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HANFORD 50026

MONTHLY REPORT

HANFORD ATOMIC PRODUCTS OPERATION

MARCH 1953

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Compiled By
DEPARTMENT MANAGERS

April 22, 1953

RICHLAND, WASHINGTON

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MONTHLY REPORT
HANFORD ATOMIC PRODUCTS OPERATION
MARCH 1953

GENERAL SUMMARY

Production Operations

Three new records were set in the Metal Preparation Section: (1) a machining yield of 83.6 percent for 4-inch material; (2) a machining yield of 83.5 percent for 8-inch material, and (3) an all time record for accepted slugs. Net Production was 106 percent of forecast. The first shipment of P-10 enriched slugs was received during the month. Target slug canning started on March 17.

Reactor input production was 102 percent of forecast, and output production for the month was 100 percent of forecast. Established maximum operating level increases were 30 MW at C and 5 MW at B. There were four uranium jacket failures at F, and all were four-inch material. Charging of material in DR pile for the new P-10 program was in progress at month end.

At the T plant, production was 305 percent of forecast, and Redox production was 121 percent of forecast, making production for the quarter 105 percent of forecast. The TBP plant was hampered by lack of feed material. At UO_3 nine carloads of powder were shipped offsite. The month's commitment of the 234-5 operation was delivered.

Engineering and Technology

Measurements of vertical height along the length of the D test hole in the DR pile have shown negligible graphite distortion effects over the 29 month period since startup. Two different methods for avoiding the use of corrosive HF in the Metal Fabrication Process have been successfully demonstrated on 10 and 20 gram scales, and a replica technique for the examination of uranium surfaces using the electron microscope has been developed.

Design progress on Project CA-512-R, 100-K Reactor Facilities, reached 74.8 percent completion. Technical management of architect-engineer services in the design of Project CA-514, 300 Area Expansion, was transferred to the Project Section on March 16, 1953. Detail design continued on the prototype fuel element canning machine for the Metal Preparation Process and is approximately 93% complete.

Three work stoppages occurred during the month, the most serious of which involved picketing by machinists on March 4.

Personnel and Services

The nomenclature for the Utilities and General Services Department was changed to Plant Auxiliary Operations. In the Plant Protection Section, the Patrol force was reduced by 29 employees, with a saving of $151,000 per year.

By letter of March 12, 1953, the HAMTC served notice of a desire to modify and revise the Collective Bargaining Agreement. The Company likewise reopened by letter of the following day.

Turnover increased from 1.03 percent in February to 1.42 percent in March.

The total number of housing applications pending is 715.

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STAFF

General Manager, Atomic Products Division	F. K. McCune
General Manager, Hanford Atomic Products Operation	W. E. Johnson
Manager, Schenectady Office	B. R. Prentice
Assistant to the General Manager, Technical	W. I. Patnode
Manager, Administrative Practices	W. K. MacCready
Counsel	G. C. Butler
Manager, Finance	W. W. Smith
Manager, Employee and Public Relations	G. G. Lail
Director, Radiological Sciences	H. M. Parker
Director, Medical	W. D. Norwood, MD
Manager, Engineering	A. B. Greninger
Manager, Manufacturing	C. N. Gross
Manager, Plant Auxiliary Operations	H. D. Middel
Manager, Community Operations and Real Estate	L. F. Huck

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NUCLEONICS DIVISION
NUMBER OF EMPLOYEES
MARCH 1953

	EXEMPT		OTHERS		TOTAL	
	3-31-53	2-28-53	3-31-53	2-28-53	3-31-53	2-28-53
Engineering Department						
General	14	5	83	5	97	10
Design	161	162	40	43	201	205
Project	212	209	296	277	508	486
Technical Section						
Administrative	10	9	2	5	12	14
Applied Research	125	147	60	84	185	231
Pile Technology	161	161	117	115	278	276
Separations Technology	108	104	23	26	131	130
Technical Services	48	35	60	114	108	149
Manufacturing Department						
General	16	17	7	7	23	24
Reactor	239	236	1 008	1 010	1 247	1 246
Separations	328	332	1 203	1 205	1 531	1 537
Metal Preparations	84	82	425	424	509	506
Plant Auxiliary Operations Department						
General	1	1	-	1	1	2
Electrical Distribution & Telephone	35	35	154	152	189	187
Transportation	45	46	478	480	523	526
Purchasing and Stores	53	56	251	257	304	313
Plant Security and Services						
Patrol and Security	62	62	491	522	553	584
Safety and Fire	43	44	110	109	153	153
Office Services	30	29	308	312	338	341
Administration Maintenance Service	11	11	56	52	67	63
Statistical and Computing	34	34	54	54	88	88
Community Operations & Real Estate Dept.	101	102	318	314	419	416
Financial Department						
General	4	4	6	7	10	11
Accounting	43	42	202	198	245	240
Payroll and Auditing	26	27	63	65	89	92
Employee & Public Relations Dept.	52	51	168	177	220	228
Radiological Sciences Department						
General	4	4	3	3	7	7
Records and Standards	25	24	146	149	171	173
Biophysics	59	58	57	57	116	115
Biology	42	42	37	38	79	80
Medical Department	43	45	214	216	257	261
Law	3	3	2	2	5	5
General	14	14	30*	31**	44	45
TOTAL	2 236	2 233	6 472	6 511	8 708	8 744

Includes 6 non-exempt female employees in Schenectady Office.
Includes 7 non-exempt female employees in Schenectady Office.

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PERSONNEL DISTRIBUTION - MARCH, 1953

	100-B&C Area	100-D&IR Area	100-F Area	100-H Area	101 Area	100-K Area	200-E Area	200-W Area	300 Area	700-1100-3000 Area And Plant General	Total
Engineering Department											
Exempt	46	74	1	13	17	18	23	77	254	316	839
Other	24	38	4	57	15	12	8	23	227	273	681
Total	70	112	5	70	32	30	31	100	481	589	1 520
Manufacturing Department											
Exempt	43	56	63	56	-	3	8	313	98	27	667
Other	237	278	366	155	-	-	122	1 078	394	13	2 643
Total	280	334	429	211	-	3	130	1 391	492	40	3 310
Plant Auxiliary Operations Department											
Exempt	24	10	6	8	9	1	22	17	16	201	314
Other	93	68	113	55	20	-	90	215	118	1 130	1 902
Total	117	78	119	63	29	1	112	232	134	1 331	2 216
Community Operations and Real Estate Department											
Exempt	-	-	-	-	-	-	-	-	-	101	101
Other	-	-	-	-	-	-	-	-	-	318	318
Total	-	-	-	-	-	-	-	-	-	419	419
Financial Department											
Exempt	-	-	-	1	-	-	-	1	1	70	73
Other	-	-	2	1	-	-	2	1	-	265	271
Total	-	-	2	2	-	-	2	2	1	335	344
Employee & Public Relations Department											
Exempt	-	-	-	-	-	-	-	-	-	52	52
Other	9	5	4	5	5	-	5	4	39	92	168
Total	9	5	4	5	5	-	5	4	39	144	220
Radiological Sciences Department											
Exempt	1	-	44	-	-	-	2	15	56	12	130
Other	5	-	45	-	-	-	9	9	158	17	243
Total	6	-	89	-	-	-	11	24	214	29	373

	100-B&C Area	100-D&DR Area	100-F Area	100-H Area	101 Area	100-K Area	200-E Area	200-W Area	300 Area	700-1100-3000 Area And Plant General	Total
Medical Department											
Exempt	-	-	-	-	-	-	-	-	-	43	43
Other	1	4	4	2	-	-	1	6	2	194	214
Total	1	4	4	2	-	-	1	6	2	237	257
General Department											
Exempt	-	-	-	-	-	-	-	-	2	15	17
Other	-	-	-	-	-	-	-	-	13	19*	32*
Total	-	-	-	-	-	-	-	-	15	34	49
Total Exempt	114	140	114	78	26	22	55	423	427	837	2 236
Total Other	369	393	538	275	40	12	237	1 336	951	2 321	6 472
GRAND TOTAL	483	533	652	353	66	34	292	1 759	1 378	3 158	8 708

* Includes 6 non-exempt Schenectady employees.

