principles are to be the same as in the test pile apparatus, but elaborate protection against radiation and contamination is planned. The relative merits of test hole and process tube installation are being examined. Rough drawings of a scheme for using a test hole have been made, and data for a more detailed design are being gathered.

Attempts are being made to increase the energy resolution of the neutron spectrometer to be used in the measurement of the Xe^{135} cross section by reducing the divergence of the neutron beam. Cadmium aperture-reducing plugs for the present collimator have been constructed as well as boron slits to limit the beam entering the detector.

Preliminary measurements were made this month with the scintillation gamma ray spectrometer equipment. Pulse height distribution curves were obtained from Au^{198} and natural thorium sources as well as the Cs^{137} source which has been used as a reference energy standard. The energy of the 411 Kev gamma ray from Au^{198} was measured to within three per cent of the published value by referring it to the 669 Kev peak of the Cs^{137} source. The Au K X-rays at about 67 Kev were also clearly resolved. Using natural thorium as a source, five peaks associated with known gamma ray energies in the thorium decay chain were resolved in the range from 0.2 to 2.0 Mev.

Initial experiments in the study of the high energy N^{16} gamma ray present in pile cooling water were undertaken with the scintillation counting equipment. The counter and associated equipment was set up on the X-2 level at 105-H. Using the Y test hole cooling water as a source, a strong high energy peak was observed. Amplifier difficulties made it impossible to measure the energy precisely, but it appeared to be between five and seven Mev and is probably due to the N^{16} activity. Rough absorption curves were run on this high energy component and reasonably good exponential curves were obtained. Despite the uncertainty of the energy measurement, the test demonstrated the feasibility of using scintillation pulse discrimination for separating a given energy component from the other gamma ray energies present.

Large Scale Pile Structure

A tabulation is given below of the assured production (based on present production at H Pile) of different pile sizes and lattice spacing:

	Lattice Spacing	Number of Tubes	Assured Production (MW equivalent)	Required Water Flow
1. Same face area as H Pile	8-3/8"	2000	575	42,000 gpm
	8"	2200	615	45,000
	7-3/4"	2340	700	51,000
	7-1/2"	2500	730	53,000
2. Face area 1.5 times as great as H Pile	8-3/8"	3000	860	63,000
	8"	3290	950	69,000
	7-3/4"	3500	1020	75,000
	7-1/2"	3750	1070	78,000

These production figures include corrections for operating efficiency, conversion ratio, and flattening efficiency and are based on H Pile annulus and tube length.

Control rod requirements for three pile sizes with 7-1/2 inch lattice have been calculated and are tabulated below:

Pile Size	No. of VSR'S to give 2000 ih	No. of HCR'S to give 700 ih
1. Same face area and tube length as H Pile	40	15
2. Same tube length, 1.5 times face area	48	18
3. Five feet longer tubes, 1.5 times face area	60	22

Calculation of thermal utilization in a criss-cross lattice is nearly complete and results will be reported in the near future. This calculation will yield a direct comparison of the standard and the criss-cross lattice design.

SHIELDING STUDIES

The apparent discrepancy between neutron attenuation data obtained at the A test hole at D Pile and the facility on top of DR Pile has now been shown to be real and is apparently due to the non-uniform flux distribution across the well. A request will be made of the Theoretical Physics group for assistance in making a correction for this lack of uniformity. Future work will consist of traverses in both iron-masonite and Brookhaven concrete using cadmium-covered gold and sulphur detectors.

Work has commenced on measurement of the attenuation of high energy gamma rays by lead and other materials. It is planned to use the 6.3 Mev gamma ray which comes from the decay of N^{16} in pile effluent water. These measurements will serve to check theories pertaining to gamma ray attenuation and should improve the validity of shielding calculations.

Design of a new gun barrel assembly for use with Brookhaven concrete shielding is now near completion. It is planned to compare the shielding efficiency of the new design with that of the present assembly.

OPERATIONAL PILE PHYSICS

Enrichment Studies

The regular metal charge in Tube 0674-H was replaced with 15 unbonded, eight inch, four per cent U^{235}-Al alloy pieces centered with regular metal for the purpose of studying the physics effects to be encountered in the use of enriched metal loadings in the Hanford piles. The analysis of these data is proceeding at the month's end. However, a preliminary data analysis indicates that both the reactivity and temperature effects were about as calculated.

It is expected that some additional information about the behavior of the neutron fluxes at the enriched metal - natural metal interfaces can be obtained by monitoring the radioactivity of the pieces after discharge.

Instrument Development

Flexowriter Installation: Work on the Flexowriter tube temperature recording equipment has proceeded as expected. Efforts to obtain the monies to procure, fabricate, and install the necessary equipment for the test installation at B Pile are presently underway. A production test to cover the B Pile installation has been written. The bulk of the circuit design and development work has been completed and specifications written.

105-DR IBM: Difficulties were again experienced during the month in the IBM card feeding and punching. Most of the difficulty is attributed to the absorption of moisture by the cards. Corrective measures are under consideration.

A system for handling and storing the cards for special studies has been established.

Pile Control: Design of a BF_3 control "rod" for use in the test pile has been completed. The total variable rod "strength" is calculated to be about one ih. Components have been ordered and fabrication will be initiated in the near future.

Short Term Transient Studies

A re-evaluation of the xenon equation and its application is underway. Past inaccuracies in the computed reactivity effect of xenon in addition to a recent re-evaluation of xenon constants make this study advisable.

Test Pile Calibration

The calibration of the test pile for single and eight egg tests is nearly complete. The weight calibrations were made by adding uranium wafers to the selected stringer positions over the range 0 to 2400 grams. For both the single and eight egg stringers, a uranium weight coefficient of 0.00026 inhours/gram was observed to hold over the 1700 to 2400 gram range. Work on the remainder of the weight range (0 to 1700 grams) is in progress at the month's end.

GRAPHITE STUDIES

Pile Graphite Sampling

Powder samples and two core samples were taken from channel 3467-B and a complete series of powder samples, eight core samples, and a bore diameter traverse were obtained from channel 2970-H. Evaluation of the graphite damage existing in these channels is being made. The abrasive property of the irradiated graphite has made it very difficult to remove cores from the damaged fringe region in the H Pile and from all positions along the channels at the older piles. The core saws have been hardened by a cyanide process, but it appears that even harder cutting teeth will be required. Carbolov cutters are being investigated.

Pile Graphite - X-Ray Expansion

The crystallite lattice expansion of powder samples taken from the center of the B Pile indicates that the bore annealing effects noted in the central portion of the channel on previous sampling programs have not progressed during the past year and the graphite remains highly damaged. The complete crystal lattice expansion profile along this tube indicates that in the fringe zones, ten feet from the front Van Stone flange, expansion is continuing at a fairly constant rate.

Pile Graphite - Thermal Conductivity

The thermal conductivity of core samples from various process channels at the H Pile show a damage profile similar to that obtained from crystal lattice spacing studies made earlier. The greatest degree of damage exists in zones of the pile where the temperature is low and the flux remains significantly great. In all cases, the thermal conductivity is greater at the outside of the tube block than the tube bore edge. The gradients were found to be regular and appreciable.

Pile Graphite - Special Measurements

A dimensional traverse has been completed down the central region of the A test hole at the D Pile. The data were obtained as a continuous plot of dimension versus position; and when coupled with similar traverses taken down both sides of this test hole, allow a complete survey of dimensional changes through this region of the pile. The measurements show, as expected, that the tube blocks have expanded to a much greater degree than the filler blocks. When these results are compared with earlier measurements taken about two years ago, effects caused by the intervening exposure and conditions should be determinable. Calculations based on these measurements and various tube traverses indicate that creep of the graphite is occurring and that the D Pile stack has sagged approximately one inch since start-up.

Controlled Temperature Exposure of Graphite

Graphite samples irradiated at the B Pile through a range of temperature operated at 200°C., 175°C., 164°C., and 123°C. for the month. Averages were fairly stable and temperature shifts were less than 10°C.

The annulus tube facility has been redesigned to allow the charging of two sets of samples, one from the front and one from the rear.

Controlled Gas Atmosphere Experiment - Project C-410

The effect of pile radiation on the $C-CO-CO_2$ reaction is to be investigated under controlled conditions of temperature and pressure.

The heater facility for the C test hole at DR has been assembled at Schenectady and has been shipped.

The gas analysis and circulating equipment has been assembled in the D Area maintenance shop. A number of leaks remain in the system. Installation on the experimental level awaits the removal of contamination at this location and a decision as to whether leak repairs are to be completed in the shop or after moving.

One trial run has been made on the sample charging and discharging equipment. Additional testing will be made after the indicated design changes have been completed.

Surface Studies of Graphite

Continuing surface studies of various graphites indicate that an irradiated sample exposed in the presence of oxygen shows no change in the surface area with various outgassing temperatures. This is in contrast with several virgin graphite samples investigated earlier. Pore size distribution determinations also show a distinction between these two types of graphite. This information is of value in interpreting gas reactions with graphite. Similar studies are being continued.

Thermal Conductivity Measurements

Studies of thermal conductivity as a function of temperature for irradiated graphites have been extended to over 300° C. for graphite stringer samples removed from the B Pile and continue to show a positive thermal coefficient of thermal conductivity over this temperature range. Similar studies made with cold test hole irradiated graphite over the range from 0 to 60°C. show that this material has a markedly different coefficient. These results point to the necessity of measuring the thermal conductivity of irradiated graphites at the temperature which they experience in the pile if these results are to be used accurately for heat transfer calculations. Apparatus is being improvised to obtain the variation of thermal conductivity with temperature for the disc samples obtained from the cores which are removed from the process tube blocks.

Chemical Studies

Preliminary experiments on the crystal lattice spacing of carbon obtained from the thermal decomposition of graphitic oxide indicate that carbons made by this process show crystal lattice spacings and structural characteristics similar to highly damaged irradiated graphite. This method may prove to be a valuable system for producing synthetically damaged graphite.

Graphite Burnout

Laboratory tests to obtain the rate of reaction of virgin graphite with pure carbon dioxide indicate that negligible reaction occurs with temperatures as high as 700°C. Studies will be continued at higher temperatures to confirm these conclusions. In-pile weight losses of graphite in the

presence of pure carbon dioxide have been measurable at temperatures as low as 380°C. over long periods. The object of these experiments is to obtain a correlation of in-pile tests at low temperatures with an extrapolation of kinetic data taken from these laboratory tests.

HEAT STUDIES

Automatic Time-Delay for Panellit System Alarm

The Microflex mechanical time-delay installed in the Panellit System at the B Pile, under Production Test 105-502-E, performed satisfactorily using a ten-second time delay. Results indicated that this ten-second delay period would be sufficient to eliminate most pile shutdowns caused by momentary water pressure fluctuations if the automatic shutdown circuit were in use. Tests will continue with the Microflex relay at shorter time periods.

Pressure Drop Film Studies

A series of tests to determine the effect of film formation on slug surface temperature has been planned. The short-tube heat transfer mock-up and flow laboratory facilities at D Area will be used in running these tests to simulate pile operating conditions.

Full-Scale Mock-Up

The design of the aluminum variable-wall-thickness heater tube is completed and the fabrication is proceeding. This heater tube is designed to give a power distribution similar to the cosine power distribution in the tubes of the pile.

Calculations for the nickel variable-wall-thickness heater tube have been completed. This tube will be used in boiling studies for heater surface temperatures up to 600°C.

Thermocouple Slug

Fabrication of the special thermocouple slugs which will permit central and skin temperature readings has not been completed by the General Engineering Laboratory. Because slug temperature information is required as soon as possible, the fabrication of thermocouple slugs containing central thermocouples only has been initiated at Hanford.

The thermocycling autoclave has been completed and will be used to test slugs with surface thermocouples.

Induction Heating of Slugs

Calculations for and design of the induction heater coil to be used in heating slugs to simulate pile slug temperatures have been completed and

fabrication will be started soon. The possibility of using electrical resistance heating of slugs is also being investigated.

Enrichment of B, D, and F Piles

The following aspects of the problem of enrichment of the old piles are being investigated:

(1) Effect of enrichment on shield temperatures and on far and near side graphite temperatures.
(2) Optimum pile gas composition with enrichment.

Temperature maps of the graphite lattice under various conditions are being made in support of the work.

Effect of Tube Length and Annulus Size on Tube Power

The results of a preliminary investigation of the effect on pile performance of increasing active metal length and annulus cross-sectional area of the process tube will be issued in Document HW-22799.

The following conclusions were obtained from the study. For an eight foot increase in the active metal length:

(1) The maximum permissible tube power based on boiling considerations and a fixed header pressure would decrease only slightly.
(2) The tube power for a given slug surface temperature and a fixed header pressure would remain essentially unchanged.
(3) The tube power would increase appreciably for a given specific slug power.

For an increase in the annulus size:

(1) The maximum permissible tube power based on boiling considerations and a fixed header pressure would increase appreciably.

C Pile Insulating Layer

The effects of an insulating layer between the bottom tube row and the thermal shield in the C Pile are summarized in Document HW-22618, issued this month.

Installation of a cast iron insulating shield may result in the following:

(1) An appreciable reduction of graphite expansion at the inlet end of the pile.
(2) A small reduction in the graphite expansion in the center of the pile.

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WATER STUDIES

105-D Flow Laboratory

Construction on the water quality experimental facilities was resumed on November 26, 1951. It is expected that the laboratory will be in partial operation by January 1, 1952.

Film Studies

Construction of the test apparatus to study the fundamental relations of film formation is scheduled for completion for December 15, 1951. It appears that if higher temperatures are desired in the process tubes, it will be necessary to go to chemical purging agents since the film formed at the high temperatures is much tougher and probably will not be affected by mechanical purging agents. Preliminary investigations on the possibility of using chemical purging agents are underway.

105-F Laboratory

The can difference test in which film formation and corrosion rates were studied for aluminum cans produced by Aluminum Company of America, Scoville, and Victor has been terminated. No indication of difference between the cans made by the various manufactureers was found. The data do indicate, however, that the total film pickup is a logarithmic function of the reciprocal of the absolute temperature.

Installation of the laboratory recirculation equipment is scheduled for completion during the coming month. Tests will be started as soon as the equipment is in operating condition.

The slug jacket abrasion test, which has been in operation about three months with a flow rate of 34 gpm, continues to show that the abrasion rate is negligible even at this high flow rate.

Production Test 105-453-P - Sodium Dichromate Elimination Tests

The system performed satisfactorily during the past month. Operation was normal and the system was purged twice during this period. Although no corrosion data are available, pressure drop data indicate that the film formation rates with and without sodium dichromate are approximately the same. The pressure drop recovery due to purging is also about the same in both cases.

Production Test 105-473-P - The Use of Aluminum Sulfate for Process Water Coagulation

The test continued during the past month without incident. The data for the second month of operation show no change from that during the first month of operation. Film formation rates and effluent activity have remained at the lower value previously reported.

The major change in the test resulted when it was found possible to decrease the alum feed from 26 ppm to 11 ppm and maintain the same coagulation efficiency. This resulted primarily in lower operating expense.

The Experimental Activated Silica Addition Equipment

Project M-611 authorizing the construction of the activated silica addition facility was processed during the past month. A suspense code was authorized and construction work was started on November 15, 1951. It is anticipated these facilities will be ready for use by December 21, 1951.

The design of the activated silica equipment for H Area, which will be used in conjunction with ferric sulfate coagulant, was completed and the project prepared for the construction of the facility. It is anticipated that these facilities will be ready for use by February 15, 1952.

Corrosion Studies

The high temperature corrosion experiment proceeded during the month. Sufficient data are not yet available to give conclusive results; however, it was found that the film formation rate in the 150°C. tube was serious. The film formed at this temperature has different physical characteristics from the film normally found at lower temperatures. The 150°C. film resembles boiler scale deposit and is composed largely of calcium carbonate.

Metallographic examination of a tube which had contained magnesium front dummies was completed during the past month. The information from this examination, when compared with borescopic evidence, indicates that no overprotection due to the magnesium dummies is occurring. A document covering the information available on tube corrosion is being prepared.

The heavy metals test utilizing samples of 2S and 72S aluminum, immersed in sample bottles, containing trace amounts of heavy metal ions normally found in Columbia River water was started on November 1, 1951. An examination, after sixteen days of operation, indicates that the corrosion attack does depend upon the heavy metal ion concentration.

Construction of the induction heating facilities for corrosion studies is progressing on schedule. It is expected that construction will be completed by December 10, 1951, and testing will start by December 14, 1951.

Construction of 50 tube mock-up, Project C-469, is still being delayed because of lack of rotameters. Partial delivery of the rotameters has been received and the remaining rotameters have a promised shipping date of December 15, 1951. Construction work will not be resumed until all rotameters have been received.

MECHANICAL DEVELOPMENT

Charging and Discharging Program

Several tests have been conducted using the pressurized charging machine and a C Pile process tube. The results of these tests indicate that a redesign of the pressurized discharge machine and its nozzle is necessary to alleviate the backseating problems which were encountered.

A new slug holding device and an oiling system for the Collins type seal have been designed and are being added to the unpressurized charging machine.

Horizontal Control Rods

The new gland design for C Pile employing oil-impregnated graphite, "O" rings, micarta wipers, and water lubrication has been fabricated and partially tested. Tests results to date are considered satisfactory. The erection of the full-scale horizontal rod mock-up is continuing; however, delays in the delivery of necessary prototype equipment are expected to interfere with testing schedules.

A preliminary report will be issued shortly outlining several plans for redesigning, converting, and modifying horizontal control rods and their related components in existing piles.

Vertical Safety Rods and Third Safety System

The equipment and material for the shock-strut tests is being assembled and erected at the White Bluffs Test Tower. A modified DR rod will be used instead of a C rod since the delivery date of the latter is sometime late in January.

Temperature tests on silicone sphincter seal indicate that temperatures up to 700°F. have no effect upon either the seal or the lubricant.

Slug Damage Studies

The final test report on "Slug Damage Due to Charging" has been issued (HW-22600). Test results indicate that there is no detectable damage to the slugs by the charging machines.

Process Tubes, Nozzle Connectors, and Strainers

Flexure tests have been completed on the Atlantic Hose connector and the Flapper Nozzle Pigtail. A test report will be issued in the near future.

The preliminary design has been started on a method to allow for process tube expansion and contraction by means of movement of the crosshead rather than by the present pigtails.

Various types of inlet strainer baskets are being pressure tested for a strength determination. To date, only one strainer has been made to fail, and this occurred at a pressure differential of approximately 475 psi. These tests will continue during the next month.

Other Tests or Programs

The drafting portion of the design for a television installation at the D Pile has been started. A mock-up of this design will be erected in the 189-D Building and the installation tested upon receipt of the television equipment. The cameras, viewing screens, and associated apparatus, will probably be ordered during the next month.

A project proposal is being written on the P-13 Pressure Assembly Removal to cover the procurement and erection of the apparatus for testing, and the subsequent disassembly and storage of portions of the equipment until final use.

Preliminary designs are being made of several possible alternate systems which might be used to provide increased production of slug air weighing. Approval has been obtained on the redesign of the water cooled test hole facility. The leakage problems on the old facility are believed to be solved, additional thermocouples have been added, and the amount of water in the facility has been reduced by one-third.

Tests have been completed on the adequacy of present tip-offs when used at the higher flow rates expected in the C Pile. A report is being written outlining the types of failure encountered, and suggested designs for improvement.

METALLURGY OF URANIUM

Fabrication

The results of the 305 Pile tests on six slugs prepared by powder metallurgical methods indicate that the compacts are comparable in reactivity to rolled metal.

Twenty-one rods, experimentally finish-rolled in a continuous mill at Lackawanna from machined billets preheated in a salt bath, were received. Because the surface of these rods was far superior to normal production material, a bare slug yield of 85 per cent was attained. Spectrochemical analysis of a sample of turning scrap processed through chip recovery indicated less than one part per million lithium remained from the salt.

Physical Measurements

The use of the General Electric Metals Comparator to detect the degree of transformation of uranium is being investigated. When bare slugs were picked at random from several rods, it was possible to detect fully

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transformed pieces but impossible to detect partially transformed slugs. Differentiation is possible only when rigorous standards are set. However, when slugs were taken from one rod, it was possible to differentiate between fully transformed pieces and slugs transformed as much as 85 to 90 per cent.

METALLURGY OF PLUTONIUM

Laboratory Facilities

Construction work on the laboratory was discontinued November 21 for lack of funds. Funds have been located, and only work order authorization is required to resume work.

Equipment is being designed for the study of phase changes in metals as the pressure and temperature are varied independently.

Laboratory Techniques

Techniques for the following work are being investigated and developed at the present time:

(1) Electrolytic polishing of plutonium.
(2) Cathodic etching of samples. Construction of the equipment is underway.
(3) Preparation of powdered specimens of plutonium for X-ray examination.
(4) Thermal analysis of plutonium.
(5) Determination of the thickness of films on metals.
(6) Measurement of shear modulus and ultimate shear strength by means of torsion equipment.

METALLURGY OF HANFORD STRUCTURAL MATERIALS

100 Area Corrosion

Corrosion studies of an uranium aluminum alloy were initiated to determine the corrosion resistance of this alloy in pile process water. Solution potential measurements are being made to determine the nature of the corrosive attack of process water on "J" alloy.

200 Area Corrosion

A corrosion program has been started to determine whether chromium stainless steels can be substituted for the nickel-chrome stainless variety for use in Redox process solutions. These studies have been instigated in view of impending shortages of nickel.

Corrosion tests for the Recuplex process are continuing and non-metallic protective coatings have been added to the list of materials which are to be studied using these process streams. The exposure of low carbon

steels to synthetic 200 Area waste solutions at various pH levels has been started. The purpose of the tests is to study corrosion rates as the pH of the solutions is lowered below the present level.

New Pile Materials

A review of available aluminum alloy data has been conducted to determine the feasibility of obtaining process tubes and cans with better mechanical and corrosion properties than the 2S aluminum now used. The commercial alloy, 63S, and an experimental alloy consisting of high purity aluminum with additions of less than 0.5 per cent magnesium were found to be promising. Negotiations for the production of some process tubing 50 feet long as well as for experimental lots of both four inch and eight inch cans and caps from 63S alloy were started. The canning process would serve as an effective solution heat treatment of the 63S while the autoclaving will provide conditions favorable for precipitation hardening. The final canned piece would thus have a considerably harder surface than the present 2S can.

Before zirconium metal may be used in the piles, the effects of pile atmospheres at elevated temperatures on this metal must be studied. Plans are now being made for such tests on both zirconium and zirconium-tin alloys, using both dry and wet inert and active gases. United States Bureau of Mines zirconium will be tested since it is believed that this metal rather than zirconium produced from the iodide will have to be used if larger tonnages are required.

CANNING DEVELOPMENT

Eight-Inch Canned Slugs

One hundred nine additional eight inch slugs were canned using the standard triple dip process using a new can with .010 inch heavier wall and a thicker end cap. Thirty-nine of these were canned to provide a pile loading of thirty-two pieces and seventy were canned for experimental tests. The thirty-two slugs were loaded in DR Pile at the end of the month. The experimental group of seventy included slugs with untransformed uranium diameters of 1.331, 1.333, and 1.336 inches. The largest diameter (1.336 inch) slugs canned satisfactorily, and preliminary data indicated that general quality of these slugs is as good as that of the 1.331 diameter canned pieces. Preliminary 305 tests on the 1.333 and 1.336 diameter slugs indicated a reactivity comparable to that of standard four-inch canned slugs.

Sleeveless Canning

Twenty slugs were successfully Al-Si bonded in cans externally coated with graphite, and without the use of steel sleeves. The process used was similar to that developed at the Argonne National Laboratory.

New Fuel Element Development

Work was continued during the month to establish a program for developing new fuel elements. This program is essentially complete and will be issued for review early in December.

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On November 5 and 6, a general information meeting was held at Hanford with representatives from the Atomic Energy Commission sites in attendance. The purpose of this meeting was to familiarize those sites with the Hanford slug rupture problem and to point out that a large amount of assistance would be required from the sites to develop new, improved slugs. The representatives were requested to review their present programs and to advise by early December, if possible, the type and amount of assistance they would be able to provide.

On November 26 and 27, representatives from Knolls Atomic Power Laboratory visited Hanford to discuss participation in this program. It was agreed that Knolls Atomic Power Laboratory would investigate the application of elemental metals and uranium alloy layers to uranium slugs as a means of producing a protection system inherently more sound than the present aluminum silicon system.

Gases in Al-Si

Graphite molds for sampling Al-Si and a recording hygrometer for the canning building have been ordered. The gas analysis line is being prepared for the determination of gases in Al-Si.

Welding Slugs

Sixty four-inch slugs with braze line width of less than 0.015 inches were welded after double grooving and crimping the can wall. The welds were sectioned and observations showed these welds to be satisfactory. However, additional slugs with wider braze lines will be welded to check dilution of the Al-Si in this more severe case.

About fifty eight-inch slugs were satisfactorily welded using a procedure comparable to that specified for four-inch slugs except that a turntable speed of four rather than six rpm was employed.

Bonding Layer Studies

Diffraction patterns have been made of successive layers between the uranium metal and the aluminum can of a triple-dipped slug and the phases present are being identified.

Frost Test Calibration

New frost tests standards have been prepared for four-inch slugs. Preliminary frost test data on eight-inch uranium slugs having thick-walled cans indicate that frost testing of those slugs on a production basis may be unsatisfactory. Destructive investigations of a number of the individual rejects showed no cause for rejection.

Inspection

The presence of silicon at the surface of aluminum slug jackets may be harmful from a corrosion standpoint through establishment of galvanic couples. Both chemical etching and anodizing were found equally effective in the detection of high silicon areas.

The Sperry Reflectroscope recently acquired by the Metals Preparation Section shows some promise of being able to detect voids under the slug caps. The General Electric Metals Comparator shows promise for checking voids and unbonded areas of the can walls of four-inch slugs.

Three stainless steel dummy slugs were canned with defects deliberately induced and sent to the General Engineering Laboratory for use in radiometric testing.

Protection Against Corrosive Attack of Al-Si

Samples of low carbon steel, cast iron, and stainless steel were given various surface treatments in attempts to reduce the attack of molten Al-Si on these materials. A ceramic coating on the present production thermocouple wells and an oxidized coating on carbon steel were the two most resistant surfaces tested. Because the ceramic coating is quite brittle and is easily chipped by impact, the oxidized surface on carbon steel is considered better. A set of carbon steel slug tongs with oxidized surfaces are to be prepared for use on the canning line to give this coating a more rigorous test.

Process Specifications

The first rough draft of revised Process Specifications for bonded canning has been completed.

Process changes were issued for increasing the flow of argon gas in the welding process, for using six-inch bismuth slugs, and for using eight-inch cans in the B Process.

RADIOMETALLURGY

Irradiated Slug Studies

Metallographic examination of two caps from slugs that ruptured in Tubes 1960-D and 4086-B has not revealed the cause of the failures. Four caps from other ruptures have been lost in the 105 basins. Interim reports on examination of failed slugs from Tubes 0970-B and 3658-D were issued as Documents HW-22642 and HW-22643.

Twenty-one slugs, canned December, 1950, and January, 1951, and discharged with the ruptured slug from Tube 3467-B, were examined by means of the basin periscope. Nineteen exhibited weld corrosion and other conditions were consistent with their exposure of 570 MWD/ton.

Process Tube Studies

No leaks were found in the sections of two of the four process tubes received for examination, 0890-F and 0893-F, when they were pressure tested in a water bath. Other sections of these tubes previously had been slit and examined for corrosion. The damage to Tubes 2959-F, 3467-B, and 3465-G, large holes and some reduction in cross section, probably occured during discharging operations.

Equipment

The special equipment for the Radiometallurgy Building to be built by Farrel-Birmingham, Ansonia, Connecticut, will be delivered in the following order: (1) dry storage unit, (2) the decontamination cell, (3) the high level cell, and (4) the low level cell. Delivery should begin May, 1952, and be completed in October, 1953. The Radiometallurgy Building should be available for use by September, 1952.

A water-proof variable speed motor has been installed in the water basin at 111-B to rotate slugs under observation. Preliminary tests of this unit have been satisfactory. A slug stripper is being built to facilitate removal of portions of the can wall from irradiated slugs. The cask design work is approximately 80 per cent completed. The ventilation system for the 111-B Building was approved by the Atomic Energy Commission and work should be finished during December, 1951.

Double Crystal X-Ray Spectrometer

Studies completed this month indicate that the low intensity of the diffracted beam in a double crystal X-ray spectrometer is a result of losses occurring during the second diffraction. Brookhaven National Laboratory has agreed to prepare a single crystal of aluminum to determine whether its use will reduce intensity losses at the second diffraction.

TRITIUM PRODUCTION

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During November no P-10 Branch personnel, or any other personnel working in the 108-B Exclusion Area, exceeded the working limit for tritium contamination, and no one was restricted from danger zone work because of tritium contamination in excess of the working limit, 35 μc of tritium oxide per liter of body fluid. Gross personnel and equipment contamination was encountered during inspection of the metal line separator. Numerous high clothing, mask, and skin counts were encountered but in most cases were easily reduced. A vigorous decontamination effort which was maintained almost continually kept contamination levels to workable limits. Several different methods of decontamination were tried after attempts to decontaminate by usual methods proved unsatisfactory. A modification of the soap and water method worked nicely; one-third detergent, two-thirds water. Instruments used to monitor surfaces for tritium contamination have been converted to use argon-methane mixtures rather than methane as a probe gas.

Project C-412 - Construction Status

It is reported that Project C-412 construction is 91 per cent complete at month end. The following construction items were accepted during the month by the P-10 Branch: the Radiation Monitoring Services Unit survey station; five 105-B supply casks; an instrument vacuum test bench; the hot instrument and maintenance shop, with exceptions; the Radiation Monitoring Services Unit urinalysis laboratory, with exceptions; the supply cask storage area; the 108-B supply and exhaust ventilation system, with exceptions; and the metal line stripper, with exceptions. In addition, the new product storage building was accepted from the CPFF contractor.

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Final acceptance of that building will be made in December by the P-10 Branch. The metal transfer systems for glass lines 2 and 5 were installed by maintenance forces during this period.

The 25 h.p. exhaust for the can opening room and metallurgical laboratory was installed by construction forces in place of the existing 3 h.p. can opening room fan. It was necessary to discontinue temporarily ventilation supply and exhaust service to Building 108-B during that installation work. Construction work continues on the following items: the new product storage building, the metallurgical laboratory, the welding service lines, the 108-B air monitoring systems, the 108-B air sampling stations, the fresh-air mask system, the new roads and walkways, and the exceptions to acceptances under Projects C-412 and C-399.

TRITIUM DEVELOPMENT

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SPECIAL IRRADIATIONS

High Pressure Water Channel - ANLM-140

The behavior of water, prototype fuel and structural materials is being investigated under conditions simulating those of the STR as closely as is possible in the Hanford piles.

Operation was routine during November with recirculating water

Gamma Irradiation of Non-Metallic Materials - Production Test No. 105-246-P

Non-metallic materials are being irradiated by the fission product gammas from exposed uranium pieces. The uranium pieces were replaced on November 3.

Fission Chamber Life Test - DPWM-101

A life test under pile conditions is planned to evaluate the possibilities of using fission chambers for monitoring a pile neutron flux. Special nozzles for use with the assemblies to be supplied by the originating laboratory have been designed and are being fabricated.

Creep Test of Pins, KAPL-M-105 - Production Test No. 105-400-P

The third Knolls Atomic Power Laboratory fuel pin creep assembly has been received and is now undergoing extensive precharging tests. It is planned to charge the slug during December.

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Electrical Resistivity Measurements of Cu_3Au - WAPD-M-112, Production Test No. 105-513-SR

The electrical resistivity of ordered and disordered Cu_3Au specimens is being investigated as a measure of the effect of pile radiation on lattice spacing.

The slug assembly was charged November 28 and is performing satisfactorily.

Heater Test for Graphite Thermal Conductivity Test - KAPL-M-109

This test will check the performance of two types of heaters which have been proposed for use in the test of graphite thermal conductivity under pile irradiation. The slug assembly and associated equipment have been received and will be charged into a pile after testing and approval of the Production Test.

Status of Special Irradiations

Monthly statistics on the Special Request Program are tabulated below:

P-10-A pieces charged	267
P-10-A pieces discharged	499
P-10-A pieces being irradiated	431
Special Request Samples charged	5
Special Request Samples discharged	100
Samples on hand awaiting charging	279
Samples now being irradiated	401
Samples awaiting shipment	27
Samples shipped during November	58

Special Measurements on Discharged DPW-100 Piece

A central piece in a column of ten per cent lithium-aluminum alloy slugs was measured on the air column weasel beginning about two and one-half hours after pile shutdown. The decay curve indicated two half-lives, one of 2.4 hours and one of 13 hours; and the absorption curve showed the gamma radiation to be mainly of 1.6 Mev energy.

Delayed Neutron Monitoring System, Production Test 105-429-P

Neutron background data were accumulated on a routine basis until November 27, 1951, when sufficient information was available to establish the normal values.

Redesigned borofin shields for the BF_3 tubes have been prepared and will be installed at the next shutdown, following which similar data will be obtained to determine which is the more satisfactory design.

PROCESS CONTROL

100 Areas

New maximum power levels were attained during the month at B and H Piles, at B Pile due to refinements in flux distribution and at H Pile due to improved flux distribution (comparable to the best previous condition) plus an increase in header pressure. F Pile level was limited during the first part of the month due to reactivity absorbed by water in the pile. Sufficient reactivity was not gained back during the month to consider recharging five dummy columns with flattening material, and the pile was operated under slightly distorted conditions the latter part of the month. DR Pile level was reduced during the month partly due to anti-flattening from heavy fringe tube discharge of regular metal and partly due to over-poisoning of hot spots.

Recovery was made within allowable scram time in 50 per cent of the ruptured slug shutdowns experienced. Approximately 45 minute scram time is available at all piles under present operating conditions.

A total of 293 10-66, thorium, pieces were charged during the month bringing the total number of pieces being irradiated in all the piles to 1065 pieces. H Pile will soon be used also for 10-66 exposure bringing the total 10-66 capacity in all the piles to approximatedly 1200 pieces under present operating conditions and with some flattening flexibility in P-10 material. A representative summary of the reactivity status of each of the operating piles during the last equilibrium period of the month is given below:

Pile	B	D	DR	F	H
Control Rods	113	152	160	179	139
Xenon	687	660	687	657	710
Plant Assistance	20	9	5	13	12
"B" Program	108	99	100	101	100
Dummy Columns	15	31	21	75	10
"P" Columns	0	0	0	21	0
Hot Reactivity	1351	1379	1287	1285	1185
Co Allowance	-390	-412	-202	-434	-228
Cold, Clean Reactivity	961	967	1085	851	957
	-66	-15	+ 62	-33	+ 62

* 341 Pieces
** 150 Pieces (total of 290 pieces at month's end)
*** 240 Pieces
**** 194 Pieces

Reactivity variations during the month could be attributed to the normal discharge cycle variations except for F Pile which may have 30 to 50 ih still attributable to water.

Installation of additional thimble thermocouples at B and D Piles has again given evidence that the graphite thermocouples originally installed may now be off calibration so that their readings are high. Thimble and C hole thermocouples which have been placed as close as possible to the graphite thermocouples indicate temperatures 10°C. to 15°C. below them. Previous experience, however, has shown that the errors can be in either direction and additional data are being collected. A study made at D Pile of the time variation of the lattice conductance at the thermocouple positions shows that a decrease in conductance occurred each time the pile gas seal was opened and air was admitted to the pile.

The study of the lattice conductance at the DR Pile was continued with the one remaining central graphite thermocouple. The lattice conductance at this thermocouple position has decreased at a somewhat higher rate than that predicted in HW-21246, "DR Pile Lattice Conductance Study", C. W. Wheelock. This would indicate, if the same agreement is present at the near side thermocouple positions, that limiting graphite temperatures with present vapor binding limits will be reached before next summer. This is critical because of the failure of the near side thermocouples which is discussed in HW-22028, "Apparent Loss of Graphite Thermocouples in DR Pile", R. B. Hamilton. Efforts to repair the damaged thermocouples have been delayed by lack of rear elevator time.

At the H Pile a graphite temperature of 378°C. was recorded on thermocouples 5G and 45G - a very unusual temperature since the return of H Pile to heavy metal loading. Investigation showed that the high temperature resulted from a distortion of the flux distribution by the rod pattern and that the lattice conductances at these positions are not unusually low. The incident illustrates the degree of distortion of the axial distribution curve which is sometimes introduced by control rods since the normal maximum graphite temperature at H Pile is 20°C. to 30°C. below these high readings. Five-G and 45G are located 52 inches upstream of the centerline of the pile.

305 Pile

Regular metal testing proceeded routinely during the month. There were no regular uranium egg tests during this period.

Egg test lot 729X, which, as reported last month, had a TDS value of 23, was pickled in nitric acid to remove any surface impurities and retested. During the pickling process, billet egg 2741-2742 demonstrated a porous composition by falling apart. The remaining 15 eggs demonstrated a TDS change from 22 to 18 as a result of the surface cleaning. The pickling bath is being analyzed in an effort to identify the impurities.

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RUPTURED SLUGS

There were seventeen ruptured slugs during November. Nine of these did not cause long shutdowns, and it will be noticed that on November 20 and 28 the discharge included slug failures in two or three tubes. The tabulation of these ruptures is given below:

Tube No.	Date of Failure	Days in Pile	Slug Power	Canning Date	Local Water	Slug Position	Down Time	Type of Failure
1262-DR	11-1-51	176	6.2	4-10-51	54	45	0.6	Cap
0971-D	11-1-51	55	6.5	7-1-51	53	39	32.0	Side
3270-DR	11-2-51	149	7.1	4-16-51	27	23	19.0	Side
3366-D	11-5-51	222	5.3	*	26	20	37.0	--
1964-D	11-7-51	266	7.5	*	45	31	22.0	--
2768-DR	11-7-51	134	7.5	5-22-51	45	36**	0.5	Side
1689-DR	11-9-51	113	6.7	6-25-51	53	43	19.0	Side
2790-B	11-12-51	293	5.1	1-4-51	47	40**	0.5	Cap & Side
1792-D	11-14-51	302	5.8	12-8-50	23	30**	0.5	Cap
2285-DR	11-19-51	145	8.0	5-26-51	28	24**	0.75	Cap
2065-DR	11-20-51	224	7.8	3-5-51	28	24	15.5	Cap & Side
1965-DR	11-20-51	147	***	3-5-51	***	***	0.0	Cap & Side
2889-DR	11-22-51	197	3.8	4-12-51	26	36	15.0	Cap & Side
1788-F	11-24-51	200	6.0	4-16-51	52	44**	0.73	Cap
0762-B	11-28-51	294	5.4	1-8-51	47	36	27.0	Side
1562-B	11-28-51	281	6.6	2-2-51	37	33**	0.0	Cap
3878-B	11-28-51	252	6.1	3-2-51	26	24**	0.0	Cap

* Stuck in tube
** Estimated by weasel
*** Cannot be found

A comparison of metallurgical properties of aluminum can furnished by Aluminum Company of America, Victor, and Scoville was requested by the Operations Unit of the Metals Preparation Section. The macrostructure of the etched parts shows that Victor and Aluminum Company of America cans were fabricated by impact extrusion whereas Scoville cans were deep drawn. Hardness studies of annealed cans suggest that the Victor can contains less impurities than the other two, and this indication is substantiated in the results of spectrochemical analysis of the can materials. Additional studies will be made to confirm these findings.

PLANT SERVICE WORK

Samples of stainless steel were received from the MJ-4 project for investigation of the effects of scarfing sheet and plate by using compressed air and carbon electrodes rather than by the conventional inert-arc method. Although a considerable saving in construction costs would be made using this new technique of cutting, it is possible that sufficient carbon from the electrodes might be introduced into the metal to promote chromium carbide precipitation in the grain boundaries thus reducing corrosion resistance. It was found that carbide precipitation adjacent to the scarfed sectioned did occur but that the grinding which normally follows scarfing removes this undesirable material.

X-ray diffraction studies were made to identify unknowns submitted by Chemical Research personnel.

Metallographic studies of fractured, type 420 stainless steel, fully hardened, hold-down screws from the Redox Building revealed a microstructure of untempered martensite which confirmed evidence of brittle failure under impact loading. In its fully hardened condition, the impact resistance for this alloy is exceptionally low. This problem is quite similar to the connector screw failure recently reported in HW-22667.

INVENTIONS

All Pile Technology 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 the period covered by this report. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

Signed _____
G. E. McCullough
Head, Pile Technology

GE'cC:lgd

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December 5, 1951

SEPARATIONS TECHNOLOGY UNIT

MONTHLY REPORT
NOVEMBER, 1951

VISITORS AND BUSINESS TRIPS

K. H. Kingdon, Knolls Atomic Power Laboratory, visited Hanford November 5, to inspect Redox.

C. A. Hanson, Knolls Atomic Power Laboratory, visited here November 5, for general discussions of instrumentation on 234-5.

J. Marsden and M. J. Gross, Knolls Atomic Power Laboratory, visited Hanford November 7-12 and 9-12, respectively, for consultations on separations processes.

M. R. Fenske, Pennsylvania State College and F. W. Schumacher, Standard Oil Development, visited here for technical consultations on process separations problems.

R. J. Anicetti visited Los Alamos Scientific Laboratory November 4-8 for consultations on ceramic operations.

R. E. Burns visited the University of Michigan November 8-9 and Michigan State College November 12-13 to recruit BS-MS personnel.

R. L. Moore, D. P. Granquist and R. E. Tomlinson visited Argonne National Labbratory November 5-7, Oak Ridge National Laboratory November 7-9, Knolls Atomic Power Laboratory November 12-14 and E. I. duPont deNemours November 14-16 for technical consultations on Purex. F. W. Woodfield also visited E. I. duPont deNemours November 14-16.

Separations Technology Unit

ORGANIZATION AND PERSONNEL

Personnel totals are as follows:

	October	November
Administration	2	2
Special Assignment	4	4
Research	41	43
Chemical Development	79	83
Process	46	46
	172	178

Research: One Tech. Grad. was transferred from Technical Services and one Tech. Grad. was added as a new hire.

Development: Four Tech. Grads. were transferred from Manufacturing, Purchasing, Metal Preparation, and Reactor-Operations.

Process: One Chemical Engineer was added as a new hire and one Technical Assistant was terminated.

BISMUTH PHOSPHATE PLANT ASSISTANCE

Canyon Buildings - 221

Decontamination. Twenty consecutive runs were processed at B Plant with a single precipitation and centrifugation in the first cycle by-product precipitation. The average Canyon log gamma decontamination factor for these runs was 4.78. The factor for the ten runs preceding the test, processed with a second scavenger precipitation and centrifugation was 5.08. The average first cycle by-product losses were 0.68 per cent and 0.91 per cent of 6-1 MS for the single and double precipitation processes respectively. Final product solution PR Can readings in the Concentration Building were unaffected. This is discussed further in the Concentration Building report.

The time required to process a run through the first cycle by-product precipitation step is twelve hours and fifteen minutes for the single precipitation process and sixteen hours and fifteen minutes for the double precipitation process. Since it is desirable to continue the double precipitation process to maintain lower radio-activity levels in the Concentration Buildings, digestion temperatures and periods were revised, within the Approved Limits for Process Variables of the Process Standards, to result in a processing time of fourteen hours and fifteen minutes. Five test runs (T-11-11-H-37 through H-41) processed under these conditions at T Plant, resulted in an average first cycle by-product precipitation waste loss of 0.71 per cent and an average Canyon decontamination factor of 5.27. Similar data for the first twenty runs processed during November were 0.78 per cent and 4.91. The revised procedures were put in use routinely with runs T-11-11-H-45 and B-11-11-HD-49. Data are not yet available to permit a long term evaluation of the effect of this revision.

Separations Technology Unit

Concentration Buildings - 224

Decontamination. Decontamination has continued to be satisfactory at both B and T Plants. This has been accomplished, in general, by processing runs with a second scavenger precipitation and centrifugation in the first cycle by-product step, barium sulfate scavenging in the bismuth phosphate by-product step and a second precipitation and centrifugation in the lanthanum fluoride by-product step. Tests are in progress to determine optimum conditions for adequate decontamination.

Isolation Building - 231

Fluoride and Lanthanum in Process Solutions. Analyses of Isolation Building process solutions of three runs from B and T Plants respectively for fluoride and lanthanum were made in an attempt to correlate lanthanum separation with fluoride content. Approximately 10 to 25 times the amount of lanthanum calculated to be in the second cycle starting solution (P-2) was indicated. The lanthanum in the final purified nitrate solution (AT) agreed reasonably well with that calculated from P-2 analyses and second cycle dilution factors. Fluoride in the Concentration Building final solution varied from 0.42 to 1.06 grams per liter with no significant difference in the material received from either plant.

Time Cycle Reduction. Transfer procedure from S-1 to AT has been revised to permit transfer to SR-1 and to AT 15 minutes after turning on the S-1 jacket cooling water. Previously the S-1 temperature was allowed to reach 40°C. (approximately one hour) before transferring, however, it is indicated that the S-1 thermohm does not reach the concentrated solution. External temperature measurements indicate the solution to be sufficiently cooled in 15 minutes.

PURIFICATION AND FABRICATION PLANT ASSISTANCE

RG Purification. Batches X-11-11-5 and X-11-11-18 as received from the 231 Building contained abnormally high concentrations, 481 and 472 grams of product/liter of solution, respectively. Batch X-11-11-5 was transferred to the Purification reactor without dilution. Batch X-11-11-18 was diluted to approximately 300 grams/liter (estimated) prior to transfer. Normal precipitations resulted on both batches and the total quantity of product as fluoride indicated that complete transfers from the sample cans and the purification vessel was effected without difficulty.

Dry Chemistry

Rehydrofluorination was required on 5.1 per cent of the batches processed through Hood 8 during the month of November. This compares with 15.7 per cent for October, and 7.2 per cent for September.

Separations Technology Unit

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Separations Technology Unit

Reduction

The average yield for batches processed normally through Hood 10 for the month of November was 98.5 per cent. Comparable yields for September and October were 98.2 and 98.1 per cent respectively.

The preparation of buttons from turnings by mixing turnings with calcium and iodine and heating in the reduction unit was carried out for 37 runs in October and November. During the charge make-up for run Y-11-11-68 in Hood 9, a premature reaction occurred. The fact that this reaction occurred before the bomb was sealed resulted in considerable spread of product and considerable damage to Hood 9 equipment. It is postulated that the premature reaction was initiated by sparks from the turnings which were tamped during the charge loading operation. As a result of this incident the diffusion of turnings in the Hood 9 and 10 equipment has been discontinued. With the discontinuance of the preparation of buttons directly from the turnings, the problem was again presented of keeping and maintaining the turnings inventory low within the RG Line. Procedures have been worked up and recommended to the Separations Section through which turnings inventory can be reduced and kept at a low figure. These recommendations have been transmitted to the Separations Section in Document HW-22754.

Although the recycle of turnings to the reduction operation by mixing turnings with plutonium tetrafluoride has been carried out both at Los Alamos and at this location for the past year without difficulty, the incident which occurred during the fusion of turnings mentioned above prompted a more thorough investigation of safety measures that might be taken in Hoods 9 and 10. Theoretical maximum pressures within Hoods 9 and 10 resulting from premature reactions of the nature described above have been calculated for air and helium atmospheres inside the hood. The total absolute maximum pressure which could be built up in Hoods 9 and 10 in an air atmosphere is 3.6 atmospheres. Thus the difference in pressures between Zones 2 and 4 would be 1 and 2 1/2 atmospheres respectively for helium and air. Provisions have been made for producing a helium atmosphere inside Hoods 9 and 10.

Melting and Casting. The average c/q summation for light element impurities in castings produced during the month of October was 0.45.

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Separations Technology Unit

RM - Task II Dry runs and calibration work on the Task II equipment is temporarily held up while the following work is being carried out on the hood and its auxiliary equipment:

1. Furnace supports are being changed to overhead suspension for better access to the hood,

2. HF rotometers in which leaks had been detected are being repaired,

3. Differential pressure control equipment is being altered to improve its operation, and

4. A drain is being installed in Hood 9 WD.

Task III A series of uranium test runs are being made to evaluate the equipment for the Task III operation.

Process Recovery

The processing of 62 lots of concentrated (SN-3)solutions by the addition of two lots of SN 3 per batch of SN 2, prior to the hydrogen peroxide addition and evaporation, has demonstrated a virtually complete destruction of oxalic acid and an iodine removal efficiency greater than 99 per cent as the hydrogen peroxide volume was varied over the range of 2.3 to 2.0 liters. The data have established that the addition of 185 grams of sodium bromate per inch of sludge remaining after two hot water rinses, and the use of 2.3 liters of 50 per cent peroxide will provide a reliable and satisfactory process, an average iodine removal efficiency of 99.8 per cent for 8 runs.

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Separations Technology Unit

REDOX PLANT ASSISTANCE

Dissolver A-2 was charged by Separations Section on November 19 and 20 with 4.4 short tons of jacketed, unirradiated uranium slugs and dissolution was completed on November 21. The metal solution was processed through the feed preparation step in the presence of 0.03 M $KMnO_4$ in the Oxidizer. Preliminary results indicate a 40 to 45% reduction of the $KMnO_4$ during the oxidation and simulated ruthenium volitalization steps. Chromic nitrate was used to complete the $KMnO_4$ reduction prior to centrifugation which was conducted in two batches, each resulting in a cake volume of approximately 20 gal. Observation of centrifuge effluent samples indicated no carry-over of MnO_2 fines at feed rates up to 3 gpm. No clear-cut definition of the cake volume was obtained during skimming which was possibly due to the labile cake and turbulence in the bowl caused by introduction of the skimmer. Ferrous ammonium sulphate was used to dissolve the centrifuge cake. No unusual difficulties were experienced during this initial run. Additional studies are planned to firm up (a) the magnitude of $KMnO_4$ reduction in the oxidizer, (b) the cake volume, and (c) the optimum centrifuge feed rate.

Ventilation balancing in the 202-S Building with the cell cover blocks in place was essentially completed on November 27. About seven air changes per hour were achieved at an air flow rate of 40,000 cfm with a pressure drop of 7.6 inches of water across the sand filter.

The E-1 (3AF Tank) agitator was replaced by its spare due to excessive water leakage through the shaft gland seal. Inspection of the faulty seal revealed that leakage was caused by improper assembly by the vendor which, after a brief period of operation, allowed the sealing unit to vibrate loose and separate the seal faces. No damage to either the boron carbide seal faces or the fluorothene cups was observed.

All one inch type 440-A stainless-steel connector screws have been replaced with screws made from 4140-A steel which has a higher impact strength. In addition, all connector screws have been lubricated with molybdenum sulfide in a petroleum carrier grease to prevent galling of the split ring bolt retainers. Completion of ventilation balancing and the connector screw replacement program has removed the main obstacles standing in the way of start-up. Hexone and aluminum nitrate are currently being brought into process equipment for final leak testing before "cold" extraction runs are started.

URANIUM RECOVERY PLANT ASSISTANCE

Testing, calibration, and flushing of equipment by the Separations Section is in progress in the 241-U Tank Farm and the 224-U Building.

Initial attempts to balance the 244-UR Process vault ventilation resulted in inadequate air flow through the tank vent system. This was caused by excessive pressure drop across the tank vent filter which is in series

with the main vault filter. The glass wool cartridge in the tank vent filter was removed and a damper was installed in the vault ventilation duct to regulate air flow through the tank vent system.

Approximately 1900 gallons of 60% UNH solution was transferred to the 224-U Area from the 321 Building. This material is currently being boiled down in the UO_3 calcining pots prior to the first "cold" shake-down runs in these pots.

The Uranium Recovery Technical Manual was issued during November as Document HW-19140.

REDOX AND METAL RECOVERY DEVELOPMENT

Process Studies

A Purex process survey trip, which included visits to A.N.L., O.R.N.L., K.A.P.L., and the duPont Company in Wilmington, was taken during the month by two members of the Process Studies group, accompanied by one member of Chemical Research. A high-spot survey comparing the Purex and Redox processes is currently in preparation, based on the latest Purex information gathered from the above sites, and will be issued early in December.

Recuplex Flowsheets HW #1 and HW #2 were issued as HW-22604 during November in cooperation with Chemical Research. C. Groot, D. P. Granquist, and R. E. Tomlinson were co-authors.

A material balance for the Redox process under essentially the O.R.N.L. June, 1949 Flowsheet conditions was published during the month as HW-22834.

Chemical Engineering Development

Recuplex Solvent-Extraction Studies. During the month forty-five Recuplex process solvent extraction studies, with CCl_4 as the diluent and with uranium as a stand-in for plutonium, were carried out in a simple 3-in. diameter glass pulse column in 321 Building. On the basis of these studies it was concluded that the use of pulse columns for the proposed Recuplex plant is feasible. Tentative design specifications for the Recuplex plant pulse columns, for a 3.33 Kg/day instantaneous plutonium production rate, were developed. Highlights of the findings are as follows:

1. "A" Column extraction section HTU values as low as 1.0 to 1.2 ft. are obtainable under Recuplex HW #2 Flowsheet conditions, at an amplitude-frequency product of 50 in/min, with a "standard" perforated-plate cartridge (stainless-steel plates, spaced 2 in. apart, 0.125 in.-diam. holes, 23% free area), at volume velocities ranging from 200 to 450 gal/(hr)(sq.ft), sum of both phases.

2. The A Column extraction section flooding capacity under Recuplex HW #2 Flowsheet conditions, at an amplitude-frequency product of 50 in/min, with a "standard cartridge" is approximately 500 gal/(hr)(sq.ft), sum of both phases.

3. "C" Column HTU values as low as 1.2 to 1.7 ft. are obtainable under Recuplex HW #2 Flowsheet conditions, at amplitude-frequency products in the neighborhood of 65 in/min, with a "standard-cartridge", at volume velocities ranging from 120 to 590 gal/(hr)(sq.ft), sum of both phases.

4. From the results it was concluded that A and C Columns each 29 ft. in overall height, and with 3-in. and 2-in. "standard-cartridge" plate-section diameters, respectively, should be capable of processing 3.33 Kg.Pu/day (instantaneous rate) with plutonium losses well below 0.05% per column.

Process Chemistry

Fenske Extractor Assistance. The contact angles of Recuplex CAFS and CAX solutions with the surfaces of plates from the Fenske extractor have been measured, and disengaging times have also been determined for some of the aqueous-organic systems used in the extractor. Highlights of the above measurements are presented below:

The organic phase, CAX (CCl_4 - 15% TBP), wetted the dry stainless steel surfaces, both machined and sand blasted, to such an extent that contact angle measurements were not possible. The steel surfaces were also wetted by the aqueous phase (CAFS) to a lesser extent, giving contact angles (θ) ranging from about 20° to 50°, with an average of about 35°. The angles measured on the machined surfaces ranged, on the average, from 2° to 6° greater than 35° while those measured on the sandblasted surfaces ranged from 3° to 11° smaller than 35°. When the stainless steel surface was first covered with aqueous CAFS, the organic phase did not wet the surface, resulting in contact angles of 120° to 125°. However, if the surface was first wetted with organic phase, then covered with aqueous CAFS, added droplets of CCl_4-15% TBP could be made to wet the surface by mechanical movement.

The disengaging time of Recuplex CAF' with 15% TBP in CCl_4 is directly proportional to the aqueous/organic phase ratio. With a ratio of 1/1 or lower, the disengaging times ranged from 30 to 90 seconds, but at ratios of 1.5/1 and higher, the disengaging times ranged from 7 minutes to more than 2 hours. Addition of nitric acid to the aqueous phase tends to reduce the D.T., as does dilution with water.

"Mini" Mixer-Settler, Recuplex Process. The agitators in the Mini unit were shortened 1/8 in. during the month in an (unsuccessful) attempt to obtain more efficient mixing of the phases. Individual Murphree stage efficiencies (calculated from organic-phase concentrations) were less than 10 per cent for most of the stages (Recuplex A Contactor operating at 8C Flowsheet conditions, using Uranium as a stand-in for plutonium). The agitators are presently being modified in design in one last attempt to obtain efficient mixing. Should this fail, the 1/4-in. Mini unit will be put aside temporarily, and efforts will be concentrated on setting up a new 3/8-in. Mini unit.

Separations Technology Unit

Mechanical Development

Corrosion Studies. Type 309 SCb, 304 ELC, and 347 stainless steels, Pyrex, Cobalt, and Vycor glass, and Teflon and Fluorothene sheet have been evaluated by the Metallurgy group for resistance to exposure to both liquid and vapors of boiling slag and crucible dissolver solution containing approximately 0.25 M HF, 3.8 M HNO_3, and dissolved Mg, Fe, and Ca salts.

Corrosion rates for the metal samples exposed 2 hours to HF-containing solutions followed by approximately 22 hours exposure to HF-free solutions ranged from 0.4 to 1.5 mils/month based on 8 exposure cycles. Increasing the HF contact time to 4 hours out of each 24-hour period increased the corrosion rates to between 1.1 and 4.3 mils per month based on one exposure cycle. Fluorothene and Teflon sheet were unaffected. Pyrex and cobalt glass were severely etched. Vycor glass was not significantly etched.

Vitro Magnetic Induction Flowmeter, (approximate range - 0 to 3 gal/min) developed by the Vitro Corporation of America (formerly Kellex Corp.) has been received for testing. The instrument operates on the principle of magnetic induction. The stream whose flow is to be measured, flows through a glass tube supported between the poles of an electromagnet (60 cycles per second alternating field). Fluid, flowing through the tube, cuts the magnetic field. If the solution is an electrolyte, a voltage is induced which is proportional to the rate of flow. The induced voltage is conducted through platinum electrodes, sealed through the glass tube, to a preamplifier and thence to a Brown electronic potentiometer. The glass flow tube is securely fastened in a case and connected at either end by means of packing glands to Type 304 S.S. pipe sections. The instrument has been mounted in a test stand in series with a Schutte and Koerting controlling rotameter.

General Engineering Laboratories Motor-Pump, a 5 horsepower stainless-steel encased electric motor close-coupled to a Peerless regenerative turbine pump has operated a total of 1265 hours (53 days) 701 of which were in water and the last 564 in a simulated solution of Redox 2AF (hexone absent) with a specific gravity of 1.21. The motor, operating at 1715 rev/min, draws 4.7 horsepower at a shut-off head of 198 feet (incorrectly reported as 232 ft. last month). Average flow rates for the test using 2AF have been 1.1 gal/min. The pump will be dismantled for inspection in early December.

Redox "Hot" Pump (E-5), a production pump installed in the 2AF tank would not pump immediately following the filling of the tank. After 10 minutes the pump operated satisfactorily. Investigation revealed that the pump can be air bound when the pump-suction opening is initially unsubmerged and the vessel is filled with liquid. Approximately 10 to 15 minutes is required for the air to bleed through the upper bearing. This difficulty should not be encountered in plant operation unless the tank is emptied (by jet) to a point lower than the pump impeller.

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Separations Technology Unit

Rotating Seals. A small two-unit test stand has been constructed to evaluate seal leakage and wear under varying conditions of seal face width, seal face material, seal spring pressure, and seal fluid pressure. Using a rotating Graphitar No. 30-A seal face operating against a Type 309 stainless steel face, leakage rates of less than 2 cc/hr have been obtained over a 57-hour period. Seal face wear was negligible.

Amercoat 1574 is a protective paint developed especially for Redox and TBP solutions by the Amercoat Division after consultation with this group over a year ago. Initial immersion studies on samples coated by the vendor show that the material will resist hexone, 12.5% TBP in hydrocarbon, 10% HNO_3, and 50% HNO_3 for 15 days at room temperature. Additional material is being procured to continue the evaluation of the coating.

Hot Semiworks

Construction of the Hot Semiworks is 41.2 per cent complete. Installation of metal siding and glazing of windows was completed on the Solvent Handling Building. Outside sanitary and raw water lines and leach pit drain lines were installed, tested, and covered by backfill. The steam main to the Fan House was completed.

Excavations for the crib and leach pit were made. Concrete ties for the crib were poured. Fabrication of the Waste Storage Tank, TK-70, was started. Concrete finishing in the Hot Process Building Cells is 80 per cent complete. Duriron drain lines were installed in the Solvent Handling Building and the first floor of the Aqueous Make-Up Building.

SEPARATIONS PROCESS RESEARCH

Recuplex Investigations

Work continued on the hydrolysis of TBP to DBP in CCl_4 due to alpha bombardment (and ionization) from plutonium. An organic phase 15% TBP in CCl_4 containing 17.3 g/l Pu was continuously contacted with an aqueous phase 1.2 M $Al(NO_3)_3$, 1.0 M HNO_3 and 0.2 g/l Pu. Aliquots of the organic were removed periodically and stripped with portions of 0.1 M HNO_3. After 24 hours, the concentration of non-strippable plutonium [measure of DBP formed] was 31 mg/l Pu or 25 times greater than that at one hour. A similar effect is produced at zero time by the addition of 0.01 volume per cent DBP to the organic phase. Thus 24 hour residence of plutonium in the organic phase resulted in the decomposition of $\gtrsim$ 0.06% of the TBP.

When the organic phase was 1 g/l Pu, no adverse effect on strippability was noticed after 24 hours, when stripping to 0.001 g/l Pu in the organic phase.

Should Los Alamos' crucible dissolving procedure be used here, it may be desirable to treat the silica to recover ca. 10% of the original plutonium. The siliceous part of the residue dissolved in 48% HF and was volatilized successfully by heating. Practical difficulties were encountered in the

hydrolysis of the SiF_4 in the condenser tube, which soon plugged. On the other hand, after addition of HF to the siliceous residue, the soluble fluosilicate can be separated by centrifuging out the plutonium bearing residue. Less than 1% of the plutonium is lost to the supernatant, and the plutonium can be dissolved away from the black residue with $Al(NO_3)_3$ solution.

A flowsheet has been designed to recover plutonium from slag and crucible solution in a "Recuplex" type solvent extraction unit employing reflux at a 25 to 1 ratio. The unit would employ a total of 18 stages to achieve 99% recovery and yield a product of about 60 g/l Pu.

Recuplex Column Studies

HETS values of 1.8 feet for aqueous phase continuous and 3.0 feet for organic phase continuous have been obtained for the Recuplex CC column using uranium as a stand-in for plutonium. In this study the one-inch diameter x 65 inch pulse column was employed. The column was fitted with double-faced plates (stainless steel and drilled fluorothene) of 0.027 inch diameter holes and 23% open area and was operated in the region of 700 to 1000 gal/(hr)(sq.ft) total volume velocity and at a frequency of 50 cycles/minute with 0.8 inch pulse displacement.

A modified double-faced plate has been made by coating one side of a perforated stainless steel plate with Kel-F dispersion and fusing at 400°C. Several successive coats were applied to give a firm, adherent layer of fluorothene of about 0.003 inch thickness which maintained its characteristics when in contact with Recuplex streams. A stripping (CC) column operating with these plates showed more uniform dispersion throughout the column, gave higher flooding capacity and at volume velocities of 1000 and 700 gal/(hr)(sq.ft) with the aqueous phase continuous gave HETS values of 1.45 and 1.5 ft., respectively.

Resin Column Coupling

The feasibility of employing a Dowex-50 resin bed column for the concentration, purification and decontamination of Hanford Works plutonium bearing streams is being investigated. Much of the development work for application of the resin column system to the Purex process has already been carried out at Oak Ridge (CF-51-10-131). Preliminary small scale experiments performed in a very crude fashion at this site tentatively support the results obtained at Oak Ridge. The concentration and purification of Redox IIBP solutions will be investigated using a one-inch column containing enough resin to accommodate 10-20 grams of plutonium. Many of the scale-up problems should be avoided by using a column of this size. Items other than concentration to be investigated include the separation obtained from aluminum, uranium, stainless steel corrosion products and fission products; permissible flow rates for plutonium adsorption and elution; alpha radiation stability of the resin; and methods of coupling the final resin column plutonium stream to present or proposed 234-5 metal reduction operations.

Separations Technology Unit

Iodine in the Redox Process

Further studies of the behavior of iodine during the concentration of Redox aqueous raffinate streams confirm a previous report that some volatilization of iodine will occur. From one to 2.5 per cent of the iodine present in simulated waste streams was volatilized under the experimental conditions employed. Only about one per cent of the iodine evolved failed to condense, however. The presence of ferrous or chromic ions in the waste had no significant effect on the evolution of iodine or on its condensation.

When condensates from these waste concentration experiments were evaporated, simulating the second stage of evaporation in the Redox process, essentially all of the iodine present in them was volatilized. Again, only a small part of the iodine (0.5 per cent) failed to condense.

Decontamination of Metal Recovery Aqueous Wastes

Decontamination of the Metal Recovery RAW stream by various coprecipitation techniques is under study. Of several scavenging agents tried, ferrocyanide has produced the greatest improvement in overall decontamination; beta DF's of about 75 being obtained on neutralization of simulated RAW spiked with activities from aged metal waste and ferrocyanide as compared to a DF of six when the waste was neutralized without added carriers. Best decontamination with ferrocyanide was obtained when the waste was neutralized to a pH of seven.