Payroll Unit
GH:lrh
4-9-53

D-2

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MANUFACTURING DEPARTMENT

MARCH, 1953

April 13, 1953

METAL PREPARATION SECTION

The net production for the month was 180 tons (106% of forecast) which included 22 tons of 4-inch material and 158 tons of 8-inch material, and represents an all time record for accepted slugs. The machining yield was 83.6 percent for 4-inch and 83.5 percent for 8-inch material. These are also new records.

The canning yield was 63.1 percent for 4-inch and 65.2 percent for 8-inch material. The combined canning yield decreased three percent. The major reject categories which affected the yields were non-seats, marred surfaces, poor bond, and thin caps for 8-inch slugs. However, during the last half of the month the non-seat rejects showed a marked improvement.

The melt plant produced 35 tons of billets with a yield of 87.5 percent and a solid yield of 96 percent. The melt plant solid and billet yields were the highest attained since December, 1951.

One 8-inch slug autoclave failure occurred during the month and was caused by a defective can.

The first shipment of P-10 enriched slugs was received during the month and an overall canning yield of 96.1 percent was attained.

Target slug canning started on March 17 with an overall yield of about 64% from bare slugs to accepted canned slugs. Weld closures have been difficult to obtain due to the air trapped between the can wall and cap. Some improvement was noted at month end.

REACTOR SECTION

The total reactor input production was 102 percent of forecast. Major items that affected the month's production were: the scheduled DR Ball 3X outage with the associated basin repairs, thermocouple replacements, downcomer alterations and repairs, and effluent line repairs; the partial plugging and subsequent replacement of valve pit header screens at D with the inspection and cleaning of the pile cone screens; rapid film buildup at C due to excessive iron in the water causing numerous panellit scrams; panellit scrams in other piles causing a small amount of outage time and four outages at F due to ruptured uranium pieces.

The output production for the month was 100 percent of forecast.

Established maximum operating level increases were 30 MW at C (includes 8 MW charged to C metal burnout) and 5 MW at B Reactor.

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REACTOR SECTION (Continued)

There were four uranium jacket failures during this period and all were at F Reactor. The outage time was 72.2 hours. Three of the failures were Group 8 material and one Group 7. (All four-inch material.)

There was one process tube failure during the month at B Area. The outage time for locating the tube was 27.2 hours.

Charging of material in the DR pile for the new P-10 program was in progress at month end.

SEPARATIONS SECTION

A total of 42 runs was started in the T Canyon Building. This production was 305 percent of forecast. The Redox plant production was 121 percent of forecast. The March production was sufficient to bring the production for the quarter to 105 percent of forecast.

During the month, 15 percent of the Redox operating time was lost due to such items as flushing the 1A column, replacing the 2DW letdown valve, reworking off-standard material and correcting the interface indicators on the 2A column.

The TBP plant produced 165 tons of uranium as UNH which was 69 percent of the forecast. The principal cause of the comparatively low production was the lack of feed material. During the last ten days of the month, however, the production was accelerated to average an 8 ton a day rate. The highest individual column rate during the month was the A at 5 tons and B at 6 tons.

The UO_3 plant operated routinely on available material during this period. A total of 281 tons of uranium as UO_3 was produced which was 94 percent of forecast. Lack of feed material from both the TBP and Redox plants hindered the attainment of maximum production. Nine carloads of powder were shipped offsite.

Metal removal efforts were handicapped by pump difficulties and poor sluicing results. The third tank farm, BXR, started sluicing and blending operations on March 17, thus substantially increasing feed material to TBP. It is also to be noted that through improved sluicing techniques material pick up had increased at C and U farms during the latter part of the month.

There were five Nagle pump failures during the month. In addition to the pump troubles, time was also lost by the failure of the slurry accumulator jets, a power outage, electrical switchgear trouble and some line plugging to 241-WR.

The month's commitment of the 234-5 operation was delivered. All fabrication work was done on the RMA line and 92.6 percent of the incoming feed material was started and processed on the mechanical line.

[redacted]

1215507

GENERAL

Effective March 1, staff components of the Department, and components of the operating sections were established as Sections or Sub-Sections in accordance with applicable nomenclature. Concurrently the former Power and Maintenance Unit of the Reactor Section was divided into the Power Sub-Section and the Maintenance Sub-Section.

J. E. Maider visited the installation at Rocky Flats on March 23.

H. A. Carlberg visited at Schenectady, N.Y., during the week of March 9 to attend conferences held there regarding singificance and use of network analyzers.

Personnel

Total on Roll March 1, 1953	3314
Accessions	35*
Separations	39*
Total on Roll March 31, 1953	3310

*Does not include intra-department transfers.

C. N. GROSS, MANAGER

MANUFACTURING DEPARTMENT

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MANUFACTURING DEPARTMENT

PATENT REPORT SUMMARY
FOR
MONTH OF MARCH, 1953

Richland, Washington
April 8, 1953

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
C. E. Frantz, Metal Preparation Section	Semi-Automatic Welding Machine

C. N. GROSS, MANAGER

MANUFACTURING DEPARTMENT

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Section 10 verified by V. D. Donihee
V. D. Donihee
Accountability

[redacted]

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Richland, Washington
April 9, 1953

MANUFACTURING DEPARTMENT
METAL PREPARATION SECTION
MARCH, 1953

I. RESPONSIBILITY

Responsibilities of the Section remained unchanged.

II. ACHIEVEMENTS

A. Operating Experience

1. Statistics

	March	February	Year To Date
Bare Pieces Machined (4")(Tons)	28	18	48
Machining Yield (4")(%)	83.6	83.0	81.9
Bare Pieces Machined (8")(Tons)	86	93	327
Machining Yield (8")(%)	83.5	82.6	82.2
Total Pieces Machined (Tons)	114	111	375
Acceptable Pieces Canned (4")(Tons) Gross	23	17	83
Acceptable Pieces Canned (4")(Tons) Net	22	16	81
Canning Yield (4")(%)	63.1	64.7	67.7
Acceptable Pieces Canned (8")(Tons) Gross	160	133	403
Acceptable Pieces Canned (8")(Tons) Net	158	131	397
Canning Yield (8")(%)	65.2	68.4	68.2

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1. Statistics (Continued)

b. Redox Operations

	March	February
Equivalent charges started	176.9	79.3
Charges completed	177.3 (Record)	79.3
Tons Uranium delivered to storage	126.9 (Record)	53.7
Average Production Rate per operating day, Tons	4.81	3.40
Average Daily Operating Rate for the month, Tons	4.10	1.73
Average yield, %		
Uranium	99.2	100.0
Plutonium	97.2	99.2
Total Waste Loss, %		
Uranium	1.21	1.42
Plutonium	2.05	1.11
Average cooling time, days	91	95
Minimum cooling time, days	83	80
Percent down time	15	43.5

c. 234-5 Operations

	March	February
Batches completed through Task II	424	265
Runs completed through Task III	200	146
Reduction yield, %	95.9	95.5
Waste Disposal, units	2.09	2.92

d. UO_3 Operations

	March	February	To Date
Uranium drummed, Tons	280.95	257.3	1649.8
Uranium shipped, Tons	287.13	268.5	1639.5
Average cooling time, days (Redox)	103	114	
Minimum cooling time, days (Redox)	94	98	
Waste loss, %	.87	.60	

e. TBP Operations

	March	February	To Date
Tons received from Metal Removal	182	120.03	736.34
Tons shipped to UO_3 Plant	164.98	111.61	702.52
Average Production Rate per operating day, Tons	6.78	6.37	
Average Daily Operating Rate for the month, Tons	5.33	3.99	

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2. Activities Continued

One eight inch slug autoclave failure occurring during the month was believed to have been caused by a defective can.

The melt plant solid and billet yields were the highest attained since the billet quality standards were revised in December, 1951. Also a new high in one shift operating efficiency was reached when 306 billets were cast out of a maximum possible 312.

During the period of non-seating difficulties in the canning operation, rigid inspection of the canning sleeves was instituted to determine the effect of sleeve size and variation. Results indicated no correlation between sleeve size and non-seating.

A marked variation in bonding strength has been noted in slugs rejected at the frost test. In a preliminary study of this condition, tin content in the AlSi canning bath was varied and bonding strength was found to be unusually strong with a tin content of 1.5%.

3. Special Operations

The first shipment of J-2 slugs was received and 2863 pieces were acceptably canned with an over-all yield of 96.1%. Of the total slugs canned, 9.8% required stripping and recanning because of faulty welds.

The canning of the initial shipment of target slugs began on March 17 on a two shift basis. To date 1409 acceptable slugs have been canned with a yield of about 60%, which is lower than had been anticipated. Weld closures have been difficult to obtain because of air trapped between the can wall and the caps. This was contrary to expectations as it was thought that the sizing operation would eliminate the air and result in higher quality welds. In addition, a substantial number of pieces have been rejected because of flaws in the metal and for unsatisfactory reactivity results.

4. Schedule Variance

Machining production was 4.9% below that forecast mainly as a result of diverting manpower from the machining operation to the P-10 program.

Billet production exceeded the forecast by 15% because of high yields and operating efficiencies.

Canning production was 6% above the forecast as a result of improved operating efficiencies on the canning lines. Efficient scheduling of furnace overhauls and prompt maintenance work reduced lost operating time to a minimum.

[redacted]

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B. Equipment Experience

1. Operating Continuity

The failure of the X-ray unit in the marking fluoroscope resulted in 16 hours lost production on this piece of equipment. It was necessary to replace the entire X-ray unit.

Production delays in P-10 target slug machining have resulted from failure of the excessively worn lathe chuck. It is believed that local repairs will enable operation to continue.

2. Inspections, Maintenance and Replacements

Repair of the ash sluice line from the power house was started when a leak was discovered. During the repair it was noted that the line joints were not properly caulked. As the line will be located under some of the laboratory area roads, the entire line was dug up. At that time it was discovered that 160 feet of spiral weld pipe on the outer end of the line had seriously deteriorated. This was replaced with cast iron pipe and the entire line recaulked.

C. Improvement Experience

1. Production Tests

PT-313-105-19M - "Irradiation of Triple Dip Canned Uranium Slugs Rolled at Fernald". Production was started on this test during the month with 27,000 pieces canned and 10,000 ready for shipment to Reactor.

2. Process Tests and Revisions

The procedure for the controlled bailing of the AlSi canning bath has been in effect since February 24, 1953. It appears the desired effect has been accomplished in reducing the tin build-up rate, with a resultant savings estimated to be about $20,000 per year.

On one canning line the tin bath agitator has been put in operation on the AlSi dip station. This has resulted in another marked reduction in tin carry-over to the AlSi canning bath. Life of the canning bath has been extended as much as 30% in some instances.

Attempts were made during the month to recover tin by the selective precipitation of the contaminating copper with 2S aluminum from a molten tin bath. The final copper content of the recovered tin was less than 1%, which is an improvement over the present method of recovery. Extremely small crystals of aluminum-copper were formed, however, which made separation of the crystals difficult. Plans are progressing for centrifugation as one method of removing entrained tin from these crystals.

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2. Process Tests and Revisions Continued

On March 10, 1953 the process test of fluxing the AlSi canning bath for removal of entrained gasses and foreign material was resumed and is now in progress.

3. Inventions and Discoveries

Personnel in the Metal Preparation Section engaged in work which might be expected to result in inventions or discoveries advise that to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during the period covered by this report, except those described in Reports of Invention as "Semi-Automatic Welding Machine."

D. Events Influencing Costs

1. Labor Variance

Nothing significant.

2. Material Variance

A slight decrease in material cost resulted from lower AlSi consumption. Procedures for decreasing tin build-up are responsible for this reduction.

3. Other

Other costs decreased slightly because of a reduction in maintenance and an increase in production over that forecast.

C. Plant Development and Expansion

1. Project Status

Project CA-433 - Power House Addition. Complete.

Project CG-481 - Equipment for 8" Slug Manufacture. Fabrication of the unloading equipment for the shipping vans was completed and one installation made. Shipments will be made in this van over a trial period before making the second installation.

Project CA-514 - Expansion of 300 Area Production Facilities. Formal approval of this project by the Atomic Energy Commission has not yet been received. Bids have been negotiated on the Operations Change House and construction is expected to begin in April. The floor plan for the Administration Building has been revised to conform with use of the 3701-L badge house as the common entrance to the Area. The contract for detailed design of 313 Building structure has been negotiated and work was started on the design March 20, 1953.

[redacted]

1215796

1. Project Status Continued

IR-135 - Low Frequency Induction Furnace for Canning Assembly Operations. Installation of the 50 KW low frequency induction furnace is nearing completion and will be put in operation in early April.

P-10 Program - The installation of equipment and facilities for production of target material was completed on March 17, 1953.

2. Plant Engineering

Labor standards were issued on the inspection of braze width and warped slug straightening. A revised material standard was compiled on the new procedure for tin recovery.

Detailed design was completed on a semi-automatic welding machine, providing mechanical control of arc travel during preheat and welding of canned slugs. Arrangements are being made for fabrication of a prototype unit.

Fabrication of an improved bronze agitator was completed and it is undergoing shakedown tests on a canning line. Performance thus far has been favorable.

Development and mock-up testing have been completed on a clamp-type canning basket to hold can sleeves in rigid alignment during slug assembly operations. Operation testing will follow bronze agitator installation tests.

Fabrication of a prototype semi-automatic capping unit is nearing completion. This unit is designed to operate on a predetermined time cycle to control the processing of caps in the canning assembly operation.