In studies of the scavenging of specific elements, ferric phosphate was found to be an excellent carrier for strontium.

Ion Exchange Decontamination of Redox Concentrator Distillates

Passage of a solution simulating the combined distillates from the various concentrators in the Redox Plant through a combination of hydrogen-form Dowex-50 and hydroxyl-form IRA-400 columns gives an overall beta decontamination of about 2000. To date, 7500 and 6000 gallons of solution per cubic foot of resin have been passed through the Dowex-50 and IRA-400 columns, respectively, without breakthrough in either.

The feed solution used in the above experiment has an initial pH of 4.5 In an experiment in which the feed is adjusted to an initial pH of 2, similar decontamination factors are obtained. To date, 2500 gallons of feed per cubic foot of resin have been passed through the Dowex-50 column without breakthrough. However, breakthrough occurred in the IRA-400 column at about 1000 gallons per cubic foot of resin when the effluent from the Dowex-50 column was passed through it. Difficulty was encountered in regenerating the IRA-400 column with 4 M NaOH.

Valve-Actuated Pulse Column

Plate spacing studies in the valve-actuated pulse column for double plates of stainless steel and fluorothene having 0.027 inch diameter holes have

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given HETS values of 8 inch and 11 inch for 1 inch and 2 inch spacing, respectively, under Purex IC conditions at room temperature. Throughput capacity was increased in the 2 inch spacing runs but this may have been due in part to a new method of interface control. The effect of pulse frequency was very important for the 2 inch spacing, e.g., at 60°C. waste losses in Purex ICW dropped by a factor of 10 when the frequency was increased from 20 to 60 cycles/minute.

Solvent Research

Diethyl decyl phosphate was found to be comparable to TBP as a uranium extractant and for its decontamination ability under both acid and acid-deficient conditions. Diethyl cetyl phosphonate forms a solid hydrate of unknown composition when contacted with aqueous solutions. N,N-dibutylacetamide has also been found to be comparable to TBP as an extractant.

The activity coefficients of UNH have been obtained in aqueous solutions salted with aluminum nitrate and sodium nitrate and in organic solutions of 15 and 30 volume per cent TBP in AMSCO 125-90W diluent. These data are being used to establish an accurate expression for the extraction of UNH by TBP from aqueous solutions.

The fission product behavior during extraction is being studied as a means of evaluating the stability of TBP and dibutyl phenylphosphonate to acid hydrolysis at 70°C. On the basis of preliminary results obtained with pentachloroethene as the diluent, it appears that the rate of hydrolysis is slow.

It was preported last month that silicones employed as diluents for TBP permit satisfactory extraction and decontamination of uranium. However, it has now been found that the silicones tend to polymerize when in longer contact with 3 M HNO_3 solutions, resulting in viscous emulsions, thus making them unattractive for plant application.

Ruthenium Chemistry Studies

Since the decontamination of uranium and plutonium from ruthenium in solvent extraction processes is quite important, the basic chemistry of ruthenium is being investigated. A full understanding of reaction mechanisms and rates should permit eventual process changes to enhance ruthenium decontamination. At the present time ruthenium(IV) nitrate complexes are being investigated by solvent extraction and spectrophotometric techniques. Both inactive and radioactive ruthenium isotopes are being used in this study. Preliminary measurements show that equilibria existing in ruthenium solutions are, in general, reached slowly; however, the rate of equilibration can be increased approximately twenty-fold by the use of activated charcoal as a catalyst.

Separations Technology Unit

Purex Decontamination as a Function of Acidity

Contrary to reports made earlier, recent experiments carried out employing full level dissolver solution and acid-deficient extraction conditions in the Purex system have resulted in poor decontamination, yielding decontamination factors ranging from 100 to 5000. Attempts to correlate this discrepancy with activity level, pretreatment of the extractant, and the diluent have been unsuccessful. Although analytical data are as yet incomplete, it may be that the poor contamination is due to the presence of dichromate in the aqueous phase. Further experiments to delineate these difficulties are in progress.

Alternate Aqueous Media for Solvent Extraction of Uranium and Plutonium

The extractability of uranium and plutonium from trifluoroacetic and trichloroacetic acid solutions into 30% TBP - AMSCO 125 was studied. It was found that the distribution of both uranium and plutonium was greater from trichloroacetic than from trifluoroacetic acid solutions. In both media, the distribution coefficients, E_D^0, decreased as the concentration of acid increased and the increase in the volume of the organic phase indicated considerable extraction of the acid at higher concentrations. From 0.5 M CCl_3COOH, the distribution coefficient of uranium was 7.7, that of plutonium (IV) (in the absence of uranium) was 21, and that of plutonium(VI) was about 4.

Ruthenium Scavenging With Copper Sulfide

Additional experiments have been carried out to determine the fate of plutonium during the precipitation of copper sulfide by the passage of hydrogen sulfide through solutions of the composition 1 M UNH, 0.5 M HNO_3, 0.025 M $Cu(NO_3)_2$. It has been found, contrary to what was reported earlier, that plutonium is not precipitated on the copper sulfide and that the portion contained in the mother liquor associated with the cake is removed by washing according to dilution law. Only about 3% of the product is associated with the cake (whose bulk volume is about 3% that of the solution) and this is reduced by three equal volume 1 M HNO_3 washes to 0.017%. The discrepancies observed in the earlier work were apparently due to some interference with the analytical lanthanum fluoride carrying technique, probably due to traces of U(IV) in the solution.

Kinetic studies of the rate of ruthenium precipitation reveal that although the precipitation of copper sulfide is complete in a matter of minutes, that of ruthenium is slower. After five minutes passage of hydrogen sulfide, approximately 93% of the ruthenium is precipitated, and this increases gradually to > 99.8% at the end of two hours. There is indication that cooking the dissolver solution with organic reducing agents, such as formic acid, prior to copper sulfide precipitation improves the kinetics and degree of ruthenium scavenging.

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Analyses also showed that no appreciable amount of precipitated ruthenium was removed by the 1 M HNO_3 washes; ruthenium found in the washes corresponding to that expected on the basis of dilution theory. These totaled 0.076 and 0.018% for two separate experiments.

Laboratory Solvent Extraction Equipment

During the month the 3/8 inch KAPL model miniature mixer settler (MINI) was received from the shop and is being set up for hot runs, following some minor modifications of the drive and feed systems. Its first use will be to produce Redox IAP or ICF solution for further research on the decontamination of organic streams by adsorbent techniques.

The batch countercurrent extractor was completed by the shop during the month. The extractor is being wired for remote handling and will be set up in one of the stainless steel hoods.

The alpha pulse column in 222-S is nearing completion. The column, jacket and gloved box have been completed, the panel board is essentially complete and most of the feed tanks, etc., are in place. At month end the piping of the equipment and the wiring of the solenoid valves were being undertaken and a Maisch metering pump (Mechanical Products Co., Chicago, Illinois) had been received for testing. The first application of this column will be in studying the Recuplex Process.

234-5 PROCESS DEVELOPMENT

Plutonium Peroxide Process

Nineteen experiments, in each of which a 0.5 g. quantity of plutonium was precipitated as the peroxide, have demonstrated that precipitation conditions conducive to high filter cake bulk densities are as follows: a strike temperature as low as practicable, 1.35 - 1.5 g/l H^+, and a hydrogen peroxide addition time of not less than ten minutes. A bulk density of 0.55 g/cc Pu was obtained at a strike temperature of 2°C, hydrogen ion and sulfate ion concentrations of 1.5 g/l and 0.13 M respectively, and with a hydrogen peroxide addition time of thirteen minutes. It is difficult to predict the bulk density of a plant-scale, plutonium peroxide filter cake from the results of precipitations on a 0.5 g. scale. However, bulk densities greater than 0.5 should be possible of attainment in the plant by aiming toward the optimum conditions found in the laboratory. The major process changes required would be in the strike temperature and in the acidity. If they should result in a great enough bulk density that the cake can be washed in the filter boat, the inferior settling characteristics of the precipitates formed at lower temperatures should not be objectionable, since present settling-decantation process could be eliminated.

Redox Coupling. A coupling process using fifty per cent potassium hydroxide to reduce the acid concentration in Redox IIBP solution from 5.15 M HNO_3 to 2.0 M HNO_3 and using one peroxide strike gave excellent buttons, but

fluoride reduction yields were low (77.8 - 86.3 per cent). It is thought that high potassium concentrations in the peroxide cakes may be responsible for the heavy slags and low reduction yields. Preliminary data indicate that the potassium content is reduced from greater than 1000 ppm to less than 2 ppm during the reductions of fluoride to metal.

Disposal of Methanol from Plutonium Peroxide Wash The highly exothermic nature and consequent autocatalysis of the reaction between hydrogen peroxide and methanol when heated to 40-50°C makes it imperative that there be no possibility of mixing methanol with the supernatant and washes from the P-2 filter cake prior to heat-kill of the hydrogen peroxide. Direct addition of methanol to a saturated $KMnO_4$ solution at 75°C resulted in quick, smooth oxidation of the methanol. The only explosion hazard thus far encountered lies in any possible ignition of a methanol-air mixture.

Recuplex Process

A comprehensive report (HW-22596 - Recuplex Feasibility Report) has been prepared presenting the results of the Recuplex feasibility investigation. The study has led to the recommendations that the procurement of supplementary chemical and engineering information proceed concurrently with: 1) the preparation of a detailed Project Proposal, and 2) following authorization, the preparation of a detailed engineering design.

Coupling with 234-5. Spectrochemical analyses of three plutonium metal buttons prepared from Recuplex product samples and one button of plutonium recovered from slag and crucible solution by solvent extraction (all samples from Chemical Research) indicate that metal of a purity satisfying both the light element restrictions and gross impurity content will be obtained if the Recuplex process is followed by either a peroxide or a Pu(III) oxalate precipitation.

Slag and Crucible Dissolution. Slag and Crucible Solution Chemical Flowsheet No. 1 (HW-22596) has given satisfactory results when applied to the dissolution of four laboratory slags and crucibles. Of the plutonium assessed to the crucibles, by accounting methods, recoveries of 92.7, 86.4, 90.5, and 76.5 per cent were made, with only 0.8 and 1 per cent recovered from the silica filter cakes of the first two curcibles listed. Modifications of the procedure have been tried: Use of 10 M HNO_3 left 4 per cent of the Pu in the silica (recoveries of 86.7 and 85.7 per cent); use of 8 M HNO_3 containing enough Al^{+3} to complex the fluoride as AlF_6^{-3} increased the time required to achieve the maximum Pu concentration in the solution from one-half hour to two hours, with only 0.2 and 1.1 per cent of the plutonium in the silica and recoveries of 92.4, 66.4, 96.7, and 67.5 per cent. After the four hour digestion with 0.44 M ANN, the disengaging times for the solutions were measured as 1.7-2.1 minutes.

Crucible Shop

R. J. Anicetti spent the week of November 5 to November 9 at the Los Alamos Scientific Laboratories studying their methods of fabricating pressed and slip-cast crucibles. Notes taken during this visit are covered in trip report HW-22856.

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Induction furnaces, the electric furnace and the transformer for the latter have been installed in the Crucible Shop. Electrical wiring remains to be done as well as the installation and wiring of the control and recording instruments for the electric furnace. The exhaust duct work above the induction furnaces was being installed at month's end.

Drawings have been prepared for casting crucibles for final shape machining of the 110 Model. Drawings have also been prepared, work orders issued, and fabrication has started for steel dies for pressing these casting crucibles.

Experimental Coating

Completion of the installation of the experimental coating facilities is expected in December, and in preparation for the experimental work which will start upon its completion, detailed write-ups are being prepared for:

1. Acceptance procedures,
2. Detailed experimental procedures,
3. Essential materials list,
4. Safety rules to be followed during the operation of equipment,
5. Manpower estimates, and
6. An estimate of the amount of work which will be required from the metallurgical and development groups in support of the experimental program.

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	
G. F. Crum	Gyroscopic Flowmeter
R. L. Moore	The use of monosubstituted phosphates. such as monobutyl phosphate for the purification and isolation of tetravalent metal ions such as plutonium(IV), cerium (IV) or zirconium(IV).

R. B. Richards, Head
Separations Technology Unit
12/5/51

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ANALYTICAL UNIT

NOVEMBER 1951

VISITORS AND BUSINESS TRIPS

T. E. Usher, General Engineering Laboratory, Schenectady, spent November 1-8 at Hanford discussing mass spectrometer work.

A. F. Scott, Reed College, Portland, Oregon, consulted here November 5-6 in regard to a research and development subcontract.

A F. Wells, General Electric Company Schenectady, spent November 26-30 assisting in the shakedown of the new mass spectrometer.

H. G. Poole, U S. Bureau of Mines, Albany, Oregon, was here November 29 discussing the reclaimed tin problem.

M. B. Leboeuf spent November 1-2 at KAPL in consultation on the latest developments in counting instrumentation.

C. A. Goodall spent November 5-9 at the K-25 Site, Oak Ridge, studying mass spectrometer analysis for uranium isotopes.

J. W Hall spent November 12-16 recruiting personnel at Kansas State College, Manhattan; Kansas University, Lawrence; and Iowa State College, Ames.

ORGANIZATION AND PERSONNEL

Personnel totals in the subdivisions are summarized as follows:

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	October 31	November 30
Analytical Service	333	326
Analytical Research	37	38
Administrative	3	3
Unit Totals	373	367

ANALYTICAL SERVICE

Work Volume Statistics

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

	October		November	
	Samples	Determinations	Samples	Determinations
Process Control - 200	5,171	13,024	5,854	14,606
Process Control - 300	663	1,198	805	1,718
Water Control - 100, 700	1,526	4,370	1,033	4,056
Research and Dev. Program	1,873	3,648	2,054	3,502
P-10 Control	429	4,282	376	3,759
Process Reagents	2,031	2,671	2,548	3,319
Essential Materials	237	985	480	1,066
Special Samples	417	5,630	518	6,712
Totals	12,347	35,808	13,668	38,738

The major causes for the increased analytical load were 27% and 10% production increases in T and Z Plants, respectively.

100 Areas Control

With certain minor exceptions, the water and P-10 Control programs continued on a routine basis. A procedure for determining tannins and lignins in raw river water is being investigated at the request of the Process Unit, Reactor Section, to assist in correlating the concentration of these compounds in the river water with chemical feed addition in the filter plants during low and high turbidity periods.

The heavy P-10 sample load presently being carried by the Consolidated Neir Mass Spectrometer has necessitated periodic analysis of a standard gas sample to check the major mass peak factors which varied slightly from week to week, giving rise to slight errors in reported analyses. The stripper addendum to the metal line for recovery of tritium from air contaminated product and from by-product gas streams of the P-10 Process has been installed. Standard samples, approximating stripper sample compositions, are being analyzed with the Mass Spectrometer for calibration purposes, along with the normal production load.

200 Areas Control (Separation and Metal Fabrication Processes)

As a result of a suggestion by one of the Laboratory Assistants, a new type sampling device was designed, fabricated, stocked in stores and placed in active use on November 16 for sampling of the most highly radioactive solutions of the Bismuth Phosphate and Redox Processes. This item is noteworthy from the standpoint that enough savings were indicated to justify a $460 award. The equipment is identified as a "Boldt Disposable Plastic Trombone Sampler".

During October a study was made of the causes for the large number of rerun analyses being made on the 231 Building starting solution, P-1. This study revealed that 26% of all P-1 samples were being rerun because of the material balance limits, set several years ago, of plus 5% or minus 10% of the radio assay analysis of the D-1-0 sample in the 224 Building. Since a majority of the P-1 samples were checking the F-10-P (224 Building final solution) closer than the D-1-0 analysis, it was recommended that the Statistics group of the Technical Services Unit examine the analytical data for the purpose of re-establishing the rerun limit for P-1 assays. Examination of data from 250 runs from T and B Plants showed that the P-1 analysis averaged 102.6% of the D-1-0 and 100.6% of the F-10-P analysis, and that the variations observed in the P-1/D-1-0 ratio and in the P-1/F-10-P ratio were approximately the same. On this basis, new rerun limits of ± 8% of the F-10-P assay were put into effect on November 22. The limits are now set so that we may expect approximately 10% of the P-1 assays to be rerun. It was recognized that occasionally additional P-1 assays will be rerun to check batch size.

Room 144 at the 234-5 Building Laboratory was accepted from Construction during the month and plans are now under way to utilize this area for routine work as soon as the hood filters can be replaced and the air conditioning balanced (estimated January 1, 1952). Installation of four to five different analytical procedures here will result in centralization of laboratory work and consequently greater efficiency.

The backlog of chemical assays of cast metal samples was reduced to zero on November 14 as a direct result of an intensive training program. Difficulties continue to be encountered with ceric sulfate reagent instability which, in one four-day period decreased in normality by 0.0004 N, throwing a large number (19) of results out of specifications. Another source of error, static electricity accumulation on the balance used in the determination, was eliminated by grounding all balance surfaces with Aquadag and graphite. Active remedial and improvement studies continue directed toward improvement of the reliability of the method and elimination of systematic errors. These systematic errors have obscured the effect on per cent reruns of a change in summation limits (basis for rerun decisions) from 100% ± 0.24% to 100% ± 0.32%, which was adopted on November 5. The assay of P-11 solutions using the procedure and equipment employed in the assay of castings rather than those employed for AT solution analysis has resulted in a saving of ca. 52 man-hours/month. The precision is ± 0.37% for 4 titrations as compared to ∓ 0.65% for 10 titrations using AT assay techniques. Using standard iron and plutonium solutions, a greater accuracy is also indicated for the casting assay procedure and equipment.

The impurities, including iron, in the plutonium metal castings are determined spectrographically. A correction for the iron content must be applied to the plutonium assay of these castings, and for that reason it has been desirable to attempt refinements of the Carrier Concentration Spectrographic Procedure to improve the accuracy from a factor of two to ± 10%. The selection of an internal standard element and the proper spectral lines was the first problem considered. Since cobalt appeared to meet the necessary requirements and since it can be determined reliably by the present procedure, work was directed toward evaluating the possibilities of using it as an internal standard after laboratory experiments proved conclusively that titanium was not sufficiently reliable for the same usage. Weighed portions of standard U_3O_8 mixtures containing known amounts of iron were mixed with gallium carrier containing cobalt, and analyzed by the routine procedure. (Spectrographic slit width was increased to 60 microns in order to be able to read intensities of required lines on the densitometer.) Using several duplicate analysis results and sets of film calibration spectra, the necessary calibration and working curves were prepared. Further check analyses were then made using a series of U_3O_8 samples containing different concentrations of iron. It was found that most of the values lying outside of ± 10% of the nominal value were high rather than low. This was probably due to iron contamination during sample preparation, which can be minimized without great difficulty.

From the preliminary data obtained it is believed that the use of cobalt as an internal standard for the iron determination will prove satisfactory and that reliable values (± 10%) for iron concentrations can be obtained within the range of 200 to 1000 ppm. The majority of metal samples received for analysis contain iron within this range. Future work on this method will be confined to determining its performance on process samples and comparison of results obtained by visual and densitometric readings.

200 Area Control (Extraction Processes)

Laboratory personnel were assigned to the standard rotating (A, B, C, D) shifts on November 5, 1951 as a means of expediting analytical training and to provide analytical service to the Redox head-end treatment runs which began November 21.

Considerable difficulty has been experienced with all potentiometric titrations performed in glove boxes due to instability of the pH meters. The apparent cause is an electrostatic charge present in the box. The condition has been partially alleviated by the use of conductive tape, but instrument operation is still not satisfactory. The Instrument group of the Plant Engineering Unit is attempting to resolve the problem.

Satisfactory uranium analyses have been obtained with the Hanford Fluorimeter by using an internal standard method rather than the direct reading scale calibration method (UF-1a). It has not been possible to use Method UF-1a since the intensity of the light source does not remain constant. No attempts will be made to calibrate the scale until satisfactory light sources have been installed in the instruments. The X-Ray equipment for determining uranium was placed in operation upon receipt of the small cell holders and calibration of the instrument.

Analytical Unit

The UO_3 Plant Cold Shakedown Run, C-1, started on November 26. Tentative methods are available for all requested analyses, acidity, particle size, surface area, water, etc., and steps are being taken to expedite the delivery and installation of certain remaining items of necessary equipment. The spectrographic determination of impurities in UO_3 will be made in the 234-5 Bldg. facility and the surface area measurements will be performed on the Analytical Research equipment in the 3706 Bldg. until it is suitable for control use

All undelivered equipment items for the analytical line have been promised by December 15, 1951. Complete assembly and testing of the Room 4-A line should be completed as of this date. The movement of laboratory hoods and benches in Room 4-L preparatory to installation of the Consolidated Engineering Corporation Mass Spectrometer has been completed. The instrument is expected to arrive by December 15 and complete installation will take approximately seven weeks.

300 Area Control and Special Services

Work in the spectrographic laboratory continued toward the lowereing of detection limits on impurities in uranium. Using a high purity UO_3 and painstakingly adding known amounts of impurities, standard plates for the Carrier Concentration Procedure were prepared, thus enabling the laboratory to apply the limits noted in the table below for reporting analyses the last week in November:

Element	Limits of Sensitivity	
	Old	New
Bi	1 ppm.	0.5 ppm.
Cd	1	0.2*
Co	100	2
Cr	10	1
Cu	20	0.5
Mg	10	1
Mn	5	2
Mo	20	2
Sn	5	1

* Std. plate to be prepared.

As time permits, work in this field will continue and should eventually provide a much improved means of correlating in-hours of pile reactivity loss with uranium impurity level. The meeting held at the Mallinckrodt offices in St. Louis and recorded in HW-20640, was partially responsible for the initiation of this work. The goals for other elements are summarized below:

Element	Limits of Sensitivity	
	Present	Goal
Ag	0.1 ppm.	0.05 ppm.
B	0.2	0.1
Cd	1.0	0.05
K	50	2.0
Li	5	0.1

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Element	Limits of Sensitivity Present	Goal
Na	5 ppm.	0.5 ppm.
Ni	10	1.0
Pb	5	1.0
Sn	5	1.0
Zn	100	10.0

A sample of an oily sludge and trapped uranium oxides was removed from the uranium melt furnace in Building 314. This sample plus five samples of oils used at various points in the building were submitted by the Plant Engineering Unit to determine the source of the oil forming the sludge. A carbon tetrachloride extraction of the sludge and samples of the five oils were compared on the Perkin-Elmer Infra-Red Spectrophotometer. The absorption curves for the sludge extract and two of the five oil samples were identical. On this information a further investigation by the engineers will be made to locate the exact source of the oil.

Since the installation of a new coil for induction heating of the converter in Building 3730, trouble has developed in the Calcium Reduction Test. Two of the last three tests have failed to "fire" properly, due possibly to improper heating. One test was suspended when the copper gasket super-heated and the pressure inside the bomb was released with a cloud of iodine vapor and UF_4 powder. The iodine vapor was drawn off by a fume hood suspended immediately over the coil. The uranium required extensive decontamination. With better positioning of the bomb within the coil and closer control of the heating cycle a repetition of the above failure is not expected.

Instances of unusual analytical service provided during the month are cited: Six uranium slugs were submitted for density determination. These same slugs will be sectioned and resubmitted for the determination of Fe, Si, N, H_2 and density in support of the program to form slugs by powder metallurgy. The original slug densities were very close to standard uranium. A sample of a sheared stainless steel bolt from 202-S Building was submitted for Cr and C analysis to determine if the material had met construction specifications. A sample of a film from test samples suspended in raw water was submitted for the analysis of aluminum, calcium, iron and silica, to be used for a comparative basis in water treatment studies by the Pile Technology Unit. The Metallurgy group submitted a fractured tensile strength test bar from the last batch of boron stainless steel for analysis of nickel, chromium, boron and carbon to determine the reason for the low fracture point.

Two more gloved boxes have been installed in the R & D Service Laboratories, thereby providing equipment for the handling of very high level plutonium samples. One box is equipped for the determination of nitric acid. The other box is equipped with a dual purpose distillation set up for determining either ammonia or sulfate. The sulfate determination has proved very satisfactory in that replicate results on a sulfate standard differed by less than one per cent and had a bias of less than one per cent.

An accurate fluoride method is necessary for the evaluation of new fluorinating agents for plutonium oxide in support of Chemical Research studies. Great difficulty has been encountered in determining fluoride in CeF_4, UF_4, and PuF_4.

Utilizing the Willard-Winter distillation of H_2SiF_6, the subsequent determination of fluoride by zirconium-alizarin titration or with lanthanum precipitation yields inaccurate results. Study is continuing along the lines of using a light filter to determine the titrimetric end point.

Methods Control

The following table summarizes the results of the routine geometry determinations made on all of the ASP, IDL and ASVP counters in the area control laboratories. These geometries are based on plutonium mounted on platinum discs which were calibrated with the ASVP chambers used prior to May, 1951, using the "pie plate" technique. With these discs the accepted value for the ASP units is 50.5 ± 0.15%. The IDL instruments are maintained at a geometry which will give stable operating characteristics. The geometry of the ASVP counter is determined solely by the physical dimensions of the vacuum attachment. Instead of reporting geometry for these instruments, the % recovery (i.e., $\frac{\text{d/m observed}}{\text{d/m standard}} \times 100$) is given. The standards for the ASVP instruments were calibrated on the revised type ASVP chamber (Berkeley design) in 3706 Building.

Summary of Routine Geometry Determinations

Laboratory	Type Instrument	Average Geometry	No. Tests	No. Out 99%	Times Instr. Out	Days Instr. Out
3706	ASP	50.47	106	6	1	6
231	ASP	50.52	61	5	6	10
231	ASVP	99.89	5	0	1	1
222-B	ASP	50.49	112	14	0	0
222-T	ASP	50.49	107	2	2	3
222-S	ASP	50.52	78	28	9	35
234-5	ASP	50.49	26	2	0	0
234-5	IDL #1			Out of Service		
	IDL #2	51.13	8	-	4	20
	IDL #3	50.88	22	-	1	4

The high number of days down time in 222-S and 234-5 was caused principally by one instrument being inoperable.

The comparison of the factor used to convert TC to grams computed from assays of the AT solution in the 231 Laboratory (using 50.5% geometry and the 1.02 correction factor for stainless steel) with that given by the curve now in plant use relating the factor to TPC/TU is tabulated below:

Run Series	B-11-10	T-11-10	B & T-11-10
No. Determinations	75	62	137
Av. % Difference*	+ 1.60%	+ 1.05%	+ 1.35%
% Precision, Individual	± 3.39%	± 4.00%	± 3.73%
% Precision, Average	± 0.39%	± 0.51%	± 0.32%

* % difference of factor from curve - factor calculated from AT assay.

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The bias of + 1.35% is in agreement with the bias of + 1.32% observed on the 11-09 series. The curve in plant use will be revised as soon as possible.

A statistical review of the analytical results obtained in the 234-5 Building Laboratory for the boron, carbon, and fluoride content of the final pieces in the September (11-09) run series was made. Results showed that the analysis of either the MC-1 or MC-2 cuttings could replace the present analysis of both cuttings and still maintain adequate analytical control. This revision was adopted November 21, 1951 and is expected to result in a savings of ca. 400 hours/month. This study is reported in HW-22786, "Analyses for Boron, Carbon and Fluoride in Metal".

Several revisions to equipment and methods were made during the month. The remote microtitrator for 222-S was equipped with special electrode holders to facilitate accurate alignment and convenient operation. The new type cold center disc evaporatory was received and preliminary tests indicated that it will operate satisfactorily for aqueous, hexone, TBP and TTA benzene solutions of plutonium. A comparison of this evaporator with those now in use is being made by personnel of the 222-B Laboratory. The glass pipet control arm of the falling drop apparatus in 222-B was repaired and the bath temperature controller replaced with one having sufficient capacity to overcome variations in room temperature. Testing of the remote microtitrator for determination of acid by fluoride complexing gave satisfactory results so that two additional microtitrators were ordered. In addition this method will replace the micro-oxalate method in Redox and TBP samples. The technique and equipment used in transferring samples for gamma determinations by the Shonka instrument was extensively revised to improve contamination hazard control and decrease the manipulative time required.

Reinstatement of the requests for radio-iodine determinations necessitated preparation of a glove box for Method IG-1b. The chemical yield determination for this method required various modifications of equipment and technique for glove box operation and would have required a magnetic stirrer and titration apparatus, for a back titration requiring three standardized solutions - iodide carrier, silver nitrate and potassium thiocyanate. An investigation revealed that it might be possible to determine the chemical yield with permanganate in the buret already installed for ferrous determinations. A laboratory test confirmed the possibility of titrating between potentiometric breaks, oxidizing bisulfite to sulfate first, then the iodide to iodine, while reducing permanganate to manganous ion. Members of the 222-S Laboratory determined the effect of acid, nitrate and chloride concentrations. Over 0.5 M hydrochloric acid interferes, and at 3 M hydrochloric acid, ICl is formed instead of I_2. 3 M nitric acid does not interfere, nor does 5 M sulfuric acid. There is a tendency to form manganese dioxide when the iodide is nearly all oxidized, giving a high result. This is reduced by efficient stirring and high acid concentration. The method easily fulfills the requirements of precision and accuracy for radio-iodine determinations.

Safety and Special Hazards Control

Data on laboratory survey and contamination are presented below:

	222-B	222-T	231	234-5	R & D
No. Days N. C. W.	48	29	8	9	2
% No Contamination Work	5.0	2.5	1.2	0.7	0.7
Survey Work (Hours)	186	187	99	120	50
Non-Regulated Items Contaminated	164	125	234	134	6
No. Cases Floor Contamination	20	19	35	18	0
Air Contamination - No. Above Tolerance					
Alpha	5	4	0	0	3
Beta	0	0	0	0	0

The air contamination in the 222-B Building occurred at one sampling location near the decontamination hoods. Air flow through these hoods is being checked and techniques and procedures used reviewed in detail.

In the 222-T Building one of the cases of above tolerance air contamination is believed to be from the same source encountered previously, namely, the 224-T Building, since difficulties have been encountered recently with leaks in the cocoons around the shafts and motors in this building. The other three cases were detected on samplers located in Room 6 which is occupied by members of Analytical Research. This information has been passed on to the individuals involved for study and possible revision of methods or procedures used.

Two hoods were removed from Room 97, 3706 Building. Radioactive dust was knocked loose, thus causing the air contamination.

Because of the increased number of new personnel at the 231 Building Laboratory and the apparent need for thorough indoctrination in the policy of complete personal surveys as well as complete SWP clothing surveys before leaving the working area, the use of clothing survey score cards was again adopted.

An outside power failure at the 234-5 Laboratory at 9:13 P.M. on November 17, 1951, necessitated the evacuation of all personnel to Zone 2 for 45 minutes. A thorough survey of all areas prior to resumption of normal work indicated no excessive contamination spread.

Four unusual incidents occurred in the 234-5 Building Laboratory. In one case the chemist dropped the rubber stopper from the sample container. It bounced out of the hood and caused floor and coverall contamination in the extent of 40,000 d/m. The rubber water hose slipped from one of the condensers used in the fluoride analyses, overflowing the hood and causing floor contamination in the amount of 240,000 d/m. A Laboratory Assistant tipped over a flask containing a plutonium solution with a resultant spread of 3.5×10^6 d/m on the floor. In the fourth case, a Laboratory Assistant was transferring the chloroform phase of an extraction when the pipet slipped from the control syringe. The solution apparently squirted, causing coverall contamination in excess of 40,000 d/m in two spots and 5000 d/m in one. A lack of experience was the contributing factor here. In all of the above cases the contamination was successfully cleaned up.

In Room 52 of the 3706 Building a standard uranium solution was being prepared from U_3O_8. The oxide had been dissolved in nitric acid and the nitric acid was

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being evaporated from the solution. In order to accelerate the evaporation in the two liter Erlenmeyer flask, a vacuum was applied to the system which caused the flask to collapse. No injuries were sustained by employees, as the hood door was lowered, thus confining splashing and flying glass to the interior of the hood. The solution ran down into the interior of the cupboards beneath the hood and also out on the floor of the laboratory. Approximately 5 man-days were required to clean the resultant contamination. Floor boards and shelves of the cupboards had to be discarded. Employees have been instructed to use only vacuum equipment for operations conducted under vacuum. In addition, large trays have been installed in the hood to serve as traps for any possible spillage in the future.

With the advent of shift work on November 5, 1951, Special Hazards regulations were placed in effect in the 222-S Building. Protective clothing is required beyond the locker rooms and personnel monitoring checks are required before lunch and going home.

There was a total of ten minor injuries in all of the control groups during the period covered by this report.

The 40# air supply line in the 231 Building is now being used exclusively for fresh air masks. For this reason all outlets in the laboratory which were leading from the 40# air supply line, with one exception, were disconnected. A four outlet manifold was installed on the one remaining 40# air supply outlet (Room 33) to provide adequate connections for the use of fresh air masks in the laboratory.

ANALYTICAL RESEARCH

UO_3 Process.

The X-Ray Photometer for uranium assay of UO_3 Process feed solution and product was moved to the 222-S Laboratory, and a new indexing scale was placed on the instrument. A supply of small sample cells was received from a fabricator. The cells are very uniform; the maximum spread in path length of the 12 mm. cells is 0.008 mm., and that for the 30 mm. cells is 0.057 mm., so they are interchangeable for all but the most exact work. Tests of a comparison method in which an unknown sample is measured on the X-Ray Photometer against a standard of known uranium content show considerably improved precision. In the range of 2-50 g./l. or uranium the precision is improved from ± 0.14 to a value of ± 0.08 g./l. for the 12 mm. cell and from ± 0.07 to a value of ± 0.05 g./l. for the 30 mm. cell.

A turbidimetric method selected for the determination of chloride in recovered nitric acid solution was found to be unaffected by the presence of high concentrations of uranium and was adopted for the determination of chloride in UO_3. Recently developed or tested methods for determination of particle size, bulk density, sulfur, and a group of impurity elements were submitted to service laboratory personnel in procedural form. Since there is little possibility that tungsten will be present to any appreciable extent, arrangements were made for samples from the shakedown run to be determined only qualitatively by a spectrographic procedure.

The shakedown run is being carried out with a supply of UNH that is presumably free from fission products and is in equilibrium with its daughter products, so that beta and gamma determinations will be made by conventional methods according to the original procedure agreed upon between Hanford and Oak Ridge. In the meantime further consideration is being given to the methods for making these determinations in the presence of interfering U-237 and an unknown quantity of daughter products. The chromatographic separation previously referred to continues to show promising results, and consideration is being given to techniques for mounting the separated fission products for counting. If the fission products and UNH are combined in solution, dried in a dish, and mounted in the powder form, a beta counting precision of ± 11% is obtained; whereas if the solution is dried directly on the counting disc, a precision of ± 3.8% is obtained. Ignition of the material in either of these ways, however, leads to a volatilization loss of about 50% of the ruthenium activity present.

The determination of water, nitric acid, and uranium(IV) in UO_3 poses a rather involved problem; little experimental work has been done on the subject, and little applicable information has been obtained from the K-25 laboratory. The standard Karl Fischer technique for determination of water is not absolute unless it can be shown to extract water completely from the solid; vacuum drying -- as suggested and under test at K-25 -- gives a loss in weight equivalent to water and nitric acid; direct ignition in air gives a change in weight due to loss of water, loss of nitric acid, and conversion of UO_3 to U_3O_8. This latter conversion is subject to correction for the U_3O_8 initially present in the sample. An available and accurate method for determination of nitric acid involves vacuum distillation and titration of the distillate but is not presently applicable to the analysis of oxide because the latter cannot be dissolved under conditions that prevent destruction of the nitrate. The K-25 laboratory has proposed the use of concentrated phosphoric acid as a dissolving agent, but tests at Hanford have shown the solution rate to be very slow at acceptable temperatures. An alternate procedure under consideration is the somewhat tedious Kjeldahl nitrogen determination. Several methods for determination of U(IV) are not applicable unless techniques can be found for dissolving the sample rapidly and without oxidation of the U(IV). Satisfactory results have been obtained on a procedure attributed to Mallinckrodt whereby the UO_3 is dissolved in hydrochloric acid to leave U_3O_8 as a residue for weighing; the presence of phosphate in Metal Recovery Process oxide will interfere because of the insolubility of certain uranium phosphates. Calculations have been made to find if magnetic susceptibility measurements could be employed for the determination of U_3O_8 in UO_3. It was found that the iron and UO_3 are sufficiently paramagnetic to mask the effect of the small amount of U_3O_8.

For analysis of the test run samples it was agreed to determine water in oxide by the Karl Fischer procedure, determine U_3O_8 as the hydrochloric acid insoluble, and to evaluate the nitric acid content as the difference between the loss on ignition and the combined water and oxygen loss. Since the apparatus for determination of specific surface of UO_3 has not been assembled in the 222-S Laboratory, arrangements were made to conduct these determinations by Analytical Research personnel in the 3706 Building. Previously established methods were available for determination of density of feed solution and recovered nitric acid, nitric acid in feed solution and trace uranium in recovered nitric acid.

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It was reported previously that a procedure involving a double lanthanum fluoride separation was being investigated to replace the lanthanum fluoride-metathesis procedure for the determination of trace quantities of plutonium in recovered uranium. The new procedure is slightly less accurate, it being subject to a 5-10% manipulation loss and a 5% counting absorption loss, but it has the decided advantage of reducing the analytical time from 2 1/2 to 1 1/2 hours per determination and so is being adopted for routine use.

The Consolidated Engineering Corporation reported further difficulties with the mass spectrometer on order for uranium isotope determinations and requested a further shipping delay.

Redox Process

Tests with the previously reported dead-stop procedure for the detection of end-points in the coulometric titration of uranium have shown that it eliminates the most troublesome feature of the coulometric analysis, namely, frequent replacement of the formerly used calomel electrode that tended to deteriorate rapidly during titrations in the hot sample solution. The new system has operated on a trouble-free basis during the entire month. Using this system a check was completed on a wide variety of elements to evaluate possible interference. Of those that might be present in Redox or Metal Recovery streams, only higher concentrations of chromium offer difficulty. The overall method will determine 0.5-7 mg. of uranium with a precision of ± 1.5%, 50-500 ug. with ± 7%, and 15 ug. with ± 35%. Two reports, entitled "The Coulometric Titration of Uranium", HW-22765 and "An Automatic Titrator Using Electrolytically Generated Titrants", HW-22780, describing the development work were ready for issue at month's end.

A laboratory model chain hydrometer was constructed and tested for the determination of solution density. Employing a 100 ml. sample, densities were determined to within ± 0.0005. Only several minutes are required for a determination since all weighings are eliminated, and provision is made to compensate for solution temperature. The method holds promise of value for measurement of cold solutions and is being considered with respect to in-line applications.

P-10 Process

The G. E. Mass Spectrometer recently installed for the analysis of P-10 materials continued to present operating difficulties. The G. E. L. field representative eliminated the amplifier noise and instrument instability and brought the electron beam emission regulator under control, but unstable, non-linear calibrations are still obtained. Recent observations at G. E. L. indicate that the rate of operation of the diffusion pump plays a very critical part in the instrument performance; with this in mind intensive study is being given to the problem, and a field engineer has returned to Hanford with the instructions to remain until satisfactory instrument performance is obtained. Advantage was taken of the delay to complete the installation of the sample manifold so that the sampling system is entirely ready for conduct of P-10 analyses.

The sample leak on the Consolidated instrument was retested to assure that no changes have occurred during the long period of operation. It was found that molecular flow is obtained if the sample pressure is below 0.1 mm., and that

viscous flow is obtained if it is above 10 mm. This indicates that no change has taken place and fixes acceptable operating pressures at greater than 10 mm. A new electromagnet has been constructed and tested in conjunction with the magnet power supply which has been received. These units will replace the mechanical magnet scan at the first available opportunity and will offer the advantage of less noise, less vibration, and considerable less maintenance.

234-5 Process

A re-evaluation of the carrier concentration and cupferron procedures for the determination of impurities in plutonium supported previous findings. By the two methods chromium and nickel determinations agree within a factor of 2, but the carrier procedure yields magnesium and manganese determinations 3 to 6 times greater. Consideration is being given to the use of a TTA extraction procedure that should replace the above two methods and show considerably improved analytical results. Previous work showed that the Pu(III) extracted into the organic phase is less than interfering amounts and that the Pu(IV) remaining in the aqueous phase is less than an interfering quantity. The method under examination would involve separation of extractable impurities while plutonium is held in the trivalent state and subsequent oxidation and removal of plutonium so as to leave non-extractable impurities in the aqueous phase. The behavior of a group of ten impurity elements in the absence of plutonium was examined. With 10 ug. of each, it was found that zirconium was completely extracted and that after a simulated oxidation with nitric acid and re-extraction, the remainder of the elements were in the aqueous phase; the sole exception was iron which was not properly evaluated because of high blank interference.

Pile Technology Problems

It was previously reported that trouble had been experienced with the infrared analyzer purchased for the determination of moisture in in-pile analyses of test gas samples. The instrument was returned to the supplier. In the interim a unit for preparation of calibration samples containing known amounts of moisture was prepared in the 3706 Building. Tests have shown it to operate satisfactorily and to yield samples which are reproducible to about ± 0.04 vol. % absolute.

A group of six samples from the P-11 program were analyzed for Pu-240 content with the spontaneous fission counter, and the results were reported. A special spectrographic test conducted for Metallurgy showed that a black stain present on a particular specimen of aluminum was not carbon as had been expected.

General

An apparatus patterned after that developed at Los Alamos was constructed and adapted to the determination of carbon in uranium. In practice, it is employed to ignite a sample in oxygen enriched air, to freeze out the carbon dioxide in a cold trap, and subsequently expand it into an evacuated volume for measurement of pressure. A single determination requires only 20 minutes, which is a considerable improvement over the 60 minute procedure previously used. For the determination of carbon in the range of 500 ppm. a sensitivity of 50 ppm. and a blank of 15 ppm. are obtained. These represent a considerable improvement

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over the former method. An analytical precision of ± 40-50 ppm. has been obtained with both methods, and it is probable that this is limited by the non-homogeneous nature of the sample. The principal difficulties overcome in adapting the procedure involved incomplete freezing of the carbon dioxide and incomplete burning of the uranium sample. The same procedure is being introduced into the 234-5 Laboratory for analysis of plutonium.

The previously reported difficulty of segregation of silicon in Al-Si samples is receiving the attention of Metallurgy. Metallurgical examination of routine samples has verified the existance of segregation and has shown the presence of large gas bubbles formed as a result of slow cooling. An acceptable chill cast procedure is being developed.

Several tests with the electroplating procedure for preparing thin, uniform, alpha counting films showed that it is applicable to stainless steel discs and that 100% plating may be obtained. Although the procedure yields highly satisfactory discs, it is tedious because of the slow ozone oxidation step that is required. Studies were initiated to find an improved oxidant. Using an H-tube with the aqueous sample in one leg, the aqueous pick up solution in the other, and ether as the connecting medium, tests of various oxidants in the sample solution were made. With ceric ions the oxidation and transfer of plutonium yielded a 96% recovery, but it was observed that cerium transferred across the cell. Permanganate was completely unsatisfactory because it tended to distribute over the entire cell. Somewhat variable plutonium recoveries of 50-90% were obtained with dichromate as an oxidant. The transfer of a small quantity of chromium was eliminated by specially purifying the ether.

Further analyses of Bismuth Phosphate Process solution to determine the distribution of Am-Cm supported the previous observation that the method developed and satisfactorily employed for analysis of dissolver solution is not universally applicable to other process streams, and attention is being given to modified procedures which will be free of the many difficulties that have been encountered. The presence of nitrite in waste streams causes an excessive reduction of the ceric reagent to the extent that heavy residues are obtained that increase the absorption loss and tend to flake from the disc. Simulated samples containing nitrite were found to introduce absorption losses in the range of 20-40%. Bromine is not effective in the destruction of nitrite, but prior heating of the sample or use of peroxide appear to eliminate the difficulty. Examination of the process distribution data shows them to be fairly reliable for the first cycle samples but to disagree widely for samples from the latter part of the process. This disagreement is large, however, on a relative basis but is not particularly significant on an absolute basis, and it is considered that the evaluation of Am-Cm distribution in several more process streams will serve to fix average figures.

The initial phase of a research problem directed towards establishment of a universal scheme for separation of trace quantities of active isotopes was concerned with Group IV elements. This has been completed. As previously reported, barium carbonate proved to be an efficient carrier for the group; strontium carbonate and barium oxalate are somewhat less effective for the purpose. It was found that conventional procedures allowed recovery of the individual elements from the mixture.

Analytical Unit

As a result of analytical disagreements between Hanford and the supplier of process reagent phosphoric acid, consideration was given to the essential material assay of this acid. It was observed that the standard Hanford procedure employed phenolphthalein as the endpoint indicator, whereas the analysis of standard samples by potentiometric titration revealed that an indicator of higher pH transition range was more proper. Substitution of thymolphthalein as the indicator increased the assay results about 1.8% absolute and brought them to the order of 75.5%, which was in good agreement with the vendor.

Another disagreement between Hanford and the vendor of aluminum nitrate solution occasioned the examination of the aluminum assay procedures. Analysis of standard solutions by a variety of techniques completely supported the Hanford assays and led the vendor to the discovery of an error in his procedure. The latter was corrected with the result that agreements are currently being obtained.

Further activities of the Analytical Research standards program involved the distribution of various standard samples to the control laboratories and a survey of relative counting results obtained on all the ASP counters in the analytical control laboratories. A group of discs were counted for 10 to 21 different four minute counting periods on the various instruments. The relative precision observed in the majority of cases was ± 0.7%, whereas the range of precisions lay between ± 0.41 and ± 0.95%. The geometry of the instruments lies within the ± 0.15% absolute range currently set for operation, except for two cases which were detected and corrected shortly thereafter by routine practice.

A subject report titled "A Photoelectric Toepler Pump Control", carrying document number HW-22468, was issued during the month.

INVENTIONS

All Analytical 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 November 1951 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
E. M. Kinderman, F. C. Tolfer, W. A. McCoy	The Separation and Purification of Tin and Uranium in Tin-Copper-Uranium Alloys.

Signed: F. W. Albaugh
F. W. Albaugh, Unit Head

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TECHNICAL SERVICES UNIT

NOVEMBER 1951

VISITORS & BUSINESS TRIPS 12-10-51

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

Business trips of Technical Services personnel were as follows:

D. C. Kaulitz spent November 3 at the P. E. Madden Pump Co., Chicago, Ill., and November 9-12 at the Argonne National Laboratory. He visited the Westinghouse Atomic Power Laboratory in Pittsburgh, Pa., on November 14, and spent November 15-16 at the Milton-Roy Pump Co., Philadelphia, Pa. The purpose of the trip was to inspect remote control devices at the atomic sites and to consult with pump manufacturers at Chicago and Philadelphia.

W. C. Healy, Jr., spent November 6-9 at the Symposium on Statistical Methods held at the General Electric Company, Schenectady, where he presented a paper.

B. F. Butler attended the Symposium on Statistical Methods November 5-9.

P.F.X. Dunigan attended the AEC-sponsored radiochemical laboratory design conferences at Washington, D. C., on November 27-28, and visited the Knolls Atomic Power Laboratory on November 29-30.

Ezra Hollister attended the annual meeting of the ASME at Atlantic City, N. J., November 26-30.

ORGANIZATION AND PERSONNEL

Personnel totals in the several subdivisions are summarized as follows:

	October 31	November 30
Engineering	66	69
Technical Information	84	87
Mathematics	30	30
Administrative	4	4
Unit Totals	184	190

ENGINEERING SERVICES

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

Work volume statistics for the Mechanical Shops are as follows:

	Customer Unit or Program	October No. of Jobs	October Man-Hours	November No. of Jobs	November Man-Hours
Work Done on Jobs Completed	P-10	19	286	9	186
	Pile Tech. (Incl. P-12) (a)	19	487	17	322
	Separations Tech.	26	680	23	548
	Analytical	10	549	12	183
	Technical Services	11	328	12	296
	Others	1	1	5	105
	Sub-Total	86	2,331	78	1,640
Work Done on Jobs Not Completed	P-10	3	381	4	282
	Pile Tech. (Incl. P-12)	8	165	9	680
	Separations Tech.	14	520	8	134
	Analytical	7	232	4	219
	Technical Services	6	252	9	519
	Others	1	1	3	478
	Sub-Total	39	1,556	37	2,312
Total Work Done			3,882		3,952
Work Backlog:					Man-Hours to Complete
Jobs Started	P-10	3	247	4	225
	Pile Tech. (Incl. P-12)	8	625	9	399
	Separations Tech.	14	262	8	257
	Analytical	7	218	4	81
	Technical Services	6	170	9	451
	Others	1	19	3	25
	Sub-Total	39	1,541	37	1,438
Jobs Not Yet Started	P-10	0	0	1	40
	Pile Tech. (Incl. P-12)	2	155	4	236
	Separations Tech.	4	257	3	73
	Analytical	3	656	4	486
	Technical Services	5	117	7	265
	Others	2	423	3	155
	Sub-Total	16	1,608	22	1,255
Total Backlog			3,149		2,693 (b)

(a) P-12 designates the Exponential Pile Project.
(b) Does not include 543 man-hours cross-ordered to other shops.

Work volume statistics for the month of November show approximately 500 man-hours drop in backlog from the preceeding month; however, this was largely due to the necessity for an early closing date for the compilation of these statistics. An actual month-end backlog of approximately 3,300 man-hours is predicted on the basis of orders received since the statistics were compiled. The Metal Preparation Section accordingly has been requested to continue a six-day work week for their craftsmen at 1717-D, 3706 and 222-S Bldgs. Mechanical Development Shops are now operating on an approximately 19-day back log. The 100 and 300 Area Maintenance shops and the 300 Area Instrument shops are engaged on a six-day schedule on other work and are unable to furnish assistance during the month of December; 200 Area assistance is limited to 80 hours per week.

Two additional special leak-proof containers for the in-pile atmosphere experiments have been fabricated for the Pile Application Program. These containers, as explained in a previous report, require fabrication techniques available only in Mechanical Development Shops.

The fabrication of flanges, lines and fittings for the P-10 metal lines is approximately 94% complete. Preliminary work is underway for the fabrication of a 6' graphite reflector for P-11. The finished unit will weigh approximately 11 tons and will have at least 30" of graphite surrounding a spherical insert. Graphite machine work in the spherical cavity must be done at relatively close tolerances, as the insert will not be available for trial assembly. Approximately 5-6 weeks will be required for completion.

A specially fabricated film test apparatus to be used in connection with corrosion studies is being fabricated for Pile Engineering. Construction details of interest are that the unit must be pressure tight at all times and place no restrictions upon flow phenomena. The apparatus requires careful machining and handling of all surfaces to meet the pressure requirements. It consists of two aluminum plates separated by a gasket of variable thickness, completely enclosed within a water jacket.

The chemical slug stripper apparatus (for Metallurgy) described last month is approximately 75% complete. Work has been temporarily suspended pending the receipt of special parts, such as stainless steel gears, sprockets and hardware.

Work on a special mercury trap, which must be degreased, heliarc welded and tested for leaks, has been started in connection with the P-10 program. Several kovar-to-glass seals were successfully welded to stainless steel adapters without damaging the metal to glass unit.

Work has been started on the fabrication of a sample blister for Bldg. 202-S, at the request of Chemical Research. The unit consists of a lead lined steel framework with step-type joints. It has a stainless steel liner and sample well. The unit will be used for sampling high level process solutions that must be handled remotely.

Technical Services Unit

The replacement of the lucite front window of the 9' gloved box in Bldg. 3706 was held up pending delivery of the Homolite sheets. This material has been received and fabrication will start immediately.

The 15-stage counter current batch extractor for Chemical Research was completed and delivered. The unit is remotely operable with push button controls.

The miniature mixer-settler for Chemical Development was completed and delivered. Improvements and design changes incorporated in this unit are a hinged motor mounting plate to allow easy adjustment, and a modified feed system.

A cross order was received from 300 Area Maintenance for 383 man-hours for the fabrication of experimental pump parts for Chemical Development. Tolerances of ±0.0005" are required in this unit. Pump seals are stellite faced and after machining will be sent to the 300 Area Optical Shop for final grinding and lapping. Another unusual fabrication detail was the machining of a new material "Graphitar" which required diamond tip tool bits.

Work on a small volume, positive displacement, pulseless pump is proceeding under the direction of Laboratory Equipment Design. Low maintenance costs, heat resistance and corrosion resistance are some of the prime considerations in the design of this unit.

Two hand-operated pipetters for the Analytical Line in Bldg. 222-S are approximately 75% complete. These units will be used to take highly active samples remotely. They are being fabricated under the direction of Laboratory Equipment Design personnel.

Two dilution track and dolly assemblies for the Bldg. 222-S Analytical Line were cross-ordered to 300 Area Instrument Shop and were completed. A cold spot drier for Analytical Services has been completed and delivered. This unit will also be used in connection with Bldg. 222-S start-up.

Eight hydraulic heads for use on the Face-Tube Mock-up were cross-ordered to 200-W Maintenance. These parts are being fabricated for Pile Application. It is estimated that these seals will be completed early in December. Six stainless steel tanks for Chemical Research were also cross-ordered to 200-W Maintenance. These units were completed and will be delivered after inspection.

Glass Shop

Work volume statistics for the Glass Shop (exclusive of P-10 services) are as follows:

	October	November
Jobs Completed		
New	70	108
Repairs	10	14
Revisions	19	40
Total	99	162

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	October	November
Job Backlog	22	19

Of this total, 10 jobs required quartz fabrication. This indicates an increase in the amount of quartz apparatus required.

A glass reactor to be fabricated for Analytical Services is included in the backlog. This unit, a duplicate of one constructed previously, has proved highly satisfactory in Bldg. 234 operation.

An emergency call-out was made on Thanksgiving Day to repair the high vacuum carbon analysis apparatus installed in the Analytical Services Laboratory at Bldg. 234. The cause of the vacuum loss was readily detected and the equipment returned to service.

Completion of the quartz room in Bldg. 3706 is delayed pending the delivery of a new glass lathe.

Equipment Design

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

	October		November	
	Engineering	Drafting & Misc.	Engineering	Drafting* & Misc.
Pile Technology				
Engineering	32	367	32	234
Metallurgy	8	25	32	307
P-10	8	32	8	38
Pile Applications	8	101	8	116
Separations Technology				
Development	36	43	76	24
Research	44	649	40	433
Analytical				
Service	184	921	128	713
Research	-	-	8	16
Technical Services				
Engineering	-	54	-	-
Laboratory Equipment Development (RDA #TC-5)	832	296	724	452
Totals	1,152	2,488	1,056	2,333

* Includes 1,050 hours of drafting time.

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Relatively high work loads continued in connection with design and scoping of equipment for the multicurie cells and analytical laboratories of Bldg. 222-S.

The following work was done for the various customers, as indicated:

Pile Engineering

Engineering assistance was given on drafting of the activated silica system, gas pump assembly, chargeable rear nozzle, sample holder, and various graphs.

Metallurgy

Assistance was given on drafting of the uniscan machine, manipulator for the hot cell, sugar loaf, transfer cask, and various charts and graphs.

P-10

Assistance was given in the drafting of the pinch-off unit and the vacuum selector valve.

Pile Applications

Engineering assistance was given on drafting of the clamping jaw and the underwater amputator.

Chemical Development

Assistance was given on the air hoist panel, sextet panel, analysis of the operation of multicurie services, strip coating the multicurie cell, revising hot semi-works box, centrifuge base supports, decontamination study of Junior Cave, and drafting of the 500 ml. cask.

Chemical Research

Work continued on the alpha pulse column and allied equipment. Engineering assistance was given on support bracket for gloved box air lock, counter current batch extractor, replacement of the lucite window on the 9' gloved box with Homalite, outfitting of two gloved boxes for plutonium analysis; and drafting of the Teflon check valve, solenoid valve pump, mixer-settler traverse mechanism, and wiring diagram of the counter-current batch extractor.

Analytical Services

Engineering assistance continued on the installation and outfitting of the gloved boxes for Bldg. 222-S, and the Analytical Line equipment. Assistance was given on the drafting of the dilution track and dolly, oil displacement sampler, falling drop apparatus, and door stop lift.

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Analytical Research

Assistance was given on the development and drafting of the coulometric titrating apparatus.

Laboratory Equipment Development (RDA #TC-5)

Development of Bldg. 222-S multicurie cell equipment and the slave type manipulator continued. Work continued on the equipment decontamination facilities at Bldg. 222-S. One engineer each continued under this RDA in the development of remote control radiochemical equipment for Chemical Research, Chemical Development and Analytical Services.

New Laboratory Planning

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

Phase II construction negotiations have been completed with Atkinson-Jones and preliminary work involving material procurement is underway.

Mechanical Development Bldg., Proj. C-406

The contract for A-E services for Phase II of the Mechanical Development Bldg. was forwarded to the Dix Steel Bldg. Co. for approval but has not been returned. Confirmation of the returned contract by AEC must be complete before formal notice to proceed can be given.

Radiochemistry Bldg., Proj. C-381

Concrete work is progressing but actual structural work is temporarily slowed awaiting the receipt of steel. The floor of the half-height basement under the front of the building has been poured.

Plot Plan & Utilities, Proj. C-394

Bids for this work were opened on November 7, 1951. The L. H. Hoffman Construction Co., Portland, Oregon, was apparent low bidder on this exterior construction, with their bid of $810,000. Bid analysis was completed and the formal notice to proceed with this work was issued to the Hoffman Co. on November 26.

Footings for the Badge House have been poured. This work is being done as a part of the contract covering construction of the Library and Files Bldg. (Project C-421).

Radiometallurgy Bldg., Proj. C-385

Formal notice to proceed with the construction of this facility was issued October 31 to L. H. Hoffman Construction Co. on AEC contract AT (45-1)-478. This lump-sum contract totaling $2,840,000 covers construction of both the Pile Technology and Radiometallurgy Bldgs.

Purchase requisitions havebeen issued to the Farrell-Birmingham Co., Ansonia, Connecticut, for the special "hot" cell equipment required for the Radiometallurgy Bldg. The total cost of this equipment is $376,413, and comprises the Dry Storage Cell, Decontamination Cell, Intermediate Level Cells, and the High Level Cell.

Pile Technology Bldg., Proj. C-414

At month end the lump sum construction contractor, the L. H. Hoffman Co., had cleared the building site of all debris and objectionable material, and was making the necessary footing and foundation excavations for this building and the Radiometallurgy Bldg., both having been awarded on the same construction contract.

Library and Files Bldg., Proj. C-421

Construction of this facility is proceeding and the concrete of the lower building walls and vault has been poured.

Building Services

Bldg. 3706

Normal Bldg. 3706 services continued routinely. Material control, stockroom and work order activity is summarized as follows:

	October	November
Purchase Requisitions		
Total number processed	87	79
Number requiring special expediting	40	63
Number requiring emergency handling	8	9
Stores Stock Requests Processed	0	8
Store Orders		
Total number processed	1,386	999
Number requiring emergency pick-up and delivery	14	15
Work Orders Processed	48	91

Work was completed on the remodeling of offices 88, 90 and 92 for the Analytical Unit.

A number of new catalogs were received for inclusion in the new catalog file. This new customer service is in the process of development and catalogs from most vendors of laboratory equipment and chemicals have been requested. As new shipments of catalogs and bulletins are received, the various customer groups are being notified. Plans are underway to make more space available for this new service.

Expediting cards covering each purchase requisition in process are now

being prepared. These cards contain all pertinent information regarding the order and the current status of all requisitions in process will be indicated by colored tabs. A summary of purchase requisition status will be sent to each customer at the end of each month.

Work order processing by Material Control is increasing. This is partially due to an increase in the number of Technical Sub-Units utilizing this central work order service.

Bldg. 3706 Services is now responsible for the procurement and maintenance of all office equipment and furniture in the 3706 Bldg.

Bldg. 222-S

Modification work and equipment installation is continuing in all parts of the building with a small amount of analytical service being furnished for the Bldg. 202-S start-up.

The flow of waste waters through the Retention Basin (Bldg. 207-SL) is being studied in preparation of initiating waste retention as soon as required by laboratory operation. The waste flow now approximates 30,000 to 40,000 gallons per day, which approaches the 50,000 gallon capacity of both sides of the basin (each side has a 25,000 gallon capacity). Assuming increased flow under operating conditions, shift operation of these units will obviously be required unless the flow can be reduced. Investigation of the waste sources indicates that a large volume of the present waste flow is due to steam condensate, condenser water and overflow water from the air supply units' spray pans. Maintenance and Power Units have been requested to determine the cost of eliminating a portion of this waste flow to permit operation of the basin on day shift only.

Extension of the building oxygen and hydrogen service to include two additional Analytical Service laboratories was completed. This was accomplished by using the "spare" and "propane" service lines incorporated in these laboratories as a part of the original construction. Replacement of the individual brass plug-cock valves on these lines with needle valves was necessary. Indications are that all brass plug-cock valves throughout the building may require replacement.

Approximately 70 gallons of water overflowed onto the floor of the air supply units during the periodic cleaning of the spray pans on these units, and flooding of the sample storage, decontamination, machine shop and cubicle rooms located directly below these units resulted. Overloading the drain was determined as the cause of this overflow and operating procedures used by Power have been revised to prevent recurrence.

One bearing (outboard) of No. 3 exhaust fan overheated and was taken out of service by Maintenance at the direction of Power; no definite cause for the failure has been determined but additional inspection and an increase of the oil level has been initiated by Power to guard against

repetition. New pulleys for the exhaust fans are expected in December. These should permit better dynamic balance of the fans and eliminate a part or all of the vibration which may also have contributed to the bearing failure.

Bldg. 222-S decontamination facilities are now being utilized routinely for decontaminating sampling equipment, laboratory glassware and sample disposal. The facilities were first used on November 13 to decontaminate "regulated" sampling equipment borrowed from the "B" and "T" plants for use by "S" plant personnel until their sampling equipment is received. Decontamination service is being provided on day shift and is serving as valuable training for Laboratory Services decontamination personnel. Use of sinks and associated facilities in Bldg. 222-S is limited to the "crib" waste sinks to avoid unnecessary loading of the hot waste receiver, Tank 103. Bldg. 202-S is yet unable to process hot waste. Eight additional laboratory assistants have been requested from Analytical Services to provide regular four-shift coverage in the decontamination room beginning approximately December 17.

A total of 33 work orders were issued and processed for customer groups by Laboratory Services during the month.

MATHEMATICAL SERVICES

Statistical Services

An experiment was designed for the Metal Preparation Section of the Manufacturing Department to determine the effects of acid concentration, deoxidizing time, position of pieces in the bath, type of uranium metal, length of storage time between machining of the pieces and deoxidizing on the average loss of uranium per pieces in the deoxidizing bath.

Analysis of data submitted by the Metal Preparation Section indicated that aluminum-silicon rejects may be caused by excessive distance between the outside diameter of the aluminum cans and the inside diameter of the steel sleeves used in the canning process. Further studies are being made to determine what tolerance limits should be maintained to minimize aluminum-silicon rejects.

In conjunction with the Metal Preparation Section, an investigation was begun to determine the cause or causes for the large variation in quality of uranium rods.

Statistical controls were reported on Metal Preparation Section results from Machining, Pickling, Canning and Autoclave, Test Pile, and Melt Plant.

A study was made for the Pile Technology Unit to determine whether a statistically significant downward trend in Test Pile reactivity of bare uranium pieces has occurred during 1951. All available 300 and 100 Area processing data pertaining to the uranium pieces that ruptured in the 105 Piles were obtained for the Pile Technology Unit. These data will be put on IBM cards for comparison with 105 processing effects.

A study of the relationship between graphite and other thermocouples within and between B, D, and F area piles was continued at the request of the Pile Technology Unit.

Analysis of Pu distribution data relating to the Recuplex process was begun for the Separations Technology Unit. The objective is to obtain mathematical relationships giving Pu concentration in the organic phase as functions of Pu, HNO_3, SO_4^{--}, and TBP in the aqueous phase.

The examination of operating limits for checking the plutonium assays of isolation process starting solutions (P-1), begun last month, was completed and a recommendation issued.

As a result of certain process modifications at the extraction step, and of a change in philosophy regarding reworking of extraction wastes, the recommendations of HW-22008, Rework and Resample Limits - Extraction Waste Solution, were modified. A new recommendation was issued, based upon 85 runs since the changes were made.

In cooperation with Chemical Research and Analytical Research, a program of theoretical computations of the quantities of plutonium isotopes, Am^{241}, and Cm^{242} expected in pile irradiated uranium was launched. This program is an extension of the previously reported work on the calculation of Am^{241} and Cm^{242}.

Calculation of precisions of certain mass spectrometer determinations of P-10 by-product samples was begun for the Analytical Unit. Accumulated precision data on all Pu radioassays through the Isolation Building was transmitted to the Analytical Unit at their request. Also, certain special extratabular values for the function χ^2/N were computed. The regular report on 200 Area Analytical Laboratory performance was issued.

The regular semi-monthly reports of certain Kr 85 computations was completed and forwarded to the AEC.