F. Significant Reports

1. Routine

Number	Title	Author	Date
HW-27273	Monthly Report, Process Unit, Metal Preparation Section, February, 1953	E.W. O'Rorke	3-3-53
HW-27478	Metal Preparation Section Evaluation of FMPC Material, Feb.-Mar. 1953	S.M. Gill	3-23-53

2. Non-Routine

HW-27210	Report on Process Experience Gained by Salt Bath Heat Treatment of Hanford Slugs	C.H. Pitt	2-24-53

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1215599

2. Non-Routine Continued

Number	Title	Author	Date
HW-27428	Hydrofluosilicic Acid as a Cap and Can Etchant	D.S. Dixon	3-17-53
HW-27501	Beveled Sleeve	J.J. Bolln	3-24-53
HW-27505	Fabrication of Frost Test Standards	J.J. Bolln	3-24-53
HW-27508	Comparison Between Reynolds and Alcoa Aluminum	C.H. Pitt	3-25-53
HW-27514	Deburring and Stamping of Unfinished Slugs	T.G. Lambert	3-25-53

III. PERSONNEL

A. Organization

No change.

B. Force Summary

	Start of Month	End of Month	Net Change
Section General	4	4	0
Operations	212	213	1
Power & Maintenance	244	245	1
Process	25	25	0
Plant Engineering	19	19	0
Radiation Monitoring	3	3	0
Section Total	507	509	2

C. Safety Experience

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

D. Radiation Experience

External exposures during March were at the lowest level of the past twelve months. Only three badge results over 200 mrep per week were reported. Contamination control during operation of the target material canning process in 303-J Building has been excellent.

E. Personnel Activities

1. Visits and Visitors

In connection with P-10 Program liaison, H. G. Henry visited the

1. Visits and Visitors Continued

Savannah River Operations Office. R. C. Aungst attended an aluminum welding clinic in Seattle sponsored by the Pacific Metal Company and the Aluminum Company of America. S. M. Gill visited the A.E.C. office in Fernald, Ohio to discuss metal preparation manufacturing problems. W. A. Blanton attended the Western Metals Congress and Exposition in Los Angeles, observing new equipment and processes for applicability to Hanford.

2. Training

The films "Quality in the Making" and "Scientific Inspection" were shown to members of Process. R. H. Titman of the Process Sub-Section spoke on "Industrial Statistics" at a meeting for the Process and Operations Sub-Sections.

[redacted]

Richland, Washington
April 10, 1953

MANUFACTURING DEPARTMENT
REACTOR SECTION
MARCH, 1953

I. RESPONSIBILITY

Responsibility for analysis of Reactor Section essential materials, except coal, helium and carbon dioxide, was transferred from the Metal Preparation Section to the Reactor Section, Process Sub-Section, effective March 16. Also, the Reactor Section, Electrical Unit was relieved of responsibility for maintaining electrical facilities in the Fire Station at White Bluffs, effective March 17, concurrent with having completed arrangements with the Engineering Department to obtain this service through construction forces.

II. ACHIEVEMENT

A. Operating Experience

The total reactor input production during March was 102.1% of forecast and 9.1% higher than in February. The longer month was primarily responsible for the increase over February. Reactor output production for the month was 100.1% of forecast. Increases in established maximum operating levels during March were 30 MW at C Reactor (maximum level included 8 MW charged to "C" metal burnout) and 5 MW at B Reactor.

The DR Reactor was shut down on March 1 for the installation of the Ball 3X System and other project work. At month end, the outage was continuing and had consumed 730.6 hours. This outage was scheduled to be longer than similar outages at B and D Reactors due to the necessity for more extensive repairs to the Building 107-DR retention basins. All project work is either complete or nearing completion and operation is expected to be resumed early in April. Charging of material for the new P-10 program was in progress at month end.

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1215102

A. Operating Experience (Continued)

There were four uranium slug jacket failures at F Reactor during March, all involving four-inch slugs. The total outage time for removal was 72.2 hours. One process tube, at B Reactor, failed during the month. The time required to locate this tube was unusually short (total outage was 27.2 hours) as a result of having successfully determined the approximate location of the leak by plenum chamber moisture analysis; only 61 tubes were hydrostatically tested.

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

1. Statistics

	B	C	D	DR	F	H	Total or Average
Reactor Time Operated Efficiency (%)	91.1	91.3	84.3	1.7	87.1	96.4	75.3
Reactor Outage Time (Hrs.)							
Plutonium Production	64.7	25.2	73.4	731.2	94.9	25.5	1014.9
Special Irradiation and Production Tests	1.4	39.9	43.5	-	1.0	1.6	87.4
Total	66.1	65.1	116.9	731.2	95.9	27.1	1102.3
Reactor Unscheduled Outage Time (Hrs.)	28.7	6.1	37.8	0.6	74.1	1.5	148.8
Metal Discharged (Tons)	27.39	24.93	19.95	33.29	14.42	13.74	133.72
Water Quality (ppm Iron)							
Raw Water - Average	0.13	0.13	0 16	0.10*	0.11	0.16	-
Raw Water - Maximum	0.14	0.15	0.23	0.10*	0.14	0.22	-
Process Water - Average	0.021	0.008	0.007	0.011*	0.009	0.023	-
Process Water - Maximum	0.032	0.020	0.018	0.022*	0.020	0.058	-
Water Pumped (MM lbs.)							
Bldg. 190 to Reactor	1540	2994	1822	124	1555	2021	10056
Bldg. 181	5264		2548		2155	2390	12357
Steam Generated (MM gals.)	152		159		130	106	547
Coal Consumed (Tons)	9711		10514		8301	6699	35225

*Data for first 1½ days of the month since water flow to the reactors was reduced to 2,000 gpm thereafter.

2. Activities

The scheduled outage of DR Reactor for installation of the Ball 3X System was begun on March 1. At month end, the installation was 95% complete. Minor construction forces performed this project work on a two-shift, six-day week basis since the Building 107-DR retention basin repair project (CG-506) determined the length of the outage. Other major reactor facility work being performed during this outage is replacement of all rear face thermocouples and associated wiring (CG-495), installation of additional moderator temperature indicators (CG-502), repair and alteration of both downcomers (CG-483), repacking of the

[redacted]

2. Activities (Continued)

DR Reactor effluent line joints at nine expansion boxes along the two lines (B-2136), replacement of process tube No. 3276-DR which has been out of service since 1951 and had resisted all previous attempts at removal, and charging material for the new P-10 program.

During the above outage, DR Water Plant sedimentation basins, flumes, storage water tanks and associated piping were inspected, cleaned and repaired as necessary.

At C Reactor, the Ball 3X System was inadvertently activated when a by-pass switch failed to close. This occurred during a scheduled outage on March 4 while a design change was being made to the low water pressure circuit. Ball recovery was completed without extension of the outage.

On March 4, partial plugging of D Reactor valve pit header screens with sand and other foreign material caused two of these screens to rupture. The reactor was scrammed by the panellit when some of the crossheader and process tube screens became plugged. During the 37.5 hour outage which followed all crossheader screens, suspect cone screens and the 12 valve pit header screens were cleaned and the process water system was thoroughly flushed. Some screen plugging was also experienced at B Reactor. These difficulties are attributed to Water Plant activities during the extended outages.

Facilities for supplying lime-free water to the Building 105-D flow laboratory from Building 183-D (Project CG-540) were accepted by the Pile Technology Unit on March 25. These facilities will be operated intermittently by the Power Sub-Section as required.

Seasonal fluctuations in river water characteristics necessitated an increase in chemical consumption for coagulation in all areas. These fluctuations were believed to have caused several periods of rapid film build-up in process tubes at D, F and C Reactors. Changes in chemical feed rates corrected the condition at D and F Reactors; however, at C Reactor the difficulty appeared to be partially attributable to use of insufficiently aged activated silica produced by the new continuous activating equipment. Minor changes in the silicate activating operation have corrected the difficulty to date.

The amount of non-routine project and maintenance work continued to be unusually high during March although somewhat less than in February. The amount of overtime worked by Reactor Section personnel was reduced 55% from February primarily because the longer outage of DR Reactor permitted more efficient scheduling and because there were fewer major projects. Minor construction forces performed the work on the Ball 3X installation, the Building 107-DR retention basins, the downcomers, and the Building 105-DR effluent line.

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1215504

2. Activities (Continued)

During the month, P. R. McMurray, of the Operations Sub-Section, was assigned to coordinate activities necessary for the startup of the Building 108-B, P-10 extraction facilities. Preliminary scoping was completed and a project proposal is being prepared to cover the work necessary to place the facilities in operating condition. (P-10 program requirements are set forth in Top Secret Documents Nos. 15-1667 (XX-985), dated 12-31-52, and 15-1691 (XX-1014), dated 3-17-53.)

The following tabulation indicates activities during March associated with special irradiations:

	Tubes Charged	Tubes Discharged	Casks Shipped
Chemical 10-66	1	2	0
Chemical 72-60	0	8	10
Production Tests	6	6	6
Total	7	16	16

B. Equipment Experience

During March, failure of normal production equipment caused eight reactor scrams; three from panellit difficulties, two from malfunctioning of the emergency instrument power system, two from failures in the Ball 3X hopper door electrical circuits, and one from malfunctioning of an SN relay. Fifteen additional panellit scrams occurred but these could not be traced to equipment failures; the majority were at C Reactor where rapid film build-up was experienced (see Operating Experience) and a program involving numerous changes in panellit settings was underway (see Improvement Experience - PT-105-533-A). Total reactor outage time involved in the above 23 shutdowns was 11.9 hours.

On March 12, a relay in an F Reactor Ball 3X electrical circuit failed which, if the precaution of by-passing the circuit had not previously been taken, would have caused a duplication of the two Ball 3X failure incidents which occurred at B and F Reactors during the previous two months.

No major difficulties were experienced with either the reactor horizontal rods or the Building 190 process pump motors during March. Horizontal rod No. A at H Reactor is still out of service pending completion of repairs during the April Ball 3X outage.

Starting approximately the middle of the month, attempts were made to drain the west Building 107-H retention basin in order to allow Minor Construction forces to proceed with repairs. However, leakage of water from the east basin into bays 5 and 6 required the construction of special dams and restricted the repair work to bays 1, 2 and 3. Actual repair work was started March 30.

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1215105

B. Equipment Experience (Continued)

Leakage in the B Reactor effluent line near the inlet to Building 107-B retention basin led to digging of three pits 20' x 60' x 20' deep to permit adequate drainage through ground seepage which was necessary in order to prevent general flooding of the area. Should this leakage become too severe, the C Reactor effluent line can be utilized for carrying water from B Reactor.

C. Improvement Experience

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

PT-105-513-E (100 Areas Process Water Quality Evaluation Tests)
Water treatment in conformance with this test continued throughout the month.

PT-105-517-E (100 Areas Filter Plant Tests)
This test to determine the effect of filter flow rates on chemical treatment costs and reactor operation was initiated during March and is expected to continue for six to twelve months.

PT-105-531-A (Enrichment of H Pile)
One additional tube was charged with C Metal during March bringing the total to 48 tubes. The use of up to 15% helium in the reactor atmosphere was continued.

PT-105-533-A (Local Controlled Increase in C Pile Tube Powers)
This test started on March 7, provides for approximately 100 central tubes to be operated at levels up to 16-2/3% higher than the current limit of 525 KW in order to serve as a "pilot" test for increasing tube powers. The reactor process water flow was increased from approximately 65,000 to 71,000 gpm by raising the water pressure and thus necessitated recalibration of panellit trip settings. Removal of the charge in the central flattening tube has resulted in the hottest tube in the "bumper zone" reaching a level 11% higher than the current limit.

PT-105-534-A (D Pile Operation with Maximum Panellit Monitor Protection)
No reactor scrams resulted from this test during March. However, approximately 14 hours of outage time was required for changing 150 panellit gauge trip settings.

PT-MR-105-7 (The Effect of the Iron Content of Process Water Produced by the Ferric Sulfate Process on the Over-all Economics of Pile Operation at 100-H)
It was demonstrated under raw water conditions encountered

C. Improvement Experience (Continued)

during March that a process water iron content in excess of 0.03 ppm cannot be tolerated for prolonged periods because of excessive film build-up in process tubes. Work is currently centering on determining the economics of producing water containing approximately 0.01 ppm iron.

Four revised Reactor Operating Standards were approved and issued during the month. Of major significance were standards specifying delta T limits for P-10 tubes at DR Reactor and process tube charge make-up for eight-inch uranium slugs and P-10 tubes.

A new system for checking the high trips on large groups of panellit gauges was successfully used during the month. The time required for testing was reduced by a factor of four.

A new type gas leak detector, originated by the Radiation Monitoring Sub-Section, has proved to be efficient for isolating gas leaks at the front face of the reactor. A Zeuto placed over a nylon-windowed box detects any radioactive gas passing through the Tygon tubing in the box.

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

D. Events Influencing Costs

The cost of coal consumed during March is expected to be approximately $40,000 higher than in February. The majority of this increase is due to the longer month; however, increased coal costs at the mines is also a contributing factor. Water treatment chemical costs more than doubled due to seasonal variations in river water.

Excessing of all equipment in Building 186-D, process water demineralization facility, was completed during the month.

Overtime worked by Reactor Section personnel decreased by 55% from February.

More extensive repairs were made in Building 107-DR retention basins than had been made in other areas in recent months.

The Reactor Section irradiation unit cost is expected to be from 5 to 10 percent higher than in February since per diem production was slightly lower and unusual maintenance work was somewhat higher.

E. Plant Development and Expansion

1. Project Status

The most significant Reactor Section project activity is reported below. Further details concerning projects may be found in the report "Status of

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E. Plant Development and Expansion

1. Project Status (Continued)

Reactor Section Projects, Informal Requests and Budget Items", dated March 20, 1953, F. A. R. Stainken to E. P. Lee.

CA-431 (100-C Plant)
An agreement has been reached with the Project Section that all unfinished construction items on Sections A and B of this project will be essentially completed by about June 30. Funds in the amount of $375,000 were authorized for metal examination facilities with the Engineering Department designated as Using Department.

CG-438 (Ball 3X Facilities for B, D, DR, F and H Piles)
This installation at DR Reactor was nearing completion at month end as reported above under "Operating Experience". The Ball 3X outage at H Reactor is scheduled to begin April 5.