Approximately one day was spent in conference with a representative of the visiting AEC SF Accountability team in connection with 200 Area problems.

A sampling plan to aid in the testing of pipes in Bldg. 221-U was devised for the Design and Construction Section.

At the request of the Environmental Hazards Section of the Radiological Sciences Department, an experiment was designed to evaluate the measurement of 107 retention basin water activity. Variables included are to be sampling personnel, sampling techniques, analytical personnel and technique, and counting instruments.

Modifications of the previously designed experiment on the retention of Pu by rats were discussed with the Biology Section. The recommended modifications, made possible by more rapid feeding than was anticipated, could result in advantageous utilization of some 30% of the original rats for determinations of the biological half life of plutonium.

The analysis of uptake of strontium by barley roots reported last month was completed and a memorandum issued to the Biology Section. Based on this experiment, suggestions have been made which will approximately halve the number of roots required for proposed future experiments of a similar nature.

Also for the Biology Section, a tentative mathematical model representing the internal and external penetrations of algae by Beta particles has been proposed. Other potential solutions to this problem are being investigated.

Analysis was performed to derive the curves of optimum fit to data supplied by Wage Administration. The data, which was obtained from a national wage survey and represented the average monthly salary based on years since receiving degree, was found to fit a logarithmic type curve. Tests were run to measure the goodness of fit of these curves for the first twenty-five, thirty, and thirty-five years.

A study of unit costs of production in the 100 Areas is in progress. An attempt is being made to establish statistical methods for estimating monthly costs, and to calculate limits within which actual costs must fall to be considered in control.

Computing Services

Work is continuing for the Pile Technology Unit on the shielding gamma flux problem. Values of the integrand have been worked out and a method of integration is being devised. Difficulties arise first from many discontinuities in the functions and second from the unusually wide range of variation of the values of the functions. All calculation has had to be done on the basis of floating decimal.

The problem of the buckling solution of a cube in an infite reflector has been continued. The analytic solution is leading to difficulty in the process of integration. Expansions for some of the functions have been found, but no suitable expansion for the $K_n + \frac{1}{2}$ functions have been found. These may have to be integrated numerically.

A series of problems on "water gas reaction" involving solving for roots to third order polonomials was programmed and calculated.

A tabulation of the half integral orders of the K Bessel Functions from $\frac{1}{2}$ to 7/5 over the range of .5 to 5.0 was made.

Programming was completed for another method of calculating diffusion length for P-12. Ninety-six cases of cosine fitting were completed, and programming of two new variations of the process were completed.

The tube production factors, their squares, cubes and the three corresponding sums over the pile were made for areas H and DR.

Programming has been completed on two equations for calculating tube-by-tube water flow on the basis of panellit pressure readings.

Fourteen Standard temperature maps were printed and five maps printed with

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the charging dates of the tubes were prepared.

The H-10 tubes were printed with all pertinent production information included. Special Request exposure calculations for 105-H were made and discussions were held to plan similar calculations for the other piles.

A large scale calculation of the pile multiplication constant k has been programmed and begun. Materials and dimensions of the slug and container are varied in combinations.

Routine graphite calculations were made for all piles and backlog calculations for F and D were completed. Several cases of "boiling disease" were calculated.

At the request of the Separations Technology Unit, programming has been completed for solving sets of simultaneous equations up to order 20 where the sets are of diagonal type. Several cases have been calculated. Programming has also been completed for calculating ratios of numbers obtained from Redox production data and printing the ratios in the order of the stages they represent.

For the Radiological Sciences Department, programming has been completed for a new meterological data reduction problem handling the data from the various wind measuring sites located over the project. This will involve approximately 8000 cards per month. Wind frequency distributions by direction for each of the 12 stations and also the total wind passage will be calculated.

The power generated per tube for the piles B, D, and F was calculated for use in a problem in process in the Statistics group.

Routine metal quality calculations for the month were made in addition to a special study of data of the past 6 months.

For the Financial Department, control panels were prepared for calculation and checking of data occurring in the Debasset project. Several hundred thousand cards are involved. Programming and control panels have been completed for preparing a cost distribution classification analysis of non-exempt salary figures for Technical Section. This will be run monthly on a routine basis.

Mathematical Technique Development (TC-6)

Procedures have been prepared for obtaining the roots to a third order polynomial by tangential extrapolation from iteration to iteration (Newton's method). Procedures for fourth order equations are under preparation. Programming using quadratic extrapolation was also prepared. While the quadratic method converged more quickly, it took longer per iteration resulting in no net gain for low order polynomials. It may result in better efficiency for higher order polynomials.

Card Programmed Electronic Calculator sub-routines for the evaluation of the $K_0(x)$ and $K_1(x)$ Bessel functions over the range 10^{-8} to 3.85 were developed, with a maximum error of 2×10^{-6}. Sub-routines for the half integer orders of the K function from $\frac{1}{2}$ to 7/2 have been prepared. These

are good over the range from 0.5 to 5.0.

Instruction decks for solving 5x5, 9x9, and 14x14 sets of simultaneous equations by iteration were prepared in addition to the 20x20 previously reported.

Programming to solve 20x20 simultaneous equations of a diagonal system where each row has three coefficients centered about the diagonal was completed.

A general purpose control panel has been prepared for the new model Card Programmed Electronic Calculator to correspond to the system in use on the old model. This was a difficult wiring problem as all of the counter channel chains, spread entry, and all sign control had to be wired on the control panel. Due to the complication in the general purpose system, several back circuits and sign timing irregularities had to be eliminated at the expense of considerable time. The additional complication is well justified, however, as much greater flexibility can be obtained with the new arrangement. This will show up in the floating decimal system now in development.

The statistical research project on parameter and distribution free techniques was continued.

TECHNICAL INFORMATION SERVICES

Plant Library

Library work volume and book statistics were as follows:

	October	November
Number of books on order received	234	204
Number of books fully cataloged	118	224
Number of bound periodicals processed but not fully cataloged	97	73
Pamphlets added to the pamphlet file	36	27
Miscellaneous material received, processed and routed (Including reprints)	50	40
Books and periodicals circulated	4,194	4,363
Unclassified reports processed	200	191
Unclassified reports circulated	291	380
Reference services rendered	1,270	1,482
Inter-library loans	13	23
Photostats from offsite	67	16
New titles added to Kardex	-	13

	Main Library	W-10 Library	108-F Library	Total
Number of books	8,154	3,660	424	12,238
Number of bound periodicals	4,994	0	631	5,625
Totals	13,148	3,660	1,055	17,863

[redacted]

Circulation, acquisitions-cataloging, and reference work proceeded routinely during the month. A number of complex reference questions were satisfactorily handled, and are included in the following representative breakdown:

Chemical composition of rivers and lake waters of the U.S., mean temperatures, rate of flow, etc.
Effects of irradiation on the magnetic properties of iron and steel.
Gamma absorption spectra for Carbon.
Effect of leakage on Alpha Simpson Proportional Counter.
Flocculating agents for sewage disposal.
Any previous design work on graphite-moderated, He cooled piles.
Methods for spectrochemical analysis of solutions using spark excitation and the porous cup electrode.
Data of electrical conductivity of typical boiler scales.
Effects of $CaCO_3$ deposits on pipe lines and on low temperature heat exchangers.
Methods of location of underground water leaks.
Vapor pressures of water solutions of Tritium oxide.
Complete analyses of monazite sand.
Threaded-joint seal for sulfuric acid discharge pipes.
Composition of cerium glass for shielding purposes.
Calcium carbonate--CO_2-Water system at 150°C.
Quench welding of stainless steel.
Specific gravity of HF above 100° C.
Name of manufacturer of Korelastic dental molding compound.
Heat transfer coefficients for sealed surfaces.
Radiation detection with a photo-electron multiplier tube.
Bibliography on determination of isotopes of U by spectrographic methods.
Bibliography on Pt-Rh thermocouples.
Use of ultrasonics to emulsify liquids.
Composition of Freon 13.
Information on suint, commonly known as wool fat.

A new procedure has been introduced which, it is believed, will reduce the complaints resulting from delays in materials ordered. In future, the Acquisitions-Catalog unit will determine the in-print status of all material before ordering. Where the item requested is out-of-print or must be imported, the requester of the material will be immediately informed of this fact and a suggestion made that the item be borrowed from another Library. In many instances, searches for out-of-print and imported items take many months, and an inter-library loan can take care of the immediate need pending location and purchase of the book.

The Library was the recipient during the month of two gifts. One of the project scientists donated a 12 to 15 year run of the "American Minerologist," and the National Institute of Health in Bethesda, Maryland, gave a very useful run of the "Journal of Industrial Hygiene and Toxicology." It is interesting to note that the lead on the latter periodical, for which we have been searching for some time, was obtained at the PNLA Library Conference and the initial contact with the Institute originated here. The Library's periodical files were also augmented by a ten-year run of the "Journal of General Physiology" and a run of the "Proceedings of the Royal Meterologi~~cal~~ Society, London" covering the period 1930 to date.

A bibliography was prepared for the Training and Development Section on the technique of leading conferences. There is considerable material available in the Library on this subject.

Study is being given to the problems of moving the book collection to the new Library and Files Building when it is ready for occupancy. The technical librarian has canvassed the experience of other librarians who have faced this problem, and special shelving and equipment to handle the moving will be designed and built well in advance of the need.

Classified Files

Work volume statistics for the Classified Files were as follows:

	October	November
Documents routed	16,741	16,626
Documents issued	6,170	7,426
Reference services rendered	4,575	4,850
Registered packages prepared for offsite	277	321
Inter-area mail sent via transmittal	34,833	34,104
Holders of Classified documents whose files were inventoried:		
(a) Because of normal perpetual inventory procedure	6	20
(b) Because of transfer of work assignment	5	1
(c) Because of termination	1	5
Inventory reductions:		
Copies of documents destroyed	3,266	4,985
Copies of documents downgraded	51	41
Copies of documents declassified	257	47
Classified documents located which were unaccounted for in previous inventory	29	30
Standard storage cartons of material retired to the Records Center		
Unclassified and Official Use Only	12	0
Classified	0	3

The work of the Audit and Inventory Unit proceeded as scheduled, and there is some optimism that the final summary may be completed earlier than originally anticipated. The summary of the HW document series is substantially completed. A separate report of documents missing in this series will be prepared for A.E.C. Security as soon as a final check is made. The 7-series, 3- series and GEH series documents remain to be summarized.

Reduction of classified document inventory through the activities of the Non-Technical Document Review Board is proceeding satisfactorily, although the volume of downgraded material could be considerably increased if more meetings were held. A "Change of Document Classification" form has been approved by the Office Services Unit as form C-241-D. This will be used to supply notification of classification changes to present holders of documents reviewed.

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Work on the manual of files procedures is proceeding satisfactorily with a final draft of the procedures for document issuance under review. The final organization plan and format for the manual has been agreed upon, and the remaining procedures will be written as rapidly as time permits.

A report setting forth some basic principles in the organization of manuals of procedures was completed and readied for issuance. This document will supply answers to many of the routine questions asked of the Classified Files regarding manuals. Unfortunately, many of the manuals previously prepared at Hanford have proven unsatisfactory in subsequent revision and control. Sound practices in the organization and format of manuals, based on extensive Files experience, will be recommended.

Considerable time was devoted during the month in preparation for changes in Hanford classified document procedures resulting from Presidential Executive Order 10290. The order re-defines the present categories of classified information, adds to the presently required Security markings, introduces a revised RESTRICTED DATA stamp, and rescinds the CAUTION stamp. Meetings were held with representatives of Security, the Design and Construction Classified Files, and Reproduction to review and draft the necessary changes in the Organization and Policy Guide. The group also drafted Security Bulletin #62 which announced these changes. In addition, an emergency purchase of the required stamps was necessary in order to make them available in Stores when the order became effective. The effect of the order on the format of the formal reports was being studied at month's end.

Retirement of the S Division's classified run books to the Records Center was covered in an earlier report. This month a cross-reference file, which will cross-reference the run number to the appropriate run book was completed. This work continues and brings up-to-date a similar cross-reference file completed by duPont for the run books issued during its administration.

Distribution lists and report format for interim and final production test reports were reviewed, since monitoring of the reports by the Classified Files is presently being done under HW-7-6333 which is now obsolete. Those concerned were contacted, and at month's end their suggestions had been assembled and a procedure forwarded for approval.

Additional copies of the Hanford Works Technical Manual, which were delayed pending receipt and printing of the binders, have now been completed and sufficient copies are available to take care of any foreseeable requests. This backlog appears necessary in view of the fact that it appears unlikely that the reproduction masters can be used again.

Information was received indicating that the Isotopes Division of the AEC, in cooperation with the Army Institute of Pathology, had developed a rather extensive series of training films entitled the "Radioisotope Series." The fourteen films in the series covered such items as fundamental radioactivity, principles and practice of radiological safety, biological effects of radiation, stable isotope, etc. It was decided to preview the films before purchasing them for project use and one of them, entitled "Methodology" has been received for this purpose. Arrangements have been completed with the Radiological Sciences Department to preview

the film to evaluate its usefulness at Hanford.

John W. Norris, of the Materials and Information Branch of the A.E.C., Oak Ridge, visited the Information Sub-Unit November 30, 1951. Application of the Standard Distribution List (M-3679) to Hanford reporting was discussed. Information problems resulting from offsite distribution of "internal reports" was also reviewed.

Central Reporting and Abstracting

Work volume statistics for this service were as follows:

	October	November
Ditto masters run	680	887
Mimeograph stencils run	1,266	1,163
Ditto copies prepared	31,176	29,916
Mimeograph copies prepared	78,765	98,205
Multilith masters typed	457	343
Multilithed copies handled	138,273	36,666
Formal Research and Development Reports issued	12	15
Formal Reports in Process	16	5
Reports abstracted	210	286
Volume of unclassified mail handled by the 300 Area Mail Room	30,366	31,171

Considerable time was spent during the month in carrying forward the responsibilities of the Information Sub-unit in connection with Hanford codes. As previously reported a revised and enlarged version of HW-18,223 (Hanford Codes and Jargon) has been underway for some months. The new document will be issued in two parts, covering presently authorized official Security codes, and a dictionary of special Hanford terminology necessary for the reading of the historical record. A canvass of those concerned indicated a Hanford need for five additional Security codes in addition to those already authorized. Request for official authorization of these codes was made to the local A.E.C. Subsequently, a meeting was held with representatives of A.E.C. Operations and Security to review the whole problem of code usage. It appears evident that some guiding principles in the use of codes as security aids are needed, as the present situation is increasingly confusing.

Approval was received for a new set of Reactor Subject Headings, worked out by one of the technical abstracters and presented to the Technical Information Service at Oak Ridge during a recent visit there. These will satisfactorily meet Hanford's needs for the subject analysis of reports in this field. One change in the submitted headings was made which was unacceptable here. The matter is being resolved with Technical Information Service.

The abstracting unit is currently at work on three major bibliographies. One is a summary of project literature on the 300 Area canning operation. The second covers project classified reports in the field of powder metal-

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lurgy. The third, being prepared at the request of the Technical Information Service at Oak Ridge, is an identification list of Hanford process buildings. This will greatly assist Technical Information Service in the understanding of Hanford reports. There is also indication that such a guide would be useful here at Hanford, and a suitable distribution list is being developed for that purpose. A letter from Technical Information Service, commending the group on a recent bibliography was received and appreciated.

Plans were completed to have the Central Reporting Service take over the final typing of the Technical Progress Letter effective with the November report. It was anticipated that this will result in an improved quality of duplicating, since the report will be prepared on paper plates for multilith reproduction.

Considerable assistance was rendered by the Central Reporting Service in the typing and duplication of the UR Manual which was given priority over routine work. One General Clerk was added to the group this month to help handle a growing work load. However, as is true throughout the Information Sub-unit, working space is now the limiting factor, and handling any further increased work load under present space restrictions will be very difficult.

INVENTIONS

All Technical Services 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 November 1951. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

Signed J. W. Underwood
J. W. Underwood, Unit Head

JWU:mcs

MONTHLY NARRATIVE REPORT

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November 1951

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DESIGN AND CONSTRUCTION MANAGEMENT SECTION

I. SUMMARY

A. ORGANIZATION

As announced and described in October, General Electric was relieved of contract responsibilities in connection with construction as of the end of November. Contract functions in connection with assigned architectural and engineering services remain the responsibility of General Electric and will continue to be performed by this Section. Certain of our former contract personnel have been released in order that they may continue their construction contract assignments with the Atomic Energy Commission.

During November the transfer of the instrument design group, formerly on loan to this Section from the Manufacturing Department, was completed.

B. SCOPE OF ACTIVITIES

At the end of the month the Design and Construction Management Section was engaged in 69 projects of which 63 have authorized funds in excess of $20,000. In addition, preliminary work was being performed on 48 proposed construction projects of which 46 are estimated to exceed $20,000. Five Research and Development projects were in progress during the month.

C. MATERIAL PROCUREMENT

Several requests for directive assistance were received during the month from lump sum contractors for materials to be used in the laboratory area projects. Information supporting these requests is being developed directly with the contractors and, where feasible, requests will be submitted for directives.

Requests submitted in August for directive assistance on various construction contractor purchase orders for copper wire were acted on as follows: At the suggestion of the National Production Authority, a change was made in the size of wire on one of the items which will enable delivery to be made as required and on the other items arrangements were made with the manufacturers for deliveries in accordance with our requirements. No directives were issued.

No final action on the request for directive assistance for the structural steel required for the Library and Files Building (C-421) has been taken by the National Production Authority. The request was forwarded to the Atomic Energy Commission in Washington D.C., on October 5, 1951.

Steady and rapidly increasing difficulties are being experienced in the procurement of critical materials, particularly structural and stabilized stainless steel. One reported difficulty is the National Production Authority requirement that a promised delivery date be obtained, which must be proved unsatisfactory, before the initial request for directive assistance can be made. Thereafter, the Atomic Energy Commission in Washington, D.C., or the National Production Authority may elect to exact a promise, as discussed in connection with copper wire above, from the producer rather than issue a directive. These promises have not proved to be as productive as directives and occasionally require repeating the routine, with an accompanying loss in time.

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D. CRAFT LABOR

Voluntary termination of C.P.F.F. construction contractors' personnel was 2.9 per cent as compared to 5.3 per cent in October.

A shortage of plumbers-steamfitters and related welders continues to affect completion schedules; 176, including 43 welders, were employed during the month resulting in a net increase of 146 for a total of 816. One hundred nineteen, including 61 welders, are on requisition.

The isolation pay dispute which affects all non-exempt construction contractor employees was heard by the 12 man Construction Industry Stabilization Commission on November 6. All employees are affected, although not all unions were represented. No decision has been announced.

As reported last month, Davis Panel hearings were scheduled early in November in connection with disputes involving the sheetmetal workers and machinists. Those hearings were conducted in Washington, D.C. on November 2 and resulted in the following decisions:

1. Sheetmetal Workers:
   a. The wage increase is to be referred to the Wage Stabilization Board as a dispute,
   b. The vacation allowance is to be increased from five to six days per year in conformity with the Spokane area,
   c. The Spokane Health and Welfare fund plan is to be put into effect if and when approved by the Wage Stabilization Board, and
   d. The isolation pay issue is to be submitted, jointly with other crafts, to the Wage Stabilization Board.
2. Machinists: The employer and union are to survey the surrounding area to determine existing wages in the industry, after which negotiations will be resumed with a Davis Panel member assisting.

The carpenters work stoppage (in objection to the continued employment of an Assistant General Superintendent), reported last month, ended November 2 upon agreement to handle the disagreement under the dispute procedure. Approximately one hundred twenty thousand manhours were lost by the construction crafts as a result of this work stoppage.

Seventy-two machinists walked off the job November 21 for approximately two days over a jurisdictional dispute with the plumbers. Resumption of work was accomplished by the union's agreement that the work belonged to the machinists.

Negotiation on a new master agreement (covering most construction crafts) was resumed November 21 with two items remaining open. They are (1) isolation pay, which presumably will be settled by the Wage Stabilization Board decision, and (2) Union Security.

The Ironworkers Union has notified the construction contractor of a desire to negotiate provisions of their schedule "A". Negotiations are currently in progress with the Spokane Building Chapter of the Associated General Contractors. Demands in Spokane include (1) a wage increase, (2) an escalator clause, (3) an interim opening clause designed to take advantage of any relaxation in Wage Stabilization Board formulas, and (4) increased travel and subsistence allowance.

Negotiations with the office workers resulted in agreement upon a wage increase.

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E. SAFETY AND SECURITY

During the month the Safety and Fire Prevention Supervisor attended the third annual Governor's Safety Conference at Olympia, Washington.

Injuries reported among construction contractors' personnel during the month consisted of 15 major, 16 sub-major and 838 minor injuries. This represents an increase in major and a decrease in minor injuries when compared with October. The increase in major injuries resulted from strains, sprains and similar causes which involved a small amount of lost time. This will increase the frequency rate but will not effect the overall severity rate to any comparable extent. The sub-major injuries, again, were small fractures, mostly of toes and fingers.

Nine automobile and two equipment accidents were reported with an estimated damage of $1,230. This is a considerable decrease over those reported last month. Twelve fires were reported with an accompanying damage of $1,600.

Five hundred ten security meetings were held and attended by 6,300 General Electric and construction contractor personnel.

F. HIGHLIGHTS OF UNIT ACTIVITIES

Contract Unit

Negotiations were conducted with Chas. T. Main, Inc., the Vitro Corporation, and the National Carbon Company for studies to be performed for new work contemplated. Sixteen contract items were completed during the month involving a net increased commitment of $885,159.35.

Twelve former contract employees were dropped from the roll at the close of the month in order to continue the contract function with the Atomic Energy Commission, effective December 1.

Design and Construction Services Unit

The contract for the painting of the administration buildings in the 3000 Area was awarded to Charles E. Barnes, General Contractor, and the notice to proceed was issued during the month. The cleanup and painting program in Cafeteria No. 2 is essentially complete, and the operator has been given an "A" card by the Deputy Health Inspector of Benton County.

Major injuries of construction contractor personnel, increased from 2 in October to 15 in November. These consisted mostly of strains and sprains and consequently will increase the frequency rate but will have little bearing on the severity rate.

The drafting work load continued to increase during November due to emphasis being placed on the Research and Development program. The reproduction work load also increased as compared to a decrease in October.

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F. HIGHLIGHTS OF UNIT ACTIVITIES (Continued)

Design and Development Unit

Recent consideration of additional design development work coupled with acceleration of the current design development schedule to provide development products required by Program "X", have resulted in an increase in Research and Development activity. This increased activity will require funds for Fiscal Year 1952 appreciably in excess of the previously authorized budget. The revised estimates are being presented through the Mid-Year Budget Review and the individual authorizations will be revised to reflect these increases in the near future.

Work continued on the five Research and Development projects which were active in October and are numbered RDA-DC-3 to, and including RDA-DC-7. A further description of those projects is included elsewhere in this report. Of the total of $853,885 which has been allocated to the Design and Construction Management Section Research and Development programs for Reactor Design Development, Separations Design Development and Mechanical Design Development for Fiscal Year 1952, $49,860 had been charged to cost by October 31, 1951.

Minor Construction Management Unit

The new work authorized to the Minor Construction Management Unit during the month of November consisted of 13 work assignments by work order and work release. Eleven work assignments were completed.

Part II of the project proposal covering the Minor Construction Fabricating Shop was approved during the month, but authorized the minimum shop requirements for winter operation. Work on the authorized changes was begun immediately.

Power and Mechanical Unit

Increases in the number of qualified welders assigned to the 100-C Water Works facility have been negligible for the past three months. It seems improbable that enough welders can be put on the job to prevent postponement of scheduled start-up on this project.

Steady and rapidly increasing difficulties are being experienced in the procurement of critical materials for all Power and Mechanical projects, particularly structural and stabilized stainless steel. The biggest stumbling block is the National Production Authority requirement that an unsatisfactory delivery promise be obtained on a given purchase order before the initial request for a directive can be made. Thereafter, the Atomic Energy Commission in Washington, D.C., or the National Production Authority may elect to exact a promise from the mill rather than issue a directive. In those cases where producers do not abide by promised delivery date, it becomes necessary to repeat the procedure.

Construction on the 100-C Water plant is approximately five weeks behind schedule for the reasons discussed above.

Project C-204-A and B was completed during the month and the final inspection was held on November 28. Only one exception was noted and will be cleared within two weeks.

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F. HIGHLIGHTS OF UNIT ACTIVITIES (Continued)

Project Engineering Unit

Work progressed during the month on 76 active project items and 3 informal requests. These figures include preparatory work as well as approved projects and requests. Five new project proposals were transmitted in final form to the sponsors. Authorizations were granted by the Atomic Energy Commission on one project as a formal directive, and a substantial allocation was made for one other on a suspense code.

Important jobs now in progress include the Ball 3X Program, the P-10 Program, Water Quality Experimental Facilities, Activated Silica Addition facilities, Pile and Pile Water Plant Improvements, Front Tube Corrosion facilities, and the 313 Mechanization program.

Project management for project C-476, Oxidation and Fluorination Equipment, Hood #8, Building 234-5 was assigned to the Separations Section. Design has been completed and no construction undertaken.

Reactor Unit

Major emphasis was focused on the RDA-DC-3 Program. The primary objectives will be those items which will result in the greatest benefits if new projects are authorized for Hanford Works in the near future. Specifically, these objectives are low capital cost, low unit production cost, and improved conversion ratio.

On project C-431-B, Production Facility, the vertical rod thimble purge system was re-evaluated. A recommendation was made to convert the system from continuous purging with decayed gas to intermittent purging with raw gas. Also, after thorough analysis, substantial relaxation of "B" block dimensional and finish tolerances was permitted.

Separations Unit

The shortage of welders continues to affect project C-362, Waste Metal Recovery Facilities. A schedule presented on November 19 established a tentative beneficial occupancy date for 221-U of January 19, 1952 and a completion date of March 1, 1952, for the C Tank Farm of Phase II, for Phase III and all portions of Phase IV of this project, which will provide for full scale production.

The construction of Part A of Project C-361, Waste Metal Conversion Facilities, was completed on November 19. A stop charge notice was issued to discontinue all Part "A" cost codes on November 28.

On Project C-413, Expansion of 234-5 Facilities, the construction contractors' indicated cost report for October 31 shows an increase of $257,000 over the August estimate for the total cost of their work. This brings the estimated construction cost to the maximum allocated in the project proposal. A complete review of these estimates is being initiated to determine whether additional funds will be required.

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G. MONTHLY REPORT OF INVENTIONS AND DISCOVERIES

All persons in the Design and Construction Management 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. 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.

J. S. McMahon, Manager
Design and Construction Management

Date: November 30, 1951

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II. STATISTICAL AND GENERAL

A. SIGNIFICANT ASSIGNMENTS

1. Initial Reporting

C-485 - Experimental Activated Silica

Part I - Additional Equipment for Building 183-F

Work in connection with this portion of the project was begun under suspense code M-611, with an authorization of $25,000, which was subsequently increased to $35,000.

At the end of the month 75 per cent of design had been completed and construction had progressed 20 per cent. The lack of detailed design on this experimental work has necessitated close supervision in the field and numerous "on the spot" design decisions.

All equipment required is on hand.

Part II - Equipment for Building 190-H

Completion: Design 50 per cent, construction has not been undertaken. A project proposal is being prepared concurrent with a review and revision of the preliminary design.

2. Final Reporting

C-204-A & B - Additions and Alterations to Kadlec Hospital and Medical Arts Building

This project is, at the end of November, completed. Final inspection on all authorized work was held November 28 and only one exception was noted, which will be cleared within two weeks.

3. Current Projects

(Hanford Works Laboratory Area)

C-199 - Expansion of 300 Area Sewage Disposal

Completion: Design 100 per cent, construction 0 per cent.

There has been no change in the status of completion this month. Design was completed previously and work in preparation for the contracting of construction had progressed to the extent that bids for construction were on hand. During the current month these bids were opened and L.H. Hoffman of Portland, Oregon was awarded the work. The notice to proceed was issued November 26, 1951, which was so late in the month that no appreciable progress can be reported.

C-257 - H. I. Control and Development Laboratory

Construction advanced 7 per cent during the month; design had been completed previously; Overall completion: design 100 per cent, construction 62 per cent.

Previously the delivery of laboratory furniture on schedule had been reported as uncertain; however, at the end of October some furniture shipments were on hand and others were enroute. All remaining items of construction material and equipment are received, excepting three which are promised on a firm basis. In addition all panel material is either on hand or enroute.

C-381 - Radiochemistry Building

Construction progressed 1 per cent during the month; design had been completed previously; overall completion: design 100 per cent, construction 4 per cent.

As has been reported previously, little additional work can be completed locally until the delivery of fabricated steel which is expected to arrive in January 1952. Construction work completed during November consisted of backfilling around basement walls, pouring floor slab and stairways and placing sub-flooring plumbing and grounding net.

C-385 - Radiometallurgy Building

Progress during the month consisted of completion of the initial .5 per cent of construction. Design had been completed previously. At the close of the month excavation was approximately 70 per cent completed.

C-394 - Plot Plan and Utilities

The completion status remained unchanged during the month; design had been completed previously and no significant construction, considering the scope of the entire project, was completed during November. Overall completion: design 100 per cent, construction 4 per cent.

Work is progressing on the badge house addition portion of the project to the extent that it is 9 per cent complete; however, that portion is small enough so as not to represent a change in the overall completion statement. Bids on the remainder of the project were opened early in the month, and the award was made to L. H. Hoffman of Portland, Oregon, with the notice to proceed being issued on November 26. This, incidentally, is the last laboratory area project to be placed under construction.

C-406 - Mechanical Development Building (Phase II)

Completion: Design 0 per cent, construction 0 per cent.

Negotiations for the design of Phase II were completed in October and a contract was prepared and forwarded early in November to the Dix Steel Building Company of Spokane, Washington, for signature. At the end of the month the contract had not been returned.

C-414 - Pile Technology Building

Progress during the month consisted of completion of the initial .4 per cent of construction. Design had been completed previously. Excavation has progressed to approximately 60 per cent completion.

C-421 - Library and Files Building

During the month construction advanced an additional 1.5 per cent for a total of 4 per cent. Design had been completed previously. The setting of forms, pouring of concrete, and plumbing work progressed as expected during the month.

C-433 - 384 Steam Plant Addition

Design advanced 11 per cent during the month and is at the end of the month 69 per cent complete. There has been no construction activity.

(End Hanford Works Laboratory Area Projects)

C-361 - Waste Metal Conversion Facilities

Construction progressed 1.5 per cent during the month. Design had been completed previously. Overall completion: Design 100 per cent, construction 96.5 per cent.

Part A, which consists of the original project, was completed on November 19, and stop-charge notice was issued. Revision II, Part II, of the project proposal covering the directed establishment of Part B of the project has been submitted to the Atomic Energy Commission.

C-362 - Waste Metal Removal and Recovery Facilities (TBP)

Design was completed during the month and construction progressed 3.2 per cent. Overall completion: design 100 per cent, construction 57.4 per cent. This project is, at the end of the month, approximately 7 per cent behind schedule, which has resulted from the shortage of plumbers and steamfitters and the recent labor unrest.

A tentative beneficial occupancy date for 221-U was established during the month as January 19, 1952. A completion date of March 1, 1952 was set for the C Farm of Phase II, for Phase III, and all portions of Phase IV, which will provide the facilities required for full scale production.

C-413 - Expansion of 234-5 Facilities

During the month 4 per cent of design was completed and construction progressed 10 per cent for an overall completion of: design 81 per cent, construction 59 per cent.

The completion status of the RMB Line fabrication being performed by the General Engineering Laboratories in Schenectady is: design 80 per cent, assembly 88 per cent which represents completion of 6 per cent of design and 7 per cent of assembly during November.

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C-413 - Expansion of 234-5 Facilities (Continued)

The construction contractors' indicated cost report for October 31 shows an increase of $257,000 over the August estimate for the total cost of their work. This brings the estimated construction cost to the maximum allocated in the project proposal. A complete review of these estimates is being initiated to determine whether additional funds will be required.

C-431-A - 100-C Water Works Facility

During the month 8 per cent of design was completed and construction advanced 7.5 per cent for an overall completion total of: design 94 per cent, construction 25 per cent.

At the end of November the project is approximately five weeks behind schedule which represents a loss of one additional week during November. This inability to maintain the accelerated schedule has been, and continues to be, caused primarily by the shortage of steamfitter-welders and also from labor unrest and the difficulties experienced in the procurement of critical materials. It is not anticipated that equipment deliveries will further delay the completion of work even though promised delivery dates have been set forward since general construction is a corresponding period behind schedule. Virtually, all purchase orders on engineered items have been placed, and those outstanding have been covered by purchase requisition.

Although two National Production Authority directives, covering steel for the 183 and 190 buildings, were issued during October and were to provide for delivery from November production, the procedure being observed on delivery of critical materials is such that delivery schedules are not known.

C-431-B - Production Facility

Completion: General Electric Company design-85 per cent, Vitro Corporation design-96 per cent and construction-18 per cent. These figures represent completion of 4 per cent of General Electric design, 7 per cent of Vitro Corporation design and 5 per cent of construction during November.

The carpenter crafts returned to work after a nine-day absence. Thereafter, all crafts except steamfitters were well balanced.

Fabrication of graphite for 105-C was started November 19. The initial stages of this operation are on a limited basis because of tooling delays and the use of only two production lines. The lack of hollow drills for the drill line is causing a serious problem in meeting production schedules. It is contemplated that the milling operation will have to be placed on a two-shift basis.

Procurement has been initiated on approximately 92 per cent of all material and equipment required. National Production Authority assistance has been requested on all orders not presently in line with the construction schedule.

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4. Research and Development Projects

RDA-DC-3 - Engineering Development Studies to Improve Design Bases for Future 100 Area Production Facilities

This project is an engineering program for the improvement of plutonium producing reactors which may be constructed in the future. During November emphasis was focused upon those program objectives and engineering problems likely to result in the greatest benefits if new projects are authorized at Hanford Works in the near future. Specifically, the primary objectives are now: (a) low capital cost (improved design), (b) low unit production cost (high total powers), and (c) improved conversion ratio (smaller lattice spacings).

Although the scope of this project includes other objectives such as power recovery, recirculating water systems, improved operating efficiency, etc., present manpower is being applied to the primary objectives mentioned above. To achieve those objectives, engineering is being concentrated on ten items and sub-projects. These are: (1) building redesign, (2) heavy aggregate concrete shield, (3) an increase in the number of process tubes from 2004 to 3220, (4) an increase in the length of the tube by five feet, (5) an improved ball 3X system, (6) elimination of vertical rods, (7) addition of an ink control system (utilizes fluid control of varying strength), (8) a reduction of lattice spacings from 8 3/8 to 7 1/2 inches, (9) process piping and downcomer redesign and (10) recirculating water system for the thermal shield cooling loop.

RDA-DC-4 - Engineering Development Studies to Improve Design Bases for Future Separations Facilities

The project involves an engineering development program based on producing preliminary scope date necessary to design a separations facility using the redox process.

Activity during the month has been concentrated on six of the thirteen studies outlined for this project, which are: (1) Vessel Design and Specifications, (2) Process Building Arrangement, (3) Remote Piping and Electrical Couplers, (4) Piping Arrangement and Specifications, (5) Ventilation of Process Buildings and (6) Use of Television in Remote Maintenance. The remaining seven studies to be undertaken more actively as conditions permit are: (1) Instrument Layout for a Central Control Room, (2) Rotating Equipment for Remotely Maintained Areas, (3) Specifications for Field Welding, (4) Waste Line Encasements, (5) Sampling of Radioactive Materials, (6) Description of Scope Material Required by Redox Type Plant and (7) Remote pH Meter for Radioactive Solutions.

RDA-DC-5 - Development of a Preliminary Design, Including Design Verification Testing of a 313 Building Canning Machine and Associated Equipment

The scope of this project has been changed to that described by the above title from "Preparation of Project Proposal for Mechanizing 300 Area Slug Canning, Finishing and Inspection Facilities." Authorization of this RDA revision is pending approval. The revision as submitted includes: (1) Preliminary engineering design, (2) design verification tests, and (3) Preparation of estimates for construction costs and work schedules for mechanization of the canning-quench and component preparation operations.

RDA-DC-6 - Process Cooling Water System Including Retention Basin, Design Development

This project is an engineering program of development studies on the reactor water systems including determination and definition of the basic scope of water plant and recirculating system for future reactor design.

Work on a recirculating water system was continued from November 1 to November 12. To continue effectively, this study would have required detailed results from the RDA-DC-3 study on the primary circulating system for the pile. This part of RDA-DC-3 is not under active study and no detailed water information on a closed system could be anticipated soon. Therefore, on November 12, work was discontinued and the conditions were revised for this project to include first priority on a "once-through" water system to be built at Hanford Works.

RDA-DC-7 - Separations Process Engineering, Expansion and Improvement

This project involves the study of chemical engineering problems relating to the expansion and improvement of separations processing in order to provide information for preliminary design of improved, revised or expanded facilities.

The major effort in this period has been in the preparation of the engineering flow sheets for the improved Redox plant in order to provide, as soon as possible, an adequate basis for preliminary structural design work contemplated under RDA-DC-4.

No change in scope is contemplated, but the force is being increased which will increase the number of items which can become active. Those studies currently active are: (1) Improved Redox Design, (2) Improved Waste Treatment and Disposal Facilities and (3) Alternate Separations Process - Purex. As conditions permit, the (1) Redox and Bi PO4 coupling to the 234-5 Process Study and (2) Increased Redox Capacity Study will be undertaken.

(For more complete coverage of activities in connection with Research and Development Projects refer to Design Development Progress Report, November, 1951, Document No. HDC 2410)

B. OTHER ASSIGNMENTS

C-187-E - Redox Analytical Plant Assistance Laboratory (Conversion of Unassigned Space for Radiochemistry Laboratory)

The completion status remained unchanged during the month at: design 100 per cent, construction 5 per cent. Design work was completed in October and no additional construction work has been accomplished.

C-192 - Biology Laboratory, Part III

Progress during the month consisted of completion of 3 per cent of design, and at the close of the period the overall completion status is: design 98 per cent, construction 88 per cent.

[redacted]

C-192 - Biology Laboratory, Part III (Continued)

A revision in the completion status figures may be expected in December, since, in November Project C-487, X-Ray Irradiation Equipment for Biological Research, was returned from the Appropriations and Budget Committee with the request that it be incorporated with this project.

C-289-R - 200 West Laundry Addition

Progress during the month consisted of completion of the initial 5 per cent of construction; design had been completed previously. Construction is being performed by the Wayne Construction Company and commenced on November 20.

C-295 - 251 Substation

Construction progressed 8 per cent during the month, design had been completed previously. Overall completion: design 100 per cent, construction 87 per cent.

The erection of steel in the present phase of this construction project is practically completed. The project is, however, about three weeks behind schedule which represents no change from the preceding month and results from difficulty experienced in obtaining competent craft labor.

C-349 - Hot Semi-Works

During the month construction progressed 10 per cent; design had been completed previously. The overall completion status is: design 100 per cent, construction 50 per cent.

A favorable schedule has been received from the process equipment subcontractor.

Construction continues to lag somewhat behind the original schedule submitted but, generally, the structural phases are in advanced stages of completion and the steel liner for the underground waste storage tank is complete.

C-364 - Aquatic Biology Laboratory

Construction progressed 9.4 per cent during the month, design had been completed previously. Overall completion: design 100 per cent, construction 13 per cent.

The exterior concrete block walls are complete as well as the outside sanitary water and sewer lines. Sub-floor interior plumbing is practically completed and pouring of floor slabs began late in the month.

C-380-R - Electricity Metering - Village of Richland

During the month construction progressed 17 per cent; design had been completed previously. The overall completion status is: design 100 per cent, construction 89 per cent.

Residential installations are essentially completed which represents completion of approximately 40 per cent of this phase of the project during November, and is that portion which was subcontracted. The Electrical Section has also completed the remaining installation work on the "prefab" units. Commercial installations are not scheduled for completion during this calendar year.

C-403 - New Fences for Distribution and 230 KV Substation

Completion: design 80 per cent, construction 60 per cent.

The completion status remained unchanged during the month since further progress is dependent upon approval of Part II of the project and the submission of the proposal is being delayed pending a work determination decision. Part I of the project has been completed.

C-404 - Primary Power Lines for Hanford

Construction advanced 52 per cent during the month making a total of 77 per cent completion. The design status is unchanged at 95 per cent.

C-409 - Riverland Elevated Water Tank

Progress during the month consisted of completion of 13 per of construction for a total of 95 per cent complete. Design had been completed previously.

The old tank and tower have been dismantled, and the new tank and piping have been chlorinated and placed in service. All plumbing and electrical work has been completed with the exception of minor items yet required to bring the installation completely within code requirements.

C-410 - In-Pile Controlled Atmosphere Experiments

Progress during the month consisted of completion of 3 per cent of construction for a total of 78 per cent. The design status remained unchanged at 95 per cent.

The transfer of the gas circulating and analyzing equipment has been delayed since the radiation level presently limits the working time on the X-1 level to one hour per day, which is prohibitive. The installation of that equipment will be resumed as soon as the radiation level can be reduced.

C-412 - P-10-X - Extraction Facilities

Progress during the month consisted of completion of 11 per cent of construction for an overall total of 85 per cent complete. Design had been completed previously.

The Manufacturing Department received beneficial use of the stripper unit during the month and, with the exception of the Metallurgical Laboratory, this provides beneficial use of all major facilities within the 108 Building. Construction of the Metallurgical facility continues with no serious material problems now apparent.

C-416 - Part II - Minor Construction Fabrication Shops

Progress during the month consisted of completion of the initial 60 per cent of construction. Design had been completed previously.

Construction is proceeding on a scope reduced by the Atomic Energy Commission which provides for only the most urgent work.

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C-418 - Additional Waste Storage Facilities - 241-TY

Design was completed during the month and construction advanced 11 per cent for an overall completion of: design 100 per cent, construction 84.1 per cent. Although the project now is somewhat behind the completion schedule, all indications point to completion of the project on schedule.

C-419 - Induction Heating Unit - Building 3732

The completion status remained unchanged at: design 100 per cent, construction 0 per cent, since this project is dependent upon facilities to be provided under Project C-451, Extension of the 300 Area Underground Electrical Power Distribution System, the construction of which has not yet begun.

C-423 - Additional Waste Evaporation Facilities - 200 East

Progress during the month consisted of completion of 27 per cent of construction for a total of 91 per cent. Design had been completed previously.

Beneficial use of the equipment was delivered late in the month which allows pre-start usage such as tank and instrument calibration. Work has started on the BX and BY farms.

C-424 - Water Quality Experimental Facilities

Completion: design 90 per cent, construction 75 per cent.

The completion figures given apply only to Part I of the project. Part I consists of experiments being performed in the flow laboratory; while Part II covers the In-Pile portion of the work. Work completed to date has been charged to suspense code and was authorized by work order. Both phases of this program are awaiting authorization by the Atomic Energy Commission.

C-430-R - Improved Lighting - 703 Building

The completion status remained unchanged during the month at: design 100 per cent, construction 0 per cent.

Bids for construction have been received and opened but the contract is not awarded at the close of the month.

C-432 - Air Raid Warning System

The completion status remained unchanged during the month, since in October all work was stopped because of an anticipated overrun in funds. During November preparatory work was completed and a revised project proposal was submitted for approval.

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C-434-R - New Bio-Assay Laboratory

A revised project proposal has been prepared and submitted for approval. This revision involves minor modifications to the project which also necessitates a revision in the former reported design completion status of 100 per cent. The project, as revised, is considered to be 90 per cent complete from a design standpoint and construction has not yet been undertaken.

C-438 - Ball Third Safety System

Progress during the month consisted of completion of 3 per cent of design for a total of 95 per cent complete. Construction has not been undertaken.

Purchase orders have been originated on all critical materials, and materials requiring an extended period before delivery can be expected, with the exception of the hoppers. The most recent U.S.R. casting specimens submitted by the Electric Steel Foundry Company have indicated satisfactory physical properties. An order for the new flexible rods and rod sections has been placed with the Western Gear Company. The detailed step by step method of fabrication and installation is being prepared through the joint efforts of the Manufacturing and Engineering Departments.

C-441 - Solvent Building

Progress during the month has consisted of completion of 9 per cent of design for a total of 95 per cent complete. No construction has been undertaken.

Further design work has been suspended pending a complete review of scope and funds required for construction.

C-442 - X-Ray Machine - 3745 A

Progress during the month consisted of the completion of 75 per cent of design and the initial 5 per cent of construction. Overall design is now 95 per cent complete.

C-445 - B-Y Telephone Exchange Additions and Changes

Progress during the month consisted of completion of the initial 3 per cent of construction. Design had been completed previously.

The construction contract was awarded to the Wayne Construction Company who began work on November 21.

C-447 - Portable Meteorological Mast

Progress during the month consisted of completion of 10 per cent of design for a total of 50 per cent complete. There will be no construction, as such, involved; but rather assembly of prefabricated parts being obtained by purchase order from vendors. Bids for this fabrication are being requested.

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C-451 - Extension of 300 Area Underground Electrical Power Distribution System

Completion: design 100 per cent, construction 0 per cent.

There was no change in the completion status during the month since design had been completed previously and approval was received during this month to invite bids for construction on a lump sum basis, for which specifications are being prepared.

C-452 - Meteorology Tower Elevator

Completion: design 100 per cent, construction 0 per cent.

There was no change in the completion status during the month. Bid assemblies were distributed in October but returned bids are not scheduled to be opened until December.

C-454 - Spectrometer Shielding

Progress during the month consisted of completion of 12 per cent of construction for a total of 25 per cent. Design remained unchanged at 90 per cent complete.

Design has been started for a new step plug and columnator which will eliminate the need for additional shielding adjacent to the spectrometer.

Equipment will be installed in the 105 DR Building during a regularly scheduled shut-down.

C-456 - Additional 13-Quad Telephone Cable BY to Point I

Completion: design 100 per cent, construction 43 per cent.

There was practically no change in the completion status during the month since it became necessary to withdraw the workmen from this project and assign them to project C-404, Primary Power Lines for the Hanford Works Laboratory Area.

C-457 - Pile Technology Office Building - 100-D

Progress during the month consisted of the initial 5 per cent of construction; design had been completed previously.

The S. S. Mullen Construction Company, to whom the construction contract has been awarded, began local activity on November 19.

C-460 - Installation of Asbestos Cement Siding and Painting Wood Trim - 272 East and West

Progress during the month consisted of completion of 85 per cent of design for a total of 95 per cent complete. Construction specifications are complete and bid assemblies are being prepared for lump sum bid advertising.

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C-461 - Maintenance Hot Machine Shop

Progress during the month consisted of completion of 10 per cent of design for a total of 70 per cent complete. Construction is scheduled to be performed by the Minor Construction Management Unit but has not yet been undertaken.

C-463 - Electrical Service to 703 Building Wing

All work covering preparation of design and specifications for contract purposes on this project has been completed and since the balance of the work will be performed primarily by plant forces, future reporting will be done by the Electrical Section.

C-468 - Horizontal Rod Mockup

Progress during the month consisted of completion of 14 per cent of construction for a total of 40 per cent complete. Design had been completed previously.

Due to the necessity for a shutdown it has been impossible to remove the electric horizontal drive unit from 105-B Building and as a result work has been stopped until the unit can be made available. This work stoppage will not be the limiting factor for the completion of this project since delayed delivery has been encountered on prototype equipment which is also required for the tests.

C-469 - Front Tube Corrosion Mock-up

Progress during the month has consisted of completion of 35 per cent of construction for a total of 50 per cent complete. Design had been completed previously.

All work has been stopped pending the delivery of the rotameters.

C-470-R - 200 West Badge House Remodeling

Progress during the month consisted of completion of 20 per cent of design for a total of 25 per cent completed. No construction has been undertaken.

The work scoped in the revised project proposal, which eliminated the addition of floor space and included the installation of a new type rack, was approved by the Atomic Energy Commission during the month and design work was resumed.

C-473-R - 100-B Automatic Dial Telephone Exchange

There was no change in the completion status during the month from: design 75 per cent, construction 0 per cent, as previously reported.

A relocation of the exchange to a position 300 feet south and a new work determination necessitated that the project proposal as submitted to the Atomic Energy Commission in October be rewritten. A revised project proposal has been submitted.

C-474 - Relocation of Exponential Facilities

Progress during the month consisted of completion of 10 per cent of construction for a total of 70 per cent complete. Design had been completed previously.

The facilities have been moved to the 189-D Building which is now an exclusion area and has been cleaned.

C-477 - Building 284-W - Fifth Boiler Addition

Progress during the month consisted of completion of 2 per cent of design for a total of 9 per cent complete. No construction has been undertaken.

C-478 - Area Fence and Minor Repairs - Excess Materials Warehouse - North Richland

Completion: design 90 per cent, construction 0 per cent.

A re-estimate during the month resulted in a change in the design completion status to that shown above. The authorization to proceed with the work has been received and design work is being scheduled to enable lump sum bids to perform work as scoped in this project.

C-479 - Replacement of Docks and Stairs on 700 Area Permanent Buildings

There was no change in the completion status during the month. Design remains 50 per cent complete and no construction has been undertaken.

The project proposal, which was submitted to the sponsor for review in October, was approved during the current month and submitted to the Atomic Energy Commission for approval and authorization.

C-480 - Remodeling 722-C Building for Office Equipment Repair

Overall completion: design 20 per cent, construction 0 per cent.

There was no change in the completion status during the month. The project proposal, which was submitted to the Atomic Energy Commission on October 31, is being reviewed and the possibility that the scope of work may be revised has been indicated.

C-482 - Pile and Pile Water Plant Improvements

There has been no design or construction work performed on this project which was initially reported in October. Part I of the project proposal was approved by the Appropriations and Budget Committee during November and provided for the procurement of critical materials for the 105-DR and H pile front face modifications and the design of the front face modifications and revisions to the 190-DR and H pumping systems.

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C-483 - Downcomer Repairs in 100-B, D, DR and H, and Replacement in 100-F

There has been no design or construction performed on this project which was reported as an engineering request in progress for October. The project proposal has now been approved by the Appropriations and Budget Committee and includes the bracing and venting of the 105-B and D downcomer, the venting repair of the 105 DR and H downcomers and the replacement of the 105-F unit. A recommendation has been drafted to install in F the cascade type similar to those in service at DR and H.

C-484 - 300 Area Administration Building

There has been no design or construction performed on this project, which was reported as an engineering request in progress for October. The project proposal was submitted to the Appropriations and Budget Committee for approval during November but has been returned with a request for additional data and information which will strengthen the proposal.

The following studies and engineering requests, involving preparatory work and scoping of future projects, were active during the month:

A-662	Reinforce and Increase Capacity of Cask Cars
A-663	Pile Technology Test and Storage Building
A-690	Soil Science Laboratory
A-691	Positive Ion Accelerator
A-692	Rest Room Alterations 716 Building
A-693	Installation of Gutters on 700 Area Buildings
A-696	Metallurgy Laboratory - 300 Area
A-701	White Bluffs Steam Plant - Automatic Firing
A-1172	Experimental One Tube Ink Facilities
A-1176	Temperature Monitor Thermocouple
E-471	Study and Recommendation for Lighting - 760 Drafting Room
2600	Duct Level Safety Showers - Building 234-5
2710	Start-Up Studies - RMA Line - Building 234-5
2711	Building 224 Waste Diversion
6010	Program X - Manpower Forecast

Project preparation work has been stopped on A-697, Pile Technology Office Building - 300 Area, since other arrangements for temporary office space in the 300 Area have been completed for this group.

[redacted]

C. RELATED SERVICES

1. Design

The drafting work load continued to increase during November due to the emphasis being placed on the Research and Development program. The reproduction work load also increased. The Returned Materials Group handled 56,000 prints during the month, which are to be destroyed.

The Project Cost and Progress Analysis group analyzed and issued a report on the elements of cost on Project C-362, Waste Metal Recovery Facilities.

The design group is lending assistance on twenty-five active construction projects. These activities are included in the project summaries above.

2. Construction

At the end of the month the population of North Richland was 6,314, which represents an increase of 62 over October. These figures do not include U.S. Army personnel.

The equipment control group has completed a survey of all Design and Construction Management Section equipment and now have a record of acquisition cost to project, depreciation and life expectancy of approximately 2,500 pieces of construction equipment.

The contract for the painting of the administration buildings in the 3000 Area has been awarded to Charles E. Barnes, General Contractor, and the Notice to Proceed has been issued.

3. Contracts

Sixteen contract items were completed during the month involving an increased commitment of $885,159.35. The major item was the contract with L. H. Hoffman, valued at $810,000 for work in connection with the Hanford Works Laboratory Area. Fifty additional contract items were in process during the month.

III. ORGANIZATION AND PERSONNEL

During November the transfer from the Manufacturing Department of an instrument design group, which began in October, was completed. This group was assigned as a part of the Design and Development Unit-Design.

The transfer of the construction contract function and certain of our former Contract Unit employees, to the Atomic Energy Commission became effective at the end of the month. Every endeavor has been and is being made to place the balance of the contract personnel, excepting those retained to handle the architect engineer function, elsewhere in the General Electric Company.

Effective November 27, W. J. Dowis relieved J. S. Parker of the responsibilities of Acting Manager, Design and Development Unit.

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Other personnel data follows:

	Beginning of Month	End of Month	Net Change
Employees on Payroll	863	853	- 10
Technical Graduates-Rotational	20	18	- 2
Business Graduates-Rotational	2	2	0
Employees on Loan to Design and Construction Management Section	9	5	- 4
TOTAL	894	878	- 16

The net change indicated above involved:

Additions to the roll	16
Deletions from the roll	30
Transfers into the Section	8
Transfers out of the Section	4

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MEDICAL DEPARTMENT

NOVEMBER 1951

General

Personnel Changes

Medical Department personnel increased from 274 to 275.

Visits

Dr. J. F. Riordan attended the annual clinical meeting of the American College of Surgeons in San Francisco.

Industrial

Employee physical examinations decreased from 2202 to 1705 due largely to a decline in construction employment. Dispensary treatments changed little from 10,865 to 10,099.

The health topic of the month "Colds", featuring a short film on the subject, was well received. No G. E. employees and 12 sub-contractor employees were treated for major injuries. One G. E. employee and 12 sub-contractor employees were treated for sub-major injuries. Sickness absenteeism figures for November are not available at this time.

Kadlec Hospital

The average daily census increased from 99.9 to 105.5 (92.9 adults, 12.6 infants). The census was 92.0 a year ago.

The remodeling and construction program is now complete. Since there is still evidence of patient crowding, approval has been received to spend the balance of the funds appropriated for the above program to add six patient rooms to the medical wing.

The occupancy rate for mixed services (all services except obstetrics) was 95.8%.

Nursing hours per patient day were 3.22 for the mixed services and 4.37 for obstetrics.

Public Health

The seasonal increase in respiratory and other infectious diseases resulted in a small increase in field visits by public health nurses.

Food handlers courses covering a period of three days were given by a restaurant sanitarian from the Washington State Health Department to managers and employees of all local restaurants. The classes were well received by the 361 who attended.

Costs (October)

Medical Department costs, before assessments to other departments were as follows:

	September	October	October Budget
Industrial Medicine (Oper.)	$ 35,653	$ 35,268	$ 36,806
Public Health (Oper.)	9,631	9,901	11,166
Kadlec Hospital (Net)	24,910	22,999	30,972
Hospital Expense Credits	3,125	3,751	2,625
Subtotal-Medical Dept.-Operations	73,319	71,919	81,569
Construction Medical (Industrial and Public Health)	15,753	16,822	13,156
Total Operations and Construction	89,072	88,741	94,725

The net cost of operating the Medical Department, before assessments to other departments was $88,741, a decrease of $331 and $5,984 below the budget.

General

Costs (Continued)

Kadlec Hospital gross cost increase of $4,707 was due to the longer month and was more than offset by an increase of $5,995 in revenue due to an increase in hospital census.

Construction industrial medical costs increased by $1,874 due to the addition of four nurses assigned to area first aid stations and a longer work month.

Industrial Medical Section

General

The number of examinations decreased from 2202 to 1705. This was due chiefly to a drop in contractor examinations. The total number of dispensary treatments also dropped from 10,865 to 10,099; however, the number of treatments increased in the 200E and 100F Areas. In the construction areas there were 741 treatments in White Bluffs, 699 in MJ-4 and 2393 in 100C.

Due to our past experience with health hazards existing on this plant and in the community, the decision was made to decrease the frequency of follow-up examinations on employees. The term "annual" examination has been dropped and the term "periodic" examination established. The periodic examination will be similar to the preplacement examination and the frequency will be based on employee category, which is determined by age, work location, and physical findings. Frequencies generally will be as follows: Group I, under age 30 each 3 years, Group II, age 30 to 40 each 2 years, and Group III, age 40 to 65 each year. Some employees, however, have medical conditions or are in locations which will require more frequent "periodic" examinations. Such employees will be examined as often as necessary. Interim examinations for selected workers in potentially hazardous locations will continue to be done and will be spaced between the periodic examinations as potential exposures and conditions demand.

The industrial physicians' scientific meeting was held on November 28th. Dr. Riordan reported on the papers heard at the American College of Surgeons meeting recently held in San Francisco. Dr. Norwood discussed his observations of the recent Las Vegas atom bomb testing as related to civilian defense.

The Chemical Hazards Committee met on November 30th. The unauthorized use of carbon tetrachloride was discussed. Other matters considered were solvent substitutions, metal cutting, pipe dipping and possible future use of certain toxic materials. Plans were made for observation of Redox and TBP operations.

The Health Activities Committee met on November 21st. The health topic on "Colds" was presented and material on this subject prepared for discussion and distribution throughout the plant.

Net cost of operations for October remained about the same. Salaries decreased approximately $200 due to the transfer of one industrial physician and an increase in nursing salaries of $700 due to the longer work month. Supply and other costs increased approximately $100 due primarily to increased maintenance costs.

	Increase or (Decrease) over Previous Month	October	September	October Budget
Administration	(362)	5822	6184	6100
Household & Property	233	5954	5721	4926
Professional Services	41	24800	24759	26540
Total Direct Expense	(88)	36576	36664	37566
Less: Revenue	297	1308	1011	700
Expense Credits	422	4180	3758	11044
Net Cost of Operations	807	31088	31895	25822

Industrial Medical Section (Continued)

General

Salaries decreased approximately $200; this was due to the transfer of one Industrial Physician resulting in a reduction of $900, and an increase in Nursing salaries of $700 due to the longer work month.
Supply and other costs increased approximately $100 due primarily to increased maintenance costs.

Two employees were observed and examined during the month in some detail for possible damage from chemical or radiation exposure. One study resulted from exposure to C ^{14} and the other from the possibility of injestion of plutonium. Neither case has resulted in significant findings so far.

Industrial Medical Section (Continued)	October	November	Year To Date
Physical Examinations			
Operations			
Pre-employment	235	170	3060
Rehire	29	20	496
Annual	74	17	1975
Interval	83	89	2739
Visitor	6	3	17
A. E. C.	13	26	184
Re-examination and rechecks	111	81	1400
Termination	150	131	1834
Sub-total	701	537	11713
Contractors			
Pre-employment	408	298	4256
Rehire	287	302	4096
Recheck	174	106	1138
Termination & Transfer	632	462	6945
Sub-total	1501	1168	16435
Total Physical Examinations	2202	1705	28148
Laboratory Examinations			
Clinical Laboratory			
Government	69	147	848
Pre-employment, termination, transfer	6393	4860	74823
Annual	395	89	10364
Recheck (Area)	534	489	14271
First Aid	34	17	219
Clinic	646	819	16019
Hospital	4666	4566	48377
Public Health	27	24	272
Total	12764	11011	165193
X-Ray			
Government	10	26	126
Pre-employment, Termination, Transfer	1020	800	11936
Annual	80	17	1976
First Aid	240	188	2272
Clinic	673	567	4021
Hospital	247	322	3241
Public Health	7	2	64
Total	2277	1922	23636
Electrocardiographs			
Industrial	15	16	187
Clinic	8	33	91
Hospital	37	24	352
Total	60	73	630
Allergy			
Skin Tests	0	0	17

MEDICAL DEPARTMENT

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Industrial Medical Section (Continued)	October	November	Year to Date
First Aid Treatments			
Operations			
New Occupational Cases	321	361	4124
Occupational Case Retreatments	1108	1175	11948
Non-occupational Treatments	3203	2917	31391
Sub-total	4632	4453	47463
Construction			
New Occupational Cases	1055	984	10808
Occupational Case Retreatments	3804	3492	37780
Non-occupational Treatments	1274	1104	11795
Sub-total	6133	5580	60383
Facility Operators	100	66	504
Total First Aid Treatments	10865	10099	108350
Major Injuries			
General Electric	0	0	4
Contractors	2	12	45
Total	2	12	49
Sub-major Injuries			
General Electric	3	1	18
Contractors	16	12	127
Total	19	13	145
Absenteeism Investigation			
Total No. calls requested	13	8	133
Total No. calls made	13	8	133
No. absent due to illness in family	0	1	1
No. not at home when call was made	2	3	29

MEDICAL DEPARTMENT

NOVEMBER 1951

Hospital Section

General

The Medical Department's roll increased from 274 to 275.

The average daily adult census increased from 87.0 to 92.9, as compared to 80.6 a year ago. This represents an occupancy percentage of 90.1% broken down as follows: Mixed Service (Medical, Surgical and Pediatrics) 95.8%; Obstetrical Service, 67.0%. The minimum and maximum daily census during the month ranged as follows:

	Minimum	Maximum
Mixed Service	57	96
Obstetrical Service	8	18
Total Adult	68	111

The average daily newborn census decreased from 12.9 to 12.6, as compared to 11.4 a year ago.

Nursing hours per patient per day:

Medical, Surgical, Pediatrics	3.22
Obstetrical	4.37

The ratio of in-patient hospital employees to patients (excluding newborn) for the month of October was 1.95. When newborn infants are included, the ratio is 1.70.

The net expense for the operation of Kadlec Hospital for October, 1951, was $22,999, as compared to $24,910 for September. Summary is as follows:

Kadlec Hospital net expense $22,999.
This is a decrease of $1,911 due to an increase of $5,992 in revenue from higher patient census and an increase of $626 in expense credits which more than offset an increase in gross costs of $4,707.

The remodeling and construction program at Kadlec Hospital was completed during November and the work was accepted from the sub-contractor, Malarkey and Moore, following an inspection by representatives of the General Electric Company and the Atomic Energy Commission.

Approval has been obtained for the addition of six rooms to our medical wing of the hospital and it is expected that bids will be requested in the near future.

Hospital Section (Continued)

General

A reorganization of the accounting service provided the Medical Department involved the assignment of M. J. Smith from the Medical to the General Accounting unit. C. A. Kremer remains in charge of medical cost accounting and J. R. Woodhead in charge of medical accounts receivable.

MEDICAL DEPARTMENT

NOVEMBER 1951

Hospital Section (Continued)	October	November	Year To Date
Kadlec Hospital			
Average Daily Adult Census	87.0	92.9	84.7
Medical	23.6	29.4	26.6
Surgical	37.6	33.5	31.0
Pediatrics	13.4	16.6	14.5
Obstetrical	12.4	13.4	12.6
Average Daily Newborn Census	12.9	12.6	12.3
Maximum Daily Census:			
Mixed Services	87	96	
Obstetrical Service	21	18	
Total Adult Census	107	111	
Minimum Daily Census:			
Mixed Services	61	57	
Obstetrical Service	6	8	
Total Adult Census	72	68	
Admissions: Adults	543	547	5738
Discharges: Adults	527	556	5718
Newborn	78	79	829
Patient Days: Adult	2696	2787	28285
Newborn	399	378	4123
Total	3095	3165	32408
Average Length of Stay: Adults	5.1	5.4	5.0
Newborn	5.0	4.8	5.0
Occupancy Percentage: Adults	84.5	90.2	82.2
Newborn	92.1	90.0	87.9
(Occupancy Percentage based on 103 adult beds and 14 bassinets.)			
Avg. Nursing Hours per Patient Day:			
Medical, Surgical, Pediatrics	3.46		
Obstetrics	4.64		
Avg. No. Employees per Patient (excluding newborn)	1.95		
Operations: Major	77	74	846
Minor	104	77	938
E.E.N.T.	89	105	802
Dental	3	1	34
Births: Live	81	76	821
Still	0	1	4
Deaths	5	4	52
Hospital Net Death Rate	.50	.31	.38
Net Autopsy Rate	20	75	44.2
Discharged against advise	0	1	12
One-day Cases	128	136	1221
Admission Sources:			
Richland	73.5	72.9	74.5
North Richland	11.8	12.1	11.8
Other	14.7	15.0	13.7

MEDICAL DEPARTMENT

NOVEMBER 1951

Kadlec Hospital (Continued)	October	November	Year to Date
Admissions by Employment:			
General Electric	69.8	70.5	71.5
Government	1.5	2.4	2.4
Facility	5.3	5.0	4.6
Contractors	19.0	19.0	16.5
Schools	1.1	.6	1.3
Military	.4	.7	1.7
Others	2.9	1.8	2.0
Hospital Outpatients Treated	477	399	5056
Physical Therapy Treatments			
Clinic	193	200	1557
Hospital	160	193	1095
Industrial: Plant	127	84	1377
Personal	6	10	195
Total	486	487	4224
Pharmacy			
No. of Prescriptions Filled	3268	3359	34597
No. of Store Orders Filled	730	752	7745
Patient Meals			
Regulars	4929	4775	47013
Specials	1310	1579	14205
Lights	1	0	112
Softs	852	1024	13230
Tonsils	187	191	1644
Liquids	302	188	2485
Surgical Liquids	67	72	856
Total	7648	7829	79545
Cafeteria Meals			
Noon	1883	1786	17140
Night	284	261	2657
Total	2167	2047	19797

MEDICAL DEPARTMENT

NOVEMBER 1951

Public Health Section

General

A slight rise was noted in the communicable disease picture, particularly in the reports received on scarlet fever, and german measles and poliomylotis. Reports were delayed due to the diagnostic problems involved.

The public health nurses field visits increased approximately, up to date, 8 per cent. This was due to the rise in the communicable disease, preschool, and morbidity visits. Generally speaking, there was a slight rise in illness in the community which can be expected during this season.

During November the Social Service Counselors participated in a screening clinic where a group of school children showing growth failure were examined for physical and emotional defects. Where the problem appeared to be based on emotional tensions, parents were offered assistance in bringing about environmental modifications which should prevent further breakdown in the child.

Dairy farms were inspected during the month and sanitary conditions were found satisfactory. Two dairy farms were approved for the shipping of Grade A milk. Pasteurized milk samples taken during the month indicated an acceptable quality.

A food handlers training course was held for three days. The first session was held for restaurant owners and managers. A total attendance of 47 was present. Four sessions were held on the following two days for waitresses and cooks, the evening session being a repeat of the afternoon. A total of 361 attended these sessions. Mr. Arthur Robinson, who is advisory restaurant sanitarian for the Washington State Health Department, conducted the classes. Reaction to the classes was favorable. Representatives from all food handling establishments in Richland and North Richland attended with the exception of one. Cafeteria personnel from Richland Public Schools, Kadlec Hospital, and mess sergeants from the U. S. Army stationed at Camp Hanford also attended these classes. Plans are being formulated to have food handlers attend a short food handler class conducted by a member of the local health department before receiving a health card.

Several insect control investigations were made during the month. Methods relative to control were given.

MEDICAL DEPARTMENT

NOVEMBER 1951

Public Health Section (Continued)	October	November	Year to Date
Education			
Pamphlets distributed	11470	11000	113136
News Releases	0	0	0
Staff Meetings	2	2	15
Classes	8	9	40
Attendance	385	546	1257
Lectures & Talks	13	5	61
Attendance	763	149	2047
Films Shown	5	1	32
Attendance	213	15	1374
Community Conferences	50	47	412
Radio Broadcasts	0	0	0
Immunizations			
Diphtheria	18	63	218
Diphtheria Booster	137	0	464
Tetanus	19	83	730
Tetanus Booster	159	0	631
Pertussis	16	61	128
Pertussis Booster	45	0	344
Rocky Mountain Spotted Fever	0	0	8
Rocky Mountain Spotted Fever Booster	0	0	2
Typhoid	0	0	17
Typhoid Booster	0	0	0
Smallpox	170	17	278
Smallpox Revaccination	0	0	277
Tuberculin Test	10	1	42
Social Service			
Cases carried over	55	67	871
Cases admitted	26	11	184
Cases closed	14	13	199
Remaining case load	67	65	856
Activities:			
Home Visits	8	4	229
Office Interviews	220	224	2342
Conferences	56	49	709
Meetings	5	8	134
Sanitation			
Inspections made	101	139	1475
Conferences held	12	23	144
Bacteriological Laboratory			
Treated water samples	279	233	2370
Milk samples (inc. cream & ice cream)	10	19	140
Other bacteriological tests	261	263	2718
Total	550	515	5228

MEDICAL DEPARTMENT

NOVEMBER 1951

Public Health Section (Continued)	October	November	Year to Date
Communicable Diseases			
Amoebic Dysentery	0	0	1
Chickenpox	4	3	384
Erysipelas	0	0	7
German Measles	4	10	106
Gonorrhea	0	0	1
Histoplasmosis	0	0	1
Impetigo	4	2	10
Influenza (Upper Respiratory Infection)	0	0	3092
Malaria	3	0	3
Measles	0	0	1115
Meningitis	0	0	2
Mumps	1	0	24
Salmonellosis	0	0	2
Pinkeye	1	2	16
Poliomyelitis	0	4	6
Rheumatic Fever	0	2	5
Ringworm	0	1	27
Roseola	1	0	15
Scabies	0	0	4
Scarlet Fever	1	4	56
Syphilis	0	0	21
Tuberculosis	1	1	10
Vincent's Infection	0	0	2
Whooping Cough	0	0	8
Total	20	29	4918
Total No. Nursing Field Visits	571	618	8393
Total No. Nursing Office Visits	186	233	1529

MEDICAL DEPARTMENT'S PERSONNEL SUMMARY

November 30, 1951

		Physicians	Nurses	Anesthetists	Nurse Aides	Orderly & Am. Dr.	Technicians - Clin. Laboratory	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 NR Area	Department Admin	2	2								2	1		3	4.0									1	2	1	18.0
	Industrial	3	8		1							2	1		8.4								4.4				27.8
	Hospital	2	62*	3	25	4	8.4	4	1	1		4			9.5	3	2	5	12				8.0			7	160.9
	Public Health	1	7		1							2			1.1					2	2	1	.6				17.7
Outlying Areas	Industrial	2.7	1				2.0	1							7.0								.7				14.4
	Public Health		2																				.3				2.3
	M.J.-4		1																								1.0
	100-B	.1	1				.2								.3												1.6
	100-D	.1	4												.3												4.3
	100-F	.1	4				.4								.2												4.8
	100-H	.1	1				.2								.2												1.6
	241-TY		1												.3												1.3
	200-E	.2	4				.2								.4												4.7
	200-W	.3	5				.6								.3												6.2
	300	.2	1																								1.2
	100-C	.2	4												1.0												5.2
	White Bluffs		1																								1.0
	101		1																								1.0
	TOTAL	12	110	3	27	4	12	5	1	1	2	9	1	3	33	3	2	5	12	2	2	1	14	1	2	8	275

* 4 part-time and temporary nurses included

Number of employees on roll:

Beginning of month	274
End of month	275
Net increase	1

RADIOLOGICAL SCIENCES DEPARTMENT

NOVEMBER, 1951

Summary

Three Class II and five Class I radiation hazards incident investigations were reported. This frequency continued to be abnormally high.

Emission of I^{131} from the separations plant stacks was approximately down to appropriate levels. Due to the vagaries of the meteorological patterns, the iodine deposition in the Lower Columbia Basin (e.g., Bonneville) was temporarily more severe than in the Tri-City area. Radioactive particle deposition was widespread, and clearly ascribable to pollution from the Nevada atomic bomb tests.

No deviation of major significance was revealed by other control programs.

The research and development activities progressed at a favorable pace. In particular, an important phase of the tritium metabolism program was completed. Results to date in the toxicology of I^{131} in sheep were exhibited at the annual meeting of the Radiological Society of North America.

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RADIOLOGICAL SCIENCES DEPARTMENT

NOVEMBER 1951

Organization

The composition and distribution of the force as of 11/30/51 was as follows:

	100-B	100-D	100-F	100-H	200-E	200-W	300	700	P.G.	Total
Supervisors	0	0	4	0	1	6	11	5	0	27
Engineers *	1	0	32	0	3	22	17	5	0	80
Clerical	0	0	5	0	0	2	4	4	0	15
Others	15	4	45	4	28	74	54	11	7	242
Total	16	4	86	4	32	104	86	25	7	364

*includes chemists, biologists, etc.

Number of employees on Payroll	November 1951
Beginning of month	361
End of Month	364
Net increase	3

Added to the roll were three inspectors, two personnel meter clerks, one technical graduate, one steno-typist, one electron microscopist, one field clerk, one laboratory assistant, and one physicist. Removals included two personnel meter clerks, one biological scientist, one badge worker, one laboratory assistant, one field clerk, one technologist, and one steno-typist.

General

The emission of I^{131} from the separations plant stacks occurred in quantities approximating but not yet achieving acceptable limits. The department has proposed that the average daily emission should not exceed 1 curie per stack. This was based on experience with two plants, and should preferably have been given as 2 curies per day total. During November, the average daily emissions were 2.2 and 1.3 curies in the East and West Areas, respectively. This gave depositions just within limits in the Tri-City area, but just beyond limits at isolated areas as remote as Bonneville Dam. Obviously, the proposed total emission of 2 curies per day is not too stringent with the present limits; in fact, it is only tolerable by assuming that the experimental animal farm program is sufficiently advanced to guarantee some future increase in limits. If this biological research had not been done,

it would now be necessary to require additional engineering toward the removal of I^{131}, or a delay in production to reach increased cooling time. Either of these would represent a cost greater than the monies that have gone into the relevant research.

Particle deposition from the Nevada tests of the Commission was again prominent. No possible question as to the origin of the particles exists, because the nature of the particles was determined by radiochemical analysis, and their time of arrival in six principal waves in October and November was broadly related to the known movements of air masses.

The rate of occurrence of radiation hazard incidents continued to exceed all previous experience before the reorganization of the Nucleonics Division. Fortunately, no incident was of such severity as to lead to expectation of significant harm to any individual; nevertheless, the basic reasons for these incidents were examined carefully so that either improvements in local management of hazards may be stimulated, or broad changes in the organization of radiation protection proposed, if deemed necessary.

The following trips were reported:

F.E. Adley - Nevada tests.
M.L. Barad - U. of Washington, Meteorology.
R.F. Foster - U. of Washington, Fisheries.
C.C. Gamertsfelder - Princeton and Yale (recruiting).
H.A. Kornberg, H.M. Parker - Rad. Soc. of N.A., Chicago, Illinois.
H.M. Parker - Lab. Design Conference, Washington, D.C.
W.C. Roesch - Argonne National Lab., Chicago, Illinois.

Thirty-three colored transparencies of the experimental animal farm program and results were exhibited at the Radiological Society meeting.

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

[redacted]

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Radiological Sciences Department

RADIOLOGICAL RECORDS AND STANDARDS SECTION

1. Radiation Monitoring Services

General Statistics

	October	November	1951 to Date
Special Work Permits	661	694	5972
Routine and Special Surveys	1468	1542	10516
Air Samples	1292	1422	5788
Skin Contamination Cases	39	179	303

Urinalysis on one metal line operator in the P-10 operation showed activity densities as high as 34 μc tritium oxide/liter. All other such samples analyzed for tritium oxide were less than 20 μc/liter.

During a critical mass experiment, six persons were overexposed to neutron and gamma radiation when the reactor went out of control. The safety devices shut down the system automatically and prevented prolonged exposure. The maximum individual exposure was estimated to be 600 mrem.

In control laboratories, 820 non-regulated items and 75 floor locations were found contaminated. A laboratory worker received skin contamination of 40,000 d/m when the contents of a pipette were discharged onto the right thigh and leg. The contamination was easily removed.

Three construction workers were overexposed while hand digging on top of the 109-TX tank. The work was being done without the required Special Work Permit.

2. Standards

Three Class II incidents and five Class I incidents were investigated. The Class II incidents involved overexposures during work at the 241-TX tank farm (No. 23), during work associated with a ruptured slug removal in the discharge area at 105-D (No. 24) and during a critical mass experiment at P-11 (No. 25). The Class I incidents involved a plutonium spill in a section of the 234 building used part time by construction personnel (No. 182), an explosion in the 235 building (No. 183), unauthorized entry to tank farm areas (No. 184), contamination of employee during spill of plutonium (No. 185), and minor spread of contamination to a home in Richland (No. 186). In none of these incidents was the exposure such as to cause concern for the welfare of the individuals involved.

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Radiological Sciences Department

3. Exposure Records

Personnel Meters, and Records and Photometry **

Pencils

Area	Single Readings 100-280 mr	Paired Readings 100-280 mr	Single Readings Over 280 mr	Paired Readings Over 280 mr	Lost Readings	Pencils Read
100-B	25	0	54	0	1	18,295
100-D	33	3	69	0	0	17,173
100-F	26	3	42	0	1	15,031
100-H	10	0	19	0	0	10,164
200-E & N	20	0	83	0	2	31,651
200-W Const.	16	5	45	0	0	11,525
200-W	63	1	138	1	4	42,601
Redox	1	0	0	0	0	42
300	13	0	53	0	0	25,565
Total	207	12	503	1	8	172,047
Total to Date	2,193	70	3,763	56	71	1,803,218

Of the 13 significant pencil readings reported, 9 were confirmed by badge results.

Badges

Area	Number Readings 100-300 mrep	Number Readings 300-500 mrep	Number Readings 500-1000 mrep	Number Readings Over 1000 mrep	Lost Reading	Badges Pro-cessed
100-B	70	10	3* 1	2*	0	2,920
100-D	88	5	0	0	1	2,848
100-F, P-11,101	51	6	1	0	0	2,733
100-H	31	2	0	0	1	2,171
200-E	71	1	0	0	5	2,572
200-N, R.R.T.	0	0	0	0	0	586
200-W	177	1* 5	1	0	2	5,224
Redox	0	0	0	0	0	898
300	140	4	0	0	1	9,213
Total	628	34	6	2	10	29,165
Total to Date	5,024	332	91	21	~~10~~ 120	287,999

*Over 300 Gamma

**Tables presented are inverted with respect to previous reports because they have outgrown the page width.

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Lost readings were accounted for as follows:

Badge lost in area	2
Lost in processing	3
Light leak	4
Wet packet	1
Total	10

Lost badge readings are routinely investigated to determine possible exposure Such investigation completed during the month indicated low probability of overexposure.

Badge Resume, Construction Areas

Area	Number Readings 100-300 mrep	Number Readings 300-500 mrep	Number Readings 500-1000 mrep	Number Readings Over 1000 mrep	Lost Reading	Badges Processed
100-C	0	0	0	0	3	2,300
200-E	4	0	1	1*	8	3,859
200-W	2	5	2	0	1	4,916
Total	6	5	3	1	12	11,075
Total to date	240	30	14	2	41	93,817

*Over 300 Gamma

Total badges processed 1951,	Operation	287,999
	Construction	93,817
	Total	381,816

In addition to the badge program, a total of 1,752 items of a non-routine nature were processed during the month.

Slow Neutron Pencil Summary

	100-B	100-D & 100-DR	100-F	100-H	Total	1951 To Date
Number of pairs issued	0	87	11	199	297	4358
Number of significant readings	0	27	0	4	31	283
Number of significant readings (above 50 mrem)	0	0	0	0	0	12

Radiological Sciences Department

Neutron Film

Badges Processed	100-B	100-D	100-F	100-H	200-W	300	Total	1951 To Date
Personnel	9	70	39	91	67	4	280	3,522
Special	0	0	12	0	18	4	26	282

Bio-Assay

Plutonium Analysis:

Number of samples	-	568
Spikes and blanks	-	82
High reading	-	0.54 d/m
Resample from last month	-	< 0.33 d/m

Fission product analysis:

Number of samples	-	500
Spikes and blanks	-	70
High readings	-	none >10 c/m

Uranium analysis

Background studies were conducted in conjunction with the start-up of 202-S and 224-U. The results were as follows:

Building	No. Samples	Average (µg/liter)	Maximum (µg/liter)
202-S	206	0.4	5.3
224-U	34	0.5	3.6

Results of the 254 samples taken from Metal Preparations personnel were as follows:

	[illegible] µg/liter			[illegible] µg/liter		
Job Description	Maximum	Average	Number Samples	Maximum	Average	Number Samples
Canning	14	4	36	4	1	23
Machining	57	10	30	25	6	32
Melt Plant	34	11	18	20	7	30
Material Handling	37	12	9	21	12	11
Inspection	14	4	10	8	4	9
305 Building	1	1	2	2	2	2
Coverage	12	3	4	11	6	4
Clerical	2	1	2	8	5	2
Car Unloading	41	12	16	37	4	14

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Tritium analysis:

	Activity Density $\mu c/cc \times 10^3$						
	<2	2-5	5-10	10-20	20-35	35-65	>65
No. Samples-Operating Personnel	758	112	15	7	6	0	0
No. Personnel involved	114	20	6	2	1	0	0
No. Samples-Construction Personnel	228	0	0	0	0	0	0
No. Personnel involved	52	0	0	0	0	0	0

Thyroid Checks

One positive thyroid count was recorded in the 3706 building on an uncalibrated counter. All other thyroid counts were below the warning level.

Hand Score Summary

There were 45,129 alpha and 61,329 beta hand scores reported. About 0.09% of the alpha and 0.06% of the beta scores were high. Decontamination was attempted and successful for all high scores.

4. Calibrations

	Number of Routine Calibrations		
	October	November	1951 to Date
Fixed Instruments			
Gamma	201	231	2,728
Portable Instruments			
Alpha	261	215	3,091
Beta	545	441	6,394
Gamma (Radium)	1,100	878	12,507
X-ray Scanning	3	7	65
Special X-ray		8	8
Neutron	6	7	33
Total	1,915	1,556	22,098
Personnel Meters			
Beta	783	798	8,805
Gamma (radium)	8,385	5,611	70,312
X-ray	7,691	7,032	51,582
Neutron	707	546	1,539
Total	17,566	13,987	132,238
Grand Total	19,682	15,774	157,064

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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 Company well	alpha	1.5×10^{-8}
Richland, N.Richland, Benton City wells	alpha	$1\text{-}8.5 \times 10^{-9}$
100 Areas	beta	$5\text{-}23 \times 10^{-8}$
Pasco, Kennewick, McNary Dam	beta	2.7×10^{-7}
Backwash solids-Pasco Filter Plant	beta	4×10^{-2} (µc/gm)
Backwash liquids -Pasco Filter Plant	beta	3.8×10^{-7}
Sand filter -Pasco Filter Plant	beta	2.4×10^{-5} (µc/gm)
Anthracite filter -Pasco Filter Plant	beta	2.9×10^{-4} (µc/gm)
Other waters		
300 Area wells #1,2 and 3	alpha	$2\text{-}5 \times 10^{-8}$
300 Area well #4	alpha	1.9×10^{-7}
Well #4 measured as uranium	U	2×10^{-7}
48 wells in the reservation	beta	$< 5 \times 10^{-8}$
Columbia River - Hanford Ferry	beta	5.8×10^{-6}
Columbia River - Patterson to McNary	beta	$4\text{-}7 \times 10^{-7}$
Columbia River - shore mud	beta	$1\text{-}20 \times 10^{-5}$ (µc/gm)
Raw water - operating areas	beta	$2\text{-}7 \times 10^{-7}$
Pile effluent retention basins	beta	$1\text{-}2 \times 10^{-3}$
Pile effluent retention basins	alpha	$< 7.5 \times 10^{-9}$
I^{131} in farm wastes	I^{131}	3×10^{-6}
I^{131} in Columbia River - Hanford	I^{131}	5.7×10^{-8}
Atmospheric Pollution		
Gross alpha emitters	alpha	$5\text{-}70 \times 10^{-15}$
Gross dose rate -Separations Areas	beta-gamma	~ 1 mrep/day
Gross dose rate -residential areas	beta-gamma	0.3 - 0.8 mrep/day
Filterable beta -Separations Areas	beta	$\sim 2.5 \times 10^{-12}$
I^{131} -Separations Areas	I^{131}	3.4×10^{-12}
* Active particles -Wash, Idaho, Oregon, Montana	--	0.2-1.3 particles/meter^3
* Active particles -Hanford Works	--	1-2 particles/meter^3
Tritium (as oxides) -Riverland to Hanford	T	$5\text{-}22 \times 10^{-9}$
Tritium (as oxides) -Reactor stacks	T	$\sim 4 \times 10^{-8}$

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* Substantial increases in the items denoted by asterisks were clearly ascribable to atomic bomb tests.

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Vegetation	Activity type	Average Activity Density µc/gm
Environs of separations areas	I^{131}	$7\text{-}11 \times 10^{-2}$
Residential areas	I^{131}	$3\text{-}5 \times 10^{-6}$
Eastern Washington and Oregon	I^{131}	trace to 1.2×10^{-5}
* Non-volatile beta-emitters-Wash.& Ore.	beta	$\sim 3\text{-}30 \times 10^{-5}$
Alpha-emitters -Separations areas	alpha	up to 4×10^{-7} µc/gm

Analytical Control Laboratory

Routine analyses were carried out as follows:

Laboratory	Analyses Completed November 1951	Analyses Completed 1951 to Date
Type Sample		
Vegetation	1640	18,369
Water	2040	21,303
Solids	397	3,583
Air Samples	513	4,224
Fluorophotometer	492	6,062
Special Survey Analyses (RMU)	26	325
AEC Fall Out Samples	446	712
Dow Background Study (Vegetation Alpha)	130	130
Total	5684	54,708
Counting Room		
Beta measurements (recounts included)	6335	60,224
Alpha measurements (recounts included)	3617	39,607
Control Points (beta and alpha)	2590	27,667
Decay curve points	3061	32,076
Absorption curve points	156	2,702
Total	15759	162,276

A revised ether extraction procedure for the determination of alpha activity in soil has demonstrated both improved yield and simplification of the extraction procedure.

Analysis of pile effluent water has continued with emphasis on fission product determination. The presence of Sr^{91} and Sr^{92} has been confirmed by chemical analysis, decay, and absorption study. Composite activity density of these two isotopes in the effluent averaged 1.7×10^{-5} µc/cc.

[redacted]

* Substantial increases in the items denoted by asterisks were clearly ascribable to atomic bomb tests.

Radiological Sciences Department

Further indication of the presence of fission products in pile effluent has been noted in the presence of I^{131} with average activity density of 1.0×10^{-6} µc/cc, Ba^{140} with average activity density of 4×10^{-7} µc/cc, and the unidentified rare earth fraction previously reported with activity densities as high as 2.0×10^{-4} µc/cc. The definite source of the fissionable material producing these fission products has not been determined, although measurements on the inlet water indicate an average of 0.50 µgm U/liter, and recent smears from slugs prior to pile admittance indicated from 10-50 µgm of easily removable uranium per slug.

Heavy water from a production plant contained tritium as oxides to the extent of 0.2 µc/cc.

Data Analysis

Analyses included fall-out data for AEC, scaler air monitoring data at Hanford Works, and a correlation analysis of power level versus activity densities at selected spots in the Columbia River. A calculation of quality control limits for the chemical procedures in the Control Laboratory was completed.

Synoptic Meteorology

Forecasts	November 1951 Number Made	Percent Reliability
Production	90	77.9
24-hour	60	79.1
Special	29	86.2

Temperatures were generally below normal during the first 25 days. On the 26th, however, the first of a series of warm fronts passed the station, and very mild temperatures followed. The overall monthly average was 39.5, or 0.5° below normal. The highest was 60° on the 30th. The lowest was 23° on both the 2nd and 16th.

Precipitation totalled 0.82 inch, or 0.07 inch below normal. Fog occurred on eight days, and was dense during a portion of each of these days.

A gust of 72 mph at 400 feet was reached during a strong wind of short duration on the 28th. This was the highest speed recorded at the station since January 15.

Wind speeds for the month as a whole at the 50-foot level averaged 0.8 mph below the November average for the first 5 years of record.

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ENVIRONMENTAL HAZARDS AND GENERAL STUDIES UNIT

1. Experimental Meteorology

A routine analysis has been organized for the network of meteorological field station wind records to make use of IBM machines.

Three field tests were made with smoke generators located at various heights on the tower, and observations both visual and photographic were made from the tower, from an airplane, and from the ground. Analysis of the data indicated that during inversion conditions, lateral diffusion decreased with elevation in the first few hundred feet of the atmosphere.

A special test of oil fog samplers was made with a ground generator to determine their applicability to the whole program. The samplers were placed in an arc about 100 meters downwind from the generator; the crosswind concentration curve determined from them was roughly bell-shaped, as is to be expected from diffusion hypotheses. In addition, the peak concentration was found to be 39 mg/m^3 as compared to a value of 48 mg/m^3 predicted from Sutton's hypothesis, and the time mean width was observed to be 38 meters, as compared with a mean value of 35 meters which was obtained in British tests.

2. Geology-Hydrology

Ground water contamination in the 200 Areas remained at previously established levels. Nitrate ion analyses confirmed the southeastward movement of the ground water in the 361-T Area. No significant change was detected in the ground water contamination in the 300 Area. Nitrate analyses on samples taken from the 300 Area in September indicated the same pattern as the radioactivity.

Waste liquid from the 224-T and second cycle 5-6 crib and tile field moved southeastward toward the 241-TY tank farm construction area at a depth of about 30 feet below the bottom of the excavation.

3. Soil Science

Particle size distribution analyses of soil samples by the pipette technique were completed for soil samples from test wells by conventional drilling methods and for undisturbed samples from the same wells. It was found that the drilling: (1) increased the percentage of gravel (particles bigger than 2 mm. diameter) by a factor of 10; (2) did not appreciably affect the sand fraction (2.0 to 0.02 mm.), and; (3) caused a reduction by a factor of two for the silt (20 to 2 μ), and clay (less than 2 μ) fractions.

Equilibrium experiments on the effect of pH on the adsorption of Zr-Nb in soil indicated a definite decrease in the removal of Zr-Nb in the vicinity

of pH 10, similar to the decreases at this point observed previously for plutonium, ruthenium, and cerium. Removal was better than 99% at pH values of 6 and 14, and only 82% at pH 10.

Process waste solution run through laboratory soil columns showed the predominant transmission of radioruthenium found in the field. The mechanism remains to be studied.

4. Industrial Hygiene

Four stage British Cascade Impactors for the stack effluent problem have been calibrated with flow metering devices to determine pump requirements. Laboratory tests were successful in removing iodine activity from cascade impactor plates by the application of heat so that particle activity counts could be made without interference.

Tests of efficiency for the cascade impactor and MSA pleated filters were made as a final step in the study of the uranium dusts and fumes in the 314 Building.

5. Methods

The variation in yield of the electrodeposition of plutonium with total current and plate size was investigated with plating areas of 10 to 126 square mm.

The electrodeposition procedure for ruthenium was further tested with 19 samples. The average yield of 82% was lower than the preliminary work would indicate, but the standard deviation of 5% was acceptable. Additional tests on interference from other isotopes indicated that little difficulty would be encountered. Some attempts are being made to plate from a basic solution to serve as a supplementary method to the one now available. Attempts to remove ruthenium from vegetation samples were unsuccessful, either due to a formation of complex ions which inhibit future precipitation or to the formation of a volatile oxide.

Ten new portable air samplers using the Trico-Vacuum booster pump and a 6-volt storage battery were put into use during the month. The capacity of these pumps is approximately one cfm with no restriction and about 0.5 cfm against a head of 20 inches of water. The maximum length of operation on one battery charge is about 7-8 hours.

An acceptable procedure for the analysis of thorium in miscellaneous samples was developed. This procedure involved solution of the sample followed by counting of the thoron gas, continuously flushed from the sample with an argon-methane mixture into a proportional counter. The analysis of several

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samples from Arco and Hanford by this technique indicated values between 50 and 100 μg/g of soil, in agreement with literature values. Tests on the procedures for U and Pu in vegetation were continued with reasonable results obtained with U and somewhat erratic results with Pu. An attempt is being made to analyze samples of effluent water directly from the pile for noble gas (particularly Xe^{133}) content.

6. Radiochemical Standards

Repeated runs using hydrogen generated from water and tritium oxide as a component in alcohol-argon GM tubes confirmed earlier runs giving an apparent 50% counting yield. These runs were made in a manner to insure the complete reaction of all water present to hydrogen and calcium hydroxide. Low partial pressure water vapor counting was studied in lieu of hydrogen filling. The method appeared to be feasible, since plateaus were satisfactory. Again low values were reported for the counting yield as compared to the reported value of the tritium concentrations of the water used.

A P^{32} sample calibrated by the U.S. Bureau of Standards was calibrated using end mica window counters. The value obtained was 1.8% lower than the U.S.B.S. value for aliquots mounted on very thin films. For aliquots dried on stainless steel plates, our value was about 3% high. Repeated backscatter measurements for stainless steel did not reconcile the difference. This same difference was obtained at different geometries.

Self-scatter and self-absorption measurements were made on I^{131} and Ru^{106}-Rh^{106}.

RADIATION MEASUREMENTS

1. Physics

Some data taken earlier with a Victoreen 0.25r chamber has been analyzed to show that when the chamber is used with 17 Kev X-rays, a correction factor of 1.34 is required.

Measurements of the beta flux above a thorium disk have been made in the same manner as was reported last month for uranium. The specific ionization was found to be 68 ion pairs per cm., a value which is slightly uncertain because the thorium is not in equilibrium and the change in surface dose-rate was calculated from previous measurements.

The neutron scintillation counter was improved and tests indicated a sensitivity of 0.4 c/m per neutron/cm^2/sec. The system was insensitive to gamma radiation from radium in fields up to 20 r per hour.

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2. Instrument Development

In cooperation with Biology, attempts were made to count tritium oxide solutions with a scintillation counter. Terphenyl in dioxane was used as the scintillator and 1% water solution of tritium was added. The efficiency of the system was found to be about 0.05%. It appeared impractical to obtain sufficient gain in efficiency to approach that of a hydrogen-filled internal geiger counter. Some additional work was done on "Pete" probes and improved plateaus obtained by using a three-diode limiter. The air monitoring chambers for tritium were corrected and installed.

An experimental survey instrument of the zeuto variety was completed, and gave satisfactory calibration results. The instrument has a seven second operating time constant and full-scale sensitivity of about 1500 d/m. A C.P. meter was equipped with a thin wall chamber, calibrated, and placed in service. A C.P. meter with a Chalk River circuit was worked over to correct certain mechanical weaknesses in preparation for use with a chamber designed to give equal beta and gamma sensitivities when monitoring radiation fields.

The sample changer was completed from the standpoint of mechanical design and most of the transient troubles corrected. The G.M. counter interval detector has been built into a unit suitable for field use, but laboratory tests were not completed. Failure of the high quality synchroscope delayed the work considerably.

The ultra-violet smoke detector was used in several field tests, where its over-all performance proved acceptable at a sensitivity of 2 mg/m^3.

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Radiological Sciences Department

BIOLOGY SECTION

AQUATIC BIOLOGY UNIT

Biological Chains

1. Algae-Trout Relationships

Feeding of radioactive algae to trout held in 5% pile effluent water continued with no adverse effect observed. Lower water temperatures slowed the feeding rate of the fish, and their activity density therefore decreased.

2. Retention Basin Algae Control

Anti-fouling paint obtained from the Navy was applied with spray equipment to about 750 square feet of the north wall of the west side of the 107-F Retention Basin. Small test patches of four other types of anti-fouling paint were also placed on this wall for comparison studies. The durability of this paint, and its effectiveness in inhibiting algal growth, will be studied over the next several months under normal operating cycles of this basin. Three of the paint types are also being tested on a metal surface primed with red lead.

Ecology

1. Survey of the Columbia River

Hydrographic conditions during the month were ideal for shore collecting operations. Mechanical difficulties with the boat disrupted plankton sampling schedules, however. The activity density of the bottom algae again increased to a new all time high; that of the plankton remained at about the same level, while the radioactivity of all higher forms decreased with the falling temperature and slower metabolic rates. The following average values were observed at the Hanford station where highest radioactivity is usually observed: plankton, 1.6×10^{-2} $\mu c/g$; bottom algae, 5.2×10^{-3} $\mu c/g$; caddis fly larvae, 4.2×10^{-3} $\mu c/g$; small fish, 1.5×10^{-3} $\mu c/g$. For large fish, a maximum of 4.9×10^{-3} $\mu c/g$ was found in the bone of a sucker, and was associated with 4×10^{-4} $\mu c/g$ in the muscle.

A third aerial survey of chinook salmon spawning in the river revealed approximately 300 nests. This indicated no decline in the local salmon population from the parent year of 1947, even though this year's fall run in the river as a whole was only about 40% of that in 1947. This observation may prove to be a vital part of the proof of the absence of radiation damage to the salmon population.

[redacted]

Effluent Monitoring

1. Effect of Pile Effluent on Rainbow Trout

Regular monitoring of the area effluent with salmon was again initiated on November 19. Silver salmon eggs are to be used this year with the objective of releasing to the ocean about 30,000 marked fingerling fish (via the University of Washington) for subsequent evaluation of possible latent effects.

BIOLOGICAL SERVICES UNIT

Biological Monitoring

1. Waterfowl

Random sampling of tissues of waterfowl taken both on and off the Hanford Works during the month showed all tissues of activity density well below the MPC of radiophosphorus. Specimens known to frequent the project exhibited higher densities than migrants. A maximum activity density of 5.0×10^{-4} μc/g was found in cranium.

A study of Canada goose feces collected on the project was instituted to determine if significant levels of activity were present. A total of 188 samples was processed during the month; detectable amounts of activity up to 1100 dis/min/gm were found in all cases.

2. Upland Wildlife

A decrease in thyroid activity densities at all three collection sites over last month was noted. Average density from the Prosser Barricade site was below the MPC of I^{131} for the first time in several months. Densities in thyroid glands for specimens taken at collection sites are tabulated below:

Locality	Specimen	Maximum (μc/g)	Average (μc/g)
200-East	Jack rabbit (5)	0.02	0.01
Meteorology Tower	Jack rabbit (3)	0.01	0.009
Prosser Barricade	Jack rabbit (4)	0.004	0.003
3 mi. east Prosser Barricade	Jack rabbit (1)	0.001	--

Clinical Laboratory

Nine hundred and twenty-one routine determinations.

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Microscopy

Routine histological preparations.

Radiochemistry Laboratory

1. Radioactivity in Carcasses

Of the 20 aliquot samples of cadaver ash received last month, 19 have been analyzed for Ra content by the physical method, yielding an average value of 4.7×10^{-11} g Ra/cadaver. Sixteen have been analyzed by the chemical method, yielding an average value of 8.7×10^{-11} g Ra/cadaver.

2. Analytical Services

Services to other groups included the preparation or calibration of 44 radioisotope solutions for plant and animal administration, and the analysis of approximately 1600 samples.

Analytical Techniques

No report.

METABOLISM UNIT

Animal Metabolism

1. Low level Chronic Plutonium Absorption in the Rat

Plutonium feedings were completed with the administration of 521 doses.

2. Percutaneous Absorption of Plutonium

A small area of the skin of rats was exposed to an acidic (pH <1) $Pu(NO_3)_4$ solution and blood samples taken at half-hour intervals over a 4-hour period. An approximately constant level of plutonium was found in the blood over this period.

3. Therapy for Internally Deposited Plutonium

No report.

4. Distribution and Retention of Tritium in the Rat. I. Serial Sacrifice

This experiment was completed, and the data prepared for open publication.

Fundamental contributions to knowledge of water metabolism came from this study.

5. Distribution and Retention of Tritium in the Rat. II. Compound Separation

No report.

6. Distribution and Retention of Tritium in the Rat. III. Effect of Growth

No report.

7. Percutaneous Absorption of Tritium Oxide

No report.

8. Percutaneous Absorption of Tritium Gas

No report.

Microbiology

1. Determination of RBE's by Microbiological Methods

Growth curves were obtained for L. Casei in minimal medium containing tritium oxide at 6 levels, varying from 10-80 mc/ml.

The radiation-induced formation of phenols from sodium benzoate solutions containing H^3, P^{32}, and S^{35}, was studied. When compared on the basis of the total energy absorbed, S^{35} was 3-4 times as effective as H^3, and P^{32} was over twice as effective as H^3 in phenol formation. These results were contrary to expectations, and deserve elaboration.

2. Destruction of Metabolites by Radiation

No report.

3. Absorption and Metabolism of Tritium Oxide by Bacteria

No report.

4. Tritium Fixation by Bacteria

No report.

5. Tritium Fixation by Mammalian tissues

Of the various tissue homogenates studied, only the large intestine gave consistent evidence of significant tritium fixation. It seems likely that any significant fixation which occurs is due to bacterial action. This hypothesis was tested with apparent success.

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Plant Nutrition

1. Absorption and Translocation of Fission Product and Pile Effluent Radioactivities

An experiment was conducted to determine the absorption and retention of strontium over periods approximating the life of the plant. Plants were grown for 32 days in a standard nutrient solution containing 1.0 ppm strontium and 10^{-4} µc of Sr^{90}/ml as a tracer. At the end of the 12th day, the addition of strontium to half of the cultures was discontinued. A significant difference in the dry weight of the various plant parts was noted between those plants which received strontium continuously and those which received no strontium after the 12th day. This effect was attributed to an interference of (inert) strontium in the general metabolism of the plant. The level of radiation from Sr^{90} was too low to have caused any damage. Such a low concentration of strontium has not been observed, heretofore, significantly to affect the growth of plants.

2. I^{131} Vapor Absorption and Translocation

No report.

3. Absorption and Metabolism of Tritium Oxide by Vascular Plants

The uptake of tritum oxide and the incorporation of tritium into bean plant tissues were determined over a 74-hour period.

Plant Metabolism

1. Radiation Damage to Plants. I. Algae

Chlorella pyrenoidosa was grown in the presence of several levels of Sr^{90} (in equilibrium with Y^{90}), S^{35}, and Zn^{65}. At the level of 2.8 µc (total of Sr^{90} and Y^{90}) per ml and 5000 mc/g nonradioactive strontium, growth of the algae was reduced approximately 70%, and at 5.6 µc/ml and 5000 mc/g sulfur, the cells failed to grow. At the level of 11 µc/ml and 57 mc/g nonradioactive sulfur, growth of the algae was reduced by 10-15%. At the level of 1.0×10^{-3} µc/ml and 59 mc/g of nonradioactive zinc, the growth of algae was reduced 10-15%.

2. Metabolism of Tritium Oxide by Algae

The binding of tritium by rapidly growing cultures of Chlorella was studied. The nutrient solution contained 20 mc HTO/ml. The activity density of the dried cells approached a maximum after about 4 generations. The maximum activity attained was 330 µc/g dried cells.

TOXICOLOGY UNIT

Experimental Animal Farm (Toxicology of I^{131})

1. Low Level Chronic Effects

Breeding of all on-project animals stopped on November 16, 1951, to limit the lambing season to March 1 to April 15, 1952.

Three hundred and fifty-seven comparative readings by ion chamber and neck counter showed the two methods interchangeable within 3% for the 0.15 μc and 5 μc levels of monitoring.

Group weight averages and gains for the month are:

Groups	Average Weights (Kg.)	Gain during November (Kg.)
Control ewe lambs	42.2	1.1
5 μc/day ewe lambs	43.1	2.9
Control yearling ewes	66.7	1.8
5 μc/day yearling ewes	63.1	1.4
15 μc/day yearling ewes	63.0	3.4
45 μc/day yearling ewes	65.0	5.5
135 μc/day yearling ewes	66.5	2.6
Control ewes	79.4	3.7
5 μc/day ewes	78.2	1.6

2. Thyroid Regeneration

The serum protein-bound iodine values in the 7 ewes formerly fed 240 μc/day averaged 0.8 μg/100 cc, which is not a significant variation from last month. This group declined 2.25 Kg from the November 1 weight of 77.9 Kg. All other sheep displayed an increase in weight for this same period.

3. Effects of Inert Iodine and Desiccated Thyroid

A 45 μc tracer dose of I^{131} was administered to each member of nine sets of twin lambs. Maximum thyroid concentrations were as follows:

Group	I^{127} (5 mg)	Desiccated Thyroid	No Augmentation
1. Previously fed 480 μc/day	0 μc	0 μc	0 μc
2. Twin of each animal above but fed no I^{131} previously	0.6 μc	4.2 μc	7.8 μc
	0.9 μc	8.0 μc	18.5 μc
	1.1 μc	8.2 μc	10.1 μc

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A second tracer dose will be given this group after sufficient decay and excretion has reduced body iodine-131 to background levels.

4. Effect of Route of Administration on Thyroid Metabolism

No report.

5. Effect of Gonadal Function in the Ram

No report.

Physiology

1. Toxicology of Active Particles

The A-strain tumor sensitive mouse colony now numbers 194.

2. Plutonium Toxicology

The ratio of tissue activity densities of animals autopsied 20 days and 148 days, respectively, following like administrations of plutonium, was as follows:

Organ	Ratio 20:148 days following administration
Liver	2.5:1
Spleen	6.5:1
Bone marrow	5:1
Kidney	3:1
Cerebrum	14:1
Blood	8:1
Pancreas	30:1
Adrenal	1:1
Thyroid	1:1
Heart	1:1
Skeletal muscle	1:1
Vertebrae	1:2
Ribs	1:2
Lung	1:6

The ratio of activity density of Pu in the periosteum compared with that in underlying bone was of the order of 1:220 in the animal sacrificed at 148 days.

3. Therapeutics in Plutonium Poisoning

No report.

[redacted]

4. Pulmonary Absorption of Tritium

Five additional normal rats were exposed to tritium via tracheal cannulation as previously described. Preliminary results indicate these animals fall within the limits previously reported.

There are also indications that a delay of 3 hours between exposure and sacrifice allows most of the dissolved gas to escape. Present results are inconclusive relative to the increased fixation of tritium as a result of a three hour delay prior to sacrifice.

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FINANCIAL DEPARTMENT MONTHLY REPORT
NOVEMBER, 1951

Work continued on the preparation of data for the mid-year review of the FY 1952 budget as requested by the Hanford Operations Office of the AEC. At the close of the month the departments' budgets and the summary budget for the Nucleonics Division were being accumulated for submission to the Appropriations and Budget Committee.

The Employees' Benefit Fund was reduced during the month from $5,000,000 to $1,000,000 by the sale of $1,000,000 face amount of U. S. Treasury Bonds and by the transfer of $3,000,000 face amount of U. S. Treasury Bonds to a newly established Administrative Fund. Refund checks aggregating $3,916,280.74 payable to General Electric Company, Nucleonics Division, were received from the General Office at Schenectady and were deposited in the contract bank account in lieu of cash advances which otherwise would have been made by the AEC. These checks represented:

Proceeds from the sale of $1,000,000 face amount of bonds	$ 984,093.24
Funds equivalent to the market value of $3,000,000 face amount of bonds transferred from the Employees' Benefit Fund to the Administrative Fund	2,932,187.50
	$ 3,916,280.74

Both of these items represented proceeds from the reduction in the Employees' Benefit Fund. The transfer of $3,000,000 face amount of bonds to the Administrative Fund was in lieu of selling these bonds as part of the reduction of the Employees' Benefit Fund and establishing the Administrative Fund through investment in other U. S. Treasury bonds.

A summary of cash disbursements and receipts (excluding advances from AEC) for the months of November and October, 1951 is shown below:

	November	October
Disbursements		
Material and Freight	$ 3 090 934	$ 3 353 800
Payrolls	2 859 128	2 438 532
Payroll Tax	507 908	456 081
U. S. Savings Bonds	217 234	120 694
Payments to Subcontractors	205 143	311 455
Other	445 344	329 275
Total	7 325 691	7 009 837
Receipts		
Sales to AEC Cost-Type Contractors	168 042	40 184
Rents	142 315	153 908
Hospital	62 445	62 214
Telephone	17 173	23 388
Bus Fares	10 433	11 031
Scrap Sales	3 136	12 195
Refunds from Vendors	2 723	2 265
Other	13 962	22 165
Total	420 209	327 350
Net Disbursements	$ 6 905 482	$ 6 682 487

Advances from AEC were increased from $4,000,000 as of October 31, 1951 to $5,000,000 as of November 30, 1951 and may be summarized as follows:

	November	October
Cash in Bank - Contract Accounts	$ 4 035 799	$ 3 342 512
Cash in Bank - Salary Accounts	50 000	50 000
Cash in Transit	489 201	182 488
Advances to Subcontractors	300 000	300 000
Travel Advance Funds	125 000	125 000
Total	$ 5 000 000	$ 4 000 000

A summary of personnel changes in the Financial Department during the month of November is shown below:

Personnel at October 31, 1951	463
Acquisitions	7
Terminations and transfers out	(16)
Personnel at November 30, 1951	454

The monthly reports of the four sections of the Financial Department, as listed below, are shown on the following pages.

General Accounting Section
Manufacturing Accounting Section
Engineering Accounting Section
Community Accounting Section

GENERAL ACCOUNTING SECTION
MONTHLY REPORT

November, 1951

At the end of November, work in connection with the midyear review of FY 1952 budget estimates originally submitted in May, 1951, was nearing completion. Information requested from department heads had been received and was being compiled and arranged for submittal to the Appropriations and Budget Committee for their review.

As provided in the last amendment to our prime contract, the Employees Benefit Fund was reduced from $5 000 000 to $1 000 000. This reduction was effected by selling $1 000 000 face amount of United States Treasury Bonds and transferring $3 000 000 face amount of United States Treasury Bonds to the newly established Administrative Fund. Proceeds from the sale of the bonds were transferred to our contract account and booked as an advance from the Atomic Energy Commission.

The Administrative Fund includes the $3 000 000 in bonds transferred from the Employees Benefit Fund. It will be credited with interest earned by such bonds and the $100 000 payment received each month from the Atomic Energy Commission for administrative overhead costs. At the end of each calendar year an audit of this fund will be made, and funds in excess of $3 000 000 are to be transferred from the Fund and applied against the cost of the work under Contract W-31-109 Eng-52.

In view of the assignment of construction contracts to the Atomic Energy Commission on October 1, 1951, amounts included in Atkinson-Jones trial balance were excluded from General Electric financial statements, and prior months' totals were recast.

Charges to the Travel and Living Expense Variation account for fiscal year 1950 were audited by Peat, Marwick, Mitchell and Company in connection with their annual audit of the Administrative Overhead account.

Considerable work was done in connection with analyzing changes in Product Cost from the previous month. Information was furnished to interested managers in both narrative and schedule form. Narrative explanation was also prepared on changes in Protection of Plant and Personnel Costs and General and Administrative Expense.

Approval of the Atomic Energy Commission was received in November for a general salary increase effective March 15, 1951, in the amount of 6%, applicable to starting and automatic progression rates for all employees classified as Firemen (firefighters) in the Community Fire Departments in Richland and North Richland. Approval of the Wage Stabilization Board was received in October. The increased rates and the retroactive portion of the general adjustment were paid to Community Firemen in salary checks distributed on November 30, 1951. The total retroactive payment amounted to $8 376.42.

Determination was made in November of equipment requirements for the transition to the IBM system of payroll operations. This information was transmitted to representatives of the Utilities and General Services Department, who will place the order for equipment. The work of developing procedures for use under the IBM system advanced considerably during November, and preliminary work was started in the design of forms to be used.

General Accounting Section

STATISTICS

Employees and Payroll	Total	Monthly Payroll	Weekly Payroll
Employees on payroll at beginning of month	8 989	2 065	6 924
Additions and transfers in	187	12	175
Removals and transfers out	(129)	(22)	(107)
Transfers from weekly to monthly payroll	-	26	(26)
Transfers from monthly to weekly payroll	-	-	-
Employees on payroll at end of month	9 047	2 081	6 966

Number of Employees	November	October
Bargaining group - HAMTC	3 434	3 404
Bargaining group - Building Services	70	67
- Two Platoon Firemen	55	55
- Hanford Guards	617	612
Other weekly - non-bargaining	2 845	2 841
Executive, administrative and operating	1 474	1 443
Professional	529	538
Other monthly	23	29
Total	9 047	8 989

Number of Employees		
Engineering	1 956	1 946
Manufacturing	3 000	2 959
Utilities and General Services	2 252	2 232
Community	224	224
Real Estate and Services	333	339
Financial	454	463
Employee and Public Relations	112	113
Radiological Sciences	364	361
Medical Services	276	275
General	22	18
Law	20	20
Accountability	21	23
Technical Personnel	13	16
Total	9 047	8 989

Overtime Payments		
Weekly paid employees	$ 146 475	$ 156 194
Monthly paid employees	49 948(1)	44 601(2)
Total	$ 196 423	$ 200 795

Number of Changes in Salary Rates and Job Classifications		
	1 128	2 169

(1) Payments over period November 1 through November 30, 1951, except in the case of patrolmen in the Plant Security and Services Section of the Utilities and General Services Department who were paid for the period October 1 through October 31, 1951.

(2) Payments cover period October 1 through October 31, 1951, except in the case of patrolmen in the Plant Security and Services Section of the Utilities and General Services Department who were paid for the period September 1 through September 30, 1951.

General Accounting Section

Gross Amount of Payroll	November	October
Engineering	$ 798 127	$ 802 555
Manufacturing	1 185 489	1 196 308
Utilities and General Services	766 341	761 074
Community Real Estate and Services	207 278	211 526
Other	451 938	439 893
Total	$ 3 409 173(1)	$ 3 411 356(2)

Annual Going Rate of Payroll		
Base	$39 455 993	$39 176 741
Overtime	2 461 879	2 353 504
Isolation Pay	1 267 969	1 237 655
Shift Differential	495 724	479 132
Other	84 089	63 127
Total	$43 765 654	$43 310 159

Average Hourly Base Rates		
Bargaining group - HAMTC	$ 2.000	$ 2.023
- Building Services	1.564	1.563
- Two Platoon Firemen	1.990	1.877
- Hanford Guards	1.742	1.741
Other weekly - non-bargaining	1.694	1.687
Executive, administrative and operating	2.927	2.939
Professional	2 948	2.947
Other monthly	2.353	2.359
Total	$ 2.090	$ 2.089

Average Earnings Rate Per Hour (3)	November			October		
	Weekly	Monthly	Total	Weekly	Monthly	Total
Engineering	$1.805	$2.942	$2.242	$1.802	$2.952	$2.235
Manufacturing	2.195	3.016	2.336	2.193	3.014	2.337
Utilities and General Services	1.912	2.716	2.011	1.911	2.713	2.011
Community Real Estate and Services	1.951	2.445	2.115	1.964	2.447	2.123
Other	1.707	3.067	1.981	1.707	3.075	1.977
Total	$1.967	$2.901	$2.171	$1.963	$2.905	$2.169

% Absenteeism	November	October
Weekly - Men	2.38	2.55
Weekly - Women	4.22	4.18
Total Weekly	2.88	2.99
Monthly	1.61	1.20
Grand Total	2.57	2.53

(1) Includes payments for four-week period ended November 18, 1951 in the case of weekly paid employees.

(2) Includes payments for four-week period ended October 21, 1951 in the case of weekly paid employees.

(3) Includes shift differential and isolation pay. Excludes overtime premiums, commissions, suggestion awards, etc.

General Accounting Section

Employee Benefit Plans

Pension Plan

	November	October
Number participating at beginning of month	6 416	6 400
New participants and transfers in	60	89
Removals and transfers out	(35)	(73)
Number participating at end of month	6 441	6 416
% of eligible employees participating	95.6%	94.3%

Employees Retired	November	Total to Date
Number	5	186-a)
Aggregate Annual Pensions Including Supplemental Payments	$ 807	$42 250-b)
Amount contributed by employees retired	$2 041	$35 959

(a- Includes 7 employees who died after reaching optional retirement age but before actual retirement. Lump sum settlements of death benefits were paid to beneficiaries in these cases.

(b- Amount before commutation of pensions in those cases of employees who received lump sum settlement.

Insurance Plan (1)

Personal Coverage	November	October
Number participating at beginning of month	8 967	8 844
New participants and transfers in	140	245
Cancellations	(19)	(18)
Removals and transfers out	(60)	(104)
Number participating at end of month	9 028	8 967
% of eligible employees participating	97.9%	98.0%

Dependent Coverage		
Number participating at beginning of month	5 379	5 332
Additions and transfers in	151	112
Cancellations	(7)	(6)
Removals and transfers out	(36)	(59)
Number participating at end of month	5 487	5 379

Claims - Disability Benefits (2)

Number of claims paid by insurance company:		
Employee Benefits		
Weekly Sickness and Accident	137	103
Daily Hospital Expense Benefits	152	132
Special Hospital Services	162	151
Surgical Operations Benefits	121	98
Dependent Benefits		
Daily Hospital Expense Benefits	202	217
Special Hospital Services	259	249
Surgical Operations Benefits	227	228
Amount of claims paid by insurance company:		
Employee Benefits	$34 347	$27 624
Dependent Benefits	28 010	31 731
Total	$62 357	$59 355

(1) The new Insurance Plan was made effective on December 1, 1950.

(2) Statistics cover only claims paid and not all claims incurred during the month.

General Accounting Section

Employee Benefit Plans (continued)

Claims - Death Benefits (1)	November	Total to Date
Number	2	71
Amount	$17 000	$385 000

Group Life Insurance

The Group Life Insurance Plan was discontinued November 30, 1950. As of November 30, 1951, 4 employees who are absent due to total disability are still participating in the Group Life Insurance Plan. They were not actively at work on 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 1951 vacation to 1952

	November			Total to Date		
	Weekly	Monthly	Total	Weekly	Monthly	Total
Engineering	3	16	19	35	80	115
Manufacturing	4	4	8	124	66	190-a)
Utilities and General Services	6	8	14	94	42	136-b)
Community Real Estate and Services	0	6	6	29	24	53-c)
Financial	2	1	3	15	4	19
Employee and Public Relations	1	0	1	4	4	8
Radiological Sciences	3	6	9	4	7	11
Medical	5	1	6	13	1	14
General	2	0	2	2	3	5
Total	26	42	68	320	231	551

(a- Manufacturing Department total-to-date decreased by two cancellations.
(b- Utilities and General Services Department total-to-date decreased by one cancellation.
(c- Community Real Estate and Services Department total-to-date decreased by one cancellation.

U. S. Savings Bonds	Engineering	Mfg.	Utilities and General Services	Community Real Estate and Services	Other	Total
Number participating at beginning of month	987	1 431	1 009	275	577	4 279
New authorizations	46	33	24	10	22	135
Voluntary cancellations	(12)	(18)	(14)	(2)	(11)	(57)
Removals and transfers out	(8)	(12)	(7)	(2)	(5)	(34)
Transfers in	15	10	-0-	1	3	29
Number participating at end of month	1 028	1 444	1 012	282	586	4 352

(1) Total to date includes all claims under the old and new Insurance Plans and three deaths on which accidental death benefits were paid.

General Accounting Section

Employee Benefit Plans (continued)

U. S. Savings Bonds (cont.)	Engineering	Mfg.	Utilities and General Services	Community Real Estate and Services	Other	Total
Percentage of participation						
G.E. Employees Savings and Stock Bonus Plan	47.8	42.9	38.9	45.2	41.6	43.0
G.E. Savings Plan	8.3	11.4	10.3	11.0	9.3	10.2
Both Plans	52.3	48.1	44.9	50.6	46.0	48.1
Bonds issued						
Maturity value	$53 400	$99 375	$63 150	$14 350	$32 750	$263 025
Number	943	1 720	1 132	244	600	4 639
Refunds issued	20	24	19	7	18	88
Revisions in authorizations	25	22	12	3	13	75
Annual going rate of deductions						
G.E. Employees Savings and Stock Bonus Plan	$384 986	$595 479	$380 852	$ 90 879	$223 448	$1 675 644
G.E. Savings Plan	82 936	183 508	115 659	28 259	50 848	461 210
Total	$467 922	$778 987	$496 511	$119 138	$274 296	$2 136 854

Annuity Certificates (For duPont Service)	November	Total to Date
Number issued	-0-	83

Suggestion Awards		
Number of awards	34	1 196
Total amount of awards	$925	$20 060

Employee Sales Plan

	November		
	Major Appliances	Traffic Appliances	Total
Certificates issued	60	407	467
Certificates voided	2	0	2

Salary Checks Deposited

	November		October	
	Weekly	Monthly	Weekly	Monthly
Richland Branch - Seattle-First National Bank	772	854	746	841
North Richland Area Office - Seattle-First National Bank	8	7	10	8
Richland Branch - National Bank of Commerce	368	260	349	243
Out of state banks (Schenectady staff)	-0-	1	-0-	1
Total	1 148**	1 122	1 105*	1 093

*Week ended 10-14-51
**Week ended 11-18-51

Special Absence Allowance Requests	November	October
Number submitted to Pension Board	4	4

General Accounting Section

PERSONNEL AND ORGANIZATION

Number of Employees	November	October
On payroll at beginning of month	268	242
Removals and transfers out	(11)	(6)
Additions and transfers in	4	32
Number at end of month	261	268
Net increase (or decrease) during month	(7)	26
% of terminations and transfers out	4.1%	2.5%
% of absenteeism	3.07%	3.20%

Changes by unit in number of Accounting Section employees during November were as follows:

	Name
General: No change	
Accounts Payable: Decrease of two employees	
One transfer to Engineering Accounting	Dorothy R. Hood
One transfer to Cost	Elsie Grant
Cost: Increase of three employees	
One transfer from Accounts Payable	Elsie Grant
Two transfers from Rotational Training Program	K. G. Warner
	J. E. Calahan
General Accounts: Increase of three employees	
Two transfers from Manufacturing Accounting	Frances G. Atkinson
	H. A. Nisle
One transfer from Medical Accounting	M. J. Smith
Two transfers from Rotational Training Program	J. D. Ryan
	D. S. Parsley
One transfer to Louisville, Kentucky	F. M. Pickard
One transfer to Utilities and General Services Department	C. M. Medica
Plant Accounting: Decrease of two employees	
One transfer to Budgets	R. A. Launer
One transfer to Manufacturing Department	Beverly J. Morse
Weekly Payroll: Decrease of two employees	
One new hire	Ruth L. Williams
One deactivation	Faye D. Russ
One transfer to Special Assignment	H. W. Libby
One resignation	Gladys E. Friend
Monthly Payroll: No change	
Special Assignments: Increase of one employee	
One new hire	Doris D. Marshall
One transfer from Weekly Payroll	H. W. Libby
One resignation	Janey P. Cruce
Budgets: Increase of two employees	
One transfer from Internal Audits	J. H. Roberts
One transfer from Plant Accounting	R. A. Launer
Medical Accounting: Decrease of two employees	
One transfer to General Accounts	M. J. Smith
One transfer to Community Department	Janet S. Hostetter

PERSONNEL AND ORGANIZATION (continued)

	Name
Internal Audit: Decrease of one employee	
One transfer from Rotational Training Program	V. B. Schwinberg
One transfer to Budgets	J. H. Roberts
One resignation	R. J. Goss
Rotational Training Program: Decrease of seven employees	
Two deactivations	D. C. Myers
	R. E. Anderson
One transfer to Internal Audit	V. B. Schwinberg
Two transfers to Cost	K. G. Warner
	J. E. Calahan
Two transfers to General Accounts	J. D. Ryan
	D. S. Parsley

Injuries	November	October
Major	0	0
Sub-Major	0	0
Minor	2	1

Number of Accounting Section employees as of November 30, 1951 were as follows:

	Number of Employees		
	Non-Exempt	Exempt	Total
General	3	7	10
Accounts Payable	25	2	27
Cost	16	3	19
General Accounts	20	1	21
Plant Accounting	24	2	26
Weekly Payroll	70	5	75
Monthly Payroll	19	2	21
Special Assignment	25	4	29
Budgets	3	1	4
Internal Audit	3	7	10
Rotational Training Program	9	0	9
Medical Accounting	8	2	10
Total	225	36	261

Non-exempt employees may be summarized as follows:

	Number as of	
Classification	11-30-51	10-31-51
Accounting A	2	2
Accounting B	3	4
Accounting C	6	6
Accounting D	10	9
Business Graduate	21	23
Clerical Working Leader	8	10
Cost Clerk A	2	2
Cost Clerk B	1	1
Cost Clerk C	4	4
Cost Clerk D	3	3
Field Clerk A	3	3
Field Clerk B	0	0
Field Clerk C	3	3

General Accounting Section

PERSONNEL AND ORGANIZATION (continued)

Classification	Number as of 11-30-51	Number as of 10-31-51
General Clerk A	30	30
General Clerk B	43	43
General Clerk C	47	48
General Clerk D	6	6
General Clerk E	1	2
Office Machine Operator A	10	11
Office Machine Operator B	6	6
Secretary B	1	1
Steno-Typist A	2	2
Steno-Typist B	6	6
Steno-Typist C	6	6
Steno-Typist D	1	1
Total	225	232

Open employment requests as of November 30, 1951 were as follows:

General Clerk B	1
General Clerk E	1

General Accounting Section

	November	October
Accounts Payable		
Balance at Beginning of Month	$ 280 855	$ 85 178
Vouchers Entered	1 941 980	1 860 682
Cash Disbursements	2 027 948 DR	1 666 093 DR
Cash Receipts	1 482	1 088
Balance at End of Month	$ 196 369	$ 280 855
Number of Vouchers Entered	2 723	2 789
Number of Checks Issued	1 509	1 640
Number of Freight Bills Paid	1 594	1 520
Amount of Freight Bills Paid	$ 396 270	$ 373 481
Number of Purchase Orders Received	1 397	1 018
Value of Purchase Orders Received	$ 632 674	$ 594 752
Cash Disbursements		
Engineering	$2 221 381	$2 784 518
General	5 104 310	4 225 319
Total	$7 325 691	$7 009 837
Material and Freight	$3 090 934	$3 353 800
Lump Sum and Unit Price Subcontracts	818	35 781
CPFF Subcontracts		
Labor	105 372	236 324
Others	98 953	39 350
Payrolls (Net)	2 859 128	2 438 532
Payroll Taxes	507 908	456 081
U. S. Savings Bonds	217 234	120 694
All Other	445 344	329 275
Total	$7 325 691	$7 009 837
Cash Receipts		
Engineering	$ 102 899	$ 58 505
General	7 916 078	4 751 676
Total	$8 018 977	$4 810 181

General Accounting Section

	November	October
Detail of Cash Receipts		
Advances from AEC	$3 682 487	$4 482 831
Rents	141 820	153 908
Hospital	62 340	62 214
Telephone	17 168	23 388
Scrap Sales	3 136	12 195
Bus Fares	10 433	11 031
Miscellaneous Accounts Receivable	8 086	11 074
Sales to AEC Cost-type Contractors	168 042	40 184
Refunds from Vendors	2 703	2 265
Employee Sales	575	836
Educational Program	180	3 270
Refund of Allowance	3 916 281	-0-
All Other	5 726	6 985
Total	$8 018 977	$4 810 181
Number of Checks Written		
Engineering	$ 1 081	$ 1 036
General	1 509	1 640
Total	$ 2 590	$ 2 676
Bank Balances At End Of Month		
Chemical Bank & Trust Company - New York		
Contract Account	$1 026 216	$ 445 596
Seattle First National Bank - Richland		
Contract Account	2 220 760	2 259 759
U. S. Savings Bond Account	243 601	155 576
Salary Account No. 1	20 000	20 000
Salary Account No. 2	30 000	30 000
Travel Advance Account	51 305	51 859
Seattle First National Bank - Seattle		
Escrow Account	31 685	31 685
National Bank of Commerce - Richland		
Contract Account	788 822	637 158
Total	$4 412 389	$3 631 633
Travel Advances and Expense Accounts		
Cash Advance balance at end of month (1)	$ 29 271	$ 32 208
Cash Advance balance outstanding over one month (1)	380	1 326
Traveling and Living Expenses - All Departments		
Paid Employees	34 953	41 574
Billed to Government	33 185	39 222
Balance in Variation Account at end of month	15 146 DR	13 378 DR

(1) General Accounting only.

General Accounting Section

	November	October
Hospital Accounting		
Accounts Receivable		
Balance at Beginning of Month	$ 137 324	$ 136 902
Invoices Issued	66 525	66 146
Refunds	855	428
Cash Receipts	62 340 CR	62 214 CR
Payroll Deductions	4 620 CR	4 108 CR
Bad Debts Written Off	2 091 CR	-0-
Adjustments	217	170
Balance at End of Month	$ 135 870	$ 137 324

	November	Total to Date
Scrap Sales		
Number of Sales	5	423
Revenue (excluding Sales Tax):		
Scrap Sales	$ 2 958	$ 386 784
Tract House Sales		
Revenue to AEC	-0-	33 449
Revenue to GE	-0-	14 498
Total	$ 2 958	$ 434 731

General Accounting Section

ACCOUNTS PAYABLE

Considerable progress was made in the final audit of completed Purchase Orders during the past two months. Since October 1, 5 500 Purchase Orders have been audited and forwarded to the Records Center. This relieved the congestion in the Accounts Payable file room and also placed this phase of Accounts Payable work on a more current basis. This audit was performed by the invoice auditors as part of their regularly assigned duties.

Volume of work during the month of November was normal; 2 723 accounts payable vouchers amounting to $1 941 980 and 1 594 freight bills amounting to $396 270 were booked during the month.

Close attention was given the "old bill list" during the month. As of November 30 there were only five vouchers on hand, amounting to $16 256, which were ninety days old and which had not been fully documented for reimbursement by the Atomic Energy Commission.