CA-512 (100-K Facilities)
Reactor design is approximately 75% complete; water plant design is 68% complete. Over-all project construction is approximately 7% complete. Construction activity continued in a near normal manner with only a limited amount of work stoppage due to strike activity.

2. Plant Engineering

A number of engineering and development studies were active in the Reactor Section during March. The studies are, in general, aimed at decreased costs and/or increased production. Details are given in Documents HW-27590 and HW-27603.

Evaluation of boiler performance in the 100 Areas continued. Work continues to be directed toward obtaining accurate data from meters and other instruments.

New design criteria are being prepared to describe required alterations in B and D Water Plant equipment necessary for Project CA-513 (200 Area Expansion).

The economics of alternative arrangements for Reactor Section maintenance shops is being studied from the standpoint of the possibility of combining two or more shops.

A new underwater collimated light source for use with the underwater slug viewing equipment was tested during the month. The viewing of slug details was greatly aided by this type light.

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F. Significant Reports

1. Routine

March monthly reports of Reactor Section Sub-Sections will be found in the following documents: Operations - HW-27617, Process - HW-27603, Plant Engineering - HW-27590, Radiation Monitoring (Technical Report) - HW-27623. The Power Sub-Section and Maintenance Sub-Section Monthly Reports are Restricted Documents.

Other major routine reports were:

"Slug Jacket Failures During March", HW-27582.
"Production Summary - March", HW-27576.
"Reactor Process Committee Meeting, March 25, 1953", HW-27565.

2. Non-Routine

"Interim Report on Process Test MR-105-6, Reactor Slug and Process Tube Examination" - HW-27346.
"Effect of Trace Metal Concentration on Tube and Slug Corrosion Between Alum and Ferrofloc Water Treatments" - HW-27169.
"Program for the Elimination of Excess Header Pressure Requirement - H Reactor" - HW-27407.
"183-H Pump Study" - by H. C. Lee, 3-10-53, (unclassified).
"Study of the Radiation Hazards Involved in the Reclamation and Reuse of Perforated Aluminum Dummies" - HW-27493.
"Frequency Drop-out Tests on Beckman Model RXB-2 Micro-Micro Ammeter" R. C. Frost to J. E. Kaveckis, 3-26-53.
"Process Change Authorization - Make-up of Tube Charges" - HW-27432.
"Process Change Authorization - Ball 3X" - HW-27317.

III. PERSONNEL

A. Organization

Effective March 1, six Sub-Sections were created by the Reactor Section by increasing the five former Units to Sub-Section status and concurrently splitting the former Power and Maintenance Unit into two Sub-Sections, i.e., the Power Sub-Section and the Maintenance Sub-Section. Also, Units were established in the Operations Sub-Section and the Power Sub-Section based on the four geographical areas, and in the Maintenance Sub-Section based on the Mechanical, Instrument and Electrical functional groups. Appointments made in connection with this change were: J. C. McLaughlin - Power Superintendent; J. T. Baker, D. S. Lewis, A. R. Maguire and O. C. Schroeder - Superintendents, Reactor Operations Units in 100-F, H, B and D Areas, respectively; E. G. Harder, C. E. Harkins, M. P. Johnson, and N. H. Skarshaug - Superintendents, Power Operations Units in 100-B, H, F and D Areas, respectively; and T. M. Clement, E. J. O'Black, and R. R. Meyers - Superintendents of the Instrument, Electrical and Mechanical Units, respectively. Heads of former Units became Superintendents of their respective Sub-Sections.

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1215109

A. Organization (Continued)

Twenty-one Radiation Monitoring Sub-Section employees worked a six-day week schedule for four weeks during the DR Reactor Ball 3X outage.

B. Force Summary

	Beginning of Month	End of Month	Net Change
Section General	3	3	0
Operations	266	267	1
Maintenance*	440	444	4
Plant Engineering	24	25	1
Power*	417	413	- 4
Process	37	38	1
Radiation Monitoring	59	60	1
Section Total	1246	1250	4

*These Sub-Sections were formed from personnel of the former Power and Maintenance Unit, effective March 1.

Changes during March consisted of 5 terminations, 1 new hire, 2 deactivations, 2 reactivations, 3 transfers out and 11 transfers into the Section.

C. Safety Experience

One Major Injury, No. 93, was sustained by an Instrument Unit trainee at Building 190-DR on March 2. The injured strained his back while lifting an instrument test cart.

A Sub-Major Injury, No. 234, occurred at Building 105-C on March 9 when an electrician fractured a finger in a revolving fan blade as a result of having violated the lock and tag procedure.

The Reactor Section Supervisor Safety Training Program was continued; two meetings were attended by a total of 18 exempt employees.

D. Radiation Experience

There were no Class I or Class II Radiation Incidents during March.

E. Personnel Activities

At month end, 19 employees are receiving on-the-job training for engineering or supervisory assignments in the Section; 13 of these employees are on assignment under the Rotational Training Program.

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E. Personnel Activities (Continued)

During the month, the second and final group of six duPont (Savannah River) trainees began a six-week training assignment in the Operations Sub-Section. One KAPL trainee completed short assignments in the Operations and Power Sub-Sections.

Increased emphasis has been placed on Communications during the past month, particularly through the medium of information meetings; E. P. Lee discussed union relations with Operations Sub-Section supervisors; J. H. Warren discussed reactor operations with Electrical Distribution personnel, G. T. VanDeCarr, of the Financial Department, discussed cost accounting with the Maintenance Sub-Section Staff, and E. W. Sutherland and L. D. Wright participated in a panel security discussion attended by the Reactor Section Staff.

F. A. R. Stainken and L. H. Wallace assisted the Technical Personnel Section during the week of March 9 by recruiting personnel at the University of California and University of Arizona.

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Richland, Washington
April 10, 1953

MANUFACTURING DEPARTMENT
SEPARATIONS SECTION
MARCH, 1953

I. RESPONSIBILITY

Responsibilities of the Separations Section were essentially unchanged during the month of March.

II. ACHIEVEMENT

A. Operating Experience

1. Statistics

a. Bismuth Phosphate Operations

	March		February	
	Normal	Acid Wash	Normal	Acid Wash
Charges started in Canyon Bldgs.	42	1	34	-
Charges completed in Conc. Bldgs.	47	1	27	-
Special charges - Conc. Bldgs.	25		25	
Charges completed - Isolation Bldg.	24		26	-
Average Waste Losses, %	2.1		2.55	
Special Charges - Isolation Bldg.	43		29	
Material Balance, %	99.7		99.3	
Yield through Process, %	97.6		96.7	
Average cooling time (days)	84		84	
Minimum cooling time (days)	64		70	