Purchase Orders received during the month numbered 1 397, an increase of 40% over the number received during October.

As of November 30 the open balance in Accounts Payable was $196 369.

BUDGETS

The entire month of November was devoted to the midyear review of the FY 1952 budget, which was originally prepared in May, 1951.

Revised estimates were completed covering costs of the Utilities and General Services Department and Nucleonics Division Staff and Staff Departments. Each budget was completed as to total operating costs, allocation of costs to end activities, estimates of equipment, construction projects for which the department has management responsibility and inventory items for which the department is responsible. Supplemental data included unit cost information and narrative explanations covering significant changes as to the budget submitted in May, 1951. Specific budgets were also prepared on Radiological Sciences Research and Development, Plant Automotive Equipment, Cash Working Capital, and Inventories.

During the month a close working arrangement was maintained with department representatives, which greatly facilitated budget preparation.

At the close of the month work was progressing on the preparation of budget data covering total Product Cost and product unit costs.

COST

Cost reports for Utilities and General Services Department and Staff Departments (excluding Medical) for the month of October were issued on November 16, 1951, and detailed reports of Research and Development costs for Radiological Sciences programs were issued on November 27, 1951.

General Accounting Section

COST (CONTINUED)

Summaries of operating costs for Nucleonics Division, including Product Cost, Protection of Plant and Personnel, and General and Administrative Expense, were issued to Plant Management on November 16, 1951. A similar summary detailed by AEC activity number was prepared for use by AEC Finance Division.

Letters were issued again to managers analyzing costs incurred by their departments or sections in October and affording comparison with previous month where major variation occurred.

Considerable work was done in connection with analyzing changes in Product Cost as compared with the previous month, and summaries and analyses were prepared for use of the Manager - Finance, in both schedule and narrative form. The schedules included "bogey" estimates for months of November, December, and January. A narrative explanation of the changes in Protection of Plant and Personnel and General and Administrative Expense also was prepared.

In addition, work was continued in connection with the midyear budget review in preparing estimates by quarter of total Product Cost and unit costs.

GENERAL ACCOUNTS

Advances from the Atomic Energy Commission at November 30, 1951, amounted to $5 000 000, an increase of $1 000 000 over the amount at the beginning of the month.

This increase resulted from crediting the advance account with the refund received from General office due to the reduction from $5 000 000 to $1 000 000 of the Employee Benefit Fund, in accordance with the latest amendment to the prime contract.

The current balance of $5 000 000 in the advance account has been applied in the following manner:

Cash in Bank - Contract Accounts	$4 035 799
Cash in Bank - Salary Accounts	50 000
Cash in Transit	489 201
Advances to Subcontractors	300 000
Travel Advance Funds	125 000
	$5 000 000

Consolidated trial balance was issued on November 15, 1951, for the month of October, and Nucleonics Division and Nucleonics Project financial statements were issued on November 17 and November 29 respectively.

GENERAL ACCOUNTS (CONTINUED)

In view of the assignment of construction contracts to the Atomic Energy Commission on October 1, 1951, prior months' totals were recast and amounts included in Atkinson-Jones trial balance were excluded from the General Electric financial statements.

Work which has been under way during the past months in connection with accountability for bus revenue and procedures affecting Transportation Unit personnel was completed, and recommendations are now ready to present to supervision for consideration.

Study and analyses of various financial reports continued this month. Revised and improved Construction Work In Progress report for November is to be issued, and changes and improvement in other reports are to be made as this work continues.

Number of travel expense reports processed decreased from last month by 20% (from 207 to 166). Current month charges to the Travel and Living Expense Variation account, including Engineering Department, totaled $1 767. These represented entertainment expenses of $958 and the excess of amount reimbursed employees over amount billed to the Atomic Energy Commission of $809.

In connection with a recent audit by Peat, Marwick, Mitchell & Company, of charges to the Administrative Overhead account, one of their auditors made an audit of charges to the Travel and Living Expense Variation account for the fiscal year ended June 30, 1950.

INTERNAL AUDIT UNIT

During November various studies, reviews, and audit programs were completed and others were in various stages of completion.

A summarization report was prepared of comments received from representatives of several departments relative to timekeeping recommendations made in a previous audit.

As a preliminary step, a study was made of the measures currently used to control inventories of spare parts and general maintenance materials in order to establish a basis from which further studies can be made of the overall problems of plant inventories. Following this review, several meetings were held with Stores Unit personnel, at which several broad objectives were outlined; namely: (1) establishment of area stores; (2) assignment of responsibility for inventories; (3) establishment of inventory stock levels; (4) utilization of mechanical recording equipment.

With respect to mechanical equipment, a review was undertaken of the experimental reports prepared for one inventory sub-account on tabulating equipment of the International Business Machines Company.

General Accounting Section

INTERNAL AUDIT UNIT (CONTINUED)

Other assignments related to inventory control problems included: (1) a study of the clerical routines followed by Stores Unit in maintaining stock records and processing underlying accounting documents for operations inventories; (2) investigations of two write-off adjustments resulting from physical inventories completed by physical inventory personnel of Purchasing and Stores Section; (3) an observation of routines followed by Technical Section in operating a stockroom in the 200-W Area from which laboratory supplies are disbursed.

An audit was begun at Kadlec Hospital of internal control system features and of records maintained and routines and procedures followed in accounting for accounts receivable, cash, and related activities.

MEDICAL ACCOUNTING

The balance in Accounts Receivable decreased $1 453 during the month - from $147 323 in October to $135 870 in November. This was due primarily to the write-off of bad debts amounting to $2 091. Of this amount, $1 922 represented charges incurred during 1948 and 1949.

Out-patient invoices numbered 2 325 and amounted to $12 247, as compared to 2 532 invoices amounting to $14 270 in October, a decrease of 207 invoices and $2 023 in amount. Out-patient services are continuing at a high level due to annual and discharge physical examinations for army personnel.

In-patient revenue increased $2 402 in November, due to an increase in the adult patient-day census from 87.0 in October to 92.9 in November.

A total of 72 claims in the amount of $2 748 were submitted this month to Fort Lewis for services rendered military personnel. Reimbursement on 19 claims in the amount of $875 on prior months' billings was received during the month.

Blue Cross claims paid during the month number 35 in the amount of $2 326.

Listed below is a summary of activity to date on accounts submitted to credit agencies for collection:

	NUMBER	AMOUNT
Accounts Submitted	213	$34 902
Accounts Returned as Uncollectible	52	10 398
Collections	65 *	3 895
Accounts Returned 10% Basis	7	1 511
Balance at Agencies	115	19 098

* Includes 39 accounts paid in full and 26 accounts partially collected.

MEDICAL ACCOUNTING (CONTINUED)

Cost reports for the Medical Department were issued on November 15, 1951. A letter summarizing these costs and explaining differences as compared to prior month and to budget was issued to the Director of Medical Services on November 30, 1951. Individual reports also were issued to section heads summarizing costs and revenue.

During the regular meeting of Medical Department staff, a short discussion was presented by the Supervisor, Hospital Costs, explaining how costs are accumulated and suggesting how they can be kept at a minimum through proper planning, without affecting services to patients.

The FY 1952 midyear budget review was completed and submitted on November 30, 1951.

PLANT ACCOUNTING

Plant Accounting records were adjusted to reflect actual miles of railroad trackage based on a recent inventory taken by the Transportation Section. Plant Accounts listed 130 miles of track, as compared with 152 miles included in the inventory. Recorded cost of railroad trackage was reviewed in conjunction with the inventory, but it was determined that no monetary adjustment was necessary, the discrepancy being only in the recorded miles of track.

An inventory of the 100-D and 100-DR Areas was completed, which included all buildings, building service equipment, production equipment, and improvements to land, such as fences and guard towers. Discrepancies between the inventory and Plant Accounts are now being reconciled.

Revised estimates of depreciation expense and expected additions to Plant Accounts for FY 1952 were prepared and will be submitted in connection with the midyear budget review.

Recommendation for converting Plant Accounting records to IBM accounting were received from the local IBM representative. It is intended that the IBM system for Plant Accounting will be adopted when the central IBM unit is in a position to handle the work.

PAYROLLS

There were 129 removals from payroll during the month of November, including 7 leaves of absence and 4 transfers to other Divisions of the Company. Additions to the payroll during the month totaled 187, including 25 employees who were re-engaged with continuous service. As a result of these additions and removals from the payroll, there was a net increase of 58 employees during the month.

The following is a tabulation of the number of rent, telephone, and hospital charges submitted to Payroll for deduction from salaries in November:

House Rent	4 991
Dormitory Rent	872
Barracks Rent	208
Trailer Space Rent	147
Telephone Accounts	3 623
Hospital Accounts	540
Total	10 381

Vacation Notice Cards submitted to Payroll indicate that 174 weekly paid employees were scheduled to begin their 1951 vacations in November. Department Managers approved deferment of one week of the 1951 vacation to 1952 for 26 weekly paid and 42 monthly paid employees. To date, approval has been given to deferment of 1951 vacations to 1952 for 320 weekly paid employees and 231 monthly paid employees, or a total of 551.

During November payment of Military Duty Allowance equivalent to one month's pay was made to two employees who had entered military service. To date, 72 employees have been paid Military Duty Allowances amounting to $23 351.

The number of Nucleonics Division employees who have entered military service as of November 30, 1951 may be summarized as follows:

	Called to Duty	Volunteered for Duty	Total
Reserve Officers	18	3	21
Enlisted Reserve	50	6	56
National Guard	6	-0-	6
Selective Service	37	-0-	37
Voluntary Enlistments	-0-	71	71
Total	111	80	191

Due to transfer or reclassification of employees in November, eleven preferential rates of weekly paid employees were eliminated.

Approval of the Atomic Energy Commission was received in November for a general salary increase effective March 15, 1951 in the amount of 6% applicable to starting and automatic progression rates for all employees classified as Firemen (firefighters) in the Community Fire Departments in Richland and North Richland. Approval of the Wage Stabilization Board was received in October. The increased rates and the retroactive portion of the general adjustment were paid to Community Firemen in salary checks distributed on November 30, 1951. The total retroactive payment amounted to $8 376.42.

Payroll deductions for subscriptions to the 1951 Community Chest amounted to $2 407 in November.

PAYROLLS (Continued)

Payroll deductions of the cost of safety shoes were authorized by 133 employees in November. At November 30, 1951, there were 63 outstanding accounts, which is 33 less than at the end of October.

The Hanford Atomic Metal Trades Council transmitted to us in November 74 new Payroll Deduction Authorizations covering check-off of union dues for employee members of seven unions, including 45 authorizations signed by Firemen of the Richland and North Richland Fire Departments. The number of authorizations in effect at November 30, 1951 was 1 009.

The Hanford Guards Union, Local 21 of the International Guards Union of America, transmitted to us in November seven new Payroll Deduction Authorizations covering check-off of union dues, bringing the total of such authorizations to 173 in effect at November 30, 1951.

There was no change in the number of authorizations in effect covering check-off of union dues for employees of Medical Department who are members of the Building Service Employees International Union, Local 201. At November 30, 1951, check-off of union dues was in effect for 25 employee members of this union.

Total number of Payroll Deduction Authorizations in effect for check-off of union dues for members of all unions was 1 207 at November 30, 1951.

Under the General Electric Pension Plan, 75 employees who became eligible for participation in November were canvassed for enrollment in the Plan. Of these, 54 employees enrolled in the Plan and 21 employees elected not to participate.

A total of 641 claims for Weekly Sickness and Accident Benefits and Hospital Benefits under the Insurance Plan were forwarded to Metropolitan Life Insurance Company during November. These claims may be segregated as follows:

Hospital Benefits		
Kadlec Hospital	388	
Other Hospitals	82	470
Weekly Sickness and Accident Benefits		171
Total Number of Claims		641

The Metropolitan Company forwarded 1 134 checks to us in November in the amount of $62 357 covering benefits on 867 claims. These checks were forwarded to employees or to hospitals and surgeons, as authorized by the employees.

During the period December 1, 1950, effective date of the new Insurance Plan, to November 30, 1951, benefits have been paid to Nucleonics Division employees under the Health Insurance portion of the Plan amounting to a total of $524 434, and a total of $113 500 has been paid to beneficiaries of deceased employees under the Life Insurance portion of the Plan.

United States savings bonds having a maturity value of $33 925 were withdrawn from the G. E. Employees Savings and Stock Bonus Plan during November, 1951, by 105 employees.

PAYROLLS (Continued)

In order that Payroll may have up-to-date information with respect to employees' claims for exemptions for Withholding Tax purposes, new Employee Withholding Exemption Certificates (Form W-4) for all Nucleonics Division employees were transmitted to Departments on November 27, 1951. Request was made for return of the completed forms on or before December 14, 1951.

Thursday, Thanksgiving Day, November 22, 1951, was an observed holiday at Hanford Works. Therefore, weekly salary checks covering the week ending November 18, 1951 for employees in the outer areas were delivered to patrolmen at the area gate houses on Wednesday, November 21, 1951 between the hours of 8:00 p.m. and 11:00 p.m. instead of on Thursday. There was no change in distribution of salary checks to employees in the 700, 1100, 3000 Areas, and Pasco. Checks for these employees were distributed to Department representatives on Friday, November 23, 1951.

The Company was served with five garnishments during November involving Hanford Works employees. Four of these garnishments were released without payment to the court, and two were pending at November 30.

At the request of Departments, approximately 450 salary checks were held in Payroll during November for distribution direct to employees whose days of rest occurred on Thursday and/or Friday. Approximately 60 salary checks were delivered to a representative of Employee Services Unit of the Employee and Public Relations Department for delivery to employees absent due to illness.

During November there was an increase in the volume of addressograph work for other Departments. Approximately 140 000 items were addressographed in addition to routine addressograph work for Payrolls.

A new addressograph file containing approximately 200 plates was prepared in November at the request of Plant Engineering Unit - Instrument, Separations Section, Manufacturing Department for use in mailing charts prepared by that Unit.

A report was prepared for management in November showing the number of employees on the payroll of the Nucleonics Division at September 30, 1951, who had been continuously employed by General Electric Company since their transfer from the du Pont Company on September 1, 1946. The average length of du Pont service of these employees was shown. Similar information was included for employees transferred to other Divisions of General Electric Company and for employees removed from the payroll. All of the statistics were segregated by Departments with a further segregation by men and women.

The report was summarized on I.B.M. equipment from punched cards which had been maintained for former du Pont employees.

During the month charts of employee and payroll statistics were extended to October 31, 1951.

Determination was made in November of equipment requirements for the transition to the I.B.M. system of payroll operations. This information was transmitted to representatives of the Utilities and General Services Department who will place the order for equipment. The work of developing procedures for use under the I.B.M. system advanced considerably during November, and preliminary work was started in the design of forms to be used.

PAYROLLS (Continued)

A list of college graduates was prepared and forwarded to General Office indicating, for each graduate, name, classification, military status, salary rate, and last salary change, and indicating those cases where the employee is in a supervisory position.

Schedules are being prepared of all year-end work so that this work can be accomplished economically and efficiently with a minimum of overtime.

Although there has been no approval of the recently announced general salary adjustment effective September 17, 1951, detailed procedures for calculating the retroactive payment have been discussed, and certain preliminary work has been done to facilitate early payment when approval has been received.

Bank reconciliations completed in November were as follows:

Weekly Salary through #272, week ended November 11, 1951.
Weekly Salary Vacation through #272, week ended November 11, 1951.
Bond Account - October, 1951.
Monthly Payroll #52, October, 1951.

A representative of the Atomic Energy Commission audited the bank reconciliation of the weekly payroll for week ended November 11, 1951 and the monthly payroll for the month of October, 1951.

MANUFACTURING ACCOUNTING SECTION
NOVEMBER, 1951

BUDGETS

Informal submission of the Mid-Year Budget Review was made on November 26 and formal submission on November 30, to the Assistant to the Manager, Financial.

SPECIAL REQUESTS

Twenty-six cost estimates were made during the month, amounting to $62,485.

An acute shortage of casks for shipment of slugs has been prevailing. Completed irradiation shipments have been delayed because suitable casks were not available. In order to know the location of casks at all times, and to follow up for prompt return, a Remington Rand "Line O Dex" file is being set-up. Methods of providing absolute identification of Hanford casks are being worked out. Prompt return of casks will greatly expedite closing jobs as it is necessary to pick up handling and decontamination costs before closing.

ANALYSIS AND REPORTS

The first in a program of regularly scheduled group meetings was held. The purpose being to discuss problems encountered in compiling reports, assure uniformity in presentation of reports, and through discussion and instruction, make everyone realize the importance of their particular job in contributing to cost information furnished management.

INVENTORY CONTROL

A special report to section Managers showing acquisition, usage and turnover of process materials was initiated to assist them in controlling inventory turnover.

STATISTICS

With the payroll for week ending November 11, the extension of payroll distribution for the Transportation and Electrical Distribution and Telephone Sections was begun by this group.

The December 1 deadline for preliminary "Debaset" calculation has been extended to about December 7 due to increases in volume and changes in requirements. Already the number of cards processed has exceeded 200,000, and the present estimate is 24,000 to complete the recording phase. IBM equipment is being utilized in both the 700 and 300 Areas on a two-shift basis. A collator has been moved from the 300 Area to the 722-A Building, and it is planned to move a sorter from the hospital to the 722-A Building. An experienced ex-employee has been rehired on a temporary basis and an Analysis and Reports employee is being utilized part time plus overtime.

The first files for Electricity billing, consisting of names, addresses, and house types, were set up by the key punch group. Lists and cards have been furnished the Electrical Section for the addition of meter numbers and reading sequence controls.

Our order for additional control panels was filled and the four panels borrowed from Atkinson-Jones have been returned.

The space problem is critical again. Two desks were removed to make room for machines. Working space is below a practical minimum.

WORK ORDER CONTROL

Work was started on a complete revision of the work order authorization list. It will be completed and submitted to the Department Managers for approval in December.

Commitments on all projects listed on the Manufacturing Department Project report have been obtained and arrangements made to keep it current.

Considerable progress has been made in discussions with Plant Engineering Service personnel towards expediting the flow of work orders from the field. It is anticipated that there will be considerable improvement and the volume of unmatched detail should be greatly reduced.

The volume of detail has been steadily increasing, due mainly to the activity in the new facilities, so that it is now greater than before the transfer of the Transportation and Electrical Distribution and Telephone Sections.

ORGANIZATION AND PERSONNEL

Beginning of Month	59
Acquisitions	5
Transfers Out	2
End of Month	62
November Forecast	60

Transfers out consisted of one leave of absence and one termination. The termination was on doctor's orders because of health. Acquisitions were four office machine operators, one on a temporary basis to assist with Debaset work; and one cost clerk to fill the job left vacant by the termination.

GTV:pm
12-10-51

ENGINEERING ACCOUNTING SECTION
MONTHLY REPORT FOR NOVEMBER, 1951

In November shipping documents were received from U. S. Steel Supply Company covering outbound shipments of our material at the leased warehouse in Pittsburgh. The bulk of these later shipments were made to other A.E.C. Cost Type Contractors or to other A.E.C. offices on a reimbursement basis or cost transfers. These shipments were valued at $368,573. The present account balance of the stainless steel in the Pittsburgh warehouse totals $37,515 with approximately 32,000 pounds or $16,500 yet to be shipped. This will then leave an account balance of approximately $21,000 as inventory variance. The total receipts into the warehouse amounted to $2,108,053, thus an approximate 1% inventory loss due to loss in cutting of steel plates and the use of theoretical weights on some issues as compared to actual weights on receipts.

Stainless steel remaining in the 10.18-2 account (located in 3000 Area) amounts to$175,717 of which $118,707 represents material from Hanley closeout.

There were 1620 vouchers processed by accounts payable during November totalling $2,057,848 as compared to 1677 vouchers in October for $2,867,116. This is virtually the same work load for November as October although dollar volume dropped sharply.

Listed below is a brief summary of disbursements during November:

Material and Freight	$1 980 877
CPFF Labor (Vitro Corp. & C. T. Main)	105 372
CPFF Other (Vitro Corp. & C. T. Main)	98 953
Miscellaneous	35 361
Lump Sum Subcontracts	818
	$2 221 381

Audit functions performed for the A.E.C. during the month follow:

Atkinson-Jones Labor	$3 157 961
Atkinson-Jones Material, Services	687 003
Atkinson-Jones Travel	2 961
Atkinson-Jones Fees	54 093
Lump Sum Partial Estimates	576 715
	$4 478 733

During November the Design and Construction Management Unit Standard Cost Code system was changed to exclude all feature and sub-feature codes. Property Accounts replaced these feature and sub-feature codes. Costs of all current projects were recast into the newly established codes.

Seven Project Financial Closing Statements were issued during the month.

The following is a Detail of Cash Advances for the Month of November as compared with October, 1951.

	November		October	
	No. of Accts.	Amount	No. of Accts.	Amount
Beginning Balance	101	$27 555	89	$21 708
Cash Advance Made		19 044		21 313
Cash Receipts & Expense reports Processed		17 366 Cr.		16 088 Cr.
Transferred Accounts		46		622
Balance at End of Month	113	$29 279	101	$27 555

Travel Expenses Billed to A.E.C. during November amounted to	$11 945
Actual amount paid to employees	12 388
Charges to Travel and Living Variation Account	443

Of the above balance of $29,279, accounts over 30 days old amounted to $7 142.

SUBCONTRACTOR PAYROLL STATISTICS

PAYROLLS	NOVEMBER	OCTOBER
Average number of employees reported by CPFF Subcontractors (including Service Contract)	7 055	7 099
CPFF Construction Subcontractors Payrolls	$2 745 959	$2 908 812
CPFF Minor Construction Payrolls	356 997	370 801
CPFF Architect Engineer Payrolls	100 998	234 396
Total CPFF Payrolls	$3 203 954	$3 514 009

SUBCONTRACTOR PAYROLL STATISTICS cont'd.	NOVEMBER	OCTOBER
Average per week (excluding Architect Engineer Payrolls)	$ 775 739	$ 819 903
Average Weekly Earnings	$ 109.95	$ 115.49

Forces

The number of workers employed on projects in November as compared with a similar date in October is shown below:

		November 21	October 18
Atkinson-Jones			
C-187-D	Redox	13	37
C-187-E	Laboratory	0	2
C-361	Waste Metal Sweetening & Conversion Facility	20	58
C-362	TBP	1 633	1 724
C-413	Expansion of 234-5 Capacity	149	138
C-431	Production Facility	3 425	3 161
	101 Area	263	173
	Minor Construction	739	704
	Total Direct	6 242	5 997
Atkinson-Jones Indirect		559	669
Minor Construction Indirect		19	18
		6 820	6 684
General Electric Design and Construction		876	895
	Total number of workers	7 696	7 579

Lump Sum and Unit Price Subcontractor forces are not included in this report.

Personnel of the Engineering Accounting Section decreased from 101 at the end of October to 98 at the end of November. The decrease resulted from one new hire, one transfer to another Section and three terminations.

COMMUNITY REAL ESTATE AND SERVICES
ACCOUNTING SECTION
MONTHLY REPORT FOR NOVEMBER, 1951

ORGANIZATION

Employees-Beginning of Month	27	Exempt	5	Male	7
Transfers In		Non-exempt	20	Female	18
Transfers Out			25		25
New Hires					
Terminations	2				
Total - End of Month	25				

RENTS

House Leases Processed	November	October
Total active leases beginning of month	5820	5743
New leases	287	323
Cancellations	203	246
Total active leases end of month	5904	5820
Modifications	18	11

Dormitory		
Total occupancy beginning of month	1085	1075
New assignments	73	138
Removals	80	128
Total occupancy end of month	1078	1085

Rental Revenue was as follows:

Equipment	$ 12.45	$ 12.45
House:		
Basic rent	209,699.54	204 797.99
Electricity	50,548.72	49,350.16
Water	8,404.11	8,206.28
Facility:		
Basic rent	52,443.57	48,579.96
Electricity	3,433.92	3,433.92
Water	490.00	490.00
Dormitory	15,166.07	14,809.20
Utilities-Electrical	3,184.62	3,047.79
	$343,383.00	$322,727.75

TELEPHONE

Number of work orders processed	414	312
Number of working telephones	5272	5228
Revenue including services	$ 19,731.58	$ 19,258.95

Community Real Estate
& Services Accounting

MISCELLANEOUS	November	October
Invoices prepared during month	399	378
Revenue derived from invoices	$ 6,711.06	$ 2,894.15

Collection Agency Accounts

Yakima Adjustment Service:

Total submitted (64 accounts)	$905.50	
Collected by Yakima Adjust. Serv.	253.40	
Collected by General Electric Co.	116.65	
Returned - Written Off	103.39	
Recalled - No Charge	4.00	
Returned - Transferred to Credit Bureau of Benton and Franklin Co's.	24.87	$403.19

Credit Bureau of Benton & Franklin Co's.

Total submitted to 10-31-51 (29 accounts)	$534.75	
Collected by Credit Bureau	9.21	
Collected by General Electric Co.	37.28	
Returned - Written Off	43.42	
Recalled - No Charge	-0-	444.84
Balance - Agency Accounts 11-30-51		$848.03

COST

Reports

The October Operating Report was issued November 19, 1951. The Expenditures on Appropriations Report was issued November 19, 1951.

Budget

The Mid-year review of the FY 1952 budget was completed and submitted November 30, 1951.

SERVICE ORDER

Service Order Charges

	QUANTITY (A)		LABOR COST		MATERIAL COST		TOTAL COST	
Code	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.
1	1,051	991	$1,660.35	$1,642.20	$1,356.84	$ 955.33	$3,017.19	$ 2,597.53
2	1,298	1,676	1,421.84	1,790.95	1,636.09	2,052.62	3,057.93	3,843.57
3	375	501	778.40	887.60	393.88	876.65	1,172.28	1,764.25
4	111	84	172.55	147.00	105.74	65.81	278.28	212.81
5	137	309	201.95	425.95	292.81	386.67	494.76	812.62
6	227	310	509.95	621.25	141.37	199.90	651.32	821.15
	3,199	3,871	$4,745.04	$5,514.95	$3,926.73	$4,536.98	$8,671.76	$10,051.93

Community Real Estate
& Services Accounting

Service Order Charges (Con't)

(B)	+ 672	+ 769.91	+ 610.25	+ 1,380.17

(A) Quantity covers the number of Service Charges made since some Service Orders include several charges.

(B) Over (+) or Under (-) Previous month.

(D) Number of Service Orders - 2 622

1.	Plumbing	3	Heating & Vent.	5	Locks & Keys
2	Electrical	4	Glazing	6	Carpentry

WORK ORDERS

	September	October	November
Active Routine	263	254	238
Active Normal	1,733	1,275	1,798
	1,996	1,529	2,036
W. O. Received	1,038	1,343	997
W. O. Completed	1,231	1,810	490
	+ 193	+ 467	- 507

ACTIVE SUBCONTRACTS

Subcontracts-Assigned to AEC-Incomplete

Subcontractor	Sub.Cont. No.	Amount Awarded	Booked for Payment This Month	Accumulative Payments
Associated Engineers, Inc.	G-381	$35,827.35	$1,804.84	$35,827.35

PLANT SECURITY AND SERVICES SECTION

MONTHLY REPORT - NOVEMBER 1951

SUMMARY

There were no lost time injuries during the month. There have been five lost time injuries to date this year as compared to seven for the same period in 1950. The major injury frequency rate for the first eleven months of 1951 is 0.31 as compared to 0.51 for the same period in 1950.

There were only two industrial fire alarms during the month and no loss was involved.

Work was started on the addition to the 200-West Area Laundry. This addition is scheduled for completion January 1, 1952 and will add 800 square feet of floor space to the existing receiving room.

A classified report, "Four Years at Hanford" was completed on schedule for the Schenectady office. The cost of this job was only one-third of the lowest estimate submitted by a commercial printing firm.

Eighty-two percent of the available space in the Records Service Center vault is now occupied. This does not include the approximate 33% of original space now occupied by the Civil Defense Center. Space relief will be needed during the next six to eight months in order to prevent curtailment of the records retirement program.

Decision was made to adopt the recommendation of the Procedures Analysis group to consolidate the majority of tabulating equipment in use and on order for the plant. Adoption of this recommendation will result in $150,000 annual savings in equipment rental and operating labor. No attempt has been made to evaluate further savings which will be realized by other departments as this service is further utilized.

A new badge rack design by Security Patrol makes it unnecessary to enlarge the 200-West Area badge house as previously planned. The new racks were tried out in the 200-West Area under a temporary arrangement and resulted in quicker badge issuance with less personnel. New type racks are being constructed for other badge houses and will be installed as soon as practicable.

PLANT SECURITY AND SERVICES SECTION

MONTHLY REPORT - NOVEMBER 1951

ORGANIZATION AND PERSONNEL:

Number of employees on payroll:

	Beginning of Month	End of Month	Increase	Decrease
Staff	6	6		
Patrol and Security	654	660	6 (a)	
Safety and Fire Protection	149	150	1 (b)	
Office Services (Building and Laundry Service, Clerical Services, Records Control and Procedures Analysis)	306	303		3 (c)
TOTALS	1,115	1,119	7	3

NET INCREASE: 4

(a) - Patrol and Security

14 - New Hires
1 - Reactivated
2 - Transferred to other Departments
3 - Deactivated, personal illness
4 - Terminations

(b) - Safety & Fire Protection

1 - New Hire

(c) - Building and Laundry Service

3 - New Hires
1 - Reactivated
3 - Transferred to other Departments
1 - Deactivated, personal illness
1 - Termination

Clerical Services

9 - New Hires
6 - Transferred to other Departments
3 - Deactivated, personal illness
1 - Termination

Records Control

1 - Termination

Plant Security and Services Section

SAFETY AND FIRE PROTECTION

	October	November	Year To Date	Comparative Period - 1950
Major Injuries	0	0	5	7
Sub-Major Injuries	3	1	17	24
Minor Injuries	300	336	3,444	3,426
Exposure Hours	1,591,633	1,524,587	16,105,031	13,805,543
Major Injury F/R	0.0	0.0	0.31	0.51
Major Injury S/R	0.0	0.0	0.03	0.008
Penalty Days	0	0	450	0
Actual Days Lost	0	0	56	112
Minor Injury F/R	1.88	2.20	2.14	2.48
Estimated Medical Treatment Time Required	1,224 hours	1,352 hours	14,373 hours	

Activities

Fire protection surveys were completed for Buildings 1704-H, 2719-W, and 2724-W. A resurvey was made of the 108-B Building.

A study is being made of the practicability of converting 40-gallon foam extinguishers to 350-pound dry chemical. Studies are also being made of a small automatic dry chemical extinguisher of our own making.

A new high tank was erected and placed in service at Riverland Yard.

Fire fighting and building evacuation procedures were prepared for Building 222-S.

Plans were reviewed for an addition to the 300 Area Power House.

Methods of handling liquid nitrogen are being studied.

There were 233 drills conducted by the Fire Department.

Safety orientation of new employees continues in all areas. 317 employees attended orientation for the 700, 1100, and 3000 Areas.

The adjustment and servicing of special lenses in prescription glasses used inside of various masks in the 200 Areas required several special trips by the 700 Area Safety Engineer.

Studies are being made and safety recommendations submitted of activities that are not covered by safety bulletins. These are on trolley equipment, non-slip flooring, clamping of crane hooks, painting of utilities poles, handling and storage of peroxide and adequate type of body and head protection for work on HF equipment. Also, temporary installation in 100-F for sulfuric acid in tank cars and more ventilation at the chromic acid pan on the decontaminators in 100-F.

The two-year no-lost-time-injury award pins have been distributed to the 100-B Area employees.

Plant Security and Services Section

Safety & Fire Protection Activities (Contin)

The 100-D Area has only four days more to go in order to complete another lost time injury free year.

An effort is being made to obtain a list of the new stainless steel and monel metal safety cans that are now obtainable for use in technical laboratories.

Two-hundred and forty-seven pairs of safety shoes were sold during the; 300 pairs of plain safety glasses and 93 pairs of prescription safety glasses.

A special safety film nd pamphlets were furnished the Medical Department during the month for the purpose of creating additional interest in their safety meetings.

The 300 Area has shown a reduction of injuries in the operational groups. The Technical Section is emphasizing the use of eye protection in the 3706 Building, and Pile Technology has increased their safety instructions to new employees.

New pamphlets are being prepared for highlift truck operations, track maintenance, and equipment maintenance. These safety folders are being prepared to increase interest and inform the employee of the hazards associated with his job assignment.

Industrial Fires

Department	Area	No. of Fires	Cause	Loss
Utilities & General Services	200-W	1	Leak of flammable liquid	None
Technical	300	1	Failure of ballast in fluorescent light fixture	None

OFFICE SERVICES

Building and Laundry Service

Plant Laundry (200-West)	October	November
Pounds Delivered	180,125	174,616
Pounds Rewash	31,808	31,381
Total Dry Weight	211,933	205,997

700 Laundry		
Flatwork - Pounds	62,317	73,736
Rough Dry - Pounds	28,531	30,987
Finished - Pounds	2,639	2,359
Estimated Pieces	123,673	140,277
Total Dry Weight - Pounds	93,487	107,082

Plant Security and Services Section

Monitoring Section - 200-W Laundry	October	November
Poppy Check - Pieces	156,356	123,155
Scaler Check - Pieces	165,756	133,655
Total Pieces	322,112	256,810

Work has been started on the addition to the 200-W Laundry. This addition, scheduled for completion by January 1, 1952, will add 800 more square feet of floor space to the existing receiving room.

Clerical Services

Central Mail

Types and Pieces of Mail Handled	October	November
Internal	892,304	829,016
Postal	83,468	81,410
Registered	1,294	1,279
Insured	417	374
Special Delivery	224	221
Total Mail Handled	977,707	912,300
Total Postage Used	$2,519.84	$2,335.77
Total Teletypes Handled	5,606	6,220
Total Store Orders Handled	446	419

The volume of internal and postal mail was slightly lower this month due to there being two less working days. The number of teletypes increased somewhat and all indications point to a heavy traffic in mail during December.

Office Equipment

The Midyear Budget Review for office machines and equipment was completed on schedule and forwarded to Accounting for formal action. Department heads were contacted and a complete explanation made to each of them as to the necessity for careful, accurate forecasting of office furniture requirements.

New equipment for FY 1952 is now arriving in quantity and being distributed as rapidly as possible.

A jeep station wagon has been furnished Office Equipment Repair for use until a new vehicle can be procured.

Plant Security and Services Section

Office Equipment (Contin)

A survey of offices is being conducted to determine equitable distribution of new, grey metal office furniture. Also, all records on machines are being revised to show usage by Departments, rather than by Divisions as they were previously listed.

Machine Repair	October	November
Office Machines repaired in shop	238	251
Office Machine Service Calls	603	500
Total Machines Serviced	841	751

Furniture and Moves		
Office Moves	105	97
Pickups for Records Center	77	72
Store Orders filled	388	237
Pieces of furniture delivered	955	389
Property transfers completed	26	26

Central Pringing

The Four Year Book for Mr. B. R. Prentice of Schenectady was completed on schedule and many favorable comments have been received for Central Printing's work on this major publication. It was completed for $2,399.05, which is approximately one-third of the estimate to have had it printed by Eastern Commercial firms.

During this month, ten exceptionally large orders were completed, aggregating over 500,000 copies in addition to the normal run of work which is steadily increasing.

New equipment received and installed this month included a "Craftsman" line-up table and a "Baum" folding machine. These units will add to our productive potential and speed up handling of printing jobs.

Plans were drawn up for revisions to the 717 Building to permit installation of a dark room type camera which is being custom built and scheduled for delivery the latter part of December.

Multilith Orders	October	November
Received	517	465
Completed	392	438
On Hand	124	149
Cancelled	0	2

Stenographic Services

Work in this unit has been at about the same level, with some increase in loan requests.

Plant Security and Services Section

Stenographic Services (Contin)

Breakdown of Hours	October	November
Dictation and Transcription	10:00	:00
Machine Transcription	8:00	6:00
Letters	28:30	45:30
Rough Drafts	48:00	123:00
Stencils, Dittos, and Duplimats	808:15	435:30
Miscellaneous	991:45	524:00
Meeting Time	4:30	21:30
Training	533:35	571:30
Holiday and Vacation	:00	144:00
Unassigned Time	70:00	32:00
Total	2493:35	1903:00
Employees loaned to other Departments	927:00	1028:30
Total Hours Available	3430:15	2931:30

Area Mail and Duplicating

Good progress has been made in meeting with supervisors in the 100 and 200 Areas and making arrangements for assuming the duplicating and mail services, pending the arrival of duplicating equipment.

Training of duplicating personnel in Central Printing is continuing with good results being achieved.

Work in the 700 Area duplicating facilities shows a decrease this month, indicating more extensive usage of offset facilities and Xerography available at Central Printing. This trend will reverse when the Duplicating Units are set up to do offset - Xerography work.

Stencil and Fluid Duplicating	October	November
Orders received	963	839
Orders completed	972	834
Orders on hand	2	7
Number of stencils	2,830	1,816
Number of copies	440,717	269,670
Number of dittos	54,378	1,499
Collated orders	59	54
Collated copies	272,650	114,835

Records Control

Quantity of records received, processed and stored:

Community Real Estate & Services Department	12	Standard	Storage	Cartons
Employee and Public Relations Department	6	"	"	"
Engineering Department	88	"	"	"
Financial Department	58	"	"	"
General Administrative Department	1	"	"	"

Plant Security and Services Section

Records Control (Contin)

Manufacturing Department	40	Standard	Storage	Cartons
Medical Department	25	"	"	"
Radiological Sciences Department	17	"	"	"
Sub-Contractors:				
Atkinson & Jones	244	"	"	"
Vitro Corporation	2	"	"	"
Utilities & General Services Department	19	"	"	"
	512	Standard	Storage	Cartons

Persons provided records services: 789
Records cartons issued: 326
Filing Service provided: 29 man hours were expended filing records in with those already in storage.

Percentage of the Records Service Center vault occupied by records is 82% excluding Civilian Defense portion.

Uniform filing was established in forty-six offices during November, or two offices per day, and twenty-six call backs to offices were made during the month. In general, uniform filing is being well received by clerical personnel.

Two hundred five-drawer files that were rejected by the Atomic Energy Commission were shipped off the project.

Orders for three-hundred and twenty five file cabinets were placed by the Atomic Energy Commission.

Organization and Policy Guide No. 10.6 was issued November 5, 1951 and Office Letter No. 133 was issued November 16, 1951. This Organization and Policy Guide and Office Letter, in effect, establish the paper conservation program for the Nucleonics Division.

Procedures Analysis

	October	November
Printing orders received	508	445
Printing orders cancelled	27	24
New numbers assigned	139	129
Forms designed	72	75

Of the total annual savings derived from Forms Control, the one major savings occurred from the installation of a new form, M-2470-D, "Instruction For Tourniquet". This form is being used by Radiation Sciences, 300 Area. Previously, these forms were hand painted on plywood by the sign shop at a cost of $165 per 45 signs or $750 per 200 signs. Printing cost for the new forms is $7.85 per 200 forms. This saving is based on the present need for 200 forms. As soon as new projects are completed, 500 additional forms will be required.

Plant Security and Services Section

Procedures Analysis (Contin)

The Richland Police forms and procedures analysis has been completed. The final report and the Clerical Procedures Manual have been distributed. The total annual savings realized from this analysis are $1968.

The Payroll Classification Records Analysis has been completed. The total annual savings realized from this survey are $2583. The major portion of this amount comes from the revision of the existing "Addition to Payroll" form. A new six-part pre-carboned snap out type form has been designed, combining the old "Addition to Payroll" form with the present "Personnel Kardex" form. Resulting savings from the signle revision - $1990.

The recommendation report concerning Tabulating Services written August 1, 1951, has been adopted, verbatim. This recommendation will result in a centralized statistical, mathematical and analytical tabulating group. The first group to be serviced by this new organization will be Payroll. The adoption of this recommendation will result in $150,000 annual savings in equipment rental and operating labor. Since this service will be available to all departments, a substantial savings in labor cost will be realized by each one as this service is further utilized. No attempt is made at this time to evaluate this indeterminate amount. Evaluation will be made as each new customer department or section utilizes the service.

PATROL AND SECURITY

Two-hundred and ten General Electric employees were given oritentation talks which dealt with plant safety and security rules, also a brief resume of plans and policies of the General Electric Company for its employees.

One-hundred and thirty-two General Electric employees were given termination interviews, at which time the terminated employees were asked to sign Security Termination Statement and Security Acknowledgement, Atomic Energy Forms No. 136 and 15 respectively. Both of these forms and their meanings were discussed with the employees.

Two-hundred and twenty-four security meetings were held and attended by 3,346 General Electric employees.

The following security education items were issued this period:

Four items appeared in the Works NEWS concerning the subject of security.

Five-hundred security posters bearing the slogan "Loose Talk Can Be Fatal" were posted in business houses in Richland during the month; also, 500 copies of this poster were posted in the plant areas.

A representative of the Security group showed the following films during the month:

"On Guard" with 25 employees attending.
"The Case of the Smokeless Chimney" was shown at twenty-five meetings, with a total attendance of 500 employees.
"Sabotage" at one one meeting with 20 employees in attendance.

Plant Security and Services Section

Patrol and Security (Contin)

The latest security film entitled "The Man on the Left" was completed during November and will be available for showing at security meetings beginning December 1.

The following emergency plans were placed into effect during the month throughout the plant areas:

Number of practice evacuations held:	4
Number of practice blackouts:	11
Number of practice mobilizations:	15

A new procedure was established November 1 for the exclusion areas and main badge houses to search for essential material if found missing in one of the operations areas - as 221-T, 231, 234-5, etc. The Senior Supervisor starts the search by notifying the Exclusion Area Badge House patrolman, who immediately starts searching all vehicles and persons leaving the area. The patrolman immediately notifies his Shift Commander, who in turn notifies the other exclusion areas and all Main Badge Houses to search all vehicles and personnel leaving the area.

At 7:00 P.M., November 5, 1951, the post known as Room 205, 234-5 Building, was changed to a Top Secret post, and the Kardex files from Maintenance Shop "D" were placed at room 205. Also, this post was changed to a twenty-four hour post.

On November 5, the Maintenance Shop "D" in the 234-5 Building, was discontinued. This post required one patrolman.

The Redox Exclusion Area was designated as a health area effective November 5. At the same time, the Red Tag Pass procedure was instituted in this new health area.

On November 5, the 202-S Badge House, 200-W Area, was changed to a health badge area, thus eliminating the plastic type badges.

Effective November 8, the 181-B Tower, 100-B Area, will be manned 24 hours per day.

A meeting was held on November 9 with the National Carbon Company personnel, representatives of the Technical Section, Atomic Energy Commission and General Electric Security personnel, wherein tentative procedures were approved on the proposed "development contract" with the National Carbon Company, Niagara Falls, New York.

The 303 and 305 Exclusion Areas, 300 Area, were combined effective November 19. Patrol functions at the 305 Badge House will be moved to and handled at the 303 Badge House. The new combined exclusion area will be designated as the 303 Exclusion Area.

Instructions were issued to all Area Commanders on November 16 which provide the procedure for relocation of M-8 armored cars. One M-8 will be stationed at the Richland Barricade and two at the Patrol Training School. The Training Instructor will be responsible for having the other M-8's moved to the Training School for storage until excessed.

Plant Security and Services Section

Patrol and Security (Contin.)

The P-12 Exclusion Area was discontinued at 1:00 P.M., November 17, by 100-F Area Security Patrol.

On November 19, Patrol post 224-U Area Badge House was made a health badge area.

On November 22, the 277-S Badge House and vehicle gate was discontinued. This post required two patrolmen twenty-four hours per day.

The 189-D Building, 100-D Area, was classified as an exclusion area on November 23. This will be an additional Security Patrol post within the 100-D Area.

The new type badge racks were placed in operation at the 200-W Main Badge House on November 23. This improvement gave the operations personnel three entrance lanes for picking up their badges thus eliminating the time personnel had to wait in line to receive their badges.

Security Field Inspection activities:

Contacts made for missing documents:	34
Searches conducted for missing documents:	13
Classified documents located:	110
Combinations changed in file cabinets:	11
Searches conducted for missing documents charged to terminating personnel:	9

A total of 484 pat searches were made during the month. Escorts handled totalled 483.

Patrol made 27 ambulance runs during the month.

There were 4,867 badge transactions completed during the month, including "A", "B", "C" and temporary type badges.

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HANFORD WORKS
General Electric Company
Richland, Washington

REPORT OF VISITORS FOR PERIOD ENDING NOVEMBER 30, 1951

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class	Restricted Data Unclass	Areas
DESIGN AND CONSTRUCTION SECTION							
I. Visitors to this Works							
A. A. Batza General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	W. P. Ingalls	4-2-51	7-1-52	X		200-W 234, 235 234-5 Const
W. C. Bellows General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	W. P. Ingalls	9-7-51	7-1-52	X		200-W 234, 235 234-5 Const
C. D. Carroll General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	W. P. Ingalls	10-1-51	11-15-51	X		200-W 234, 235 234-5 Const
E. P. Diehl General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	W. P. Ingalls	11-5-51	7-1-52	X		200-W 234, 235 234-5 Const
L. H. Duff General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	W. P. Ingalls	10-22-51	11-20-51	X		200-W 234, 235 234-5 Const
J. Di Pietro General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	W. P. Ingalls	11-12-51	12-15-51	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
C. W. George General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	W. P. Ingalls	10-1-51	11-8-51	X		200-W 234, 235 234-5 Const
Edward Long General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	W. P. Ingalls	6-26-51	7-1-52	X		200-W 234, 235 234-5 Const
W. W. Moles General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	W. P. Ingalls	10-15-51	12-15-51	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	W. P. Ingalls	10-1-52	7-1-52	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	W. P. Ingalls	10-17-51	7-1-52	X		200-W 234, 235 234-5 Const
R. Siftar General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	W. P. Ingalls	10-1-51	7-1-52	X		200-W 234, 235 234-5 Const
L. D. Singleton Hadley Associates Burlington, Vermont	Consultation and installation of equipment on 432 Project	W. P. Ingalls	10-22-51	12-15-51	X		200-W 234, 235 234-5 Const
M. W. Vittum General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	W. P. Ingalls	10-30-51	12-15-51	X		200-W 234, 235 234-5 Const
N. H. Wood General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	W. P. Ingalls	10-15-51	12-15-51	X		200-W 234, 235 234-5 Const
R. W. Stanhouse Gen. Eng. Lab., Schenectady	Consultation and installation of equipment on 432 Project	W. P. Ingalls	10-17-51	12-1-51	X		200-W 234, 235

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
J. B. McClure General Engineering Laboratory Schenectady, New York	Industrial planning study	J. S. Parker H. W. Huntley	11-26-51	11-29-51	X		Redox 700
R. G. Lorraine General Engineering Laboratory Schenectady, New York	Industrial planning study	J. S. Parker H. W. Huntley	11-26-51	11-29-51	X		Redox 700
A. G Mellor General Engineering Laboratory Schenectady, New York	Industrial planning study	J. S. Parker	11-26-51	11-29-51	X		Redox 700
S. L. Stoller Vitro Corporation New York, New York	Consultation on Project D-431-B	R. K. Andersen V. D. Nixon J. R. Wolcott	11-2-51	11-16-51	X		700 105-C
J. Maloy Vitro Corporation New York, New York	Consultation on Project C-431-B	R. K. Andersen V. D. Nixon	11-27-51	11-30-51	X		700 221-U, 224-U 105-C,
W. H. Bruggeman Knolls Atomic Power Laboratory Schenectady, New York	Study Separations & Reactor Design	V. D. Nixon	11-29-51	11-29-51		X	700
W. W. Kendall Knolls Atomic Power Laboratory Schenectady, New York	Study Separations & Reactor Design	V. D. Nixon	11-29-51	11-29-51		X	700
M. S. Davis Knolls Atomic Power Laboratory Schenectady, New York	Study Separations & Reactor Design	V. D. Nixon	11-29-51	11-29-51		X	700
C. D. Carroll General Engineering Laboratory Schenectady, New York	Study 313 Building mechanization	H. P. Shaw W. A. Blanton P. J. O'Neil E. A. Smith	11-1-51	11-1-51	X		300 313

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
L. H. Duff General Engineering Laboratory Schenectady, New York	Study 313 Building mechanization	H. P. Shaw W. A. Blanton P. J. O'Neil	11-1-51	11-1-51	X		300 313
C. W. George General Engineering Laboratory Schenectady, New York	Study 313 Building mechanization	H. P. Shaw W. A. Blanton P. J. O'Neil	11-1-51	11-1-51	X		300 313
R. W. Stanhouse General Engineering Laboratory Schenectady, New York	Study 313 Building mechanization	H. P. Shaw W. A. Blanton P. J. O'Neil	11-1-51	11-1-51	X		300 313
N. H. Wood General Engineering Laboratory Schenectady, New York	Study 313 Building mechanization	H. P. Shaw W. A. Blanton P. J. O'Neil	11-1-51	11-1-51	X		300 313
R. L. Tower Tower Equipment Company Seattle, Washington	Inspect equipment installed by his firm	J. A. Larkin	11-1-51	11-1-51		X	277-S
H. A. Wilcox Eastern Industries Chicago, Illinois	Inspect equipment installed by his firm	J. A. Larkin	11-1-51	11-11-51		X	277-S
L. W. Dietrich Milwaukee Railroad Kennewick, Washington	Help in loading equipment onto train cars at 101	E. Schuchart	11-5-51	11-7-51		X	101 Hanford
L. C. Ford General Electric Company Spokane, Washington	Inspect equipment installed by Apparatus Division, General Electric	R. C. Hollingshead	11-7-51	11-8-51		X	277-S
II. Visits to other Installations							
V. G. Blanchette Vitro Corporation New York, New York	Coordinate design on Project C-431-B	G. A. Vincent	11-26-51	11-29-51	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
H. S. Davis to; Los Alamos Scientific Lab. Los Alamos, New Mexico	Obtain information on weapon's effect on structures, i.e, Program III of Entewatok tests	Major A. S. Knauff	11-28-51	12-6-51	X		
H. S. Davis to: Albuquerque, New Mexico	Obtain information on weapon's effect on structures, i.e., Program III of Entewetok tests	E. F. Cox	11-28-51	12-6-51	X		
J. A. Larkin to: Knolls Atomic Power Lab. Schenectady, New York	Excess material on Project C-198	H. E. Scott	11-27-51	11-29-51	X		
J. A. Larkin to: General Engineering Lab. Schenectady, New York	Excess material on Project C-198	C. W. George	11-27-51	11-29-51	X		
C. E. Love to: Puget Sound Navy Shipyard Bremerton, Washington	Inspect equipment on order	W. L. Horner	11-6-51	11-8-51	X		
R. C. Mann to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Consultation and inspection of instruments for instrumentation study	R. E. Schreiber	11-23-51	11-23-51	X		
R. C. Mann to: Argonne National Lab. Chicago, Illinois	Consultation and inspection of instruments for instrumentation study	H. L. Hull	11-24-51	11-24-51	X		
R. C. Mann to: Radiation Laboratory University of California Berkeley, California	Consultation and inspection of instruments for instrumentation study	N. B. Garden	11-20-51	11-20-51	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
O. H. Pilkey to: Atomic Energy Commission Las Vegas, Nevada	Discuss and witness tests of structures	Colonel M. S. George	11-26-51	11-29-51	X		
O. H. Pilkey to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Discuss and study resistance of structures to air blast	Major A. S. Knauff	11-30-51	12-4-51	X		
O. H. Pilkey to: Sandia Corporation Albuquerque, New Mexico	Discuss and study resistance of structures to air blast	E. F. Cox	11-28-51	12-3-51	X		
O. W. Priebe to: National Research Council New York, New York	Conference on radioactivity laboratory design	A. F. Thompson, AEC	11-27-51	11-28-51		X	
F. H. Shadel to: Atomic Energy Commission Las Vegas, Nevada	Discuss and witness tests of structures	Colonel M. S. George	11-26-51	11-29-51	X		
F. H. Shadel to: Sandia Corporation Albuquerque, New Mexico	Discuss and study resistance of structures to air blast	E. F. Cox	11-30-51	12-3-51	X		
F. H. Shadel to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Discuss and study resistance of structures to air blast	Major A. S. Knauff	11-30-51	12-4-51	X		
G. H. Strong to: General Engineering Lab. Schenectady, New York	Discuss Ball 3X electromagnetic conveyor model being built at Schenectady for Hanford	D. H. Marquis	11-26-51	11-29-51	X		
N. H. Watkins to: Puget Sound Navy Shipyard Bremerton, Washington	Inspect equipment on order	W. L. Horner	11-14-51	11-16-51	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
T. Williams to: Nagle Pumps, Inc. Chicago Heights, Illinois	Engineering consultation on pumps	C. L. Edwards	11-6-51	11-12-51		X	
D. D. Taylor to: General Electric Co. Lynn, Massachusetts	Graphic Reproduction Meeting	A. H. Rau	11-1-51	11-1-51		X	
J. S. McMahon to: Atomic Energy Commission Las Vegas, Nevada	Inspection of facility	- -	11-4-51	11-5-51	X		
B. E. Woodward to: Panellit, Inc. Chicago, Illinois	Discuss instrument design and procurement problems on Project C-431-B	A. F. Sperry	11-4-51	11-15-51		X	
B. E. Woodward to: Foxboro Company Foxboro, Massachusetts	Discuss instrument design and procurment problems on Project C-431-B	M. F. Parr	11-4-51	11-15-51		X	
C. W. Harrison to: Puget Sound Navy Shipyard Bremerton, Washington	Consultation on HS-47	Mr. Hicks Captain Webster	11-5-51	11-7-51	X		
J. R. Carrell to: Apex Steel Corporation Los Angeles, California	Consult with vendor on bottom insulating layer and horizontal rod	Mr. Robertson	11-7-51	11-9-51		X	
J. R. Carrell to: Coast Centerless Los Ang les, California	Consult with vendor on bottom insulating layer and horizontal rod	Mr. Raite	11-7-51	11-9-51		X	
E. L. Reed to: Apex Steel Corporation Los Angeles, California	Consult with vendor on bottom insultating layer and horizontal rod	Mr. Robertson	11-7-51	11-9-51		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
E. L. Reed to: Coast Centerless Los Angeles, California	Consult with vendor on bottom insulating layer and horizontal rod	Mr. Raite	11-7-51	11-9-51		X	
J. B. Medlin to: Tube Reducing Corporation Wallington, New Jersey	Consult with vendor on design	Mr. Mergarle	11-12-51	11-12-51		X	
J. B. Medlin to: American Machine & Foundry Buffalo, New York	Consult with vendor on design	Mr. Wilson	11-13-51	11-13-51		X	
J. B. Medlin to: Atlantic Metal Hose New York, New York	Consult with vendor on design	Mr. Reubin	11-14-51	11-14-51		X	
J. B. Medlin to: E. W. Bliss & Company Canton, Ohio	Contact vendor	R. V. Moss	11-15-51	11-15-51		X	
J. B. Medlin to: Whiting Corporation Chicago, Illinois	Contact vendor	Mr. Rice	11-16-51	11-16-51		X	
J. R. Fritz to: Puget Sound Navy Shipyard Bremerton, Washington	Information on fabrication of "B" blocks	C. S. Powers	11-5-51	11-5-51	X		
C. E. Bonham to: Alaskan Copper Works Seattle, Washington	Witness tests of substandard bellows assays	Mr. Cahill	11-14-51	11-14-51		X	
C. W. Harrison to: Puget Sound Navy Shipyard Bremerton, Washington	Consult on HS-47	S. L. Allison	11-30-51	11-30-51	X		
E. S. Bell to: Bay Company Tacoma, Washington	Consult on Project C-349	P. DuCharme	11-13-51	11-13-51		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
B. E. Woodward to: Vitro Corporation New York, New York	Discuss instrumentation on Project C-431-B	G. A. Vincent	11-12-51	11-16-51	X		
I. Visitors to this Works (cont'd)							
E. J. Hatfield General Engineering Laboratory Schenectady, New York	Consultation and installation of equipment on 432 Project	W. P. Ingalls	11-26-51	12-22-51	X		200-W 234,235 234-5 Const
II. Visits to other Installations (cont'd)							
J. M. Fox, Jr. to: Crane Company Chicago, Illinois	Metallurgy work on connectors	- -	11-1-51 11-14-51	11-1-51 11-15-51		X X	
J. M. Fox, Jr. to: Schenectady Works Lab. Schenectady, New York	Casting problems	- -	11-17-51	11-20-51		X	
J. M. Fox, Jr. to: Michigan Steel Products Chicago, Illinois	Connectors and valves, Project C-362	- -	11-26-51	11-30-51		X	
J. M. Frame to: Crane Company Chicago, Illinois	Design consultation	P.M. Weiss	10-29-51	11-20-51		X	
G. S. Cochrane to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Work in connection with DP West work on metal fabrication	R. D. Baker	11-5-51	11-9-51	X		
G. S. Cochrane to: General Engineering Lab. Schenectady, New York	Liaison work on 234-5 Building Program	J. E. Brown	11-12-51	11-16-51	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
A. F. Luebke to: Bay Company Tacoma, Washington	Consult on Project C-349	P.DuCharme	11-13-51	11-13-51		X	
E. S, Bell to: Alaskan Copper Company Seattle, Washington	Consult on Project C-349	R. A. Kamb	11-14-51	11-14-51		X	
A. F. Luebke to: Alaskan Copper Company Seattle, Washington	Consult on Project C-349	R. A. Kamb	11-14-51	11-14-51		X	
P. M. Murphy to: Vitro Corporation New York, New York	Design consultation on Project C-341-B	G. White, Jr.	11-8-51	11-9-51	X		
EMPLOYEE RELATIONS							
I. Visits to other Installations							
W. A. Halteman to: Atomic Energy Commission Washington, D. C.	Attend meeting of Ad Hoc Committee on technological information	M. Salisbury, AEC N. H. Jacobson, AEC	11-6-51	11-9-51		X	
B. S. Havens (to this Works) General Electric Company Schenectady, New York	Discussion on Hanford Technical Report	G. L. Browne	10-16-51	11-14-51	X		700
MANAGEMENT							
I. Visitors to this Works							
O. G. Paasche Oregon State College Corvallis, Oregon	Consultation on zirconium	R. Ward	11-30-51	11-30-51		X	
D. S. Roberts General Electric Company Schenectady, New York	Inspect facilities regarding transfers	W. I. Patnode	11-5-51	11-9-51	X Redox;	300 XXX; 100-D 105; 100-H-105; 200-W 234, 235	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
A. U. Seybolt Knolls Atomic Power Laboratory Schenectady, New York	Meturgical discussion	R. J. Schier	11-26-51	11-30-51	X	300 XXX	
D. W. White Knolls Atomic Power Laboratory Schenectady, New York	Meturgical discussion	R. J. Schier	11-26-51	11-30-51	X	300 XXX	
B. S. Havens General Electric Company Schenectady, New York	Consultation on Hanford Achievement Report	G. R. Prout O. N. Walden (Printing)	10-16-51	11-14-51	X	700	
MANUFACTURING DEPARTMENT							
I. Visitors to this Works							
J. B. McClure General Engineering Laboratory Schenectady, New York	Industrial planning study	W. K. MacCready	11-26-51	11-30-51	X	700	
R.G. Lorraine General Engineering Laboratory Schenectady, New York	Industrial planning study	W. K. MacCready	11-26-51	11-30-51	X	700	
A. G. Mellor General Engineering Laboratory Schenectady, New York	Industrial planning study	W. K. MacCready	11-26-51	11-30-51	X	700	
W. H. Bruggeman Knolls Atomic Power Laboratory Schenectady, New York	Inspection and discussion on irradiation experiments	J. E. Maider	11-28-51	11-30-51	X	700; 300-303; Redox; 200-W 221-T, 231; 100-H-105	
M. S. Davis Knolls Atomic Power Laboratory Schenectady, New York	Inspection and discussion on irradiation experiments	J. E. Maider	11-28-51	11-30-51	X	700; 300-303; Redox; 200-W 221-T, 231; 100-H-105	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
W. W. Kendall Knolls Atomic Power Laboratory Schenectady, New York	Inspection and discussion on irradiation experiments	J. E. Maider	11-26-51	11-30-51	X		700; 300-303; Redox; 200-W 221-T, 231; 100-H-105
G. S. Mikhalapov Knolls Atomic Power Laboratory Schenectady, New York	Inspection and discussion on irradiation experiments	J. E. Maider	11-26-51	11-30-51	X		700; 300-303; Redox; 200-W 221-T, 231; 100-H-105
G. R. Grove Mound Laboratory Miamisburg, Ohio	Discuss measurements on and processing of pieces	C. N. Gross	11-19-51	11-21-51	X		300-303,305; 100-H-105
M. M. Haring Mound Laboratory Miamisburg, Ohio	Discuss measurements on and processing of pieces	C. N. Gross	11-19-51	11-21-51	X		300-303, 305; 100-H-105
M. McEwen Mound Laboratory Miamisburg, Ohio	Discuss measurements on and processing of pieces	C. N. Gross	11-19-51	11-21-51	X		300-303, 305; 100-H-105
D. L. Scott Mound Laboratory Miamisburg, Ohio	Discuss measurements on and processing pieces	C. N. Gross	11-19-51	11-21-51	X		300-303, 305; 100-H-105
C. G. Kruse International Business Machines Kennewick, Washington	Service IBM equipment	J. H. Warren L. T. Hagie	11-5-51	11-7-51		X	100-H-105
M. E. Norby International Business Machines Kennewick, Washington	Service IBM equipment	J. H. Warren L. T. Hagie	11-19-51 11-23-51	11-19-51 11-23-51		X X	100-H-105 100-H-105
A. E. Boas Worthington Pump and Machinery Spokane, Washington	Service equipment installed by his firm	J. F. Heberer	11-27-51	12-8-51		X	100-F 190 100-DR 190

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
T. D. Martin Worthington Pump and Machinery Spokane, Washington	Service equipment installed by his firm	J. F. Heberer	12-3-51	12-31-51		X	100-F 190 100-DR 190
G. M. Smith Idaho Operations Office Arco, Idaho	Consultation and inspection of facilities	C. N. Gross J. E. Maider	11-26-51	11-29-51	X		100-H-105 Redox; 200-N 300-313
E. E. Shields Idaho Operations Office Arco, Idaho	Consultation and inspection of facilities	C. N. Gross J. E. Maider	11-26-51	11-29-51	X		100-H 105 Redox; 200-N 300-313
J. W. McCaslin Phillips Petroleum Company Arco, Idaho	Health physics training	P. C. Jerman L. V. Barker J. G. Myers	11-28-51	11-29-51	X		100-B 105 100-D 105, D and DR
J. W. McCaslin Phillips Petroleum Company Arco, Idaho	Health physics training	P. C. Jerman L. V. Barker J. G. Myers	11-28-51	11-29-51	X		100-B 105 100-D 105, D and DR
II. Visits to other Installations							
J. T. Baker to: Oak Ridge National Lab. Oak Ridge, Tennessee	Meeting for discussion of production problems	A. J. VanderWeyden	11-15-51	11-17-51	X		
C. W. Botsford to: Chemical Industries Exposition New York, New York	Attend exposition	- -	11-26-51	11-27-51		X	
C. W. Botsford to: Argonne National Lab. Chicago, Illinois	Discuss corrosion and Process Unit work	J. E. Draley	11-30-51	11-30-51	X		
C. W. Botsford to: Knolls Atomic Power Lab. Schenectady, New York	Discuss instrumentation and cocooning as applied to Process Unit work	C. E. Weber	11-28-51	11-29-51	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
C. N. Gross to: Atomic Energy Commission Las Vegas, Nevada	Inspection of tests and facility	AEC personnel	11-3-51	11-5-51	X		
C. N. Gross to: University of Washington Seattle, Washington	Recruit technical personnel	- -	11-19-51	11-20-51		X	
RADIOLOGICAL SCIENCES DEPARTMENT							
I. Visitors to this Works							
C. S. Comar (consultant for OR) University of Tennessee Knoxville, Tennessee	Visit Hanford farm for high level isotopes studies with sheep	H. A. Kornberg	11-1-51	11-5-51		X	100-F-108-F
E. Fast Phillips Petroleum Company Arco, Idaho	Health physics training	W. A. McAdams M. L. Mickelson	11-26-51	12-14-51	X		300 XXX; 100-B 105; 100-D-105; 100-F-105; 100-H 105; 200-E 271-B; 200-W 271-T, 231,234; Redox
J. W. McCaslin Phillips Petroleum Company Arco, Idaho	Health physics training	W. A. McAdams M. L. Mickelson	11-26-51	12-14-51	X		300 XXX; 100-B 105; 100-D-105; 100-F-105; 100-H 105; 200-E 271-B; 200-W 271-T, 231,234; Redox
M. E. Ensminger Washington State College Pullman, Washington	Consultation at experimental farm	H. A. Kornberg	11-6-51	11-6-51		X	100-F-XXX
A. G. Mellor General Engineering Laboratory Schenectady, New York	Industrial planning study	H. M. Parker	11-26-51	11-29-51	X		700

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
R. G. Lorraine General Engineering Laboratory Schenectady, New York	Industrial planning study	H. M. Parker	11-26-51	11-29-51	X	700	
J. B. McClure General Engineering Laboratory Schenectady, New York	Industrial planning study	H. M. Parker	11-26-51	11-29-51	X	700	
B. R. Prentice Nucleonics Department General Electric Company Schenectady, New York	Consultation on health physics	H. M. Parker	11-14-51	11-15-51	X		
E. E. Held University of Washington Seattle, Washington	Consultation on health physics	H. A. Kornberg	11-19-51	11-21-51		X	100-F XXX
L. R. Donaldson University of Washington Seattle, Washington	Consultation on meteorology	D. E. Jenne	11-19-51	11-20-51		X	
J. E. Rose Argonne National Laboratory Chicago, Illinois	Consultation on health physics	H. M. Parker	11-14-51	11-15-51		X	
II. Visits to other Installations							
F. E. Adley to: Atomic Energy Commission Las Vegas, Nevada	Inspection after recent atomic tests	AEC personnel	11-5-51	12-5-51	X		
M. L. Barad to: University of Washington Seattle, Washington	Meteorological discussions on meteorological facilities	P. E. Church R. G. Fleagle	11-29-51	12-1-51	X		
R. F. Foster to: Seattle, Washington	Acquisition of salmon eggs	- -	11-19-51	11-19-51		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
H. M. Parker to: Atomic Energy Commission Washington, D. C.	Discuss radiation protection problems	S. Warren W. D. Claus J. Deal	11-27-51	11-30-51	X		
H. M. Parker to: Chicago, Illinois	Attend Rad. Society of North America meeting	- -	12-2-51	12-3-51		X	
H. A. Kornberg to: Chicago, Illinois	Attend Rad. Society of North America meeting	- -	12-2-51	12-3-51		X	
W. C. Roesch to: Argonne National Lab. Chicago, Illinois	Discuss neutron and beta dosimetry problems	R. E. Zirkle J. E. Rose Dr. Shonka	11-12-51	11-15-51	X		

PURCHASING AND STORES SECTION-Utilities and General Services Dept.

I. Visitors to this Works

E. E. Stevens Bumstead-Woolford Company Seattle, Washington	Supervision of erection of water softener	G. J. Hayward	10-29-51	12-3-51		X	200-W 284
H. A. Wilcox Eastern Industries Mercer Island, Washington	Supervision of agitator run-in test	G. J. Hayward	10-29-51	12-3-51		X	200-W 241-WR 244-UR
O. F. Bienz Pacific Car and Foundry Seattle, Washington	Examine structural steel	G. J. Hayward	11-30-51	11-30-51		X	100-C 105-C
F. A. Carter General Electric Company Seattle, Washington	Examine project RR engine locomotive	H. B. Beers	11-20-51	11-20-51		X	Riverland
W. A. Shearer Wash. Public Service Comm. Olympia, Washington	Inspection and certification of HW railroad scales	E. G. Jones	11-6-51	11-6-51		X	Riverland

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass	Areas
M. Brill Lee and Estes Kennewick, Washington	Deliver material on order 83029-M	W. H. Sutton	11-2-51	11-2-51		X	100-B 105
	Deliver material on order 83029-M	W. H. Sutton	11-7-51	11-7-51		X	100-F 105
	Deliver material on order 83029-M	W. H. Sutton	11-12-51	11-12-51		X	100-D 105
F. F. Smith Inland Motor Freight Kennewick, Washington	Deliver material on order	W. H. Sutton	11-5-51	11-5-51		X	100-D 189
G. Hixon Inland Motor Freight Kennewick, Washington	Deliver material on order	W. H. Sutton	11-5-51	11-5-51		X	100-D 189
	Deliver material on order HW 83096	W. H. Sutton	11-6-51	11-6-51		X	Redox 202-S
	Deliver material on order HW 86096	W. H. Sutton	11-6-51	11-6-51		X	100-B
B. V. Brown Inland Motor Freight Kennewick, Washington	Deliver material on order	W. H. Sutton	11-5-51	11-5-51		X	100-D 189
F. F. Smith Inland Motor Freight Kennewick, Washington	Deliver material on order HW 86096	W. H. Sutton	11-6-51	11-6-51		X	100-F
W. H. Meachern Inland Motor Freight Kennewick, Washington	Deliver material on order HW 86096	W. H. Sutton	11-6-51	11-6-51		X	100-F
R. Bagley West Coast Fast Freight Kennewick, Washington	Deliver material on order HW 9071	W. H. Sutton	11-8-51	11-8-51		X	200-W XXX
L. Wilson Lee and Estes Kennewick, Washington	Deliver material on order HW 83029-M	W. H. Sutton	11-14-51	11-14-51		X	100-B 105

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
A. Wiegard Consolidated Freightways Kennewick, Washington	Deliver material on order D61579	W. H. Sutton	11-16-51	11-16-51		X	101
H. Riggs West Coast Fast Freight Kennewick, Washington	Deliver material on order 83029-M	W. H. Sutton	11-28-51	11-28-51		X	100-F 105
D. L. Beeman Apparatus Department General Electric Schenectady, New York	Inspect electrical distribution system	J. F. Spease	10-31-51	10-31-51		X	100-H XXX 200-W XXX
G. M. Clifton Apparatus Department General Electric Pasco, Washington	Inspect electrical distribution system	J. F. Spease	10-31-51	10-31-51		X	100-H XXX 200-W XXX
II. Visits to other Installations							
C. P. Fleming to: Puget Sound Navy Shipyard Bremerton, Washington	Expedite material on order	S. L. Allison	11-14-51	11-14-51	X		
C. P. Fleming to: J. M. Gauntlett Company Seattle, Washington	Expedite material on order	Mr. McCurthy	11-15-51	11-15-51		X	
H. A. Hauser to: Foster Wheeler Corp. New York, New York	Procurement of material on order	G. D. Dodd	11-19-51	11-20-51		X	
H. A. Hauser to: Vitro Corporation New York, New York	Procurment of material on order	A. Kuhms	11-20-51	11-20-51		X	
H. A. Hauser to: Farrel-Birmingham Ansonia, Connecticut	Procurement of material on order	Mr. Drake [redacted]	11-21-51	11-21-51		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
H. A. Hauser to: Atomic Energy Commission Washington, D. C.	Procurement of material	R. Lee	11-26-51	11-26-51		X	
H. A. Hauser to: Balmar Corporation Baltimore, Maryland	Procurement of material on order	Mr. Lewis	11-26-51	11-26-51		X	
H. A. Hauser to: Sunship Building Co. Chester, Pennsylvania	Procurement of material on order	A. Norton	11-27-51	11-27-51		X	
H. A. Hauser to: O. G. Kolley Co. Boston, Massachusetts	Procurement of material on order	O. G. Kolley	11-28-51	11-28-51		X	
J. C. Hamilton to: A. O. Smith Milwaukee, Wisconsin	Expediting and inspection	Mr. Phillippi	11-5-51	11-5-51		X	
J. C. Hamilton to: Crane Company Chicago, Illinois	Expediting and inspection	Mr. P. M. Weiss	11-6-51	11-6-51		X	
J. C. Hamilton to: Foster Wheeler Corp. Cartaret, New Jersey	Expediting and inspection	Mr. Tibbs	11-7-51	11-7-51		X	
J. C. Hamilton to: Hammel-Dahl Co. Providence, Rhode Island	Expediting and inspection	Mr. Dahl	11-8-51	11-8-51		X	
J. C. Hamilton to: Patterson Foundry & Mach. East Liverpool, Ohio	Expediting and inspection	- -	11-9-51	11-9-51		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
J. C. Hamilton to: Tube Reduction Corp. Possaic, New Jersey	Expediting and inspection	Mr. Magargle	11-12-51	11-13-51		X	
J. C. Hamilton to: E. W. Bliss Company Canton, Ohio	Expediting and inspection	Mr. Tredinnick	11-15-51	11-15-51		X	
J. C. Hamilton to: American Machine & Foundry Buffalo, New York	Expediting and inspection	Mr. Wilson	11-14-51	11-14-51		X	
J. C. Hamilton to: Whiting Corporation Harvey, Illinois	Expediting and inspection	Mr. Rice	11-16-51	11-16-51		X	
J. F. Spease to: Knolls Atomic Power Lab. Schenectady, New York	Discuss procurement problems of critical material	H. E. Scott	11-19-51	11-30-51	X		
J. F. Spease to: Atomic Energy Commission Washington, D. C.	Discuss procurement problems of critical material	E. J. Block C. R. Lee	11-19-51	12-7-51	X		
J. F. Spease to: Vitro Corporation New York, New York	Procurement of construction material	G. E. Sage G. White, Jr.	11-20-51	11-20-51	X		
H. A. Hauser to: Vitro Corporation New York, New York	Procurement of construction material	G. E. Sage G. White, Jr.	11-20-51	11-20-51	X		
I. Visitors to this Works (cont'd)							
H. A. Riggs West Coast Fast Freight Kennewick, Washington	Deliver material on order HW 83029	W. H. Sutton	11-23-51	11-23-51		X	100-D XXX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass	Areas
F. Balestriere Lee and Estes Kennewick, Washington	Deliver material on order HWC-17378	W. H. Sutton	11-23-51	11-23-51		X	100-F 183
TECHNICAL SECTION - Engineering Department							
I. Visitors to this Works							
A. M. Bounds Superior Tube Company Norristown, Pennsylvania	Consultation on zirconium	J. H. Bach	11-1-51	11-13-51	X		100-D 105 300 305-A,313
D. Crumb International Business Machines Richland, Washington	Service IBM machines	P. M. Thompson D. E. Davenport	11-1-51 11-26-51	11-30-51 11-26-51		X	300 3707-C 100-D
L. M. Currie National Carbon Research Corp. Cleveland, Ohio	Consultation regarding contract at Niagara Falls on graphite	W. K. Woods	11-8-51	11-9-51	X		300 XXX 101
R. Elson Argonne National Laboratory Chicago, Illinois	Discussion of pile irradiations	R. E. Nather	11-15-51	11-16-51	X		300 3706
M. R. Fonske Pennsylvania State College State College, Pennsylvania	Separations process technology discussion	R. B. Richards	11-26-51	11-28-51	X		700; 300-XXX; Redox; 221-U; 224-U; 241-U
M. J. Gross Knolls Atomic Power Laboratory Schenectady, New York	KAPL assistance on P-10 and separations and reactor technology	H. L. Mars J. A. Ayres	11-9-51	11-12-51	X		300-XXX; 700; 200-W 231; 221-T Redox; 221-U; 224-U; 241-U; 100-B 105,108; 100-D 105, 189 105-DR; 300-313, 305-A

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data. Class.	Unclass	Areas
V. C. Hamister National Carbon Research Corp. Cleveland, Ohio	Consultation regarding contract at Niagara Falls on graphite	W. K. Woods	11-8-51	11-9-51	X		300 XXX 101
C. A. Hanson, Jr. Knolls Atomic Power Laboratory Schenectady, New York	General discussion on instrumentation for 234-5 Program	B. Weidenbaum D. W. Pearce	11-5-51	11-9-51	X		100-H 105; 100-D 105 200-W 2704-Z 700; 300-XXX
C. G. Kruse International Business Machines Kennewick, Washington	Service IBM machines	P. M. Thompson D. E. Davenport D. E. Davenport	11-1-51 11-7-51 11-27-51	11-30-51 11-7-51 11-27-51		X X X	300 3707-C 100-D 105-DR 100-D 105-DR
H. G. MacPherson National Carbon Research Corp. Cleveland, Ohio	Consultation regarding contract on Niagara Falls on graphite	W. K. Woods	11-8-51	11-9-51	X		300 XXX 101
J. Marsden Knolls Atomic Power Laboratory Schenectady, New York	Consultation on P-10, material separation, 234, product preparation, etc	H. L. Mars J. A. Ayres R. B. Richards	11-7-51	11-13-51	X		300 305-A,313; 700; 200-W 234-5 Const; 231; Redox; 221-U; 224-U; 241-U; 100-B 105, 108; 100-D 189, 105 105-DR
M. E. Norby International Business Machines Kennewick, Washington	Service IBM machines	P. M. Thompson	11-1-51	11-30-51		X	300 3707-C
H. L. Pemberthy Pemberthy Instrument Company Seattle, Washington	Exhibit lead glass	J. A. Berberet	11-20-51	11-20-51			300 XXX
F. W. Schumacher Standard Oil Development Co. Bayway, New Jersey	Separations process technology discussion	R. B. Richards	11-26-51	11-28-51	X		700; 300-XXX; Redox; 221-U; 224-U; 241-U

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
E. E. Shields American Cyanamide Company Arco, Idaho	Study decontamination and operating procedures	R. B. Richards	11-26-51	11-30-51	X		300 XXX
G. M. Smith American Cyanamide Company Arco, Idaho	Study decontamination and operating procedures	R. B. Richards	11-26-51	11-30-51	X		300 XXX
R. C. Warren International Business Machines Richland, Washington	Service IBM equipment	P.M. Thompson D.E. Davenport	11-26-51	11-26-51		X	100-D
A. F. Wells General Electric Company Schenectady, New York	Service mass spectrometer	R. J. Brouns	11-26-51	12-12-51	X		100-B 108 300 XXX
J. E. Draley Argonne National Laboratory Chicago, Illinois	Obtain information on corrosion of aluminum alloys in process water	R. S. Dalrymple	11-1-51	11-2-52	X		100-B 105; 100-D 105 300 303
L. H. Duff General Engineering Laboratory Schenectady, New York	P-10 consultation	W. M. Harty	11-1-51	11-17-51	X		100-B 108
J. W. Norris Atomic Energy Commission Oak Ridge, Tennessee	Standard distribution list for Research and Dev. Reports	C. G. Stevenson	11-30-51	11-30-51		X	
Dr. Zeigler Atomic Energy Commission Washington, D. C.	SF Accountability	B. F. Butler W. C. Healy L. G. Waters	11-30-51	11-30-51		X	300 XXX
P. Deans E. I. du Pont de Nemours & Co. Wilmington, Delaware	Gain knowledge for setting up statistical quality control system at Svannah River Plant	B. F. Butler L. G. Waters	11-2-51	11-2-51	X		300 XXX
K. H. Kingdon Knolls Atomic Power Lab., Schenectady	Redox inspection	R. B. Richards	11-5-51	11-5-51	X		Redox

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
T. E. Usher General Electric Company Schenectady, New York	Discussion of mass spectrometer	R. J. Brouns	10-29-51	11-9-51	X		100-B 108 300 XXX
A. F. Scott Reed College Portland, Oregon	Discuss work in regard to subcontract	F. W. Albaugh A. H. Bushey H. R. Schmidt R. J. Brouns	11-5-51	11-6-51	X		300 XXX 200-W 221-T, 231 Redox
H. G. Poole Bureau of Mines Albany, Oregon	Discuss reclaimed tin problem	G. J. Behling	11-29-51	11-29-51		X	300 XXX
II. Visits to other Installations							
J. J. Cadwell to: Oak Ridge National Lab. Oak Ridge, Tennessee	Consultation regarding slug failures	E.J.Boyle	11-29-51	11-30-51	X		
A. B. Carson to: Oak Ridge National Lab. Oak Ridge, Tennessee	Discussion of production problems	A. J. VanderWeyden	11-15-51	11-16-51	X		
P.F.X. Dunigan to: Nat'l Academa of Sciences Washington, D. C.	Symposium on Radioactivity Laboratory Design-AEC-AIA	- -	11-27-51	11-28-51	X		
P.F.X. Dunigan to: Knolls Atomic Power Lab. Schenectady, New York	Inspect laboratory construction design	H. H. Race H. H. Zornig	11-29-51	12-4-51	X		
C. A. Goodall to: Oak Ridge National Lab. Oak Ridge, Tennessee	Study mass spectrometer analyses for uranium isotopes	F. W. Hurd	11-5-51	11-9-51	X		
D. P. Granquist to: Argonne ational Lab. Chicago, Illinois	Technical consultation on Purex	S. Lawroski L. Burris R. Vogel	11-5-51	11-7-51	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
D. P. Granquist to: Oak Ridge National Lab. Oak Ridge, Tennessee	Technical consultation on Purex	F. L. Steahly H. K. Jackson J. O. Davis	11-7-51	11-9-51	X		
D. P; Granquist to: Knolls Atomic Power Lab. Schenectady, New York	Technical consultation on Purex	J. Marsden B. V. Coplan E. J. Reber	11-12-51	11-14-51	X		
D. P; Granquist to: E. I. du Pont de Nemours & Co. Wilmington, Delaware	Technical consultation on Purex	F. S. Chambers H. A. L. Fritze J. D. Ellett	11-14-51	11-16-51	X		
W. M. Harty E. I. du Pont de Nemours & Co. Terre Haute, Indiana	Technical consultation as requested by dupont	J. A. Monier	11-5-51	11-9-51	X		
W. T. Kattner to: Mallinckrodt Chem. Wks. St. Louis, Missouri	Discuss metal fabrication development program	W. H. Keller	11-19-51	11-23-51	X		
W. T. Kattner to: Bar Mill, Allegheny Ludlum Watervliet, New York	Discuss metal fabrication development program	Mill Supt.	11-1-51	4-1-52	X		
W. T. Kattner to: Simonds Saw & Steele Lockport, New York	Discuss metal fabrication development program	A. D. Potts	11-1-51	4-1-52	X		
W. T. Kattner to: Bar Mill, Bethlehem Steel Co. Lackawanna, New York	Discuss metal fabrication development program	Mr. Henderson	11-1-51	4-1-52	X		
W. T. Kattner to: Atomic Energy Commission New York, New York	Discuss material fabrication development program	R. J. Smith R.E.L. Stanford F. G. Stroke	11-1-51	4-1-52	X		
D. C. Kaulitz to: Argonne National Lab., Chicago	Consult on remote laboratory equipment	J. Schraidt	11-9-51	11-12-51	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class	Restricted Data Unclass	Areas
D. C. Kaulitz to: Westinghouse Atomic Power Div. Pittsburgh, Pennsylvania	Consult on remote laboratory equipment	R. H. Filnow	11-14-51	11-14-51	X		
M. B. Leboeuf to: Knolls Atomic Power Lab. Schenectady, New York	Consult concerning latest development in counting instrumentation	B. F. Rider	11-1-51	11-2-51	X		
R. H. Leyse to: General Engineering Lab. Schenectady, New York	Follow shop construction of Project C-410	L. E. Weber R. E. Cumerow C. D. Carroll	7-14-51	11-30-51	X		
R.H. Leyse to: Knolls Atomic Power Lab. Schenectady, New York	Follow shop construction Of Project C-410	C. D. Carroll	7-14-51	11-30-51	X		
R. L. Moore to: Argonne National Lab. Chicago, Illinois	Technical consultation on Purex	S. Lawroski L. Burris R. Vogel	11-5-51	11-7-51	X		
R. L. Moore to: Oak Ridge National Lab. Oak Ridge, Tennessee	Technical consultation on Purex	F. L. Steahly H. K. Jackson J. O. Davis	11-7-51	11-9-51	X		
R. L. Moore to: Knolls Atomic Power Lab. Schenectady, New York	Technical consultation on Purex	J. Marsden B. V. Coplan E. J. Reber	11-12-51	11-14-51	X		
R. L. Moore to: E. I. du Pont de Nemours & Co. Wilmington, Delaware	Technical consultation on Purex	F. S. Chambers H. A. L. Fritze J. D. Ellett	11-14-51	11-16-51	X		
F. B. Quinlan to: Knolls Atomic Power Lab. Schenectady, New York	Consult on non-destructive testing techniques	D. W. White J. A. Sams	11-26-51	11-30-51	X		
F. B. Quinlan to: General Engineering Lab., Schenectady	Consult on non-destructive testing techniques	A. H. Canada	11-26-51	11-30-51	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
C. A. Rohrmann to: E. I. du Pont de Nemours & Co. Wilmington, Delaware	Technical and engineering consultation on process and equipment	F. S. Chambers	11-15-51	11-17-51	X		
M. J. Sanderson to: Simonds Saw & Steel Co. Lockport, New York	Observe metal fabrication	A. D. Potts	11-21-51	11-25-51	X		
M. J. Sanderson to: Brookhaven National Lab. Upton, Long Island, New York	Inspect neutron spectrometer for metallurgical uses	D. H. Gurinsky	11-26-51	11-27-51	X		
R. B. Socky to: Knolls Atomic Power Lab. Schenectady, New York	Consult on non-destructive testing techniques	D. W. White J. A. Sams	11-26-51	11-30-51	X		
R. B. Socky to: General Engineering Lab. Schenectady, New York	Consult on non-destructive testing techniques	A. H. Canada	11-26-51	11-30-51	X		
R. E. Tomlinson to: Argonne National Lab. Chicago, Illinois	Technical consultation on Purex	S. Lawroski L. Burris R. Vogel	11-5-51	11-7-51	X		
R. E. Tomlinson to: Oak Ridge National Lab. Oak Ridge, Tennessee	Technical consultation on Purex	F.L. Steahly H. K. Jackson J. O. Davis	11-7-51	11-9-51	X		
R. E. Tomlinson to: Knolls Atomic Power Lab. Schenectady, New York	Technical consultation on Purex	J. Marsden D. V. Coplan E.J. Reber	11-12-51	11-14-51	X		
R. E. Tomlinson to: E. I. du Pont de Nemours & Co. Wilmington, Delaware	Technical consultation on Purex	F. S. Chambers H. A. L. Fritze J. D. Ellett	11-14-51	11-16-51	X		
F. W. Woodfield to: E. I. du pont De Nemours & Co. Wilmington, Delaware	Technical consultation on Purex	F. S. Chambers H. A. L. Fritze	11-14-51	11-16-51	X		

[redacted]

[redacted]

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
W. L. Schalliol to: Research Molding & Engr. Southgate, California	Consultation on vacuum tanks and zirconium metallurgy	W. F. Bennett	11-19-51	11-23-51		X	
P. H. Reinker to: National Carbon Rsearch Corp. Cleveland, Ohio	Graphite consultation	L. C. Currie	11-20-51	11-20-51		X	
J. H. Bach to: Bureau of Mines Albany, Oregon	Discussion on zirconium	S. M. Shelton	11-23-51	11-23-51		X	
R. S. Dalrymple to: Kaiser Aluminum & Chem. Corp. Spokane, Washington	Consultation on metallurgi- cal research	- -	11-30-51	11-30-51		X	
L.A. Hartcorn to: Kaiser Aluminum & Chem. Corp. Spokane, Washington	Consultation on metallurgi cal research	- -	11-30-51	11-30-51		X	
W. C. Healy, Jr. to: General Electric Schenectady, New York	Symposium on statistical methods	J. H. Davidson H. A. Liebhafsky	11-6-51	11-9-51		X	
B. F. Butler General Electric Schenectady, New York	Symposium on statistical methods	H. A. Liebhafsky J. H Davidson	11-6-51	11-9-51		X	
R. J. Anicetti to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Consultations on ceramic operations	J. M. Taub	11-4-51	11-8-51	X		

DESIGN AND CONSTRUCTION (cont'd)

II. Visits to other Installations

[redacted]

[redacted]

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass	Areas
H. S. Davis to: Atomic Energy Commission Idaho Falls, Idaho	Witness placing of heavy aggregate concrete	A. Johnson	11-13-51	11-15-51	X		
R. W. Erickson to: Atomic Energy Commission Idaho Falls, Idaho	Witness placing of heavy aggregate concrete	A. Johnson	11-13-51	11-15-51	X		
P. A. Hesselgrave to: Atomic Energy Commission Idaho Falls, Idaho	Witness placing of heavy aggregate concrete	A. Johnson	11-13-51	11-15-51	X		
L.F. Reilly to: Atomic Energy Commission Idaho Falls, Idaho	Witness placing of heavy aggregate concrete	A. Johnson	11-13-51	11-15-51	X		

DECLASSIFIED

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PURCHASING AND STORES SECTION
UTILITIES AND GENERAL SERVICES DEPARTMENT
SUMMARY - NOVEMBER 1951

Personnel of the Purchasing and Stores Section showed a net increase of one as noted below:

	TOTAL PERSONNEL		
	10-31-51	11-30-51	Net Change
Exempt	86	87	+1
Non-Exempt	335	335	0
	421	422	+1

Requisitions received by Purchasing Units have increased approximately 20% over the previous month.

Quarterly application for allotment of controlled materials required for the E-1 and E-2 programs for the fourth quarter of calendar year 1952 were transmitted to A.E.C.

Allotments of controlled materials received from A.E.C. were, in many cases, lower than our requirements and will necessitate a considerable increase in applications for supplemental allotments.

On a request from General Chemical Corporation action was taken to obtain special assistance through A.E.C. and the Defense Electric Power Administration to provide power supply cable on a Benton County Public Utilities District order. This cable is necessary to supply power to the Hedges Works. Case is pending in Washington, D.C.

During the past two months, long periods of time have been required by N.P.A. for issuance of special assistance. This condition has been improved slightly during the past month due to reorganization within the National Production Authority.

A survey of West Coast and East Coast manufacturing and fabricating facilities was made by the Assistant Manager, Purchasing and Stores Section and the Purchasing Agent, Construction Procurement Unit, for the purpose of determining potential sources of supply. The general conditions existing indicated a shortage of skilled labor and raw materials, especially metals. Although many of the facilities visited claimed to have orders backed up through 1952, labor and material shortages prohibited working three full shifts per day.

In connection with material furnished to vendors by General Electric Co., it was recommended to A.E.C. Property Manager that only scrap stainless steel located in vendors' plants be sold and that the salvage or useable steel be shipped to Hanford Works and held for future use. The recommendation was accepted with the understanding that physical custody of the steel will be handled by General Electric Stores Unit, and the accounting and property records will be maintained by A.E.C.

All Essential Material items for MJ-4 have been procured with the exception of Diluent. Some difficulty has been experienced in meeting the Hanford specifications for this material. It is expected that this problem will be solved shortly and orders will be placed.

Necessity of assisting sub-vendors in locating sources of material and expediting material is increasing. It is becoming increasingly important that directive assistance be obtained on all critical orders.

PURCHASING AND STORES SECTION
SUMMARY

A program has been initiated to develop, through inspector contacts, sources for future fabrication. Early reports are not encouraging. There does not appear to be open shop time in any fabricating plant as other Government installations are initiating the same type program. In general, the more reputable fabricators have a shop load extending through 1953.

Gun barrels and safety rods may become limiting items for Project C-431-B. Present indications are, however, that this difficulty will be resolved early in December.

2655 purchase requisitions were processed through screening and 1111 items were furnished from plant sources. 19 items of stainless steel not immediately available on the open market were furnished to fabricators from plant inventories.

During the month, 58 formal excess lists, totaling $1,672,205.40 were submitted to A.E.C. for disposition.

Approximately 1000 tons of scrap were delivered to the North Richland scrap yard in response to the scrap metal drive.

Effective November 17, 1951, the Railway Express Agency eliminated the $40 switching charge on express cars handled in regular service to and from Hanford Works. This action resulted from our protest in June 1951. Estimated savings of $3,000 annually are expected.

On November 7, shipment of eight cars of Furnace Lining, moving in special freight train service to Savannah River Works at Dunbarton, S.C., was made.

As a result of rate reductions obtained from carriers, a savings in freight charges of $9,881.55 was realized in November. This makes a total savings from September 1, 1946, to date of $1,661,072.01.

PURCHASING AND STORES SECTION
STAFF
NOVEMBER 1951

The volume of work in the Clerical group again shows a considerable increase over the previous month. The increase of requisitions handled by the Purchasing Section is approximately 20%.

The work in the claims group continues at same high level. The last few alterations of the bulk steel orders are now being made and the work load is nearly up to date.

The claims group reported handling 32 separate cases where a total savings of $2,281.60 was obtained for General Electric.

Quarterly application for allotment of controlled materials required for the E-1 and E-2 program for the fourth quarter of the calendar year of 1952 were transmitted to the Atomic Energy Commission.

Allotments of Controlled Materials received from the Atomic Energy Commission were, in many cases, lower than our requirements and will necessitate considerable increase in applications for supplemental allotments.

Priorities, on a request from General Chemical Corporation, instigated action to obtain special assistance through the Atomic Energy Commission and the Defense Electric Power Administration to provide power supply cable to the Benton County Public Utilities District. This cable is necessary to supply power to the Hedges Works. Case is still pending in Washington, D.C.

The long periods of time, which have been required during the past 60 days, for issuance of special assistance by NPA was shortened to a degree during the past month due to reorganization within the National Production Authority. The last ten days has reflected some reduction in the time necessary from that branch for obtaining request for assistance.

Thirteen requests for NPA directives were received during November.

Six requests for special assistance were submitted to AEC for directive or DX rating.

V-Loan case was received. An analysis was made and reply prepared and forwarded to the Commission.

One certificate of necessity recommendation was requested. Reply prepared and transmitted to the vendor.

Supplemental allotments of controlled materials requested and received in November are as follows:

Copper Wire Mill Products	-	24,500 pounds
Alloy Steel	-	14 tons
Carbon Steel Plate	-	100 tons

The physical inventory of Automotive Parts in 903-3 Account has been completed in all locations. The summarization and reconciliation of monetary valuation is approximately 90% completed.

PURCHASING AND STORES SECTION
STAFF

PERSONNEL

	As of 10-31-51			As of 11-30-51			Net Change		
	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total
Staff	4	2	6	4	2	6	0	0	0
Priorities & Allocations	1	12	13	1	12	13	0	0	0
Inventory Audits	2	10	12	2	11	13	0	+1	+1
Office Services	2	32	34	2	32	34	0	0	0
	9	56	65	9		66	0	+1	+1

SAFETY AND SECURITY

Safety and Security Meetings Scheduled	1
Number of Employees Attending	56

STATISTICS

The following schedule reflects total allotments received from the Atomic Energy Commission and allotments used and extended to suppliers and subcontractors thru November. Top figures under each item number indicate allotment received from AEC. Lower figure under each item number reflect material allotment used or alloted for the quarter indicated.

CONSTRUCTION

Controlled Material	Unit Meas.	4th Q. 1951	1st Q. 1952	2nd Q. 1952	3rd Q. 1952	4th Q. 1952
Carbon Steel Plate	Short	8110.00	1000.00	90.00	8.00	0
	Tons	7749.36	247.01	.05	.05	0
Carbon Steel Structural Shapes	Short	1832.00	1240.00	163.00	5.00	0
	Tons	1690.24	456.40	.05	.05	0
Other Carbon Steel	Short	3131.00	1800.00	565.00	125.00	0
	Tons	2729.10	1027.87	427.10	.05	0
Alloy Steel (excluding stainless steel)	Short	16.00	6.00	3.00	3.00	0
	Tons	15.25	4.51	.05	.05	0
Stainless Steel	Pounds	384,438	270,000	44,995	2,000	0
		354,452	145,436	28,000	2,000	0
Copper & Copper Base Alloy Brass Mill Products	Pounds	30,025	39,914	2,000	1,000	0
		10,934	20,635	200	200	0
Copper Wire Mill Products	Pounds	110,680	81,796	10,448	10,884	0
		96,876	79,127	7,252	200	0
Copper & Copper Base Alloy Foundry Products Powder	Pounds	4,400	4,000	None	None	0
		3,750	148			0
Aluminum	Pounds	122,000	19,800	5,000	200	0
		120,948	16,860	200	200	0

PURCHASING AND STORES SECTION
STAFF

OPERATIONS

Controlled Material	Unit Meas.	4th Q. 1951	1st Q. 1952	2nd Q. 1952	3rd Q. 1952	4th Q. 1952
Carbon Steel (including wrought iron)	Short Tons	103.00 89.14	277.00 19.11	145.00 .45	100.00 0	None
Alloy Steel (excluding stainless steel	Short Tons	2.00 .78	2.00 .50	2.00 0	2.00 0.	None
Stainless Steel	Pounds	12,862 5,538	66,000 4,523	40,000 3,308	46,000 0	None
Copper & Copper Base Alloy Brass Mill Products	Pounds	10,993 8,810	10,000 8,485	6,878 1,293	6,990 0	None
Copper Wire Mill Products	Pounds	9,646 6,301	15,646 4,862	10,000 0	7,858 0	None
Copper & Copper Base Alloy Foundry Products & Powder	Pounds	480 0	8,100 0	8,000 0	2,700 0	None
Aluminum	Pounds	302,800 288,625	197,200 180,877	174,000 91,379	175,108 90,000	90,000 90,000

	G	D	Total
Requisitions on hand 11-1-51 (Includes 92 assigned to Gov't.)	738	383	1121
Requisitions Assigned During November	2390	1018	3408
Requisitions Placed During November	2186	965	3151
Requisitions on Hand 11-30-51 (Includes 212 assigned to Gov't.)	942	436	1378

	NUMBER	VALUE
H. W. Orders Placed	1393	$ 652,421.24
H. W. Alterations Placed	117	72,420.89
Total	1510	$ 580,000.35
H. W. C. Orders Placed	668	$1,302,590.59
H. W. C. Alterations Placed	176	62,425.33
Total	844	1,240,165.26
A. E. C. Orders Placed	111	$ 265,302.09
D. C. Orders Placed	31	73,378.89

	OR	ORC
Gov't. Transfers	0	0

Return Orders Issued 120

PURCHASING AND STORES SECTION
CONSTRUCTION PROCUREMENT UNIT
NOVEMBER 1951

A survey of West Coast and East Coast manufacturing and fabricating facilities was made by the Assistant Manager, Purchasing & Stores Section and the Purchasing Agent, Construction Procurement Unit, for the purpose of determining potential sources of supply. The general conditions existing in the facilities visited indicated a shortage of skilled labor and raw materials, especially metals. Although many of the facilities visited claimed to have orders backed up thru 1952, the labor and material shortages prohibited working three full shifts per day. Stainless steel welders and experienced machinists are particularly scarce.

In order to assure the best possible delivery from vendors holding fabrication orders and orders for other critical material several expediting trips were taken by committees consisting of purchasing, engineering and inspection personnel. Results of these trips uncovered some possible late deliveries. Immediate steps are being taken to find alternate sources and to improve present production schedules in existing facilities.

In connection with material furnished to vendors by General Electric Company, it was recommended to the Atomic Energy Commission Property Manager that only the scrap stainless steel located in vendors' plants be sold and that the salvage or useable steel be shipped to Hanford Works and held for future use. The recommendation was accepted with the understanding that physical custody of the steel will be handled by General Electric Stores Unit, and the accounting and property records will be maintained by A.E.C.

To date, eleven separate scrap sales have been completed. Seventy-six hundred pounds of scrap stainless steel was sold at OPS ceiling prices. Two lots of salvage material have been transferred to other AEC installations and seven lots have been shipped to Hanford Works.

A maximum price order was negotiated with the Foster-Wheeler Corporation for the completion of the vessels which were removed from Vulcan Copper & Supply Company's plant because of inability to produce. Approximately 69,000 man hours were required to complete the vessel fabrication.

PERSONNEL

As of 10-31-51			As of 11-30-51			Net Change		
Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total
9	8	17	9	9	18	0	+1	+1

SAFETY AND SECURITY

Safety and Security Meetings - 1

Number of employees attending - 18

PURCHASING AND STORES SECTION
OPERATIONS PROCUREMENT UNIT
NOVEMBER - 1951

No new contracts for Essential Materials were negotiated during the month.

The 9½" Aluminum Can program is progressing on schedule. The cans are in production and partial shipments have been made. Additional orders have been placed for the 8" can to maintain stocks and back up the 9½" program.

All Essential Material items for MJ-4 have been procured with the exception of Diluent. Some difficulty has been experienced in meeting the Hanford specifications for this material. It is expected, however, that this will be resolved shortly and orders will be placed.

Requisitions for maintenance and operating supplies have climbed to a level approximately 20% above normal. Open requisitions in process are averaging 1100 to 1200. Some overtime has been required to maintain a current position.

Personnel

As of 10-31-51			As of 11-30-51			Net Change		
Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total
8	16	24	8	16	24	0	0	0

Safety and Security

Safety and Security Meetings schedules - 1
Number of employees attending -24

PURCHASING AND STORES SECTION
INSPECTION AND EXPEDITING UNIT
NOVEMBER 1951

Superintendent of Inspection and Expediting completed a tour through the East from November 3 through November 18. The first week he was accompanied by an engineer from Separations Section, the second week by an engineer from Reactor Unit. Those vendors holding what are considered the most critical orders were visited. The visit developed the fact that three orders were extremely critical. Cancellation of two orders is being considered and consultants were furnished to one vendor. Other orders are critical, but drastic action is not considered necessary at this time.

The workload of Inspection and Expediting Unit increased over the previous month due mainly to the increasing necessity of assisting sub-vendors in locating sources of materials and expediting materials. It is becoming increasingly important that directive assistance be obtained on all critical orders.

The Supervisor of Inspection has spent two weeks at the E. W. Bliss Company along with a representative of the York Naval Ordnance in assisting the vendor in modifying his procedure on the production of gun barrels. At the present time a satisfactory procedure has been developed, and we feel satisfactory delivery will be made although a definite schedule will not be received before the week of December 3, 1951.

An agreement was made between Inspection Unit, Stores Unit, and Purchasing Unit, regarding handling of off-project or excess stainless steel remnants. Briefly, the agreement assigns responsibility to field inspectors for preparing detailed description of remnants in vendors' plants, and furnishing assistance to stores in determining if material is satisfactory to furnish to vendors. It is believed that this arrangement will assist in obtaining maximum use of this material.

A program has been initiated to develop through the inspectors, sources for future fabrication. Early results are not encouraging. There does not appear to be open shop time in any fabricator's plant as other Government installations are initiating the same type program. In general, the more reputable fabricators have a shop load extending through 1953.

On the TEP Project the most critical item is the order for control valves from Hammel-Dahl. It now appears that pouring of satisfactory castings by Michiana Products should be completed by December 10, 1951. Follow-up with Michiana will be maintained and as soon as castings are received by Hammel-Dahl, we will concentrate our efforts there.

Johnston Pump Company has been making shipments; however, they now have some shortages of Graphitar bearings that will effect shipment of possibly four or five operational units. Expediting action on the Graphitar bearings is being taken.

Gun barrels and safety rods appear to be limiting items for Project C-431-B. It may be necessary to find another source of supply for at least part of the safety rods, and this answer should be forthcoming by December 8, 1951. The gun barrel problems seem to be solved; however, a definite schedule is due the week of December 3, 1951.

More time than was anticipated is being spent on Hot Semi-Works' orders since Project Engineering has continued to request expediting aid. Several requests for directives on these orders are now in process and it will require close follow-up from now through February or March.

PURCHASING AND STORES SECTION
INSPECTION AND EXPEDITING UNIT
NOVEMBER 1951

During the month of November an organization change was made in the Expediting Unit. The construction purchase orders were divided into two groups and a man was set up to head each of these groups so that closer coordination could be obtained. Information in subsequent reports will be given, advising the results of this reorganization.

In a number of instances the Expediting Unit has been able to locate material sources either at suppliers or on the plant site where vendors and sub-vendors were unable to locate a source.

PERSONNEL

	As of 10-31-51			As of 11-30-51			Net Change		
	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total
Inspection	30½	22	52½	31½	20	51½	+1	-2	-1
Expediting	13½	10	23½	13½	10	23½	0	0	0
	44	32	76	45	30	75	+1	-2	-1

SAFETY AND SECURITY

Safety and Security Meetings Scheduled	1
Number of Employees Attending Each Meeting	29

STATISTICS

Inspection

Number of open orders requiring inspection	292
Number of open orders being inspected	278
Number of new orders requiring inspection	21
Number of open requisitions requiring inspection	59
Number of completed orders (cancelled, waived)	42
Number of open orders being inspected - sub-vendor	27
Number of open orders requiring inspection - sub-vendor	33
Number of completed orders - sub-vendor	3

Expediting

HW Orders expedited in November (active)	401
HW Orders expedited in November (routine)	1065
HWC Orders expedited in November	1356
Sub-vendor orders expedited in November	2200*
HW Orders completed in November	1187
HWC Orders completed in November	692

*Estimated

PURCHASING AND STORES SECTION
STORES UNIT
NOVEMBER, 1951

GENERAL

2655 purchase requisitions were processed through screening and 1111 items were furnished from plant sources. 19 items of stainless steel not immediately available on the open market were furnished to fabricators from plant inventories.

Maintenance materials and supplies disbursed from Operations' inventories were valued at $274,566.96. Receiving reports issued during the month totaled 5573.

Materials and equipment valued at $139,153.13 from 19 captions in the 10.20 account (Construction Held Materials) were disbursed to construction forces during the month. In addition to the foregoing, materials valued at $22,117.90 were withdrawn for use by Operations' forces and materials valued at $63,563.91 were shipped as directed by the Commission. Materials declared excess from the above account totaled $25,532.96.

Materials and equipment valued at $98,925.65 were withdrawn from the 10.10 account (Excess) for use on the project. Of this amount, Construction forces' withdrawals were valued at $56,030.53.

During the month 58 formal excess lists, totaling $1,672,205.40, were submitted to the Commission for disposition. Excess materials and equipment valued at $216,075.82 were shipped from the project as directed by the Commission.

98 representatives of government and private businesses were escorted through our warehouses and yards for the purpose of negotiating the sale of scrap and transfer of excess property.

During October plans for a project-wide scrap metals collection program were announced. Progress through November was very satisfactory and approximately 1000 tons of scrap was received at the North Richland Scrap Yard.

A program has been initiated to develop criteria by which a measure of performance may be established for the disposition of excess materials through the A.E.C. New information on this subject is included in this month's report and additional data will be included in subsequent monthly reports.

The program to effect a consolidation of surplus materials operations at North Richland is now under way. Shipping operations have been centralized in Warehouse No. 85 at North Richland and office and staff of the supervisor of warehousing for surplus materials has been moved from Richland Salvage Yard to Warehouse No. 76 at North Richland. The Scrap Yard at Richland and at Leasure Spur has been closed and the activity consolidated at North Richland.

PURCHASING AND STORES SECTION
STORES UNIT

PERSONNEL

	As of 10-31-51			As of 11-30-51			Net Change		
	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total
Administrative	6		6	6		6			
Construction Materials	1	28	29	1	29	30	+1		+1
Operations Materials	4	122	126	4	122	126			
Surplus, Salvage & Scrap Materials	3	64	67	3	64	67	-		-
TOTALS	14	214	228	14	215	229	+1		+1

SAFETY AND SECURITY

Safety and Security Meetings Scheduled	13
Number of Employees Attending	207
Minor Injuries	4

STATISTICS

Construction Materials

Items in Stores Stock	40,907
Items added to Stock	388
Items Completely Liquidated from Stock	3,178
Store Orders Posted (Items)	2,973
Number of Requisitions Screened - A.J.	604
Number of Take-Offs Screened - G. E. (Minor Construction)	119
Number of Items Screened	5,262
Number of Items Furnished from Stock	661
Value of Disbursements	$224,834.94*
Inventory Valuation at Month End - Materials	5,064,900.62
Value of Materials Received	591.85
Value of Materials Declared Excess	25,532.96

* Includes $139,153.13 disbursed to Construction & CPFF Subcontractors
22,117.90 disbursed to Operations' forces
63,563.91 shipped at the Commission's direction.

Operations Materials

Number of Items Added to Stores Stock	1,617
Number of Items Deleted from Stores Stock	324
Items in Stores Stock at Month End	51,378
Store Orders Posted	23,703
Number of Requisitions Screened This Month - G.E.	1,932
Number of Items Furnished from Plant Sources This Month	450
Number of Requisitions Screened - other A.E.C. Installations	15
Number of Items Furnished - Other A.E.C. Installations	100
Number of Items of Stainless Steel Furnished to Fabricators	19

PURCHASING AND STORES SECTION
STORES UNIT

STATISTICS (Continued)

Inventory Valuation at Month End (903-All Captions, 906 & 912)	$1,508,846.14
Inventory Valuation at Month End (Spare Parts)	1,462,323.27
Inventory Valuation at Month End (Spare Equipment Held in Storage)	226,240.59
Total Value Inventory Accounts	3,197,410.00
Value of Disbursements, not including Cash Sale Items	272,439.20*
Value of Cash Sales	451.54
Value of Sales, Payroll Deduction	1,676.22
Value of Materials Declared Excess	3,995.93
Value of Materials Returned to Stores Stock for Credit	34,427.10

* Includes $47,468.03 disbursed to Construction and CPFF Subcontractors

Surplus, Salvage & Scrap Materials			
Balance of Account 10.10 as of 10-31-51			$4,902,889.45
Receipts 10-31-51 to 11-30-51			
Material & Supplies	44,874.57		
Miscellaneous Equipment	74,578.19		
Office Furniture & Equipment	394.69		
Machine Tools & Equipment	2,973.57		
Automotive Equipment	18,756.79		141,577.81
Adjustments - Classes and Current Market Prices			Cr. 28,366.15
			5,016,101.11
Disbursements 10-31-51 to 11-30-51			
On Project			
Lumber	3,791.82		
Machine tools & Equipment	2,842.20		
Office Furniture	50.42		
Material & Supplies	76,193.86		
Miscellaneous Equipment	14,966.28		
Automotive Equipment	1,076.47		
Household Furniture	4.60	98,925.65*	
Stores Material Transfers		1,679.73	
Off Project			
Automotive Equipment	69,892.14		
Materials and Supplies	15,378.75		
Miscellaneous Equipment	130,175.45		
Household Furniture	629.48	216,075.82	316,681.20
Balance of Account 10.10 as of 11-30-51			$4,699,419.91

* Includes $56,030.53 disbursed to Construction and CPFF Subcontractors.

Total Receipts to Date	$42,316,383.08
Total Disbursements to Date	37,616,963.17

PURCHASING AND STORES SECTION
STORES UNIT

STATISTICS (Continued)

Status of Excess Listing as of 11-30-51

Value of Formal Excess Lists sent to A.E.C. in November		
Material and Supplies		$1,461,295.43
Miscellaneous Equipment		102,243.40
Automotive Equipment		38,669.48
Office Furniture		69,997.09
Total		$1,672,205.40
Total Number of Formal Excess Lists Transmitted to A.E.C. in November		58
Value of 10.10 Account Not Listed		$1,108,611.42
Value of Field Lists Circulated for Plant Screening		194,319.77
*Current Net Value of Excess Lists Waiting AEC Disposition		3,396,488.72
Item Statistics		
Receiving Reports (AW 1.54A) Processed		1,885
Store Orders Processed		509
Shipping Orders Processed		52
Purchase Requisitions Screened		628
Scrap and Salvage Disbursed		
Scrap Sales Completed	9	
Scrap Sales in Process	5	
Scrap Sales Revenue for Month of November		$2,562.12
Scrap Sales Revenue to Date		92,770.82

WAREHOUSING, RECEIVING, DISBURSING & SHIPPING

Excess Materials	
Construction Materials	
Store Orders Filled	2,448
Items Filled for Shipping	143
Items Excessed	1,053
Surplus and Salvage Materials	
Store Orders Filled	1,217
Excess Items Received	551
Items Filled for Shipping	283
Excess Items Re-checked	2,832
Receiving and Shipping	
Receiving	
Receiving Reports Issued	5,249
Shipments Received	5,329
Operations Shipping	
Orders Completed (RM-RC)	299
Weight	255,911#

281

PURCHASING AND STORES SECTION
STORES UNIT

STATISTICS (Continued)

Excess Shipping	
Orders Completed	109
Weight	1,762,168#
Truckloads of Material Shipped	49
Carloads of Materials Shipped	27
Operations Materials	
Store Orders Registered	26,204
Items Received (Receiving Reports)	2,972
Items Received (Material Transfer)	2,940
Off-Shift Disbursements	17

CONSTRUCTION STORES

Account No.		Balance 10-31-51	Purchases	Disbursements	Balance 11-31-51
10.16-101	Cement	178.24	-0-	6.75	171.49
10.16-102	Sand, Blasting Sand, Gravel	71.50	-0-	-0-	71.50
10.16-103	Plaster, etc.	31.16	-0-	-0-	31.16
10.16-104	Lumber	20,855.00	514.32	2,765.78	18,603.54
10.16-105	Reinforced Steel	10,378.96	92.04	2,408.67	8,062.33
10.16-106	Miscellaneous	39,786.89	5,458.20	3,185.31	42,059.78
10.16-107	Plumbing	94,959.86	14,532.77	5,451.20	104,041.43
10.16-108	Electrical	108,016.33	2,689.92	4,687.90	106,018.35
10.16-109	Vitrified Clay Pipe	1.66	-0-	-0-	1.66
10.16-110	Paint, Glass	4,918.65	160.97	255.58	4,824.04
10.16-111	Welding Rod	3,157.66	346.49	516.92	2,987.23
10.16-112	Structural Steel	58,110.13	744.10	5,106.88	53,747.35
10.16-113	Concrete & Masonry Sup.	183.41	-0-	-0-	183.41
10.16-114	Thermal Insulation	46.13	-0-	-0-	46.13
10.16-115	Roofing Supplies	1,802.54	-0-	531.19	1,271.35
10.16-116	Transformers	1,366.74	-0-	175.00	1,191.74
10.16-118	Automotive	44,057.71	1,456.08	2,284.15	43,229.64
10.16-133	Small Tool Repair	4,165.14	117.06	553.98	3,728.22
10.16-134	Clothing	8,146.51	632.54	1,748.47	7,030.58
	Total	$400,234.22	$26,744.49	$29,677.78	$397,300.93

PURCHASING & STORES SECTION
TRAFFIC UNIT
November, 1951

GENERAL

Effective November 15, 1951, the Interstate Commerce Commission authorized the Railway Express to increase express rates and charges. The increases supersede the interim increase of 20¢ per shipment which became effective May 3, 1951, and are as follows:

1. First class rates and charges
   Under 100 pounds graduated
   in 1 pound units - - - - - - - - - - - - - - - - - 30 cents per shipment
   Minimum Charge $1.50

   One hundred pounds and over - - - - - - - - - - 30 cents per 100 lbs.
   Minimum Charge $1.50
   per shipment

2. Valuation charge of 11 cents: Increased to 15 cents per $100. value
   Other Valuation Charges - - - - - - - - - - - 25 per cent

3. All C.O.D. service Charges - - - - - - - - - - - 25 per cent

4. Rates and charges between points in
   United States and Canada - - - - - - - - - - - Increase in accordance
   with (1) above

Effective November 17, 1951, the Railway Express Agency in their Tariff of Terminal and Switching Charges has eliminated the $40.00 switching charge on express cars handled in regular service to and from Hanford Works via the Milwaukee, Northern Pacific or Union Pacific Railroads. This action was the result of our protest in June, 1951, at the time this charge became effective. It is estimated that savings to the Government through the elimination of this unreasonable charge will amount to approximately $3,000 annually.

On November 7 shipment of eight cars of Furnace Lining moving in special freight train service to Savannah River Works at Dunbarton, South Carolina, was made. All details in connection with the special move were handled with operating officials of the Milwaukee Railroad and included such items as the furnishing of new box cars, obtaining shock recorders for placing in the cars, assistance from the railroad in sending to Hanford their specialist on loading who spent three days assisting our loading crews. Complete time schedules and routes were worked out which were satisfactory to the railroads who handled the movement as well as to the consignee.

On November 1, at the request of the Superintendent of Stores, arrangements were made to intercept at Pocatello, Idaho, a shipment of Crucibles from Buffalo, New York, which was moving in regular Freight Forwarder's service. A portion of the shipment consisting of three barrels was taken out of the car at Pocatello and forwarded via Air Express to Pasco. These Crucibles were critically needed to continue required work in the 300 Area and the deadline for delivery was set for November 2. Excellent cooperation on the part of the railroad, the Freight Forwarder, the Express Company and the Airline resulted in delivery of the shipment to the 300 Area at 11:00 A.M., November 2.

PURCHASING & STORES SECTION
TRAFFIC UNIT
November, 1951

GENERAL (CONT.)

Effective November 26, 1951, the use of One Trip Air Travel Orders in connection with air passenger reservations for employees traveling on Company business was discontinued. In lieu thereof all ticketing for air travel is done by the Kaymax Travel Agency in Richland. All details in connection with securing each reservation are being handled directly with the Airlines by this Unit the same as in the past.

As a result of rate reductions obtained from the carriers there was a total savings in freight charges for the month of November amounting to $9,881.55. This makes a total savings from September 1, 1946, to date of $1,661,072.01.

PERSONNEL

As of 10-31-51			As of 11-30-51			Net Change		
Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total
2	9	11	2	8	10	0	-1	-1

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 November	Savings 9-1-46 thru Oct., 1951	Total savings 9-1-46 to date
Lime	Evans, Wash.	$ 24.00		
"B" Blocks	Bremerton, Wash.	3,673.49		
Phosphoric Acid	South Gate, Cal.	1,391.60		
Salt, Crude	Newark, Cal.	395.48		
Caustic Soda	Tacoma, Wash.	928.30		
Soda Ash	Trona, Cal.	202.00		
Iron & Steel	San Francisco, Cal.	152.00		
Castings, Rough	Los Angeles, Cal.	3,020.04		
Railway Express	Various	69.41		
Truck	Various	25.23		
		$9,881.55	$1,651,190.46	$1,661,072.01
2. Freight Bill Audit		2,217.21	74,167.15	76,384.36
3. Loss & Damage & Overcharge Claims		124.53	108,735.11	108,859.64
4. Ticket Refund Claims		1,227.18	19,592.12	20,819.30
5. Household Goods Claims		215.92	15,641.46	15,857.38
		$13,666.39	$1,869,326.30	$1,882,992.69

PURCHASING & STORES SECTION
TRAFFIC UNIT
November, 1951

STATISTICS (CONT.)

Work Volume Report

Reservations Made	Rail	184
	Air	183
	Hotel	217
Expense Accounts Checked		158
Household Goods & Automobiles	Movements Arranged Inbound	4
	Insurance Riders Issued	9
	Furniture Repair Orders	1
	Requests for Claim Billing	2
	Claims Filed	10
	Claims Collected - Number	5
	Claims Collected - Amount	$215.92
Ticket Refund Claims	Filed	28
	Collected - Number	43
	Collected - Amount	$1,227.18
Freight Claims	Filed	13
	Collected - Number	4
	Collected - Amount	$124.53
	Over and Shorts Processed	6
	Damage Reports Processed	12
Freight Bill Audit Savings		$2,217.21
Freight Shipments Traced		77
Quotations	Freight Rates	238
	Routes	244
Bills Approved	Air Express	44
	Boat	1
	Carloading	188
	Express	89
	Rail	1,318
	Truck	399
Return Orders Processed		47
Carload Shipments	Inbound - GE - AEC	1,251
	All Others	191
	Outbound - GE - AEC	44
	All Others	4

STATISTICS (CONT.)

Report of Carloads Received

	OMSTP&P	N.P.	U.P.	TOTAL
General Electric Company				
Acids, Miscellaneous			1	1
Aluminum Pigs			1	1
Aluminum Sulphate			3	3
Aluminum Tubing		1	1	2
Ammonium Flurosilicate		1		1
Asphalt	1			1
Blowers			1	1
Caustic Soda	3	4	8	15
Chemicals	3			3
Chlorine, Liquid	1	1	1	3
Coal	151	37	904	1,092
Fibreboard Boxes	1			1
Filter Parts			1	1
Filtering Balls		1		1
Hydrofluoric Acid			1	1
Hydrogen Peroxide	1			1
Infusorial Earth		1		1
Iron Castings	2			2
Lime Hydrate		1		1
Lumber	2			2
Machinery		9	1	10
Machinery Parts			1	1
Nitric Acid		11	9	20
Phosphoric Acid	1	2		3
Pipe	20	4	5	29
Salt	1	1	1	3
Sand	1			1
Soda Ash	2	1	1	4
Steel	1			1
Steel and Gaskets		1		1
Steel Plates			1	1
Steel Structural	2	2		4
Steel Tubing	1	1		2
Tables		1		1
Tanks			3	3
Mdse. Cars	2			2
Express Cars	3			3
TOTAL	199	80	944	1,223
A.E.C.				
Automobiles		2		2
Lumber		1		1
Plywood		2		2
Steel Scrap	8	10	5	23
TOTAL	8	15	5	28

STATISTICS (CONT.)

Report of Carloads Received (Cont.)

	CMSTP&P	N.P.	U.P.	TOTAL
Atkinson & Jones Const. Co.				
Aggregate, Filter Bed		1		1
Asbestos		2		2
Cement	33	32	10	75
Fittings, Pipe			1	1
Insulation Material	5			5
Lumber	2	1		3
Pipe	6	5		11
Pipe Coating			2	2
Roofing Paper	1			1
Sand		1	1	2
Steel Bars	2	3		5
Steel Plates	1		2	3
Steel Sheet		1		1
Mdse. Cars	4			4
TOTAL	54	46	16	116
Chicago Bridge & Iron Co.				
Steel Plates			1	1
TOTAL			1	1
R. C. Larson & Co.				
Sand & Gravel		1		1
TOTAL		1		1
McPhail Engineering Co.				
Roofing			1	1
TOTAL			1	1
Pittsburgh Des Moines Steel Co.				
Steel Plates			9	9
TOTAL			9	9
Richland Fuel Co.				
Briquetts			1	1
Coal		15	22	37
TOTAL		15	23	38
Seldens, Inc.				
Tile			2	2
TOTAL			2	2
Sound Const. & Engr. Co.				
Laboratory Furniture			1	1
Siding		2		2
TOTAL		2	1	3

PURCHASING & STORES SECTION
TRAFFIC UNIT
November, 1951

STATISTICS (CONT.)

Report of Carloads Received (Cont.)

	OMSTP&P	N.P.	U.P.	TOTAL
U. S. Army				
Autos, Freight	2			2
Cable		1		1
Fire Control Equipment		2		2
Food Stuffs		1		1
Pontoons		1		1
Trailers	6			6
Vehicles		1	4	5
TOTAL	8	6	4	18
U. S. Corps of Engineers				
Laundry Machinery			2	2
TOTAL			2	2
TOTAL - SUBCONTRACTORS	62	70	59	191
TOTAL - ENTIRE PROJECT	269	165	1,008	1,442

TRANSPORTATION SECTION
MONTHLY REPORT
NOVEMBER 1951

GENERAL

Transportation Section personnel forces were increased from 513 to 519 employees during the month by 14 new hires, 2 transfers in, 1 reactivation - personal illness, 7 transfers out, 3 terminations, and 1 deactivation - personal illness.

RAILROAD ACTIVITIES

Commercial cars handled during November decreased 4.1% over October. Receipts of coal and construction materials remained at a high level.

Process movements during November were above normal and increased 33% over October. The services of two train crews were required on a full time basis and a third train crew was utilized on occasions to maintain scheduled service.

Special work train service was rendered to the Separations Section for the movement of cell blocks from the 200 West Area Slab Yard to the 202-S Building. This work required a total of six days and was completed on November 23.

Cars handled during November including process movements totaled 3,470 compared to 3,651 in October; 2,800 in September: 2,321 in August: 1,275 in July: 2,226 in June· 2,443 in May; 2,078 in April; 1,984 in March: 1,793 in February; and 2,625 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	1259	39	38	1263
Atkinson & Jones Co.	120	-	-	117
The Bay Co.	0	-	-	1
Bryan W. Burtch Co.	2	-	-	2
E. I. du Pont Co.	0	9	9	0
F. J. Early	0	-	-	2
D. E. Hutchins Co.	1	-	-	1
R. C. Larsen Co.	1	-	-	1
Pittsburgh-Des Moines Steel Co.	9	-	-	9
Richland Fuel Co.	38	-	-	36
School District #400	1	-	-	1
Sound Construction & Engr. Co.	1	-	-	0
U. S. Army	18	4	4	18
Corps of Engineers	2	-	-	2
	1452	52	51	1453

Flat car 10B 3636, derailed at the 221-T Building, 200-West Area on November 1, was rerailed that night and moved to Riverland for repairs which were completed on November 9.

DECLASSIFIED

Transportation Section

Construction was virtually completed by the subcontractor on the Riverland Elevated Water Tank. The new tank was filled with water and chlorinated. The old structure has been dismantled.

Railroad track maintenance and rehabilitation work continued on a routine basis. Lining, surfacing, and dressing of track required 5,017 man-hours. Relay of rail and ties required 300 man-hours. Handling of track materials required 284 man-hours.

AUTOMOTIVE ACTIVITIES

The Plant Bus System transported 2.5% fewer passengers in November than in October. Decline was due to the thirty day month which included Thanksgiving. The following tabulation indicates the November passenger volume by shifts and the total revenue received.

No. 1 outbound and No. 3 inbound	30,038
No. 2 outbound and No. 1 inbound	64,339
No. 3 outbound and No. 2 inbound	62,715
Total	157,092
Revenue	$ 7,854.60

The following is a comparative breakdown of average daily bus trips to the Plant Areas:

Passenger buses - 100-B	12
Passenger buses - 100-D	12
Passenger buses - 100-F	10
Passenger buses - 100-H	10
Passenger buses - Hanford	4
Passenger buses - 200-West	34
Passenger buses - 200-East	10
Passenger buses - 300 Area	10
Passenger buses - Riverland	3
Passenger buses - Pistol Range	1
Passenger buses - White Bluffs	4
Passenger buses - North Richland	3
700-300 Area Shuttle Service	21
Inter-Area Passenger Service	3
Inter-Area Express Service	1
Inter-Area Mail Service	1

Effective November 19, bus service for TBP personnel was increased from six days a week on the No. 2 and No. 3 Shifts to seven day round-the-clock service.

Effective November 15, inbound buses from Riverland were rerouted to use the Riverland lower road. This was necessary to prevent a delay of approximately thirty-five minutes at the Yakima Barricade due to westbound one-way heavy vehicular traffic by construction personnel from 200-West and 100-B Areas through this barricade between 4:25 p.m. and 5:00 p.m.

Effective November 7, Inter-Area Shuttle Service schedules were advanced one hour from the Plant Areas to Kadlec Hospital. New departure time from 100-B and 100-D is 12:15 p.m. to arrive at Kadlec Hospital at 1:30 p.m.

Transportation Section

The Richland Local Bus System continued to show a seasonal increase by transporting 6% more passengers in November than in October. Volume of service rendered is indicated in the following statistics:

Total passengers including transfers	35,796
Total bus trips	3,530
Total bus miles	19,415
Total revenue	$ 2,634.35

Effective November 13, the 8:30 a.m. Newcomer bus trip to Columbia High School was discontinued due to a lack of patronage.

Off-Plant automobile trips (Company business and/or official visitors) totaled 187.

The following tabulation indicates the volume of Drivers Test Service rendered including the new permits issued in compliance with AEC Bulletin GM-181 and H.W. Instructions Letter No. 15

Applicants:	Male	72	Number rejected	0
	Female	12	Number tests given	84
Permits Issued:	Limited to driving with glasses			23
	Unlimited			61
Permits Reissued:	Routine	28		
	New AEC	150		

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	39,481	10,519	18,960	2,544	81
Received during month	117,264	30,535	25,034	5,043	265
Total	156,745	41,054	43,994	7,587	346
Disbursed during month	113,121	22,663	27,877	5,154	76
Stock at end of month	43,624	18,391	16,117	2,433	270

The following tabulation indicates the volume of inspection and maintenance service rendered to Hanford Works automotive and heavy equipment by Equipment Maintenance personnel: 23 motor overhauls, 58 Class A Inspections and Repairs, 1110 Class B Inspections and Lubrications, 2334 other routine maintenance repairs and service calls, 590 tire repairs and 597 wash jobs.

DECLASSIFIED

Transportation Section

The following tabulation indicates the Plantwide usage of automotive equipment:

Code	Type	No. of Units	Total Mileage
1A	Sedans	331	606,556
1B	Buses	157	233,217
1C	Pickup Trucks	453	296,752
1D	Panel,Carryall,Sta.Wagon	119	148,430
1E	Armored Cars	12	894
1G	Jeeps	2	739
68 Series	Trucks	282	86,195
		1,356	1,372,783

Winterizing of Plant owned water cooled automotive and heavy equipment was completed.

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	7,549	0	2,803
Received during month	0	9,489	0	0
Dispensed during month	0	15,114	0	0
Stock at end of month	0	1,924	0	2,803

Manufactured 247 tons of 3/4" pre-mis material requiring 104 man-hours. Maintenance of primary roads required 574 man-hours, secondary roads 220 man-hours; and patrol roads and trails 56 man-hours.

Crushed and hauled 900 tons of iron ore to 100-B Area.

Handling of miscellaneous materials for the Stores Unit at White Bluffs required 2,298 man-hours.

Handling of materials for the Stores Unit in the 700-1100 Areas required 1,175 man-hours.

Handling of Area deliveries required 1,552 man-hours, Stores deliveries 243 man-hours and office furniture 1,160 man-hours.

Handling of 2 carloads of material, 3 carloads of equipment, 121 truckloads of material and 49 truckloads of equipment required 2,307 man-hours.

ELECTRICAL DISTRIBUTION AND TELEPHONE SECTION

NOVEMBER 1951

GENERAL:

The total number of employees of the Section has increased to one hundred and eighty-one (181) by the employment of a lineman and a steno-typist.