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1. Statistics (Continued)

b. Redox Operations

	March	February
Equivalent charges started	176.9	79.3
Charges completed	177.3 (Record)	79.3
Tons Uranium delivered to storage	126.9 (Record)	53.7
Average Production Rate per operating day, Tons	4.81	3.40
Average Daily Operating Rate for the month, Tons	4.10	1.73
Average yield, %		
Uranium	99.2	100.0
Plutonium	97.2	99.2
Total Waste Loss, %		
Uranium	1.21	1.42
Plutonium	2.05	1.11
Average cooling time, days	91	95
Minimum cooling time, days	83	80
Percent down time	15	43.5

c. 234-5 Operations

	March	February
Batches completed through Task II	424	265
Runs completed through Task III	200	146
Charges completed through Task IV	79	55
Charges processed through Task VII	98	62
Reduction yield, RM	95.9	95.5
Waste Disposal, units	2.09	2.92

d. UO_3 Operations

	March	February	To Date
Uranium drummed, Tons	280.95	257.3	1649.8
Uranium shipped, Tons	287.13	268.5	1639.5
Average cooling time, days (Redox)	103	114	
Minimum cooling time, days (Redox)	94	98	
Waste loss, %	.87	.60	

e. TBP Operations

	March	February	To Date
Tons received from Metal Removal	182	120.03	736.34
Tons shipped to UO_3 Plant	164.98	111.61	702.52
Average Production Rate per operating day, Tons	6.78	6.37	
Average Daily Operating Rate for the month, Tons	5.33	3.99	

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1. Statistics

e. TBP Operations (Continued)

	March	February
Average yield, %	91.95	93.30
Total Waste Loss, %	3.39	2.48
Ratio Waste Volumes	1.29	1.20
Percent Down Time	21.4	37.4

f. Power

	200 East	200 West
Raw water pumped, gpm	1 246	5 807
Filtered water pumped, gpm	349	979
Steam generated, lbs/hr	33 643	176 935
Maximum steam generated, lbs/hr	50 000	240 000
Total steam generated, M lbs.	25 031	131 640
Coal consumed, tons (est.)	1 683	9 477

g. Waste Storage

	Equivalent Tons U
Metal Waste reserve storage capacity - T Plant	72
1st Cycle reserve storage capacity - T Plant	376
Metal Waste reserve storage capacity - B Plant	347
1st Cycle reserve storage capacity - B Plant	55
Redox Waste reserve storage capacity	1 025

2. Activities

a. Redox Processing

The Redox Plant operated at an average rate of 5 tons per day at an 85% efficiency. Approximately 100 hours operating time were lost while flushing the 1-A column, replacing a limiting 2-DW let-down valve and reworking off-standard material. Starting on March 13, a 5.5 ton operating rate was consistently maintained until the end of the month. On March 25, a failure of interface indicators on the 2-A column resulted in wastes high in plutonium content which required reworking and a loss of 40 hours operating time in the 1-A column. One batch of this waste containing 220 units of plutonium was inadvertently sent to stored waste.

b. TBP Processing

"A" line (30% by Volume TBP Extractant) was shut down a total of 12.25 days during the period, primarily due to lack of feed inventory. With the exception of a 6 hour outage for flush of the

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2. Activities

b. TBP Processing (Continued)

RA Column, operation was continuous from the 20th of the month to period end. The line has processed feeds from UR, CR and BXR farms. Decontamination has been satisfactory with the exception of two batches of RCU contaminated during a short period of flooded RA operation. Waste losses have been higher than previously, due to the nature of the feeds from East Area farms (high sulfate and phosphate ion) which limit concentration from solubility considerations and the necessity for operation at higher RAF rates to obtain reasonable production.

With the exception of a period of 1 day, "B" line (12.5% by Volume TBP Extractant) operated continuously throughout the period at rates varying from 2.5 T/D to 6.0 T/D on feeds from UR, CR and BXR farms. Operation was generally good, from the standpoint of decontamination and, with the exception of start-up difficulties resulting from a faulty RA column interface control, all product batches produced were within specifications. Higher than average RA column losses resulted primarily from variation in RAF composition and the necessity for processing more dilute feeds at high rates in order to obtain production.

c. UO_3 Processing

It was possible during the month to operate the calcination furnace at nearly design rate for a few days at a time when feed was available. It now appears that there is greater assurance that design capacities can be achieved routinely after improvements such as baffles and baffle chambers have been installed in the fume vent header. All observations, of course, are based on the availability of good quality feed.

d. Waste Metal Removal

Metal Removal efforts were hindered during the month by pump difficulties and poor sluicing results. A third tank farm facility (BXR) came on the line on March 15 and since then adequate amounts of feed were provided to the TBP Plant. Improved sluicing techniques at month end also seem to be giving better results.

Tons of uranium delivered to the TBP Plant storage include 76 from 241-UR, 56.8 from 241-CR and 49.2 from 241-BXR for a total of 182 tons.

e. 234-5 Processing

The March commitment of final shapes was produced and delivered to the A.E.C. All fabrication work was done on the RMA Line and 96.2 percent of the incoming feed material was started and processed on the mechanical line. The RG Line, with the exception of the coating units, was shut down at month-end and placed in standby condition.

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2. Activities

e. 234-5 Processing (Continued)

An abnormal number of coating rejects occurred necessitating considerable maintenance work on the coating units in an attempt to overcome vacuum difficulties and "sooting-up" of pieces.

3. Special Operations

a. Waste Evaporation

The 242-B Waste Evaporator processed 393,250 gallons of waste which had previously been reduced in volume about 73%. A further reduction of 34.6% of the feed volume was achieved in this operation. A total of 85 hours was lost due to equipment failures, process blowbacks and line freezes during the month.

Similar wastes were processed in the 242-T Waste Evaporator. A total feed volume of 613,252 gallons was processed with a reduction in volume of 27.6%.

b. B Plant Stand-by

All process equipment in 221-B Building was wetted with water flushes each week. Peroxide-caustic overflow flushes processed through the 224-B Building to complex residual solids in the process vessels were discarded in view of the small product pickup.

c. Recycle Addition in Redox

Two cans of Isolation Building oxalate recycle were added to the Redox H-4 oxidizer and processed through the extraction batteries. Although the 1-A column required a flush shortly afterward, it is not believed that the recycle addition provided the cause. A subsequent test of effects on the process will be made when five cans of recycle are introduced.

d. Redox Capacity Tests

Capacity tests of the D-12 Waste Concentrator, G-3 Organic Still and F-2 1CU Concentrator were performed. Results indicate the three vessels to be limiting at 6.6 T/D, 7.2 T/D and 9.3 T/D, respectively.

e. Acid Wash - Bismuth Phosphate Plant

Acid wash T-53-03-AW-1 processed through the 221-T Canyon Building and 224-T Concentration Building, recovered 55.38% of a standard run.

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3. Special Operations (Continued)

f. Skull Recovery

The equivalent of 24.7 bottles of product was recovered from skulls during March and 32.5 bottles of material were transferred to the Concentration and Isolation Buildings for re-processing.

4. Schedule Variance

The Redox record plutonium production was 121% of the amount forecasted in the January Annual Forecast. T Plant produced approximately 305% of its forecast. Combined production for March was 136%. This combined production brings the total for the first quarter of 1953 to approximately 103% of the forecast made in January.

TBP production for March was 69% of the January forecast. This is low because of the difficulties experienced early in the month in removing the metal waste feed from the underground tanks.

UO_3 production was 94% of forecast due primarily to lack of expected feed from the TBP Plant.

234-5 production was 100% of the January forecast.

B. Equipment Experience

1. Operating Continuity

Equipment failures did not appreciably affect operations with the exception of the Waste Metal Removal Facilities.