The work backlog of the Section was decreased by 3.8 per cent to 5060 man days as of November 30. Distribution of this backlog is as follows:

	Days per Craftsman	Total Man Days	Net Change Man Days
Line Maintenance	56.9	1822	109 Decrease
Substation Maintenance	43.7	830	19 "
Telephone Unit	58.9	2417	65 "

Electric Power Peak demands for November were:

	Date	November KW Demand	Comparative October Demand
Process Load	11-26-51 (1:30-7:30 p.m.)	73350	71200
Village Load	11-13-51 (4:30-5:00 p.m.)	26900	25100

Increased Village demand is normal for the season. Process load is at an all-time peak with gradual addition of new loads and increased construction activity.

Preliminary studies were made of telephone and electric power facilities for Program "X". Tentative load estimates were developed for both the construction phase and final operating requirements.

Representatives of the General Electric Company, Bonneville Power Administration, and the Atomic Energy Commission met at Richland to discuss the general electric power situation in the Pacific Northwest for the next five years. Emphasis was placed on additional requirements related to approved projects now under construction, or in the design stage at Hanford, and the need for increased BPA system generating capacity.

Preparations for civil defense included two meetings with the co-ordinator of the Radio Amateur Emergency Corps, Benton and Franklin County, and a committee of the Richland members of that organization. An outline was prepared of the duties of the Emergency Corp as related to overall civil defense communications. Equipment requirements were discussed and a list developed to assist in preparation of a project proposal for purchase and installation of radio and telephone facilities.

The Electrical Distribution Unit procedure for civil defense emergencies has been prepared for final discussion.

ELECTRICAL DISTRIBUTION UNIT:

DECLASSIFIED

Maintenance and Operation

DECLASSIFIED

[redacted]

Electrical Distribution and Telephone Section

A portion of the electric service to Building 234-5 and Substation 252 W was interrupted by the tripping of a circuit breaker at Substation 251, 9:13 p.m. November 17, 1951. Service was restored to Building 234-5 at 10:02 p.m. Disconnect switches were opened on an Army tap after a portion of one of their lines was discovered on the ground by line patrolmen. Service was restored to Substation 252 W at 11:43 p.m. Fuse co-ordination has been reviewed.

A conductor burned off at a loose line clamp in the rear of the Village Theatre and fell to the ground at 6:10 p.m. during a strong wind on November 21, 1951. Service was interrupted to a portion of the downtown business district for approximately one and one half (1 1/2) hours during an outage established for repairs.

A recommendation was made to the Transportation Section for installation of auxiliary motor generator sets on line trucks. These generators are to be used to eliminate the necessity for running the main truck motor to permit continuous radio operation. Three generators have been installed to date and data on savings will be presented at a later date.

"Brownout" action was initiated in Richland by cutting out alternate street lights on the Yakima Bridge and in the parking areas of the North Commercial Area. Control clocks have been set to turn off the remaining lights at midnight in these parking areas. Floodlights are left off at the Distribution Headquarters Yard and the brilliancy of street lighting has been reduced in the newer sections to the level of older sections of Richland Village.

The source of considerable radio interference in Richland was located in the ratio control mechanisms at the two 115 KV Substations. This was eliminated by bonding the control gearing to the mechanism frame.

SYSTEM EXPANSION AND PLANNING

Project C-380 (Electric Metering - Village of Richland). Residential meter installations are approximately ninety-nine per cent (99%) completed. Preparations have been completed so that meter readings can be initiated on short notice.

Project B-537-R (Grounding of 440 V Secondary Systems). This project has been transferred to the Manufacturing Department, with a review summary.

Plans have been discussed with the Atomic Energy Commission relative to a temporary extension of a 13.8 KV Army feeder from 100 H Area to five camp sites across the Columbia River. Recommendations were made that the permanent supply be provided from Midway.

The Bonneville Power Administration completed the installation of totalizing demand and reactive meters at the 115 KV Village substations.

TELEPHONE UNIT

Maintenance and Operation

[redacted]

[redacted]

POWER STATISTICS
ELECTRICAL DISTRIBUTION AND TELEPHONE SECTION
FOR MONTH ENDING NOVEMBER 30, 1951

ITEM	ENERGY - MW HRS. Oct.	ENERGY - MW HRS. Nov.	MAX. DEMAND - KW Oct.	MAX. DEMAND - KW Nov.	LOAD FACTOR - % Oct.	LOAD FACTOR - % Nov.
230 KV SYSTEM						
A-2 Out (100-B)	7,380	7,570	12,100	12,100	82.0	86.9
A-4 Out (100-D)	14,640	13,130	22,600	22,200	87.1	82.1
A-5 Out (100-H)	8,928	9,820	13,350	15,150	89.9	90.0
A-6 Out (100-F)	7,120	8,040	12,800	11,600	74.8	96.3
A-8 Out (200 Area)	4,824	5,220	8,640	9,720	75.0	74.6
TOTAL OUT	42,892	43,780	69,490**	70,770**	83.0	85.9
MIDWAY IN	43,594	44,491	66,000*	67,600*	88.8	91.4
Transm. Loss	702	711				
Percent Loss	1.6	1.6				
115 KV SYSTEM						
B1-S4 Out (N.Rich.)	2,020	2,366	4,147	4,378	65.5	75.1
Richland	10,476	13,412	27,810**	26,880*	50.6	69.3
BB1-S3 Out(300 Area)	768	800	1,920	1,920	53.8	57.9
TOTAL OUT	13,264	16,578	33,877**	33,178**	52.6	69.4
Benton In	1,030	1,560	51,600*	62,400*	26.8	34.7
S. Richland In	12,430	15,280	28,800*	31,200*	58.0	68.0
TOTAL IN	13,460	16,840	80,400**	93,600**	22.5	25.0
Transm. Loss	196	262				
Percent Loss	1.5	1.6				
66 KV SYSTEM						
B9-S11 Out(100-C	220	280	500	600	59.2	64.8
B7-S10 Out(W. Bluffs)	510	510	1,373	1,463	49.9	48.4
Hanford Out	333	369	600	600	74.7	85.4
TOTAL OUT	1,063	1,159	2,473**	2,653**	57.8	60.4
HANFORD IN	981	1,089	2,150*	2,300*	61.3	65.7
Transm. Loss	+82	+70				
Percent Loss	+8.4	+6.4				
PROJECT TOTAL						
230 KV Out	42,892	43,780	69,490**	70,770**	83.0	85.9
115 KV Out	13,264	16,578	33,877**	33,178**	52.6	69.4
66 KV Out	1,063	1,159	2,473**	2,663**	57.8	60.4
TOTAL OUT	57,219	61,517	105,840**	106,611**	72.7	80.1
230 KV In	43,594	44,491	66,000*	67,600*	88.8	91.4
115 KV In	13,460	16,840	80,400**	93,600**	22.5	25.0
66 KV In	981	1,089	2,150**	2,300**	61.3	65.7
TOTAL IN	58,035	62,420				
Transm. Loss	816	903				
Percent Loss	1.4	1.4				

* Coincidental Demand
** Non-Coincidental Demand

Average Power Factor - 66-KV System--88.0
Average Power Factor - 115 KV System--95.3
Average Power Factor - 230 KV System--93.4

DECLASSIFIED

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DECLASSIFIED

Electrical Distribution and Telephone Section

Preparation of information was completed for a new issue of the telephone directory for distribution in December.

Approximately three hundred and eighty (380) requests for telephone service in Richland cannot be served due to inadequate exchange facilities pending completion of installation of four-party service equipment scheduled for April 1952. A comprehensive review of the current telephone situation is in preparation.

A summary of telephone subscriber service is as follows:

	Stations in Service	Extensions in Service	Vacant Lines	Lines in Service
Richland	6,217	1,058	152	3,848
North Richland	505	277	158	442
Process Areas	1,296	713	541	1,209
Project Total	8,018	2,048	851	5,400

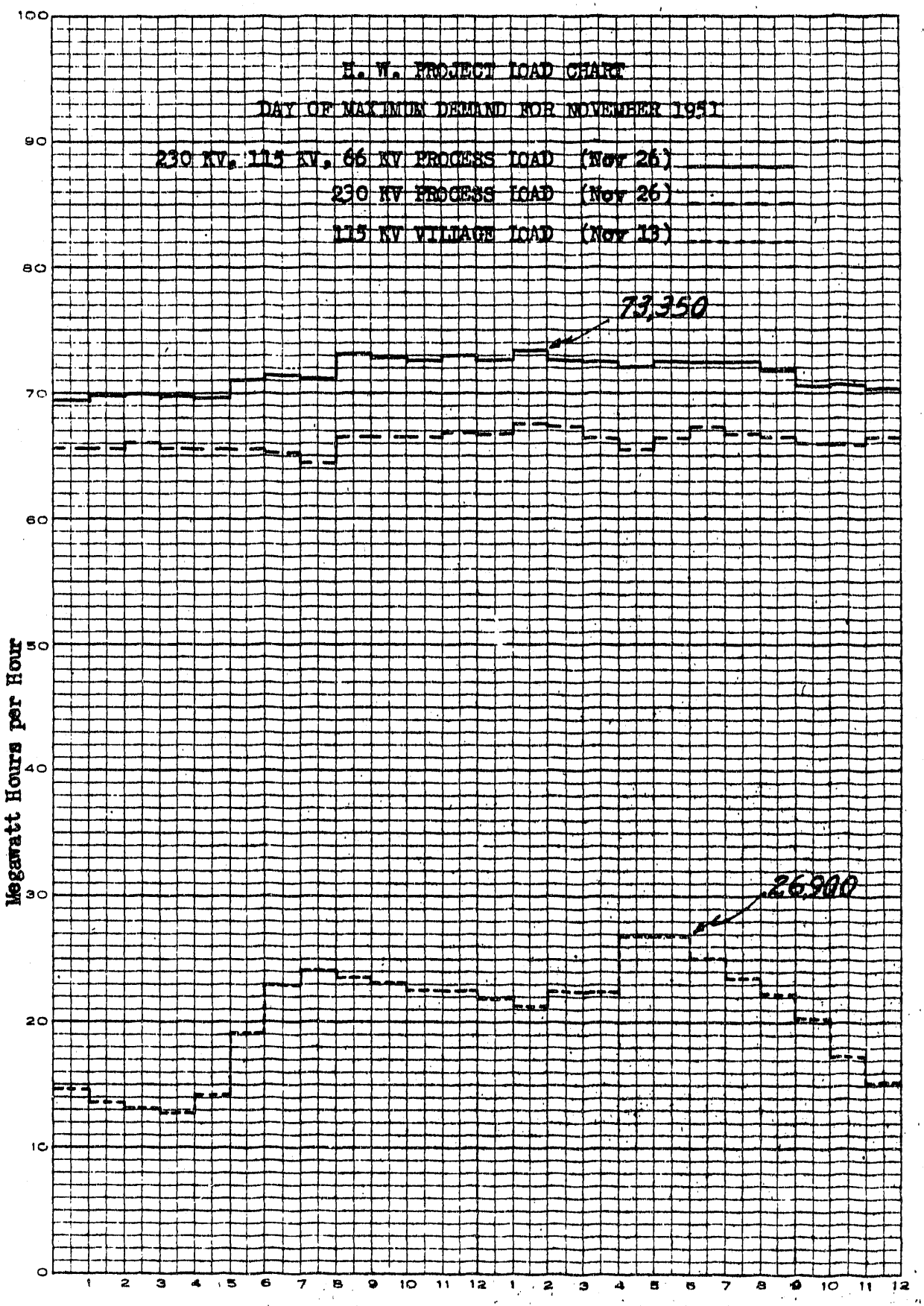
SYSTEM EXPANSION AND PLANNING

Testing has been completed of Fourth Housing Addition telephone cable distribution system which has been spliced into the operating system.

Project C-402 (Salvage and Recovery of Exchange Equipment and Telephone Cable). Drawings and detailed instructions were completed for rearrangement of existing cable facilities to permit the removal of equipment from the former 100 D Area telephone exchange.

A study was made of a proposed rearrangement of trunking facilities between the BY Tandem Office and the Richland, North Richland, and 300 Area exchanges.

Proposed telephone requirements for the 200 U Area were studied and cable pair splicing allocation information provided for the contractor.



EUGENE DIETZGEN CO
MADE IN U.S.A.
ONE DAY BY HOURS

EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

SUMMARY -- NOVEMBER, 1951

The number of applicants interviewed in November was 1,655 as compared to 1,721 interviewed in October. Of these applicants, 678 were individuals who applied for employment with General Electric for the first time. In addition, 210 new applications were submitted through the mail. Open, nonexempt, nontechnical requisitions increased from 254 at the beginning of the month to 267 at month end. Total plant roll increased from 8,993 to 9,070. Turnover rate decreased from 2.17% in October to 1.17% in November. An analysis was prepared on all resignations in the exempt classifications for the period January through September, 1951, including reasons for resignation, reasons why 97 of 147 total resignations resigned for other jobs, educational data, length of service represented, and age and classification summaries. The turnover rate for Hanford Works for this period was 7.8%. During November, 53 new requests for transfer to other type of work were received in the Employment Office, and 26 transfers were effected. During the past month the Linedex system was installed to simplify and to reduce the cost of publishing seniority lists, and to enable us to publish these lists monthly instead of twice a year. Attendance recognition award pins and wallet cards were distributed and presented to 134 employees who qualified for one-year awards during October. In order to improve employee relations with female employees, during November a program was initiated for a representative of Women's Activities to visit all female employees off work because of illness. The work and working conditions of the metalworker classification was reviewed during November in order to select tests to be used in testing candidates for this work, in hopes that these tests will reduce turnover and enable Employment to make better selections of personnel to fill these positions.

Two employees died during the month, and four employees retired, one of which was on an optional basis. Two hundred and twenty-seven visits were made to employees confined at Kadlec Hospital and 82 checks were delivered to employees either confined at home and at the hospital. At month end, participation in the Pension Plan was 95.6%, in the Insurance Plan 97.8 and in the Employee Savings and Stock Bonus Plan 43.0%. As a result of the letters written to all eligible nonparticipants in October, 7 new participants were gained. As further promotion of the Pension Plan, a summary of distribution of all eligible nonparticipants was prepared for distribution to all Department Heads, with the result that many departments have requested a list of the names of all their eligible nonparticipants. During November, a pre-retirement program was initiated with interviews being held with eleven employees scheduled for retirement within the next year to help them prepare for their retirement. As of the end of November, there were 1,061 employees registered under Selective Service, and 754 military reservists on the rolls. Since August 1, 1950, 172 employees have terminated to enter military service, of which 12 have returned, leaving 160 still in military leave status.

Employee and Public Relations
Summary

The Supervisors' 40-Hour Training Program was presented by Training and Program Development during the week of November 12-16. Four additional PMS conference groups were started in November with a total of 8 groups now going, involving 160 supervisors. A Nonexempt 8-Hour Training Program was presented five times during November with a total of 138 employees participating. Special meetings on "Disciplinary Action", "9-Point Better Job Program", "Rating of Nonexempt Employees", were presented at the request of the Chemical Development Unit. A total of 160 employees were given orientation during November. New records were established by Training in accordance with the revised nomenclature by department, section and unit. This information will be used in reporting to department heads participation in training activities. Preparation has been made to present a HOBSO institute to train speakers for the Richland Jaycees, Rotary, Kiwanis, and Lions Clubs.

A total of 38 news releases were distributed during November. A special story was written on welders at Hanford Works and sent with photographs to the Schenectady News Bureau, which requested the story to send to "Industrial Hazards" magazine.

The News Bureau Supervisor visited the News Bureau, Photo House and other Public Relations Services groups in Schenectady. Policies and practices used in the East were studied and some of them are being adapted to the work here.

As a special assignment, and at the request of the AEC, a representative of the Public Relations Section participated in a meeting of the Ad Hoc Committee on Technological Information for Industry and AEC Operating Contractor Representatives at Washington, D.C. The representative was also appointed to the Working Committee for developing recommendations to the AEC concerning dissemination of technological information to technical and scientific journals as well as establishment of a firm policy on authorization.

Presentation of HOBSO on the Community level was discussed with members of the HOBSO Action Committee of Richland. It was decided to introduce the program by presenting it first to officers of local PTA groups.

A form letter concerning a vocational guidance program for high school students was written at the request of local high school student counselors. They requested assistance in learning of G-E personnel believed qualified to counsel students about activities in a given profession or business field.

A total of 8,423 prints of photos were produced during November. Of the total, 4,830 were for employee identification and area admittance badges.

Employee and Public Relations
Summary

To assist in the preparation of the Community House "Open House," eight spot announcements were written and scheduled for release over the three local radio stations. Eight personal interviews were written and arrangements made for tape-recording these interviews for broadcast on the following day.

Paper conservation activities during November included: designing, producing, and installing reminder cards on all paper towel dispensers throughout the plant; developing and placing in production a leaflet to stenographers and typists explaining ways to conserve paper; developing and producing two posters; obtaining a series of five different paper conservation posters on a no-charge basis. Works News publicity included two full-page messages, two full-page features, cartoons and miscellaneous publicity photos.

"Here's to Your Health!", a sound-slide film on the Kadlec Hospital Medical Program was prepared and produced at the request of the Health Activities Committee.

Four women's pages appeared in the Hanford Works News during the month. Five free patterns were featured in the November 2 issue, and approximately 150 were mailed out at the request of readers.

The NLRB dismissed the unfair labor charge submitted by HAMTC regarding the proposed rent increase. A petition for representation was received from the HAMTC covering janitorial employees in North Richland. The CIO has filed an unfair labor charge in the matter of the discharge of E. B. Brown.

Master Agreement negotiations resumed on November 21. No agreement reached. Machinists negotiations held on November 19. Both parties dissatisfied with Davis Panel recommendation. Office Employees granted nine cents per hour increase effective October 12, 1951. A grievance meeting with Carpenters Union as a result of recent dispute was recessed indefinitely due to the inability of the Union to present factual evidence against the Assistant General Superintendent.

EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

NOVEMBER, 1951

ORGANIZATION AND PERSONNEL

Employment and Employee Services

Effective November 1, 1951, John B. Thompson, Employment Interviewer and Investigator "B" was transferred from Employment to Employee Services as an Employee Services Counselor.

Effective November 1, 1951, Stanley E. Linter, Supervisor Employee Benefit Plans, was transferred to Training and Program Development.

Effective November 1, 1951, K. H. McElveny, Employee Services Counselor, was upgraded to Supervisor Employee Benefit Plans.

Effective November 1, 1951, O. B. Isaacs, Jr., a Business Graduate assigned to Employee Services was upgraded to an Employee Services Counselor.

Effective November 12, 1951, a General Clerk "C" assigned to Employment was transferred to the Manufacturing Department.

Effective November 26, 1951, a General Clerk "C" assigned to Employment was transferred to the Engineering Department.

Training and Program Development

No organizational changes.

Public Relations

Effective November 1, 1951, the Public Relations Section assumed responsibility for the development and maintenance of the Richland and North Richland Civil Defense Warden Service. R. L. Weston was transferred into Public Relations, and appointed Chief Warden.

Union Relations

Effective November 12, a Clerical Working Leader was deactivated due to personal illness.

Effective November 30, a General Clerk B was added to Wage Rates.

Number on Payroll	November, 1951
Beginning of month	114
End of month	112
Net decrease	2

Employee and Community Relations

ACTIVITIES

Employment and Employee Services

Employment

	October, 1951	November, 1951
Applicants interviewed	1,721	1,655

678 of the above applicants interviewed during November were individuals who applied for employment with the Company for the first time. In addition, 210 new applications were received through the mail.

Open Requisitions	October, 1951	November, 1951
Exempt	1	2
Nonexempt	254	267

Of the 254 open, nonexempt, nontechnical requisitions at the beginning of the month, 180 were covered by interim commitments. Of the 267 open, nonexempt, nontechnical requisitions at month end, 170 were covered by interim commitments. During November, 129 new requisitions were received requesting the employment of 201 nonexempt employees.

	October, 1951	November, 1951
Employees added to the rolls	291	183
Employees removed from the rolls	194	106
NET GAIN OR LOSS	+ 97	+ 77

Of the 106 employees removed from the rolls, 1 was removed due to lack of work, and this one employee was in the bargaining unit.

Turnover:	October, 1951		November, 1951	
	Male	Female	Male	Female
Including employees who were laid off for lack of work	1.85%	3.36%	.89%	2.22%
Excluding employees who were laid off for lack of work	1.72	3.36	.87	2.22

Over-all Turnover:	October, 1951	November, 1951
Including employees who were laid off for lack of work	2.17%	1.17%
Excluding employees who were laid off for lack of work	2.07	1.16

Employee and Public Relations

During November, 19 employees terminated voluntarily to accept other employment, 7 terminated to leave this vicinity and 7 terminated to be married.

To assist all Department Heads and Managers in analyzing turnover experience in their departments, an analysis was made of all resignations in exempt classifications for the period January through September, 1951. The analysis included a summary of reasons for resignation, reasons why 98 of 147 total resignations for the period resigned for other jobs, educational data, length of service represented, and age and classification summaries. The turnover rate for Hanford Works of 7.8% for the period and for each department, as well as for each section of the three largest departments at Hanford Works was included in the tabulation.

Transfer Data

Accumulative total of requests for transfer received since 1-1-51	607
No. of requests for transfer received during November	53
No. interviewed in November, including promotional transfers	30
Trans. effected in November, including promotional transfers	26
Trans. effected since 1-1-51, including promotional transfers	422
Trans. effected in Nov. for employees given lay off notices	10
Trans. effected since 1-1-51 for employees given lay off notices	22
No. of stenos. transferred out of steno. pool in November	5
Transfer requests active at month end	53

During November, 12 people whose continuity of service was broken while in an inactive status were so informed by letter.

During November the Linedex system was installed to simplify the publishing of seniority lists and also to reduce the cost. Instead of publishing seniority lists only twice a year with numerous changes being issued as they occur, these lists will be published monthly, incorporating all changes, such as new hires, rehires, terminations or other deletions or additions that are made during the month.

As a result of the A.E.C. taking over the responsibility of the work handled by the Contract Services Unit of the Design and Construction Section during the month, 26 employees in this Unit of which 12 were exempt male and 14 nonexempt female were made available first to the Commission in continuing their work in the same group and second for assignment elsewhere in the Company. Twelve elected to go with the Commission, 13 remained with General Electric and the other resigned.

One-year emblems and wallet cards in recognition of perfect attendance were presented to 134 employees in November, who became eligible during October.

All applications in the female pre-employment application were reviewed during November, with the obsolete applications and classification cards being removed.

Employee and Public Relations

In order to perform better service for female employees who are out because of illness a representative of our Women's Activities has been contacting these individuals, as it is felt that perhaps such employees would feel freer to confide in or consult with one of their own sex. During the last two weeks of November 43 hospital calls were made to employees confined there. Of this number, 14 were given assistance in completing disability insurance forms. In addition, weekly salary checks were distributed twice to female employees off work due to illness.

Earlier in the year a number of temporary clerks were engaged for work on a special assignment and inasmuch as this work is nearly completed, surveys have been made for quick reference in placing as many of these clerks as possible after they have received lay off notices. Wherever possible requisitions for clerks are not being filled until these employees have completed their present assignments.

In November a survey was made of the job work and conditions of metalworkers in the 300 Area to determine what types of tests might be useful in selecting the proper candidates to fill these positions. It is hoped that by aptitude testing it will be possible to reduce turnover and improve employee relations. The tests have been selected and as soon as possible validation will be made in order to introduce these tests in our pre-employment interviewing of candidates for metalworker's jobs.

Employment Statistics

Number of employees on rolls		10-31-51	11-30-51
Exempt -	Male	1,920	1,935
	Female	55	56
		1,975	1,991
Nonexempt -	Male	5,909	5,138
	Female	1,873	1,885
		6,963	7,023
Community Firemen		55	56
	TOTAL	8,993	9,070

ADDITIONS TO THE ROLLS

	Community Firemen	Exempt	Nonexempt	Total
New Hires	1	8	148	157
Re-engaged	0	0	1	1
Reactivations	0	0	25	25
Transfers (from other plants)	0	0	0	0
Actual additions	1	8	174	183
Payroll exchanges	0	27[a]	0[b]	27
GROSS ADDITIONS	1	35	174	210

Employee and Public Relations

TERMINATIONS FROM THE ROLLS

	Community Firemen	Exempt	Nonexempt	Total
Actual Terminations	0	13	53	66
Removals from the rolls (deactivations)	0	1	34	35
Payroll exchanges	0	0c	27d	27
Transfers (to other plants)	0	5	0	5
GROSS TERMINATIONS	0	19	113	132

GENERAL

	10-1951	11-1951
Applicants interviewed	1,721	1,655
Photographs taken	421	326
Fingerprint impressions (taken in duplicate)	454	371

ABSENTEEISM STATISTICS f
(Weekly Salary Roll)

Male	2.11%	2.15%
Female	4.14	4.13
Total Plant Average	2.53	2.57

PERSONNEL SECURITY QUESTIONNAIRES PROCESSED

General Electric cases	167
Facility Cases	46
TOTAL	213

INVESTIGATION STATISTICS

Cases Received during the month	289	303
Cases closed	462	312
Cases found satisfactory for employment	219	249
Cases found unsatisfactory for employment	9	15
Cases closed before investigations completed	37	56
Special investigations conducted	21	79

PERFECT ATTENDANCE RECOGNITION AWARDS

Total one-year awards to date	1,777
One-year awards made during November for those qualifying in October	134

a Transferred from Weekly Payroll
b Transferred from Monthly Payroll
c Transferred to Weekly Payroll
d Transferred to Monthly Payroll
f Statistics furnished by Weekly Payroll

Employee and Public Relations

Employee Services

The following visits were made with employees during the month by a representative of Employee Services:

Employees visited at Kadlec Hospital	227
Salary checks delivered to employees at Kadled Hospital	70
Salary checks delivered to employees at home	12
Disability checks delivered to employees at home	2

As of the end of November, participation in Company Benefit Plans was as follows:

Pension Plan	95.6%
Insurance Plan	97.8
Employee Savings and Stock Bonus Plan	43.0

As a result of the letters written to all nonparticipatns of the Pension Plan during October, 7 new participants were gained. In addition, as further promotion of the Plan, a statistical report was prepared showing the distribution of the eligible nonparticipants by Department, exempt or nonexempt, male or female and showing Section distribution of the department with the highest number of nonparticipants. This report was distributed to all Department Heads, and as a result many of the departments have requested a list of names of their eligible nonparticipants.

During November a representative of Employee Services visited the following local hospitals, St. Elizabeth and Valley Memorial Hospital, Yakima, Memorial Hospital, Toppenish, Valley Memorial Hospital, Sunnyside, and Memorial Hospital, Prosser, for the purpose of providing them with information and forms for use by our employees who might be hospitalized at those locations.

Two employees died during November, namely:

Fred R. Highfill, W-11078-MT, Utilities and General Services; and
Thomas M. Jones, M-681-US, Utilities and General Services.

Fourteen letters were written to deceased employees' families during the month, concerning payment of monies due them from the Company, as well as answering other pertinent questions for them.

Four employees retired during the month, namely:

E. C. Babbington, W-3835-SO, Utilities and General Services;
Frank X. Pasch, W-9227-SS, Utilities and General Services
John Keim, W-5571-MP, Manufacturing; and
Duncan M. Blair, W-9414-VRH Community Real Estate and Services, (Optional)

Employee and Public Relations

During the month, one letter was written to a retired employee providing him with information of a general nature in which he would be interested. Three retiring employees visited the office to sign their retirement papers and to learn of benefits to which they would be entitled as retired employees.

During November, the pre-retirement program was initiated with interviews held with 11 employees. This program was designed to helpe employees to plan for their pending retirement, and during these interviews information concerning the details concerning their pension and retirement was discussed.

Military Reserve and Selective Service:

The statistics with respect to employees registered under Selective Service are as follows:

Employees registered	1,061
Employees registered who are veterans	532
Employees registered who are nonveterans	529
Employees subject to the draft	373
Deferments requested to date (including renewal requests)	362
Deferments granted	235
Deferments denied and appealed at state levels	20
Deferments denied and appealed at national levels	4
Deferments denied by local board and not appealed	1
Deferments denied by state board and not appealed	1
Deferments denied at national level (Gen. Hershey's office)	1
Deferments requested, employees later reclassified	39
Deferments requested, later withdrawn	14
Deferments pending	47

Statistics with respect to employees who are members of the military reserve are as follows:

Number of reservists on the rolls	754
Number who returned to active duty to date	89
Number who returned to active duty in November	2
Deferments requested to date	98
Deferments granted	89
Deferments pending	2
Deferments denied	4
Deferment requests withdrawn	3

Military terminations since 8-1-1950 are as follows:

Reservists recalled	89
Selective Service	81
Female Employees enlisted	2
TOTAL	172

Employees returned from military service:

Reservists	11
Selective Service	1
TOTAL	12

Number of employees still in military leave status 160

Employee and Public Relations

TRAINING AND PROGRAM DEVELOPMENT

A total of 44 supervisors were enrolled by the major departments and participated in the Supervisors' 40-Hour Training Program during the week of November 12-16. A special luncheon was held on Friday noon of the program week with the participating members and 7 members of senior management as guests. The program was very well received by all participating supervisors, however, approximately 80% of the questionnaires included comments regarding poor ventilation of the conference room. This has been discussed with D. W. McLenegan who is responsible for Dorm W-10 where these meetings are held and corrective action recommended.

On November 27 and 28, four additional PMS conference groups were started; Groups 21 and 22 for inner area supervisors and Groups 23 and 24 for outer area supervisors. Each group has approximately 20 supervisors enrolled. PMS Groups 17, 18, 19, and 20 attended 4 meetings during the month of November completing through Meeting 10. A total of 17 conferences are held in all and this makes a total of 160 supervisors now attending PMS conferences.

During the month of November, the Non-Exempt 8-Hour Training Program was presented on each Tuesday at the request of the Design and Construction Services Unit. A total of 91 members of the D&C Services Unit attended these meetings, and 16 members of the Employee and Public Relations Department participated. Because of comments reflected through an anonymous questionnaire, details of benefit plans are omitted and just highlights of the plans are now included since many of the participating members felt that it was a program too similar to orientation to new employees. This revision in the content of the program has brought about greater acceptance for the information included. The Non-Exempt 8-Hour Program was also presented to 31 members of the Manufacturing Department's Separations Section in the 200-West Area on November 30. This program was very well received in this production area.

Special meetings were presented at the request of the Chemical Development Unit in the 300 Area as follows: On November 8, "Disciplinary Action Program"; "9-Point Better Job Program" on November 20; and "Rating of Non-Exempt Employees" on November 29.

Employee and Public Relations

TRAINING AND PROGRAM DEVELOPMENT

Because of the tremendous number of requests for programs which have proved successful at Hanford Works to be given throughout the year, special consideration is being given to the presentation of these Management Aids to be presented on a recurring basis beginning in 1952 in order that all new exempt and particularly new supervisors may have the opportunity of gaining the advantage of this basic human engineering. This will be reflected in the Objectives Report for this section for 1952.

A total of 160 people were given orientation during November. This included 156 new employees, one re-engaged, and three re-activated employees. Of the total number, 95.5% elected to participate in our Group Insurance Plan.

During the month, 34 Supervisors' Handbooks were reissued. No net change has been made in the total number of Handbooks issued, which now stands at 1495. The 5 remaining Handbooks to make the total of 1500 are not issuable because they lack most of their contents. A special canvass will be made shortly in all departments to verify if present Handbook holders are using their manual or if we may have some turned in to be reissued to new supervisors. During November complete revisions to Section 3 of the Supervisors' Handbook were submitted to Printing.

Since revised copies of "You and General Electric at Hanford Works" were made available in October, a complete list of new employees has been compiled who did not receive copies of this booklet during the period of March 1 through October 1, 1951. Copies of the booklet will be sent to each of these 2200 new employees. Incidentally, revised tax tables are being printed to include in the revised issue of this employee's handbook.

A Safety Meeting for all members of Employee and Public Relations Department was held on November 14. Safety, security, and health were the three topics discussed in this meeting.

Considerable time was spent during November in setting up new record cards in accordance with the reorganized nomenclature to have names of all exempt roll employees filed in accordance with department, section, and unit, including recording of the various training meetings each individual has attended. This information will be used in reporting to department heads the participation in training activities of their exempt personnel.

Employee and Public Relations

TRAINING AND PROGRAM DEVELOPMENT

Two conferences were held with members of the Richland Jaycees to establish a definite period when a HOBSO institute may be held to train speakers to present the appreciation version. This institute will be held in December and at the request of the Public Relations Section, members of the Rotary, Kiwanis, and Lions Club will be invited to participate.

S. E. Linter was transferred from Employee Services to this section as a Training Staff Assistant, effective November 1.

Mr. J. J. Williams, Safety Director of Morrison & Knudsen Company, spent three days in Richland to observe training activities and request assistance to establish training activities in his organization.

A total of 26 copies of "Men and Volts" were sold by Training and Program Development Section to employees during the report period.

A total of 350 copies of the pension plan booklet were furnished to Weekly Payroll Unit during this report period. Also 8 copies of "You and Labor Law" booklet were furnished to members of supervision at Hanford Works; 87 copies of HOBSO booklet were furnished to Community Relations Section; 250 copies of Hanford Guards Agreement were furnished to Labor Relations Section.

PUBLIC RELATIONS

PUBLIC INFORMATION

A total of 38 news releases were distributed during the month. Of these, 23 were sent to the "local list" and nine were sent to the "daily list". Six were answers to requests.

Twelve recreation stories were written for the "local list".

The names of those employees reported injured in a recent accident behind the barricade were released to the Tri-City Herald at their request. This story was not made available to the press until several days after the accident occurred. At that time the information in the story was not complete and some of it was incorrect. These deficiencies caused considerable caustic comment in the Tri-City Herald. Arrangements have been completed for the News Bureau to receive prompt and complete reports of all accidents that occur behind the barricade.

Arrangements were completed to commemorate the hiring of the employee who brought the total G.E. payroll at Hanford to 9000 employees. An album containing photographs of Miss Patricia L. Colvard's routine trip through the employment office, and a letter of congratulations were presented to her by H. E. Callahan. Photographs were taken at the presentation and sent to newspapers in the Northwest.

Public Health Classes for local food handlers were publicized through the local newspapers with news stories, and photos with captions.

Hill Williams, Tri-City Herald, received information from the News Bureau about 55-year ground lease. Some of this information was used in a newspaper story.

The Columbia Basin News received answers to questions concerning: the opening of Jason Lee School, when metering of electricity here will start, the new Fire Station, when the Standard Oil service station will be completed, and what construction work is going on at the corners of Swift and Stevens and Swift and Goethals.

Vance Orchard, roving reporter Walla Walla Union Bulletin, requested eleven stories for the Progress Edition. A News Bureau Representative took him on a tour of Richland.

The News Bureau supervisor visited the News Bureau, Photo House and other Public Relations Services groups in Schenectady. Policies and practices used in the East were studied and some of them are being adapted for use in the News Bureau and Photo House here.

Newspaper personnel on the Spokane Chronicle and Spokesman Review were contacted in Spokane. The contacts were worthwhile since new demands for information were discovered. It was found that with minor exceptions both papers are satisfied with News Bureau service and they use a large percentage of the material they receive.

The Public Relations Manager accompanied the General Manager to Seattle for the latter's talk before the Seattle Chamber of Commerce. Seattle newspapers and wire services were contacted about Mr. Prout's speech and news releases and photos were distributed.

more

A feature article on the Inspection of Incoming Materials at Hanford Works was completed and sent to the WESTERN INDUSTRY magazine.

A special story was written on welders at Hanford Works, and sent with photographs to the Schenectady News Bureau, which requested the story to send to "Industrial Hazards" magazine.

Arrangements were made to change publicity writers in the News Bureau from general assignment to a "beat" system whereby each will handle news from specific departments in the Nucleonics Division.

Presentation of HOBSO on the community level was discussed with members of the HOBSO Action Committee of Richland. It was decided to introduce the program by presenting it first to officers of local PTA groups in December.

A form letter concerning a vocational guidance program for high school students was written at the request of local high school student counselors. Also, a meeting betwen the Employment Supervisor and the counselors was arranged. They requested, and will receive, assistance in learning of G-E personnel believed qualified to counsel students about activities in a given profession or business field.

Effective November 1, 1951, Public Relations assumed responsibility for organizing, training, and maintaining the Richland and North Richland Civil Defense Warden Service. R. L. Weston was transferred into Public Relations and named to the position of Chief Warden. Some time has been spent in relieving him of certain assignments and responsibilities as Civil Defense Representative for North Richland.

Letters are being prepared to be sent to former District Wardens asking them to continue in their previous capacities. Letters also are being prepared relieving those persons in North Richland of their responsibilities under the previous arrangement.

The Chief Warden acted as an observer, when the Amatuer Radio League of the Tri-Cities put on a practice show, simulating a catastrophe. The trial was informative and it is apparent that the "Hams" can be utilized to an advantage in Civil Defense, particularly in the Warden Service.

Distribution of Civil Defense Bulletin No. 5 was arranged; an explanatory note was attached to copies for North Richland which pointed out the portions of this bulletin which applied to North Richland. Civil Defense Bulletin No. 6, a 32-page booklet on fire fighting for residents, was produced. Distribution will be made early in December.

CD news stories and pictures released to local newspapers concerned the following: mailing of CD Bulletin No. 5; tests conducted by the Amateur Radio Emergency Corps; a drawing of the Morrison Air Raid Shelter--the shelter used successfully in England during World War II.

A tape recorded CD message, designed to stimulate interest in civil defense was played continuously at the "open house" of Richland's Community House. Also, a special civil defense display was exhibited. About 1500 people attended the open house.

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Talks about Civil Defense were given by the local CD director before the following organizations: Women's Democratic Club (about 30 people present); Women's Society, Latter Day Saints Church (20 people).

The CD coordinator for local schools was offered any assistance desired in publicizing school civil defense activities.

Six CD movies were shown to 169 members of various clubs and organizations in Richland.

A tour of the CD Control Center was made by 20 G-E employees.

Six papers were submitted for clearance during the month.

Reprint of the pamphlet "Health for the School Child" was arranged at the request of Public Health. These will be distributed to parents of Richland school children.

Advertisement for an industrial physician was placed in the December issue of the Journal of the American Medical Association.

PHOTOGRAPHIC SERVICES

A total of 8423 prints of photos were produced during the month. Of the total prints produced, 4830 were for employee identification and area admittance badges.

A statistical report of Photo House work during November is attached.

PROGRAM DEVELOPMENT

Community House "Open House" printed programs were edited and produced at the request of Parks and Recreation.

Eight spot announcements were written and scheduled for release over the three local stations to assist in the preparation of the Community House "Open House". Eight personal interviews were written and arrangements made for tape-recording these interviews for broadcast on the following day.

News stories and cutlines were written for local papers to publicize Community House "Open House".

Power conservation in the plant was publicized in a Works NEWS message urging people to conserve power whenever possible. Light switch "reminder" posters were posted throughout the plant, and publicized through a Works NEWS photo.

Letters were sent to approximately 70 "Adventures Ahead" sponsors of children ineligible for subscriptions to explain why the subscriptions could not be honored. It was explained that those ineligible due to being under age would become eligible after reaching teen-age.

The "Adventures Ahead" issue containing an article about the visit of local high school journalism students to the Public Relations Section was sent to

more

one of the students who made the visit. This student was requested to furnish the addresses of other students who made the visit, so that they, too, could be furnished a copy of the magazine.

Paper conservation activities during November included: designing, producing and installing reminder cards on all paper towel dispensers throughout the plant; developing and placing in production a leaflet to stenographers and typists explaining ways to conserve paper; developing and producing two posters; obtaining a series of five different paper conservation posters on a no-charge basis from the Beloit Iron Works. Works NEWS publicity included the following: two full-page messages in the "Imagine America Without Paper" series obtained from Beloit Iron Works, two full-page features, cartoons, and a variety of publicity photos.

Three spot announcements advertising the 2nd Kiwanis-YWCA paper driverwere written and released to the three local stations.

Dinner for Hanford Works pensioners was assisted by the following: letter of invitation was written and a reply card produced; assistance in developing the program was given; printed programs were developed; and Works NEWS publicity was arranged.

Six radio programs for the Richland Public Library, First Annual Book Fair, were coordinated, manuscripts written and studio appearances performed at the request of the Library Board and Community Real Estate and Services Department. These programs included: five 15-minute daily programs consisting of two interviews held with the Librarian and Board Members, a musical program consisting of two short classical selections and script, a high school student panel discussion on the subject, "Comic Books," for which a member of this group acted as announcer and moderator with Mr. Chris Stevenson; a children's program consisting of a story, and the announcement of poster contest winners. The hour-long program broadcast from 9 to 10 p.m., November 13, was comprised of musical selections with narrative script and announcements.

A total of 24 spot announcements were also written and scheduled for release over the three local stations for the Library Annual Book Fair. Four news releases were written and a full page pf publicity in the Works NEWS.

As a special assignment and at the request of the AEC, a representative of this section participated in a meeting of the AD Hoc Committee on Technological Information for Industry and AEC operating Contractor Representatives at Washington, D. C. The representative was also appointed to the Working Committee for developing recommendations to the AEC concerning dissemination of technological information to technical and scientific journals as well as establishment of a firm policy on authorization.

A total of five films were booked and scheduled for showings in Richland during the month.

"Here's to Your Health!"...a sound-slide film on the Kadlec Hospital Medical Program was prepared and produced at the request of the Health Activities Committee. It is planned to have showings made of the film to all project employees and to use the film in new employee orientation.

A letter of commendation from the Manager, Hanford Operations, Atomic Energy

Commission to the General Manager, Nucleonics Division, General Electric Company, citing the cooperative efforts of members of the Employee and Public Relations Department in the preparation of film footage, was read to members of the Advisory Committee and forwarded to this Section.

EMPLOYEE INFORMATION

Special forms were initiated for the convenience of people submitting material for columns appearing regularly. This was done to eliminate time taken by re-typing information by both the Works NEWS staff and the person receiving information.

Procedure was worked out to give a priority number to the engraver to enable him to obtain more zinc, and arrangements were made to have the printer, the Columbia Basin News, assume full responsibility of used cuts for proper distribution through proper salvage channels.

Suggestion system was promoted in two different issues of the Works NEWS with banner headlines, pictures, and a feature. Special emphasis was given to presenting pictures of top winners differently than in former issues.

Income tax tables reflecting the rise in the income tax was published for the convenience of all Hanford Works people..

Scrap Drive in the plant was publicized in a series of issues to promote the saving of scrap and its accumulation.

Four women's pages appeared in the Hanford Works NEWS during the month. Five free patterns were featured on November 2 and more than 150 were mailed out at the request of readers. General Electric women who are also fashion models were featured on November 23. A feature on "The-Rec-a-Teers", a new club formed by G.E. young-adults at Hanford Works, was featured on November 9.

The December Health Bulletin on "Colds" was developed and produced. Advance copies with instructions for use were sent to all supervisors.

Hanford Works booklet information rack service was carried near to completion during November: arrangements were made through Schenectady to receive G-E booklets for this purpose on a no-charge basis; work order for construction of the racks was issued; and a convenient carrying rack for both booklets and posters was built and installed in the vehicle which will be used for servicing these racks.

Six additional partial sets of Sheldon-Claire employee relations posters were ordered.

Hanford Works posting service activities included installation of: four in the series of Sheldon-Claire employee relations posters on a weekly basis; one locally produced paper conservation poster; two in a series of paper conservation posters obtained at no cost from Beloit Iron Works; G-E Photo News Service posters on a weekly basis.

A new "Safety Topic of the Month" cover and format were developed for Safety, and the January safety topic material was written and approved. Editing and production of safety topic material, and special artwork, will be handled in the future by Special Programs.

6-6-6-6-6-6

Artwork was furnished Special Programs, Works News and other Units in this Section in the promotion of their current programming. New techniques being employed by the illustrator, were particularly appreciated by one customer unit.

Artwork services included: lettering and illustration for cover of "Health for the School Child" folder; layouts and final art work for 4-page booklet; design and finished art work for front and back cover of "Steps to Health" medical folder for women; design of 3 cover layouts for monthly safety folder; production of new dummy layout for grievance booklet, using different sytle and illustrations than used in first booklet; layout for civilian defense poster to be placed in all office and business buildings; three editorial cartoons; one full-page Works NEWS layout with photos and cartoons; and eight rough sketches for Community Services Section report.

News Bureau Space Report--See last page of report.

Hanford Works Photo House
Month of November

	2 x 2	5 x 7	8 x 10	Negatives	3½ x 4	4 x 5	Film repair	Processing Only	Transportation	2 x 4
COMMUNITY REAL ESTATE & SERVICES										
Fire			3							
Police		64	2							
Public Library			8	2						
Municipal			10	4						
EMPLOYEE AND PUBLIC RELATIONS										
Employment	644			161						
News Bureau		73	52	121						
Special Programs		36	19	58		12				
Works News		73	56	116						
Labor Relations			6	6						
ENGINEERING										
Design & Construction			14							
Engineers			12	12						
Pile Technology		16	178	62	19	80				
MEDICAL									9	
MANUFACTURING										
Separations Section			31	44	4	54				
RADIOLOGICAL SCIENCES										
Operational			5	32	8					
Survey				7	7					
Instrument		35	1	36						
Radox		1		2						
Aquatic		2								
UTILITIES AND GENERAL SERVICES										
Electrical Distribution			16	6						
Purchasing and Stores			24	16						
Security	4186	2309	24	6						2309

continued

	2 x 2	5 x 7	8 x 10	Negatives	3½ x 4	4 x 5	Film Repair	Processing Only	Transportation	
North Richland Realty		10	09							
MISCELLANEOUS										
AEC Property				91	320	320				
TOTAL	4830	310	470	621	38	466			9	2309

NEWSPAPER SPACE REPORT
October, 1951
As Compiled from the Nucleonics Division News Bureau clipping files

SUBJECT	NEWSPAPER	COL. IN.	PHOTOS
Speakers & Visitors	Oregon Journal	8½	
	Spokane Chronicle	3½	
	Walla Walla Bulletin	19	
	Wenatchee World	10½	
	Tri-City Herald	27	1
	Yakima Herald	4	
	Astorian Budget	3	
	Seattle Times	7½	
	Spokesman Review	2½	
	Spokane Chronicle	2½	
	Times, Herald, Vllejo, Cal.	1	
	Medford Mail Tribune	4½	
	DJof C, Seattle	2	
	Columbia Basin News	12	
	San Bernadino Telegram	4½	
	Bend Bulletin	2½	
	Hanford Works News	7	
Fire Prevention	Tri-City Herald	11	3
	Columbia Basin News	28	5
	Spokane Chronicle	13½	
	Hanford Works News	3½	
Recreation	Walla Walla Bulletin	16½	1
	Columbia Basin News	4	
	Tri-City Herald	3½	
	Spokane Chronicle	6½	
Radiological Sciences	Hanford Works News		1
	Columbia Basin News		1
Housing	Spokesman Review	6½	
	Tri-City Herald	21	
	DJ of C, Seattle	7½	
	Walla Walla Bulletin	3½	
Organization Changes	Tri-City Herald	2	
	Walla Walla Bulletin	2	
	Columbia Basin News	2	
Civil Defense	Columbia Basin News	6½	3
	Spokane Chronicle	6½	2
	Yakima Morning Herald	3	
	Spokesman Review	9½	
	Tri-City Herald	21	
	Hanford Works News		1
HW Pay Increase	Spokesman Review	12	
	Yakima Herald	7	
	Yakima Republic	3½	
	Columbia Basin News	9½	
	Walla Walla Bulletin	21	
	Tri-City Herald	6	

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more

	Hanford Works News	5	
	Spokane Chronicle	3½	
	Oregonian	3	
Plant General	Tri-City Herald	23	2
	Walla Walla Bulletin	4	
	Columbia Basin News	14	
	Spokane Chronicle	2	
Plant Construction	Coeur D'Alene Press	1½	
	Moscow Idahoian	1½	
	Walla Walla Bulletin	11	
	DJ of C., Portland	10	
	Spokesman Review	1	
	Columbia Basin News	12½	
	Seattle Times	5½	
	Tri-City Herald	8½	
	Oregon Journal	1	
	Centralia-Chehalis, Wn.	3	
	Yakima Republic	2	
	DJ of C., Seattle	8½	
	Los Angeles, California	1½	
Community General	Tri-City Herald	17	
	Columbia Basin News	9½	
	Walla Walla Bulletin	1½	
	Hanford Works News	4	
	Spokane Chronicle	8	
Community-Construction	Tri-City Herald	4	
	Columbia Basin News	4	
	Yakima Herlad	3	
	TOTAL	500½ col. in.	22

Employee and Public Relations

Union Relations

UNION RELATIONS - OPERATIONS PERSONNEL

The Company was advised on November 14, that the National Labor Relations Board was dismissing the unfair labor charge submitted by the Hanford Atomic Metal Trades Council, on the ground that the Company failed to negotiate a possible rent increase at Hanford Works. The NLRB indicated that there was insufficient evidence of violation to support the charge.

The HAMTC has petitioned the NLRB for a representation election involving janitorial employees on the Engineering and Construction rolls in North Richland. Approximately 60 employees will be eligible to vote if an election is ordered by the NLRB.

The Company has also been advised of an unfair labor charge which the CIO has filed with the NLRB in the case of E. B. Brown, an employee recently discharged for fighting on the job. The CIO claims that the discharge was prompted by Brown's CIO organizing activities and was not due to a violation of the Company's rule against fighting.

Grievance Statistics:

Thirty-three grievances were received during the month, bringing the total received this year to 188.

Grievances were sent in this month from the following departments:

Utilities and General Services Department	
Plant Security and Services Section	2
Transportation Section	5
Community Real Estate and Service Department	
Community Services Section	3
Community Real Estate Section	1
Manufacturing Department	
Reactor Section	9
Separations Section	12
Medical Services Department	
Kadlec Hospital	1
Total	33

Employee grievance reports were received regarding the following subjects:

Recognition	1
Discrimination	1
Jurisdiction	12

Health-Safety-Sanitation	1
Hours of Work	2
Overtime Rates	7
Holidays	1
Sick Leave	1
Vacations	1
Seniority	1
Information to Council and Employees	1
Wage Rates	3
Miscellaneous	1
Total	33

The status of grievances received in 1951 as compared to those received during the same period in 1950 is as follows:

	1951	1950
Received in November	33	14
Received through November	188	196
Settled satisfactorily, Step I, thru Nov. 30	93	126
Pending at Step I thru November 30	5	--
Settled Step II thru November 30	31	49
Pending at Step II thru November 30	65*	17
At arbitration	4**	4

*Including nine grievances received in 1950.
**Including one grievance received in 1950.

Five per cent of the total grievances received this year have been submitted by employees outside the bargaining unit.

Four meetings were held during the month for the purpose of processing grievances at the Step II level. One meeting was held with the HAMTC, two meetings with the Hanford Guards Union, and one meeting with the Building Service Employees International Union.

On November 20, 1951, a letter was received from the Building Service Employees Union, Local 201, indicating that they desire to submit a grievance to arbitration. However, they indicated they were willing to discuss the case further in an attempt to make arbitration unnecessary. In the Company's opinion, the subject of the grievance is not arbitrable and the BSEIU was so advised on November 21, 1951.

CONSTRUCTION LIAISON

The isolation pay dispute was heard by a twelve-man committee of the Construction Industry Stabilization Commission on November 6. On November 24, Atkinson-Jones presented certain payroll information which was requested by the C.I.S.C. Committee. At this time, there is an indication that the committee is

25

contemplating elimination of the existing differential between crafts. This information is construed as meaning: (1) increases in varying amounts to provide a uniform $2.50 per day allowance or (2) a flat increase of 50 cents per day except to those presently residing in the Construction Camp and receiving $2.00 per day, which would maintain a differential between those residing on and off the Project but would recognize no differential between crafts. Atkinson-Jones went on record as being opposed to this thinking in a Brief which was submitted on November 30, and by personal letter to the A.G.C. member on the committee.

A Davis Panel hearing was conducted on November 2, in Washington, D. C. Their recommendation was that the Sheet Metal Workers' wage demand be submitted to the Wage Stabilization Board as a dispute, the vacation allowance and Health and Welfare Fund be allowed in conformity with Spokane and the isolation pay demand be included in the dispute before the W.S.B. The Machinists were requested to join the Employer in a wage survey, after which negotiations would be resumed with Schmidt of the Panel available to assist in reaching an agreement.

Master Agreement negotiations were resumed on November 21, with two issues outstanding: (1) isolation pay (to be settled by C.I.S.C. Disputes Panel) and (2) Union security (AJ has indicated concurrence with negotiation of a Union Shop without conducting certification elections).

Machinists' negotiations were held on November 19, as a result of the Davis Panel's recommendation. Both parties expressed dissatisfaction with the Panel's action on this issue. No agreement was reached.

The Ironworkers have opened their Schedule "A" for negotiations. No meetings have been held to date.

Agreement was reached with the Office Employees' Union granting nine cents per hour (maximum allowable under Wage Stabilization), effective October 12, 1951.

The Carpenters' dispute reported last month ended on November 2. A meeting under the grievance procedure of the Master Agreement on November 23, revealed that the Union was unable to make any specific complaint against the Assistant General Superintendent whose discharge the Union had demanded. In view of this fact, the meeting was recessed indefinitely.

Requests for Reimbursement Authorization handled during the month:

1. Blacksmiths - Wage Rate
2. Plasterers - Wage Rate
3. No. 105 Plug Welders - Classification and Rate
4. Office Employees - Wage Rates
5. Plumbers - Welding Inspector

Reimbursement Authorizations received during the month:

1. Electrician Linemen - Wage Rates

Employee and Public Relations

Work Stoppages:

Machinist walked off the job on November 21, in protest of reassignment of certain work to the Plumbers and Steamfitters. The disputed work was set aside pending settlement of the jurisdictional claims. The men returned to work on November 23. It was agreed that the work properly came under the jurisdiction of the Machinists and it was accordingly reassigned to the Machine Shop.

WAGE RATES

Reimbursement authorization was received from the Atomic Energy Commission for the payment of the 6% general increase for members of the Richland and North Richland Fire Departments, which will be retroactive to March 15, 1951. This retroactive payment was made on November 30, 1951.

Reimbursement authorization was received from the Atomic Energy Commission which will enable the General Electric Company to use a more flexible hiring rate plan.

Wage Agreements and Joint Applications to the Wage Stabilization Board for all recognized unions at the Hanford Works were sent to the New York Office for inclusion in the Company's petition to the Board for a general increase of 3.58 percent for all nonexempt employees. This petition applies to all weekly paid salaried employees, Richland and North Richland Firemen and monthly paid Supervisors-in-Training at Hanford Works.

Half of the Wage Rates Unit personnel spent full time on the details of the DEBASET Project during the month of November.

A reimbursement authorization request was submitted to the Atomic Energy Commission for all reimbursable items covered in the contract between the Hanford Guards Union, Local 21, of the International Guards Union of America, and the General Electric Company.

A personal survey was made during the month in the larger Pacific Coast cities in which the rates of pay for secretaries to top management of industrial concerns were ascertained.

An over-all review of nonexempt job classifications in the Electrical Distribution and Telephone Section was completed. A similar review was begun in the Purchasing and Stores Section.

SUGGESTIONS AND INSURANCE

Suggestion System:

	October, '51	November, '51	Total Since 7-15-47
Suggestions Received	202	200	7704
Investigation Reports Completed	103	135	
Awards granted by Suggestion Committee	23	35	
Cash Awards	$ 1,035.00	$ 815.00	
Estimated Savings	$10,978.90	6,414.40	

Employee and Public Relations

A $200 award was made to an employee in the Separations Section for his suggestion that lucite strips be rolled into cylinders and the glove port frames on lucite hoods be made from this stock. Considerable savings in material and labor was realized through adoption of this suggestion.

The second highest award was made to an employee of the Separations Section for her suggestion to consolidate Operating Log Books into one acco binder for each month from the various plants. Savings were quality of work. This suggester received $150 for her suggestion.

Workmen's Compensation:

Three cases under litigation were closed during the month.

Life Insurance:

Code information which is known only to Home Office Life Underwriters Association has been furnished 40 insurance companies and investigation agencies during the month of November, 1951. This is in accordance with an arrangement with the Underwriters whereby employees on this project might be insured on the same basis as those working elsewhere.

Insurance Statistics:

	October, 1951	November, 1951	Total Since Sept., 1946
Claims reported to the Department of Labor and Industries	135	121	5313
Claims reported to Travelers Insurance Co.	5	7*	563

*Of the above claims reported during November, six were property damage and one was both property damage and bodily injury.

COMMUNITY REAL ESTATE AND SERVICES
DEPA TMENT
SUMMARY - NOVEMBER, 1951

ORGANIZATION AND PERSONNEL

Number of employees on roll:	Beg. of Month	End of Month
Administration	22	21
Community Services Section (Total - 224)		
Public Works	82	83
Recreation & Civic Affairs	36	38
Police (Richland)	43	42
Fire (Richland)	51	50
Engineering	11	11
Community Real Estate Section (Total - 196)		
Housing and Maintenance	192	183
Commercial Property	12	13
700-1100-3000 Area Services Section (Total - 113)		
700-1100 Maintenance	59	58
Patrol (North Richland)	21	22
Fire (North Richland)	31	33
	560	554

There was a decrease of six employees in the Department during the month of November, 1951.

GENERAL

The responsibility for housing mat ers of commercial facilities' employees was transferred from the Commercial Property Unit to the Housing and Real Estate Maintenance Unit.

Total housing applications pending - 650.

The following individuals were awarded ground sites to construct privately owned business buildings:

1. Virgil O. McVicker - Block 1, Uptown Business District, Investment Building 160' frontage.

2. Chalmer D. Joseph - Block 5, Uptown Business District, Investment Building 100' frontage.

Richland's Community Services Annual Report was distributed to residents and other interested persons and groups.

The Parks and Recreation Unit was reorganized and will henceforth be called the Recreation and Civic Affairs Unit. The function of grounds maintenance will be transferred to the Public Works Unit.

HAR/jak
12/10/51

COMMUNITY SERVICES SECTION

SUMMARY

NOVEMBER, 1951

ORGANIZATION AND PERSONNEL:

	BEGINNING OF MONTH		END OF MONTH	
	Exempt	Non-Exempt	Exempt	Non-Exempt
ENGINEERING	7	4	7	4
FIRE	51	0	50	0
PARKS & RECREATION	13	23	13	25
POLICE	16	27	16	26
PUBLIC WORKS	15	67	15	68
	102	121	101	123

GENERAL

Richland's Community Services Annual Report was distributed to residents and other interested parties and groups such as the major Washington cities and municipal associations. This is the first of such reports and therefore supplied not only fiscal year information but a background of information necessary to full understanding. The report has been well received, and it is hoped that an annual report will be compiled each year in the future.

The expansion of parking facilities between W-20 and W-21 was begun, and is expected to be completed the first week in December.

Effective December 1, the Parks and Recreation Unit was reorganized. The planning and direction of recreation programs, the management of the Community House, and the coordination of civic activities will be done by the newly created Recreation and Civic Affairs Unit under the direction of R. E. Anderson. The function of grounds maintenance will be transferred to the Public Works Unit.

The personnel of the Recreation and Civic Affairs Unit moved its offices to the Community House November 23. The available offices on the lower floor of W-20 will be occupied by the Community Services Engineering Unit December 1.

The position of General Foreman - Public Works, supervising Roads and Streets and Sanitation, has been elimited.

COMMUNITY REAL ESTATE AND SERVICES DEPARTMENT
PUBLIC WORKS UNIT
NOVEMBER 30, 1951

ORGANIZATION AND PERSONNEL

	Exempt	Non-Exempt
Employees - Beginning of Month	15	67
Transfers In	- -	1
Transfers Out	- -	2
New Employees	- -	2
Terminations	- -	- -
Total - End of Month	15	68

SANITATION

Waste material collected and disposed of during November weighed 1,124 tons. In accordance with the recently approved policy, collections were not made on the Thanksgiving holiday, and the route normally covered on Thursday was collected on the following day.

ROADS AND STREETS

Project C-426, "Fiscal Year 1951 Street and Sidewalk Improvements", has been completed with the exception of some minor close-out items. The re-seeding of lawn areas disturbed by this work is scheduled for the spring of 1952 and will be chargeable to this project.

Construction work on Project L-589, installation of 35' radius curb returns at Swift and Goethals, and Swift and Stevens, is in progress, and is scheduled for completion by 12-7-51.

A project proposal for the improvement of Thayer Drive, from Swift Boulevard to Van Giesen Street, during Fiscal Year 1952 has been prepared and will be presented to the A & B Committee on 12-12-51.

Preparations for ice control work have been made through the stock-piling of screened sand, mounting of two hydraulic sand-spreaders, and the storing of sand and salt in boxes provided at both Yakima River bridges.

Public Works Unit

ROADS AND STREETS (CONT'D)

Routine maintenance of streets, sidewalks, and street drainage system was continued according to schedules.

DOMESTIC WATER

Project S-552, "Additional Fire Protection - Hotel and Theatre", was approved by the AEC on 11-19-51, and has been assigned to the Engineering Unit for preparation of plans and specifications, and letting of a sub-contract.

Removal of the roof from the 1182 south reservoir has been completed, and the reservoir has been cleaned and is now available for service.

The average daily water consumption for November was 5.075 million gallons.

Production and consumption recordings for the month are shown below:

Domestic Water System

	Well Production Million Gallons	Avg. Daily Production	Total Consumption Million Gallons	Avg. Daily Consumption
Richland	86.5434	2.8848	89.3602	2.9787
North Richland	34.5468	1.1516	39.3942	1.3131
Columbia Field	30.4686	1.0156		
300 Area			23.4968	0.7832
Total	151.5588	5.0520	152.2512	5.0750

SEWERAGE

A program of flushing and cleaning of manholes and trunks in the collection system is in progress, and is approximately one third completed.

Normal operation and maintenance of the treatment plants and lift stations were continued, and flow through the treatment plants was as follows:

Public Works Unit

Sewerage

	Total Sewage Flow Million Gallons	Average Daily Flow Million Gal. G.P.D.	Average Rate Flow Gals. per Min.
Plant No. 1	23.030	0.768	533
Plant No. 2	63.618	2.121	1,473
Total	86.648	2.889	2,006

IRRIGATION SYSTEM

Winterizing of all irrigation system pressure lines has been completed, and the seasonal overhaul of irrigation pumps is in process.

Cleaning of the gravity flow canals has been continued, and that section between the Airport and Station 310 has been completed.

PARKS AND RECREATION UNIT
MONTHLY REPORT
November, 1951

ORGANIZATION AND PERSONNEL

	Exempt	Non-exempt
Beginning of month	13	23
New Hires	0	2
Terminations	0	0
Transfers - IN	0	1
OUT	0	1
	13	25

SCHOOLS

The following is a tabulation of full-time paid School District #400 personnel as of November 30, 1951:

Administration	6
Principals & Supervisors	14
Clerical	23
Teachers	280
Health Audiometer	1
Cooks	44
Nursery Scho. & Extended Day Care	12
Bus Drivers	1
Maintenance	9
Operations	48
	438

CLUBS AND ORGANIZATIONS

As of November 30, 1951, the employees of the listed organizations, exclusive of those included in the Real Estate - Commercial and Other Properties Unit report, include:

Youth Council	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 Monday, November 12, 1951, an "Armistice Day" program sponsored by Richland Post 71 of the American Legion was held on the Plaza.

Parks and Recreation

The second in the series of the Community Concerts was held on November 15, 1951, at the Carmichael Junior High School with the presentation of "The Reveliers" quartet.

Again this year the Greater Richland Chamber of Commerce contracted to have street Christmas decorations installed throughout the business districts of Richland. The Parks and Recreation Unit made arrangements to have electrical connections made to the decorations.

Arrangements were made by the Parks and Recreation Unit for the loan of a truck to the Junior Chamber of Commerce to haul a large 40 ft. Christmas tree from out of town and which is to be set up and lighted in the Plaza.

The Girls Scouts of Richland made arrangements to install Christmas decorations on the power poles throughout the business districts. The Parks and Recreation Unit arranged for sufficient wire and rope for hanging of the ornaments to be provided them.

The number and types of organizations presently served by the Parks and Recreation Unit include:

Business and Professional Clubs	21
Churches and Church Organizations	26
Civic Organizations	17
Schools	13
Fraternal Societies	24
Political Organizations	5
Recreation & Social Clubs - Alumni	3
Art, Music and Theatre	9
Bridge	2
Dance	4
Garden	2
Hobby	9
Social	10
Sports	18
Veteran & Military Organizations	14
Welfare Groups	7
Youth - Boy Scouts	20
Girl Scouts	49
Camp Fire Girls	36
Miscellaneous	10
	289

RECREATION

The indoor Archery Instruction program for youth groups was initiated on November 1, 1951, at Columbia High School. The group was divided into two divisions, the midgets under 11 years, and the juniors 12 years or older.

The Athletics and Playground Supervisor attended the Washington State Recreation Society meeting held in Seattle November 1 and 2, 1951

Parks and Recreation

Open House at the Community House Center was held Sunday, November 4, 1951, from 3:00 PM to 6:00 PM with all members of the Unit in attendance.

The weight lifting classes were moved from the Community House to the Spalding School on November 19, 1951.

Attendance figures for November, 1951, of participants in the Fall and Winter Adult and Family Group program sponsored by the Parks and Recreation Unit and held in the gym at Spalding Grade School were as follows:

	Children	Adults	Total
General Attendance	81	986	1,067
Special Events			
Participants			
Spectators			
Assisted Activities			
Totals for Month	81	986	1,067

On November 1, 1951, the regular monthly meeting of the Parks and Recreation Board was held in the reception room of Building W-20. The Community Services Section Manager advised the Board of the organization changes effective December 1, 1951, in the Parks and Recreation Unit. The Library is to be removed from the Parks and Recreation Unit and will report directly to the Community Services Section Manager. The functions of the Park Maintenance Sub-Unit including Erosion Control, is to be transferred as a group to Public Works and will be known as Public Grounds Maintenance Unit. The Recreation Sub-Unit will be known as the Recreation and Civic Affairs Unit and will report to the Community Services Section Manager. The Recreation Director is to be available as the official representative of the General Electric Company to the Parks and Recreation Board and will be Acting Secretary of the Board. The next regular meeting of the Board is scheduled for December 6, 1951, in the Community House.

COMMUNITY HOUSE

Community House held their official Open House on November 4, 1951 - introducing the facilities and equipment to the public. Approximately one thousand people attended.

The Women's Republican Club was the first group to use the new Banquet Room this month. Work orders have been issued to move and connect the electric stove and oven, changing the counter and squaring off the room to provide more space for participants. The room is becoming very popular as the different groups learn of its existance.

Plans are progressing for the different Christmas Parties that will be held in the Community House. The following permanent groups are planning activities:

1. Elementary program
2. Hi-Spot Club
3. Altrusa - Elderly People
4. Rec-A-Teers - Young Adult Group
5. Red Cross Servicemen's Center

Parks and Recreation

A very successful Halloween Party was held on November 2, 1951, for the Elementary group. Approximately 690 children participated in the festivities.

On November 21, 1951, Recreation and Civic Affairs personnel in Building W-20, moved to the Community House, which will serve as permanent headquarters.

Plans are underway to provide two offices in the lobby of the Community House to help house the Recreation and Civic Affairs Unit personnel and also to renovate the storage closet in the Games Room so that it may be used as an office for Community House personnel as well as for equipment storage.

Attendance - Community House

	Children	Adults	Total
General Attendance	6,822	4,175	10,997
Special Events - Participants	37	489	526
Spectators	319	1,271	1,590
Assisted Activities	38	684	722
Totals for Month	7,216	6,619	13,835
At end of previous Month	22,242	17,438	39,680
Fiscal Year Totals to Date	29,458	24,057	53,515

MAINTENANCE

Grounds maintenance during the Month of November consisted of general cleanup of the park area and primarily of replacement planting.

Janitorial services were provided the Bomber Bowl and Burlin Camp.

A considerable amount of cleanup of trash and paper was necessary around the newly installed fences in the park areas during the month blown into areas by high winds.

Space was made available to the Girl Scouts in the Park Maintenance Headquarters Building for repairing the Christmas decorations which the group were to install on power poles throughout the business districts.

Park Development

Progress Report

Proposed Work	Percentage Complete
1. Playground Equipment Installation Project C-425	80%
2. Street Tree Planting Project S-405	75%

Parks and Recreation

RICHLAND PUBLIC LIBRARY

Circulation

Books	16,005	(adult - 9,305; Juvenile - 6,700)
Magazines	351	
Records	804	
Pamphlets	11	
Inter-Library Loans	60	
Grand Total	17,231	
Books added during Month	676	(adult - 325; Juvenile - "442) *Includes October statistics
Current book stock	17,245	

Registration

Adult	487
Juvenile	143
Total	630

Total registered borrowers - 7,722

Children's story hour attendance - 501

The first Annual Book Fair was attended by approximately 700 people. Although the attendance was not as large as had been hoped, it was still felt that the Book Fair was a success and is worth carrying on. The cooperation of the merchants who loaned materials for the displays was excellent. Particular mention should be made to the Columbia Book Store which furnished all the books for the displays so the Library would not have to take their copies out of circulation. Also through the cooperation of the Columbia Book Store, book prizes were awarded to 15 elementary and junior high school students as winners in the art contests run in conjunction with the Book Fiar on "My Favorite Character in Children's Books." The Richland Public Library is also grateful for the full cooperation and assistance which was received from the schools, individuals, organizations, radio stations, News Bureau, Public Projects Office and the newspapers. Again, special mention is due Mrs. Dorothy Roos who worked untiringly with the Library in the planning and execution of the Book Fair, and Mrs. Mary Ellen Boyd who did the radio planning and some of the programs.

The Book Fair Exhibits were followed by a Jefferson School Art Exhibit which was very interesting and well attended.

Mr. Frederick P. Seymour was appointed to fill the vacanct on the Library Board. He will serve for a five year term.

Parks and Recreation

MAJOR EVENTS DURING NOVEMBER, 1951

November 2	Sunnyside vs. Columbia High School	Bomber Bowl
3	Carmichael Jr. High vs. Chief Joseph Jr. High	" "
4	Community House Open House	Community House
12	Armistice Day Program	Plaza
15	Community Concert	Carmichael
16	Richland vs. Wapato High School	Bomber Bowl
17	Ft. Lewis vs. Army	" "

COMMUNITY SERVICES

RICHLAND POLICE DEPARTMENT

NOVEMBER 1951

ORGANIZATION AND PERSONNEL

	Exempt	Non-exempt
Employees - Beginning of Month	16	27
Transfers In	0	0
Transfers Out	0	0
New Hires	0	0
Terminations	0	1
Total - End of Month	16	26

GENERAL

Installation of a new land radio station was completed at Police Headquarters during the month which will permit direct contact with outside police agencies. A mobile unit of the same frequency has already been installed in one of our patrol cars. Both the land station and the mobile unit correspond to the Benton County Sheriff's radio frequency and become a part of a police network extending throughout the state.

On November 1, 1951, Capt. J. S. Johnson of Crime Prevention and Investigation and Sgt. E. E. Miller of Traffic Control attended a meeting of the Student-Parent Council. Sgt. Miller spoke on bicycle laws and safety and Capt. Johnson spoke on thefts of bicycles and acts of vandalism by juveniles.

Capt. J. S. Johnson and Sgt. A. L. Reil of Crime Prevention and Investigation attended a dinner meeting of Richland school principals and counsellors on November 5. School and juvenile problems were discussed, including the means and methods of handling juveniles by the Police Department.

Capt. W. A. Ziegler of Enforcement and Sgt. E. E. Miller of Traffic Control attended the Governor's Safety Conference in Olympia on November 6, 1951.

Capt. J. S. Johnson of Crime Prevention and Investigation spoke to the Richland League of Women's Clubs on November 8, 1951, relative to narcotics, the existing narcotics laws and problems confronting this community.

Fourteen safety films were available for the use of personnel groups, civic organizations and schools during the month of November. Approximately 1,750 school children and adults viewed these safety films during the month.

During the month, a total of 112 letters were received, compared to 159 last month. These consisted of 104 inquiries on arrests and 8 requests for assistance.

During the month, 35 prisoners were processed through the Richland Jail. Thirteen of these were from North Richland.

During the month, 14 gun registrations were recorded.

During the month, 103 bicycle registrations were recorded.

During the month, 363 traffic violation reports were received. These consisted mainly of speeding and illegal parking. A total of 90 other reports were received. These consisted mainly of larceny and public intoxication cases.

TRAFFIC

There were 28 reportable accidents in Richland during the month of November. This was one less than the preceeding month, but six more than the same month last year. There have been a total of 226 accidents this year to date as compared to 175 for the same period last year. Total property damage this month was $4,563.37, a decided decrease from the $7,939.83 reported last month.

There were no injuries reported this month, but the total for this year is 50 as compared to 24 for the first eleven months last year.

Twenty of the above accidents were investigated at the scene by members of the Police Department. One of these investigations resulted in an arrest at the scene for Failure to Yield Right of Way to a Motor Vehicle and Criminal complaints were signed against 15 drivers by members of the Richland Police Department.

Driving violations which contributed to the 28 accidents this month were:

Failure to yield right of way	13	Unsafe speed	1
Negligent driving	7	Failure to signal	1
Improper backing	5	Improper parking	1
Inattention to driving	1		

Checks have been made each day on patrol operations at each of the schools for attendance, appearance and methods of operation. All groups seem to be operating very well and efficiently. Meetings were conducted at four of the schools this month. Equipment was checked and some replacements made.

The Sacajawea School requested a bicycle safety program. Ptm. Metz conducted this meeting and showed a bicycle safety film.

At the request of this department, Mr. Allan requested all school principals to direct the children in their schools to walk their bicycles across intersections where school boy patrols are on duty unless the traffic is controlled by a traffic light. At these intersections the students may ride across on the green light.

Construction has been completed on the increasing of turning radii at the intersections of Swift with Goethals Drive and Stevens Drive. These intersections were greatly improved by this work and vehicles can make proper right turns without endangering oncoming traffic in apposing lanes. This is especially true of buses.

During the month of November there were 21 new traffic control signs installed and 25 signs re-set or renewed due to traffic damage and construction.

A new 35 mile zone was posted on George Washington Way as recommended by the Traffic Control Committee. This seems to be working out well and to date no accidents have been reported in this area. However, a speed survey was made approximately 10 days after the 35 mile speed was posted, which revealed that 78% of the vehicles were travelling at less than 40 m.p.h. 16.9% of the 143 vehicles checked were travelling in excess of 45 m.p.h.

TRAINING

The subject for classroom training for the month was as follows: use of new portable radios, arson investigation, use of crime laboratory and equipment.

Training at the small arms range for the period in field instruction was as follows: two hours pistol instruction and two and one half hours machine gun instruction.

Qualifications on the Army-L Course were as follows:

Score	No. Men	Per Cent
Expert	14	60%
Sharpshooter	1	4%
Marksman	4	18%
Unqualified	4	18%

Qualifications on the Machine Gun Course were as follows:

Score	No. Men	Per Cent
Expert	9	82%
Sharpshooter	2	18%

A total of 23 men reported for police training.

ACTIVITIES AND SERVICES

	September	October	November
Doors and windows found open	38	27	15
Children lost or found	23	42	18
Dogs, cats reported lost or found	28	60	38
Dog, cat, loose stock complaints	17	25	30
Persons injured by dogs	3	1	3
Bank escorts and details	0	0	0
Fires investigated	15	17	13
Miscellaneous escorts	10	7	15
Complaints investigated (no enforcement action)	63	63	40
Deaths reported	0	1	2
Property lost or found	28	22	37
Records inquiries	174	150	162
Law enforcement agencies assisted	13	16	5
Private individuals assisted	9	3	6
Plant divisions assisted	61	64	69
Emergency messages delivered	46	31	39
Street lights out reported to Electrical			157
Totals	528	529	645

MONTHLY REPORT
RICHLAND POLICE DEPARTMENT
NOVEMBER, 1951

	OFFENSES	KNOWN	UNFOUNDED	CLEARED ARREST	CLEARED OTHER*
PART I					
1.	Murder	0	0	0	0
2.	Rape	0	0	0	0
3.	Robbery	0	0	0	0
4.	Aggravated assault	0	0	0	0
5.	Burglary - break. & ent.	1	0	0	2
6.	Larceny - over $50.00	4	0	0	1
	Larceny - under $50.00	23	1	2	11
	Bike theft	19	0	0	19
7.	Auto theft	2	0	1	1
	TOTAL PART I CASES	49	1	3	34
PART II					
8.	Other assaults	3	0	3	0
9.	Forgery	0	0	0	0
10.	Embezzlement & fraud	4	0	4	0
11.	Stolen Prop:buy:rec:poss.	0	0	0	0
12.	Weapons:carry:poss.	0	0	0	0
13.	Prostitution	0	0	0	0
14.	Sex offense	0	0	0	0
15.	Off.ag.fam. & child	0	0	0	0
16.	Narcotics - drug laws	1	1	0	0
17.	Liquor laws	3	0	2	1
18.	Drunkenness	10	0	10	0
19.	Disorderly conduct	0	0	0	0
20.	Vagrancy	1	0	1	0
21.	Gambling	0	0	0	0
22.	Driving while intoxicated	1	0	1	0
23.	Violation rd. & dr. laws:				
	Speeding	80	0	80	0
	Stop sign	21	0	21	0
	Reckless driving	4	0	4	0
	Right of way	9	0	9	0
	Negligent driving	26	0	26	0
	Defective equipment	8	0	8	0
24.	Parking	110	0	110	0
25.	All other traffic	18	0	13	5
26.	All other offenses:				
	Public nuisance	4	0	4	0
	Malicious mischief	4	0	0	4
	Vandalism	4	0	0	4
	Dog nuisance	2	0	0	2
	Investigation	1	0	0	1
	Disturbance	1	0	0	1
	Cruelty to animals	1	0	0	1
27.	Suspicion	0	0	0	0
	TOTAL PART II CASES	318	1	[illegible]	13

	OFFENSES	KNOWN	UNFOUNDED	CLEARED ARREST	CLEARED OTHER*
PART III					
28.	Missing Persons	9	1		10
	Lost Persons	12			12
	Lost Animals	6			1
	Lost Property	10			2
29.	Found Persons	0			0
	Found Animals	15			13
	Found Property	5			5
	TOTAL PART III CASES	57	1		43
PART IV					
30.	Fatal Mot. Veh. Traf. Acc.	0			
31.	Pers. Inj.Mot.Veh.Traf.Acc.	0			
32.	Prop.Dam.Mot.Veh.Acc.	28			
33.	Other Traffic Acc.	0			
34.	Public Accidents	No accurate statistics kept			
35.	Home Accidents				
36.	Occupational Accidents				
37.	Firearms Accidents	0			
38.	Dog Bites	1			
39.	Suicides	0			
40.	Suicide Attempts	0			
41.	Sudden Death & Bodies Found	0			
42.	Sick Cared For	0			
43.	Mental Cases	0			
	TOTAL PART IV CASES	29			
	COMPOSITE TOTALS PARTS I, II, III, IV CASES	453	3	301	90

*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 in that there were no arrests.

Property Reported Stolen During Month $1,979.95 (inc. 19 bikes)
Property Recovered During Month 620.75 (inc. 19 bikes)

SEE PAGE THREE FOR JUVENILES INVOLVED

Number of offenses known to police per 25,000 inhabitants in cities of 25,000 persons:

	Wash. Ore. & Cal. Six months (July-Dec.1950)	One month average	Richland July-Dec.1950	Richland October 1951	Richland November 1951
Murder	.76	.13	0	0	0
Robbery	19.8	3.3	0	0	0
Agg. Assault	14.9	2.4	0	0	0
Burglary	128.1	21.3	12	3	1
Larceny	392.	65.3	155	24	27
Auto theft	57	9.5	12	0	2
Bike theft			134	14	19

Number of offenses known to police per 25,000 inhabitants regardless of whether offenses occurred in cities or rural districts:

	State of Washington Six months (July-Dec.1950)	One month average	Richland July-Dec.1950	Richland October 1951	Richland November 1951
Murder	.74	.12	0	0	0
Robbery	16.7	2.8	0	0	0
Agg. Assault	5.0	.8	0	0	0
Burglary	120.4	20.0	12	3	1
Larceny	377.6	62.9	155	24	27
Auto theft	54.5	9.0	12	0	2
Bike theft			134	14	19

The portion of offenses committed by persons under the age of 25 years is shown:

	National Average Percentage of cases (July-Dec. 1950)	Wash. Ore. Cal. Actual cases (July-Dec. 1950)	Richland July-Dec.1950	Richland October 1951	Richland November 1951
Robbery	54.1	.23	0	0	0
Burglary	61.6	6.0	1	0	0
Larceny	45.4	4.5	24	4	4
Auto theft	67.3	17.3	0	0	1

Note: Statistics of juvenile offenses throughout the United States were taken from the Uniform Crime Report published by the Federal Bureau of Investigation, which states: "It should be remembered that the number of arrests recorded is doubtless incomplete in the lower group because of the practice of some jurisdictions not to fingerprint youthful offenders."

PAGE THREE RICHLAND POLICE DEPARTMENT MONTHLY REPORT NOVEMBER 1951 JUVENILES INVOLVED

OFFENSES	NO.	JUVENILES	SEX	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	TOTAL
LARCENY	4	9	M				1		1			2					2	3	10
		1	F															1	
JUVENILES WITH LIQUOR	2	5	M													3	2		7
		2	F												1				
VANDALISM	1	3	M									3							3
			F																
MALICIOUS MISCHIEF	1	2	M	1	1														2
			F																
CAR THEFT	1	1												1					1
TOTALS	9	23		1	1		1		1			5		1	1	4	4	4	23

RICHLAND POLICE DEPARTMENT
RICHLAND JUSTICE COURT CASES
NOVEMBER 1951

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.
Def. equipment	11	7	2	2						2	1	$ 15.00	$ 37.00	$ 25.00
Drkn driving	1				1					1				
Dr. license	28	14	4	4	1	5					16	20.00	30.50	22.50
Dr. while lic. rev.	1		1									250.00		
Dr. on sidewalk	1				1									
F.T.Y.R.O.W.	7	1	5	1								57.50	10.00	
Illegal parking	160	42	88	29	1					6	1	324.00	145.00	113.50
Illegal passing	1			1										
Impr. backing	1	1											5.00	
Impr. passing	5	5									5			
Negligent driving	37	25	6	5	1				1	9		130.00	75.00	70.00
No registration	2	1		1							2			
Reckless driving	6	2		2	1	1			2	2			90.00	
Speeding	90	31	42	12	1	4				7	3	435.00	330.00	17.50
Stop sign	24	12	11			1					6	55.00	41.00	
Entering posted "exit"	1	1									1			
Following to closely	1	1									1			
C to D of a M	2	2					2							
Dog ordinance	1				1									
Larceny by check	2				2									
Permitting child to operate vehicle w/out lic.	2	1		1									12.50	
Petit larceny	1	1											30.90	
Public intoxication	7	4	3				1				-	25.00	32.50	
Public nuisance	5	3	2									17.50	110.00	55.00
Third degree assault	2	1			1								25.00	25.00
Vagrancy	1	1					1							
TOTAL	400	156	164	58	11	11	4		3	27	36	$1379.00	$974.40	$328.50

NOTE: One drunken driving case amended to negligent driving.
Two reckless driving cases amended to negligent driving.
One F.T.Y.R.O.W. case taken to Juvenile Court.
One grand larceny case amended to petit larceny.
One operation of motor vehicle while lic. rev. case taken to Superior Court.

POLICE DIVISION - TRAFFIC CONTROL STATISTICS
NOVEMBER, 1951

MOTOR VEHICLE ACCIDENTS:

	Total Number		Fatalities		Major Injuries		Minor Injuries	
	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.
Richland	29	28	0	0	0	0	4	0

ACCIDENT CAUSES:

	Negligent Driving		Failure to Yield Right of Way		Reckless & Drunken Driving		Other Cases	
	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.
Richland	8	7	8	13	4	0	9	8

PLANT WARNING TRAFFIC TICKETS ISSUED:

Richland: ONE WARNING TICKET ISSUED IN OCTOBER, 1951 FOR ILLEGAL PARKING: NO WARNING TICKETS ISSUED IN NOVEMBER, 1951.

TRAFFIC CHARGES AND COURT CITATION TRAFFIC TICKETS ISSUED:

	Speeding		Stop Sign		Drunken Dr.		Reckless Dr.		Right of Way V.		Neg. Dr.		Parking V.		Other V.		Totals	
	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.
Richland	91	83	27	24	5	0	5	7	9	7	22	25	218	151	57	48	434	345

NOTE: Traffic Control Statistics show ORIGINAL CHARGES ONLY.

COMMUNITY SERVICES

RICHLAND FIRE DEPARTMENT

NOVEMBER 1951

Organization and Personnel	Exempt	Non-Exempt
Employees - Beginning of the Month	51	0
Transfers In	0	0
Transfers Out	1	0
New Hires	0	0
Terminations	0	0
Total - End of the Month	50	0

Fire Protection

Fire Loss (Estimated):	Government	$ 320.20
	Personal	582.93
	Total	903.13

Response to Fire Alarms	13
Investigation of Minor Fires and Incidents	9
Ambulance responses	39
Inside Drills and Schools	43
Outside Drills	5
Safety Meetings	8
Security Meetings	4
Fire Alarm Boxes Tested	194
Fire Hydrants Tested	16

It was necessary to recouple two sections of new fire hose received for Civil Defense purposes.

Nine new street fire alarm boxes, serving the new apartment and housing areas, were connected to the public alarm circuits.

Three Boy Scouts were examined for Firemanship Merit Badges.

Starting on November 5th, engineers of the National Board of Fire Underwriters and the Washington Surveying and Rating Bureau spent approximately ten days resurveyed the community in reviewing Richland's insurance classification. In addition to surveying other Community units and facilities, the engineers were assisted in testing water mains, five Fire Department pumpers and the fire alarm system. The witnessed a simulated firefighting operation and examined fire prevention records. A formal report of their findings is expected in sixty or ninety days.

Fire Prevention

A total of 212 fire inspections were performed during the month, 303 fire extinguishers were inspected or serviced and 20 fire hose standpipes were inspected. Ten hazard reports were submitted.

Fire Prevention (Continued)

Starting November 7th, the Assistant Fire Marshal was detailed to assist Civil Defense personnel on a shelter zone survey of commercial buildings.

Considerable preparation was necessary prior to November 29th when the Fire Prevention Week report was submitted to the National Fire Prevention Week Contest. Another report is being prepared for entry in the Chamber of Commerce of the United States Fire Waste Contest.

Arrangements were made for light bulb installation in all foam extinguisher boxes and houses subject to freezing and for weekly inspection of these bulbs by janitorial servicemen.

At the request of the Underwriters Laboratories, a fluorescent light fixture wiring harness involved in a recent fire was shipped to their San Francisco laboratory.

Investigated a November 3rd fire at the Richland Supply. From all indications, the fire was caused by a defective neon sign transformer.

Five residences were inspected during the month, including a tract house in which an oil stove explosion had occurred.

After two months of effort to get the new sprinkler system in Kadlec Hospital in serviceable condition, the installing contractor made the required corrections, making it possible to place the system in service November 14th.

The lack of crash protection for butane storage tank at Dy's Burger was referred to the Real Estate Section.

Inspected stage properties for the Richland Players production in the Chief Joseph Junior High School.

Consulted Real Estate supervision on the failure of emergency lighting facilities in theatres to meet code requirements.

Serviced automatic CO2 fire extinguishing system in the AEC Beechcraft plane.

Investigated a minor fire at the Downtown Thrifty Drug where a fire extinguisher was damaged. The extinguisher was replaced and backcharged to the Real Estate Section.

Self-inspection reports on residences, submitted during Fire Prevention Week by school students, were reviewed. Confusion was noted on the proper method of using fire alarm boxes. Corrective education program was proposed to school authorities.

COMMUNITY REAL ESTATE AND SERVICES DEPARTMENT

ENGINEERING UNIT

NOVEMBER, 1951

Personnel

	Exempt	Non-Exempt	Total
Employees - Beginning of Month	7	4	11
Employees - End of Month	7	4	11
Total	7	4	11

The Status of Active Projects is as follows:

K-562 - Automatic Irrigation Levee 2-C - Bids opened Nov. 20, award of contract in progress.

L-262 - Water and Sewer - Assembly of God Church - Bids opened Nov. 20, award of contract in progress.

L-575 - Parking Lots - Facilities - Work 100% complete.

L-589 - Increased Radii at Swift and Goethals - Scheduled for completion 11-29-51. It appears the work will be done by Nov. 30.

S-350 - Improved Lighting 705 Building - Work complete and accepted. Physical Completion Notice being revised to include information as to reasons for underrun on Project.

S-405B - Street Tree Planting - Additional Erosion Control - Stakes were placed on 15 residential streets or sections of streets. Holes have been dug by residents and 339 trees have been planted.

S-450 - Fencing Riverside Park - Subcontract modified to include 240' of additional fence. Completion date moved to December 10, 1951. Modified Subcontract 90% complete.

S-469 - Site Preparation at 703 Bldg. - Subcontract Work completed and accepted 8-17-51.

S-479 - Fire Protection - Chief Joseph School - Work completed on October 17, 1951, with exception of painting fire hydrants. This exception has been cleared up and project is 100% complete.

C-357 - Alterations to Sewage Lift Station - Subcontractors work completed and accepted by formal acceptance with exception of two pieces of electrical equipment. Cyclone fence to be installed by modification of Seattle Chain Link Fence Co. existing subcontract No. G-410.

C-408 - Additional Erosion Control - Bids opened and award in progress on the tree and shrub planting.

C-425 - 1951 Park Development Program - Bids opened Nov. 20, award in progress on all work.

C-426 - Street Improvement Program 1951 - All work including cleanup will be completed November 29, 1951.

Engineering Unit

Status of Active ESRs

235-PW Town Planning Board Work - Def. for other work.

369-CA Site Map CAP Field - Def. for other work.

510-M Roads and Streets Drawings - 1950 Construction - Def. for other work.

547-MD Fixed Irrigation System - Design is progressing

552-MF Fire Protection Desert Inn and Richland Theater - Project authorization signed November 13, 1951.

561-SD Chief Joseph Grounds - Bids opened Nov. 19, award in progress.

565-RC Site South of Tract House 0-1224 - Def. for other work.

572-M First Baptist Church - Work progressing 35% complete.

573-M Westside United Protestant Church - Work temporarily delayed.

579-MS Goethals Drive to Williams - Study of Intersection - Def. for other work

581-RC As Built plans for LDS church - Plans returned to building committee for correction.

585-M Anderson Motors Addition - Construction work progressing - 80% complete

586-M Standard Oil Station - Construction progressing 50% complete.

590-PR Rehabilitation of Bomber Bowl Fence - Design 60% complete - Park Sec. requested deferment of project as sufficient money not available for work.

591-M Preparation of advice pamphlet for contractors - Rough completed. temporarily delayed for other work.

594-M Fence around Well #15 - Design 20% complete - Request by Public Works Unit to cancel request.

595-M Shell Oil Company - Work progressing - 90% complete

596-M Store Building #3 - C. D. Joseph - Work Progressing - 50% complete

597-RC Addition to Mart - Preliminary sketches rejected as not complying with Uniform Building Code.

598-RC Legal Descriptions of Churches and Clubs sites - 75% complete

599-MM 1952 Street Improvement Study - 100% complete.

600-RC McVicker Building #5 - Legal Description - 100% complete.

601-RC Legal Description - C. D. Joseph Building #4 - 100% complete.

Engineering Unit

602-RC Legal Description - McVicker Building #4 - 100% complete

603-RC Legal Description - McVicker Building #3 - 25% complete - Waiting for size of ground assignment.

604-RC Joseph Investment Building #3 - Legal Description - 100% complete.

605-PR Erosion Control - Project proposal submitted to A & B Committee.

606-RC Legal Description - 89 Lee - 25% complete - Waiting for size of ground assignment.

607-M Maintenance - Roads and Streets - 95% complete.

608-MU Elimination of Odors Emanating from Sewage Lift Station - Study 80% comp.

609-M Plan Checking - Store Bldg. #4 -CD.Joseph - 20% complete.

610-RC Business Development - 95% complete

611-M Parking Lots - W-20 - Request for Modification of G-390 for ten days extension of contract has been made.

612-RC As Builts for Richland Thrifty Drug - Temporary delay for other work.

613-RC Building Alteration Permit #11 - Central United Protestant Church - Permit approved. Work progressing.

614-RC Charge Code - Temporary Loan of Employees

615-M Plan Checking - McVicker Building #4 - First Plans submitted - rejected as not in full conformance with Code and not representative of building to be built.

REAL ESTATE SECTION

I

SUMMARY

NOVEMBER

ORGANIZATION AND PERSONNEL:

	BEGINNING OF MONTH		END OF MONTH	
	Exempt	Non-Exempt	Exempt	Non-Exempt
Commercial Property Unit	6	6	7	6
Housing & Real Estate Maintenance Unit	22	170	22	161
	28	176	29	167

Net decrease of employees for month of November 8

GENERAL

Supplemental Agreement entered into with Anderson Motors to provide for Lessee to construct an addition of approximately 3,700 square feet for a parts room, men's room, storeroom and four additional service bays.

Ground sites were awarded to the following individuals for construction of privately owned business buildings:

1. Virgil O. McVicker - Block 1, Uptown Business District, Investment Building 160' frontage.

2. Chalmer D. Joseph - Block 5, Uptown Business District, Investment Building 100' frontage.

Housing matters and problems for Commercial Facilities formerly handled by the Commercial Property Unit were transferred to the Housing & Real Estate Maintenance Unit as of November 1, 1951.

HOUSING AND REAL ESTATE MAINTENANCE UNIT

November, 1951

ORGANIZATION AND PERSONNEL		November
Number of employees on payroll:		
Beginning of month:	22 Exempt 170 Non-Exempt	
	192	192
End of Month:	22 Exempt 161 Non-Exempt	
	183	183

Richland Housing

Housing Utilization as of Month Ending November 30, 1951

Houses occupied by Family Groups

	Conventional	Block	T	Precut	Ranch	Prefab	Apt	4th add	Tract	Total
G.E.Employees	2229	259	9	383	831	1159	57	206	39	5172
Commercial Facilities	85	11	1	33	72	58	8	8	5	281
Community Activities	9				7	4			1	21
Medical Facilities	4	15			1	1		3	3	27
Post Office	6				3	12		1	4	26
AEC and other government	87	30		19	43	16	1	9		205
Schools	48	1		5	11	55	1	1		122
Vitro Corporation	6	3		4	10	4	1			28
Atkinson Jones	8	13		2	11	4	1	1		40
Newberry Neon	3	1		1			1	1		7
Vernita Orchards									4	4
Robert's Filter Co.	1									1
V.S.Jenkins					1					1
Hanley Co.					1		1			2
Urban-Smythe-Warren					1			1		2
Charles T. Main				1	3	9				13
Total	2486	333	10	448	995	1332	71	231	56	5952
Houses assgn.Leases written	6			1	4	8	2	12		33
Houses assgn.Leases not written	7			1	1	9		9		27
Houses available for assgn.	1					3	1			5
	2500	333	10	450	1000	1342	74	252	56	6017

	Begin Month	Moved In	Moved Out	Month End	Difference
Conventional Type	2478	67	58	2487	Plus 9
Block Type	329	8	5	332	Plus 3
"T" Type	10	2	2	10	
Precut Type	443	14	7	450	Plus 7
Ranch Type	988	32	26	994	Plus 6
Prefab Type	1317	62	58	1321	Plus 4
Apartments	72	5	6	71	Minus 1
4th Housing Addition	180	52	1	231	Plus 51
Tract	56			56	
Total	5873	242	163	5952	Plus 79

DORMITORY STATISTICS

Dormitories:

		Occupants	Vacancies	Total Beds
Men Occupied	15	616	---	616
Men Unoccupied	0			
Women Occupied	12	*481	---	481*
Women Unoccupied	0			

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 193 men waiting for rooms in Richland.
There are 14 women waiting for rooms in Richland.

GENERAL

Houses Allocated to new tenants	120
Exchanged Houses	12
Moves(Within the Village)	80
Turnovers	10
Total Leases Signed	241
Terminations	14
Total Cancellations	163
Applications Pending	650

ALLOCATION SECTION STATISTICS

Voluntary Terminations	14
R.O.F.	1
Discharge	-
Transfers	4
Retirement-Divorce-Misc.	7
Houses assigned "As IS"	87
Move Off Project	6
Houses Sent to Renovation	35

DORMITORY REPORT FOR NOVEMBER - 1951

231	MINOR REPAIRS TO FUSES, PLUMBING, ETC.
33	WORK ORDERS STEAM, GLASS, EQUIPMENT, ETC.
140	PIECES OF FURNITURE REPAIRED.
70	HOUSEKEEPING CONTACTS.
327	LIGHT GLOBES REPLACED.
55	ROOMS VACATED.

LINENS LAUNDERED

8,601	SHEETS
4,420	PILLOW CASES
161	BED SPREADS
33	BED PADS
229	SHOWER CURTAINS

MISCELLANEOUS STORES WAREHOUSE INVENTORY SUMMARY
MONTH ENDING NOVEMBER 30 - 1951

	EXPENDABLE ITEMS	FURNITURE (GEN.LEDGER)	FURNITURE (KARDEX CONT.)	PLANT ITEMS	TOTAL
BEGINNING BALANCE	$18,446.10	$10,966.06	($11,672.27)	$42,739.40	$72,151.56
On Purchase Orders	590.90				
On Store Orders	821.65				
From Excess	2312.68				
From Housing	2468.15		2.00	5850.41	
From Dormitories	28.80		238.25	201.00	
From Other (Misc.)					
TOTAL RECEIPTS	$ 6222.18	$10,966.06	$ 240.25	$ 6051.41	
TOTAL AVAILABLE DISBURSEMENTS:	$ 24668.28	$10,966.06	$ 11,912.52	$ 48790.81	
Cash Sales (Backcharge)	153.69				
To Excess				3009.00	
To Salvage					
To Housing	2320.76		513.63	2035.45	
To Dormitories	452.39		85.66	542.66	
To Dormitories-Linens	7.50				
Dorm-Shades & Reflectors	11.55				
To Warehouse Supplies	26.05				
To Other (Misc.)	49.28				
TOTAL DISBURSEMENTS	$ 4379.82	10,966.06	$ 599.29)	$ 5587.11	
ENDING BALANCE (1)(2)(4)	20,288.46	10,966.06	($11,313.23)	$43,203.70	$ 74,[illegible].22
NET CHANGE	$ 1,842.36	$	$ 359.04	$ 464.30	$ 2300.[illegible]

ENDING BALANCE GENERAL LEDGER (BALANCE -COL. 1 PLUS COL. 2) $31,254.52

COLUMN 3 FOR LOCATION CONTROL ONLY-COLUMN 4 MEMO ACCOUNT ONLY

EXCHANGED:	PIECES		
Dorm. Furniture	48	Prefab Heaters	41
Ranges	4	Sent to Maintenance	107
Refrigerators	11	From Maintenance	88

TENANT RELATIONS WORK ORDER AND PROGRESS REPORT - MONTH OF NOVEMBER, 1951

Processing of Service Orders, Work Orders & Service Charges

	Orders Incomplete as of October 31	Orders Issued 10-31 to 11-30	Total Orders Incomplete as of November 30, 1951
Service Orders	304	2797	196
Work Orders	1851	417	1500
Service Charges	52	364	15

Principal Work Order Loads

	Incomplete as of October 31, 1951	Incomplete as of November 30, 1951
Laundry tub replacements	109	64
Bathroom Renovations (tub, lino., tile)	125	95
Tileboard Only (Bathroom)	0	1
Kitchen Cabinet Linoleum	34	9
Kitchen Floor Linoleum	7	7
Shower Stalls	111	42

Alteration Permits Issued During the Month of November totaled 97 compared to 106 issued in October.

Floor sanded	3	Install driveway	9
Install storage shed	2	Install water softner	7
Install air conditioner	1	Change range	1
Install auto. dishwasher	2	Install coal stoker	1
Install back door	4	Install basement partition	3
Install fence	4	Install gas heat system	1
Install auto. washer	27	Install overhead lights	1
Install auto. dryer	16	Install shelf	1
Basement excavations	5	Install shelter cover over door	1
Install oil burner	5	Install cold air registers	1
Install clothes poles	2		

1657 Inspections were made during the month of November compared to 1786 made during October.

Alteration permits	32	Tileboard	29
Bathtubs	54	Toilet seats	38
Cupboards	7	Top soil	7
Floor boards	16	Cancellations	167
Screen doors	16	Renovations	186
Jack & Shim	8	Shows (New Tenants)	248
Leaking basement	10	Walls	25
Linoleum	109	Windows	8
Lot lines	30	Miscellaneous	420
Paint	145	Drainage	16
Porch & Steps	15	Driving on grass	25
Shower stalls	15	Shades	2
Sidewalks	6	House siding	1
Sinks	12		

REAL ESTATE ENGINEERING UNIT
NOVEMBER 30, 1951

Following is the status of projects being handled by this unit:

S-321, Rearrangement of Steam Valve Pits at Dormitories
(Subcontract No. G-405, Weston Plumbing Company)

Project completed November 15, 1951. "Project Physical Completion Notice" issued November 20, 1951.

S-379, Interior Painting - Prefabs

Project completed June 30, 1951. Payment to subcontractor of final estimate withheld pending agreement on final quantities.

S-909, Exterior Cycle Painting - 329 Houses - Divisions II and III

Field Release (1), covering all design work and engineering necessary to prepare the project for bid, issued November 16, 1951.

HOUSING AND REAL ESTATE MAINTENANCE

November, 1951

I. ORGANIZATION AND PERSONNEL

	Exempt	Non-exempt	Total
A. Employees: as of November 1	13	129	142
B. Employees; as of December 1	13	122	135
C. Requisitions are in for:		2	137

II. MAINTENANCE REALTY BACK-LOG REPORT

TYPE OF WORK	OLDEST ISSUE DATE	BACK-LOG	RATE OF REPLACEMENT
Bathtubs, including tile board (bath) floor linoleum (bath) Painting (bath)	6/21/51	95	20 per week
Tile Board - A & J (other than tub installation	9-28-51	1	
Tile Board - Conventional (other than tub installation	None	None	
Painting (Misc.)	6/11/51	12	8 per week
Kitchen floor lino. (Conv.)	11-20-51	5	1 per week
Kitchen floor lino. (Prefabs)	11-27-51	2	2 per week
Bath floor lino. (Prefabs)	5-23-51		Held up until shower is replaced
Bath floor lino. (Conv.)	11-28-50		Held up until tub is installed.
Kitchen sink lino. (Prefabs)	9-12-51	1	None
Kitchen sink Lino.	11-15-51	8	None
Shower stall installations	11-30-50 1 BR 12-7-50 D 2-28-51 Other	42	3 or 4 per week
Prefab cupboard doors	None	None	
Laundry trays	7-31-51	64	8 to 10 per week

III. MAINTENANCE TRANSPORTATION FACILITIES

Heavy Maintenance

TRUCK TYPE	NUMBER IN POSSESSION	CRAFT
1½ ton Flatbed	8	Carpenters
Cushman Scooter	1	Carpenters
1/2 ton Pickups	9	Carpenters
3½ ton Dump trucks	2	Labor
1/2 ton Pickup	1	Labor
3/4 ton Power Wagon	1	Labor
1/2 ton Pickups	2	Sheetmetal
Panels	2	Millwrights
3/4 ton Walkin	1	Millwrights
Panels	2	Painters
1½ ton Flatbed	2	Painters
1/2 ton Pickups	2	Painters
1/2 ton Pickups	2	Plumbers
3/4 ton Pickups	3	Plumbers
Subtotal:	40	
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:		
Chevrolet Carryall	1	Painters & Janitresses
1/2 ton Pickup	2	Carpenters
Subtotal:	3	
GENERAL:		
Sedans	2	Supervision
Subtotal:	2	
GRAND TOTAL:	59	

IV. PROGRESS REPORT

A. INTERIOR PAINT PROGRAM:

A total of 99 units of housing had minor carpenter repairs and were completely painted on the Interior Paint Program.

B. LINOLEUM AND TILE:

The following work was accomplished by the Linoleum and Tile function:

Floor area in Ganzel's Barber Shop had linoleum installation.
86 floor linoleum installations were made.
64 sink tops had new linoleum installed.
55 tileboard installations.
407 units had sink, tub and tile Chempointed.

C. FIELD CARPENTRY:

The following is the work completed by the Field Carpentry function:

Replaced sash balances	20	Repaired foundations	1
Repaired street steps	40	Replaced front doors	4
Repaired porches and steps	8	Repaired cabinet doors	6
Repaired roofs	15	Installed and calked base shoe	4
Repaired or replaced screen doors	15	Raised rear slab	4
Jack and level	20	Installed concrete threshold	2
Drill weep holes	8	Installed metal thresh. (front door)	4
Repaired floors	10	Replaced shelving (Rnch. Hse. cab.)	4
Replaced shakes	12	Installed new cover on septic tank	1
Replaced window screens	10	Repaired fire jobs	2

Painting done by Miscellaneous Paint function. (Field Carp. Gen.):

Painted Community House	1	Painted screen doors	10
Painted fire jobs	2	Painted front doors	8
Sealed basements	11	Refinished floor boards	10
Touched up bathrooms	50	Touch up after lino installation	20
Repaired & painted kit. ceilings	8	Painted cupboard doors	6
Painted porches and steps	16	Repaired and painted walls	8

D. CARPENTER SHOP:

Routine work such as filing of saws, sharpening of tools, repair of ladders, repair of office furniture, upholstering of furniture and shop painting continued throughout month.

Screen doors fabricated	100	K. C. chairs reupholstered	25
Screen doors repaired	16	Davenos reupholstered	11
New screen doors installed	4	FIRO chairs	2 hrs.
K. V. chairs reupholstered	5		

E. GENERAL PLUMBING:

The following is a summary of the work completed by the work order plumbing function:

Installed 44 bathtubs.
Installed 49 laundry tubs.
Installed 20 shower stalls
Installed 22 water heaters.
Opened 19 sewer lines that were clogged with tree roots, etc.
Completed 31 plumbing work orders such as repairing broken water lines, replacing broken fixtures, service valves, etc.
Completed 4 lino repairs; taking up toilet bowl and resetting after new lino is laid.
Completed 13 bath faucet repairs.
Completed 34 steam work orders such as replacing radiator valves, traps and rusted- out pipes.
Replaced heating coils in unit at Elite Shop and Womens' Apparel.
Installed new drain field for tract house
Winterized air conditioners and hose bibbs in Dorms and Commercial buildings.
Made steam inspections on Dorms, Dorm. Apts, Efficiency Apts. and Commercial facilities on a weekly basis.
Copper Sulphate was put in toilet bowls in all houses in Divisions 5 & 9, for the purpose of killing tree roots in sanitary sewers.

F. MILLWRIGHTS: - 3 men.

This group has been doing furnace Service Order work only.

G. SHEETMETAL: - 3 men

The following is a summary of work done by Sheetmetal function:

Installed new gutters on 65 houses.
Installed 21 shower stalls.
Numerous Service Orders were done such as, replacing smoke pipes, repairing air ducts, repairing flashings, etc.

H. RENOVATION:

There were fifty-one (51) houses processed in the Renovation function. Of these fifty-one houses, seven (7) received complete interior painting and cleaning. There were four (4) houses that were partially painted in interior, plus cleaning.

The remaining forty (40) houses received complete interior cleaning only. We have now eight (8) orders on hand.

When paint work is not available on houses in Renovation, the painters time is utilized on Interior Paint Program.

I. SERVICE ORDER FUNCTION:

The following is a status report of Service Orders:

On hand at the beginning of the month:	304
Received during the month:	2689
Completed during the month:	2797
On hand at the end of the month:	196

A. PLUMBING:

1. 144 Service Order backlog.
2. 13 Renovation Order backlog.
   a. 111 plumbing orders are for the replacement of rusted-out kitchen sink strainers. Progress is being made on this item now that the material is on hand.

B. ELECTRICAL:

1. 45 orders on backlog which will be normal starting the month of December.
2. Major repairs and installations have been made by the Service Order Function.

C. LOCKSMITH:

1. Backlog has been cut in half in the past month due to assignment of overtime. Unless lock work of a major proportion should come in, assignment of overtime may be discontinued December 1, 1951.

J. LABOR:

The following is a summary of the work completed by the Labor function:

1.	Replaced blacktop in street steps	45
2.	Dug up clean-outs, sewers & water lines	25
3.	Trash pickups	95
4.	Hauled ashes from 784 Bldg.	4 times
5.	Pumped waste oil from service stations (6)	2 times
6.	Removed trees	8
7.	Filled and graded yards	8

COMMERCIAL PROPERTY - REAL ESTATE SECTION

NOVEMBER, 1951

PERSONNEL - COMMERCIAL PROPERTY:

	November
Beginning of month	12
End of month	13
Net difference	1

PERSONNEL - COMMERCIAL AND NONCOMMERCIAL FACILITIES:

	Commercial	Noncommercial	Total
October	1,303	111	1,414
November	1,295	115	1,410
Net difference	8	4	4

SUMMARY OF ROUTINE ITEMS PROCESSED:

Work Orders	29	2	31
Back Charges	1	3	4
Service Orders	39	2	41

CONTRACTS AND NEGOTIATIONS:

A. Commercial:

1. Supplemental Agreements:

(a) Mart - to provide for the Lessee to pay a flat rental sum to the Lessor in addition to the percentage rental payments provided for in the basic lease.

(b) Anderson Motors - to provide for the Lessee to construct an addition of approximately 3,700 square feet for a parts room, men's room, storeroom and four additional service bays.

(c) Automatic Laundry Company, Bldg. No. I - to provide for the Lessee to pay the Lessor additional monthly payments as compensation for electricity and water used in the operation of a Beauty Parlor in subject facility.

2. Letters of Authorization:

(a) Chalmer D. Joseph, Bldg. No. 4, Block 5 - change from a two-story building to one-story.

(b) Virgil O. McVicker, Bldg. No. I - to construct 12' x 32' addition for dry storage.

3. Letters of Award:

(a) Virgil O. McVicker - Block 1, Uptown Business District, Investment Building 160' frontage.

(b) Chalmer D. Joseph - Block 5, Uptown Business District, Investment Building 100' frontage.

B. Noncommercial:

1. Letter of Authorization:

Richland Assembly of God Church - extending the completion date of construction to December 31, 1952.

2. Contracts of Sale:

Southside United Protestant Church and Richland Masonic Temple Association - covering the sale of Government-owned equipment.

SUMMARY OF OCCUPANCY AND EXPANSION STATUS:

A. Commercial:	October	November
1. Number of Government-owned buildings	37	37
(a) Number of businesses operated by prime lessees	41	41
(b) Number of businesses operated by sub-lessees	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	21	21
3. Number of privately-owned buildings	41	41
(a) Number of businesses operated by prime lessees	38	38
(b) Number of businesses operated by sub-lessees	34	33
(c) Total businesses operating in privately-owned buildings	72	71

	October	November
4. Privately-owned buildings under construction	3	4
5. Total Number of businesses in operation	129	128
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	6	6
(c) Sites tentatively allocated or leases in process of negotiation	6	6
Total	18	18
3. Pasture Land Assignments	35	35

GENERAL:

A. Commercial:

1. V. O. McVicker - construction work was started on Building No. 4 of Block I, Uptown Business District.

2. Termination of sublease - Americana Corporation - a sublessee of Spencer-Kirkpatrick Ins.

B. Noncommercial:

1. Marine Corps League - lease terminated, effective October 31, 1951, and custody of building # O-1204 assigned to Public Works.

2. Termination of lease - Redeemer Evangelical Lutheran Church, effective as of June 30, 1951.

3. Acquisition of Government-owned building - Building 89-X, formerly occupied by Villagers', Inc., was assigned to this Unit by the Parks and Recreation Section.

4. Richland Lutheran Church - construction work was completed on an addition to the church building, and the improvements vest in the Government.

COMMERCIAL PROPERTY - REAL ESTATE SECTION November, 1951

COMMERCIAL PROSPECTS:

A number of applicants expressed an interest during the month in establishing and operating businesses in Richland. Inquiries were received concerning the following types of commercial enterprises:

Automobile Agency
Automotive Garage
Ice Cream Drive In
Transfer and Storage Office
Used Automobile Lot

NONCOMMERCIAL PROSPECTS:

Inquiries were received during the month, as follows:

(a) Leasing of Government-owned church building #137-X:
Unitarian Fellowship
Mission Baptist Church

(b) Construction of privately-owned buildings:
Mission Baptist Church
Veterans of Foreign Wars

700-1100-3000 AREA SERVICES SECTION
MONTHLY REPORT
NOVEMBER 1951

700-1100 MAINTENANCE & STEAM UNIT

General Maintenance:

Crating, banding, shoring and preparation of materials for excessing involved approximately 460 manhours. This consisted primarily of 3 carpenters' time.

The automobile unloading dock at north end of railroad spur by 1125 Warehouse was leveled. Rotted support posts were replaced with pressure treated timbers.

Floor linoleum repaired in sleeping hut at Fire Station; several floor joists were rotted requiring reinforcing.

Damaged linoleum was removed and replaced with floor tile in three rooms in 717 Building.

Minor routine carpentry work was heavy throughout the month.

Resealed roof of 69-X Building with hot tar and replaced rotted wall cap supporting electrical service.

Seven rooms were redecorated at Kadlec Hospital.

Painted miscellaneous carpentry repair jobs, patch work, touch-up and did striping work on Richland streets and Area roads.

Over 50% of sign painting time was on posters for A.E.C. Property Section.

Replaced original light fixtures with fluorescent fixtures in large south room of Community House and scattered individual offices in 700 Area buildings, to provide improved lighting.

The wiring and receptacle work on 760 Building drafting tables is approximately 80% complete. Completion date depends on material delivery.

Miscellaneous and routine electrical work was performed, including rebuilding of 29 desk lamps, repair to crane electro-magnet wiring, relamping, and portable tool and cord inspection.

Sixty gallon agitator-equipped paint pot was installed on road striper truck, for increased capacity. Additional spray guns and shields added to sprayer to permit three stripes to be run at once, resulting in economy and more accurate striping.

Replaced one wash machine at 723 Laundry and made extensive repairs to the mangle.

Designed, fabricated and installed brake and speed governor on merry-go-round at Riverside Park.

Oil heating stoves were cleaned, repaired and put in service.

Miscellaneous shop and millwright repairs were made to reproduction equipment and refrigeration units.

Desert coolers are being readied for next summer's service.

Steps were taken to conserve paper and electricity.

Three refrigerated oxygen tents for the hospital were repaired; this work has previously been performed by out-of-town specialists.

Inspection and repair of radiator valves and traps, and replacement of deteriorated condensate and steam risers to radiators in 703 Building is complete. Some sections of condensate main line required replacement.

Five steam radiators were installed in individual 700 Area offices, instead of requested electrical heat.

Routine minor steam repairs were made in hospital and 700 Area buildings. This included repair of valves, regulators, traps, and 20 leaky radiators.

Inspection of No. 1 boiler at 784 Heating Plant revealed nine faulty tubes, which were replaced. Work on this boiler is 75% complete.

Steam Operation:

The third boiler was placed in operation on November 1 to meet peak requirements. Three boilers remained in service throughout the month.

Requirements at 1131 Area are still being met with one boiler in operation.

Soft water consumption at Kadlec Hospital has leveled off in the last two weeks to approximately 45,000 gallons per day.

Steam Generated	27,137.6 M. Lbs.
Steam Leaving Plant	23,067.0 M. Lbs.
Steam Delivered	20,907.0 M. Lbs.
Coal Consumed	2,087.50 Net Tons
Total Water Softened	5,009,100 Gallons
Soft Water Sent to Kadlec Hospital	1,459,000 Gallons
Soft Water Used at 784 Heating Plant	3,550,100 Gallons

NORTH RICHLAND FIRE

Alarm No.	Response to Alarm	Cause For Alarm	How Received
134	7th St. & C Ave.	False Alarm	Box
135	Bks. 169 at 1st & Geo. Wash. Way	False Alarm	Box
136	Bks. at 1st & W	Accidental Alarm	Box
137	Trailer at 914 D Ave.	Careless handling of inflammables	Box
138	Trailer at 900 H Ave.	Improperly operated cook stove	Box
139	Bks. 172 at 1st and Q	False Alarm	Box
140	Bks. 152 at 1st and Q	False Alarm	Box
141	Bks. 169 at 1st & Geo. Wash. Way	Accidental Alarm	Box
142	Bathhouse in 700-C block	Faulty oil feed on furnace	Phone
143	Trailer at 1211 F Ave.	Overload on wiring	Box
144	Vacant lot at 13th & C	Grass Fire, cause unknown	Box
145	Bks. at 2nd and W	False Alarm	Box
146	Auto at 1st and W	Smoker's Carelessness	Box
147	Bks. at 4th & W	Accidental Alarm	Box
148	Trailer at 11th & K	Probably smoker's carelessness	Box
149	Bremerton House at 327 B	Grease fire in oven	Phone

Investigations of Fires:

Date	Location and Cause	Personal Loss	H. W. Loss	Total Loss
11/10/51	Bks. 238-C, Rm. 22, smoker's carelessness	$ 18.36		$ 18.36
11/17/51	Bathhouse in 900 L Block, sparks from chimney			
11/22/51	Trailer at 904 E, short circuit in wires	5.00		5.00
11/29/51	Bks. 238-C, Equip. Rm., faulty thermostat			
11/29/51	Bremerton House 504 C, improperly operated oil stove			
	Alarm No. 137	1,200.00	$40.00	1,240.00
	Alarm No. 143	150.00		150.00
	Alarm No. 146	50.00		50.00
	Alarm No. 148	200.00		200.00
		$1,623.36	$40.00	$1,663.36

General:

There were 4 safety and security meetings held during the month, and 13 inside drills and schools.

Seventy-four fire alarm boxes and 125 fire hydrants were tested.

Fifteen fire extinguishers were charged.

Stand-by fire protection was provided for controlled burning at 8th St. and M Ave.

Auxiliary boxes in Barracks 179 were tested. Also, Protecto wire was hooked up, tested and put in service.

All officers inspected the sprinkler system in the hospital.

Chief Olson, Captain Sharpnack and #3 Company lowered Loyd Oswalt from a scaffold after he became unconscious from a heart attack. The man was pronounced dead on arrival at Kadlec Hospital.

NORTH RICHLAND PATROL

General:

Ninety traffic warning tickets, mainly for illegal parking, were issued by North Richland Patrol.

Twelve citation tickets were issued to traffic violators: 6 for speeding, 2 for illegal parking, 1 for no muffler and no registration, 1 for running stop sign, 1 for no operator's license and 1 for passing in a no-passing zone.

Sixteen inquiries regarding formerly employed General Electric and construction personnel were answered by this office. Inquiries came from the Civil Service Commission, U. S. Navy, U. S. Army and du Pont Company.

Twenty-four persons were incarcerated in Richland jail by North Richland Patrol, ten for public intoxication, 7 for gambling, 1 for possession of gambling equipment, 4 for operating a motor vehicle while under the influence of or affected by the use of intoxicating liquor, 1 for reckless driving with liquor involved, and 1 for third degree assault.

Observations on possibilities of further conservation of electricity were called to attention of Construction Services Section.

All fire, safety, and traffic hazards observed by North Richland Patrol were reported to the proper authorities.

All facilities, warehouses, buildings and the John Ball School were checked daily by No. 1 and 3 shifts, and by all shifts on Sundays and Holidays.

Fifty-one Courtesy Cards were issued during the month. These cards were placed on automobiles where the violation did not warrant a warning ticket. These cards request the cooperation of drivers in helping North Richland Patrol uphold the traffic laws of the State of Washington.

Thirty weekly hours and ten monthly hours were used for bank escort service from Pasco, Washington.

Eight firearms, belonging to persons living in the Trailer Camp and Bremerton Houses, were registered with the Arsenal Officer. Thirty-one firearms were checked out of the Contraband Room.

There were 12 automobile accidents in the North Richland Area.

An Appearance Officer was assigned to Judge E. W. Brown's court in Richland on Thursdays to appear against persons cited to court by North Richland Patrol.

On 11/30/51 C. H. Overdahl gave an informal safety talk to a group of Construction Maintenance employees. The talk stressed that winter months are here and it is vitally necessary to take all precautionary measures for winter driving.

North Richland patrolmen spent 124 hours acting as escort for a group of Maintenance employees who were installing fire alarm system in all barracks. It was necessary to have a patrolman there while the closets were opened for the installation.

There are 5 fixed posts and 5 reposts in North Richland at the present time.

Population is as follows:

Bremerton Houses	671
Trailer Camp	4,074
Men's Barracks	1,472
Women's Barracks	81
Total	6,298

Total Lots Occupied in Trailer Camp	1,437
Total Bremerton Houses Occupied	196

Unusual Incident Reports:

Public Intoxication	10
Operating Vehicle While Under Influence	4
Negligent Driving	1
Negligent Driving & No Driver's License	1
Reckless Driving	2
Reckless Driving, Liquor Involved	1
Gambling and Possession of Equipment	1
Missing Patrol Blouse	1
Failure to Yield Right-of-way	1
Accident (Army Vehicle & Barricade Cable)	1
Accident (Truck & Passenger Bus)	1
Accident (1 Private & 1 Government Vehicle)	1
Accident (1 Private Vehicles)	2
Accident (2 Private Vehicles)	5

Accident (1 Army jeep and 1 private Vehicle)	1
Suspicion of Stolen Automobile	1
Runaway Juvenile Girls	1
Disorderly Conduct (Gang Fight)	1
Carrying Loaded Firearms in Car	1

Special Services Performed:

Emergency Messages delivered	59
Emergency Long Distance Telephone Calls	117
Western Union Telegrams	2
Pacific Telegraph Telegrams	1
Fires (Signal 12)	10
False Fire Alarms	5
Unusual Conditions Reported to Maintenance	20
Escorts to First Aid	3
Complaints on Dogs (Trailer Camp)	3
Dogs Impounded	3
Billfolds Reported Lost	2
Billfolds Turned Into Patrol	5
Billfolds Returned to Owners	1
Disturbances Investigated	4
Suspicious Persons Investigated	5
Personnel Locked out of Rooms	3
Bicycles Reported Lost or Stolen	2
Bicycles Found	2
Bicycles Returned to Owners	1
Soldiers Turned Over to M.P. Detachment	12
Cars Impounded at Patrol Headquarters	5

Signed Complaints:

Grand Larceny	5
Petit Larceny	5
Miscellaneous	3

NORTH RICHLAND COURT CASES
NOVEMBER, 1951

VIOLATIONS	NO. OF CASES	NO. OF CONV.	NO. OF FORF.	CASES DISM.	CASES CONT'D	LIC. RVKD.	TOTAL FINES	TOTAL SUSP.	TOTAL BAIL FORF.
Reckless Driving	4	3			1		$107.50	$	$ 50.00
Illegal Parking	5	1	3		1			3.50	10.50
Failure to Yield Right-of-way	3	1		2					12.50
Speeding	7	1	5		1		27.50		115.50
Negligent Driving	2	2					40.00		
Illegal Passing	2		2						15.00
Running Stop Sign	5	1	4				5.00		33.00
No Driver's License	3	1	2				5.00		17.50
No Muffler or Registration	1				1				
Drunken Driving	3	1			2	1	52.50		202.50
Gambling	8	5	3				137.50		82.50
Possession of Gambling Equipment	1	1					52.50		
Public Intoxication	3		2		1		45.00		
3rd Degree Assault	1	1						50.00	
	48	18	21	2	7	1	$472.50	$53.50	$539.00

ORGANIZATION AND PERSONNEL

No of Employees on Roll	Beginning of Month Exempt	Beginning of Month Non-Exempt	Beginning of Month Total	End of Month Exempt	End of Month Non-Exempt	End of Month Total
North Richland Patrol	5	16	21	5	17	22
North Richland Fire	31	--	31	33	--	33
Maintenance & Steam Operation	8	52	60	8	50	58
TOTAL	44	68	112	46	67	113

Personnel Changes During Month:

	Weekly	Monthly
North Richland Patrol		
New Hire	1	
North Richland Fire		
Transfer from Richland Fire Department		1
New Hire		1
Maintenance & Steam Operation		
Transfer to Community Accounting	1	
Transfer from Public Works	1	
Terminations	2	

CONTRACT SECTION

Contract Number	Contractor	Title & Status	Project Number
G-334	Erwen Construction Company	Additions to Sewage Lift Station. Contractor awaiting arrival of electrical equipment which was ordered in February and has not as yet been received from the factory.	C-357
G-343	Baldwin & Dunham	Rehabilitation of 1341 Prefabricated Houses. All work completed September 28. Modification #5 adjusting final quantities approved November 2. Contract closed out November 5.	C-448 C-380 L-483
G-373	R. A. Neuman & Son	Interior Painting Prefabricated Houses. Final quantities submitted by project engineer were verified by Contractor November 28. Contract to be modified to adjust final quantities. This contract not assigned to the Commission.	S-379
G-381	Associated Engineers Inc.	Shelterbelt Planting, Fire Protection Facilities Chief Joseph Junior High School. Work completed October 19. Modification #3 adjusting final quantities approved. Contract to be closed out early in December.	C-408 S-479 C-426
G-390	D & H Paving Company	1951 Street Improvements. Modification #2 approved by A. E. C. November 21, which includes construction of sidewalk to Jason Lee School. Modification #3 being processed which includes additional work for extension of parking lot adjacent Dorm W-20 and extends time to December 10, 1951.	C-426 L-575 L-589

375

Contract Number	Contractor	Title & Status	Project Number
G-405	Weston Plumbing Company	Steam Pit Rearrangement at Dormitories. Modification #1 extending time to November 15 being processed. All work completed November 15. Contract to be closed out early in December.	S-321
G-410	Seattle Chain Link Fences	Fencing Riverside Park and Columbia Playfield. Modification #1 approved by A. E. C. November 19 which covers additional work under Project C-357 to install fence around sewage lift station, and under Project S-450 for additional fencing at Riverside Park, and extends time to December 10.	C-425 S-450 C-357

Seven contracts were active of which work has been completed on three. Bids were opened November 20, for Projects C-425, C-408, K-562 and L-262. Four bids were received in the following amounts: $130,679.50, $172,521.10, $176,802.49 and $235,505.25. The engineer's fair cost estimate was $117,561.20. Bids are being reviewed and it is expected recommendations to award will be made by December 5, 1951. Payments to contractors during the month totaled $38,737.37.

PROJECT & RELATED PERSONNEL

	10-31-51		11-30-51	
GOVERNMENT EMPLOYEES				
Civilian Personnel-Atomic Energy Comm.	332		342	
Civilian Personnel G. A. O.	7		7	
Total		339		349
RICHLAND VILLAGE PERSONNEL				
Comm. Facilities (Inc.No.Richland)	1303		1295	
Govn. Agencies, Churches,Clubs,Etc.	111		115	
Schools	435		438	
Organizations	11		11	
Total		1860		1859
CONSTRUCTION SUB CONTRACTORS				
Atkinson & Jones	5768		5798	
Newberry Neon	372		420	
Urban Smyth Warren co.	792		973	
Vitro Corp of America (Kellex Corp.)	209		179	
Erwin Const. Co.	25		18	
J. P. Head	12		9	
Fred J. Early Jr.	90		80	
V. S. Jenkins	30		35	
Empire Electric Co.	1		0	
Associated Engr. Inc.	1		0	
X-Ray Products	1		0	
Marlarkey & Moore	7		0	
Montgomery Electric Co.	3		4	
Sound Const. & Engr. Co.	22		22	
J. G. Shotwell	9		9	
West Coast Heating & Plumbing Co.	12		11	
Electric Smith Inc.	8		9	
L. H. Hoffman	44		71	
Stier, Shelton & Schick	1		1	
Charles T. Main	205		205	
The Bay Co.	34		35	
Day Brothers	8		0	
Peter Kiewett Sons Co.	5		0	
Puget Sound Sheetmetal Works	4		0	
Valley Roofing	0		6	
National Blower Sheetmetal Co.	3		0	
Holliday & Edworthy	7		7	
Industrial Electric Co.	12		8	
D.H. Paving Co.	34		17	
Steel Const. Co. of Oregon	14		16	
Paul Berg	1		0	
G. W. Paulson Co.	1		0	
Puget Sound Naval Shipyard	725		730	
A. H. Barbour & Sons	3		2	
Noise Control of Seattle	2		0	
Charles B. Brower	2		0	
Anderson Decorating Co.	2		5	

CONTINUED PAGE #2

RECEIVED DEC 27 1951 Hanford Operations Office Richland, Wash.

	10-31-51		11-30-51	
Soule Steel Co.	0		2	
Leland S. Rosener	2		1	
R. M. Robson	8		0	
Allied Painter & Decorators	3		2	
Rust Engr. Co.	8		6	
Seattle Chain Link Fence Co.	3		0	
Weston Plumbing Co.	9		0	
North West Painting & Roofing Co.	4		0	
Head Mech. Construction Co.	8		8	
Fox Smith Sheetmetal Works	0		2	
Murphy Brothers	0		7	
Buchanan Co. Incorp.	0		2	
Jagger-Sroufe Co. & McCoy Electric Co.	0		2	
H.H. Robertson Co.	0		2	
TOTAL		8514		8704
GENERAL ELECTRIC TOTAL		8993		9070
GRAND TOTAL		19,706		19,982

RECEIVED DEC 26 700 AREA CLASSIFIED FILES

RECEIVED JAN 1 Operations Division

END

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5 / 15 / 92