A total of 237 hours lost time was logged at 241-UR during the month caused by Nagle pump failures, valve failures and process rerouting requirements. A total of 30 hours was logged as lost time at 241-CR during the month. The principal causes for this lost time were the failure of the slurry accumulator jets and the failure of Nagle pumps. 72 hours were lost at 241-BXR during the month resulting from a power outage, electrical switch gear trouble, Nagle pump failure, and the inability to pump feed to 241-WR.

2. Inspections, Maintenance and Replacements

a. Nagle Pumps

There were a total of five failures during the month in the various tank farms. Of the original 22 pumps, 18 have failed in service. A number of these pumps have been repaired and returned to service. Some of them have failed a second time. At month end there are six operable pumps. In addition to these, there are two new pumps on hand which are incomplete and disassembled but which are to be placed in operating condition early in April.

[redacted]

2. Inspections, Maintenance and Replacements

a. Nagle Pumps (Continued)

Three Nagle pumps, #10, #11, and #18, were overhauled and repaired and made ready for service in the B canyon shop this month. All Nagle pumps coming out of the B canyon shop will have the weld removed, which locks the impeller to the shaft, and all will be equipped with impeller guards. Two new pumps were received from the vendor on March 25, 1953. These are being readied for installation.

b. Power House Boilers

Both #1 and #2 boilers in the West Area Power House were shut down for extensive inspection and repairs in March. One leaking tube in #2 was cut out and a stub rolled in. The stokers were inspected and repaired and the main steam valves were repacked. Number 2 cinder-return fan was overhauled.

c. UO_3 Plant Pump

The UNH PX-19 feed pump was replaced four times during the month when the Graphitar bearings failed. A fifth replacement of this pump was scheduled for the installation of special glass bearings which have been fabricated. This pump will probably be placed in service early in April.

d. Redox Organic Supply and Recovery

Improper functioning of the Redox G-3 Organic Still coil outlet trap caused interruption of operations for a 24 hour period, and made it necessary to by-pass approximately 20% of in-process hexone without distillation. The trap jumper was removed twice before it was successfully adjusted to meet operating needs.

C. Improvement Experience

1. Process Tests and Revisions

Process tests were held to a minimum during the month to obviate interference with high production rates. Redox revisions were confined principally to slight changes in flowsheet which included:

a. Reduction in 1C, 2E and 3E extractant flow ratios to effect an increase in U cycle column capacities.

b. Final elimination of dichromate oxidant from 2A scrub stream. This permits make-up of 2AS and 3AS to the same specification and in the same make-up vessel to reduce the total number of preparations as well as analyses.

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C. Improvement Experience (Continued)

2. Adoptions, Inventions or Discoveries

There were no inventions or discoveries of a patentable nature reported during the month.

D. Events Influencing Costs

1. Labor Variance

Total force of the Separations Section was reduced by nine, due to the termination and transfer of twelve people in the Operations Sub-Section.

2. Material Variance

Recovery of 41 gms of spectrographically pure 70-58 metal oxide from laboratory wastes, and reagent bottles was accomplished in spare time during the month. This represents a saving of approximately eight hundred dollars.

3. Other

TBP wastes are now being concentrated to a specific gravity of 1.33 instead of the previous 1.30. This will result in savings of about 8% in waste storage space required. The feasibility of a further increase in specific gravity is being investigated.

The Isolation Building Laboratory was closed down on March 9 and samples are now being delivered to the 234-5 laboratory for analysis. The shutdown of the Isolation Laboratory will amount to a direct saving to the Process Sub-Section of approximately $13,000 per year due chiefly to reduction of maintenance costs based on charges incurred over the past year.

Repair of three highly radioactive Nagle pumps will account for a savings of approximately $25,000 in replacement costs.

Thirty-eight proposals are being studied under the Separations Section Methods Improvement Program. To date, nine studies have been submitted proposing a yearly savings of $54,000.

All instrumentation on the RG line, 234 Building, was placed in a standby condition except the high vacuum systems at Hoods 25 and 26. This will result in a saving of 40 man hours per month which, added to the reduced chart changing, will make an annual saving of approximately $3,000.

E. Plant Development and Expansion

1. Project Status

Construction of the UO_3 Building addition is expected to start on or before April 15, 1953.

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E. Plant Development and Expansion

1. Project Status (Continued)

The project proposal for the 234-5 Task I activation will be ready for the necessary approvals the first of April.

Phase I Redox Capacity Increase, may possibly be completed the end of April with the installation of a new 1-B column and a revised 1-S column.

The revised project proposal for construction of Phase II facilities has not yet been approved by the A.E.C.

Construction of the waste line from Redox to the U tank farm area is now expected to be done by Minor Construction forces due to ground contamination in the work area. The project proposal is presently being revised to reflect this change. Design and procurement are proceeding.

Sufficient design for the opening of bids for the new Redox tank farm is expected to be completed by April 17. Individual fill lines for the tanks will be provided and the capacity of each tank will be increased from 750,000 gallons to 1,000,000 gallons.

2. Plant Engineering

Revision of the Isolation Building Labor and Material Standards was completed during the month and accepted by the Operations Sub-Section.

Preparation of Labor and Material standards for the 234-5 Building and for the 234-5 Analytical Laboratory have been started.

A report of the standard analytical requirements of the Redox Plant under current flowsheet and production levels was issued.

The material standards for Redox were revised to include changes made in process during February.

A re-study of Task I - Recuplex Economics was completed and results were summarized and issued in report form.

To facilitate a cost reduction program, charges made to Redox Operations were analyzed, cost centers established, and one year's work orders to Maintenance examined.

In the interest of cost reduction, review of the building maintenance costs for the area and inspection of conditions of buildings were begun.

A cost and operational analysis of the water plant was completed and a similar analysis was begun for the Power House.

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F. Significant Reports

1. Routine

Number	Title	Author
HW-27592	Separations Section - Operations Monthly Report	V. R. Chapman
HW-27591	Separations Section - 234-5 Operations Monthly Report	V. R. Chapman
HW-27609	Separations Section - Process Monthly Report	W. N. Mobley
HW-27604	Separations Section - Radiation Monitoring Monthly Report	A. R. Keene
Unclassified	Separations Section - Power and Maintenance Monthly Report	R. T. Jessen
HW-27412	Separations Process Committee Minutes	O. F. Beaulieu
HW-27642	Separations Section - Plant Engineering Monthly Report	C. P. Cabell
HW-27638	Essential Materials - Operations Sub-Section Separations Section	J. P. McBride

2. Non-Routine

HW-27556	Radiation Incident Investigation, Class II, No. 15	A. R. Keene
HW-27380	Radiation Incident Investigation, Class I, No. 55	R. N. Donelson
HW-27475	Radiation Incident Investigation, Class I, No. 56	D. R. Koberg
HW-27568	Radiation Incident Investigation, Class I, No. 57	R. N. Donelson
HW-27294	Basic Information for 231 Building Labor Standards, Addendum 1	J. E. Fouts
HW-27336	Task I, Recuplex Economics	V. P. Madsen
HW-27403	UNH Loading Facilities, P.E. Report #54	R. W. Harvey W. H. Koontz

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F. Significant Reports

2. Non-Routine (Continued)

Number	Title	Author
HW-27515	Re-Use of UO_3 Drums, P.E. Report #55	R. H. Siletto
HW-27511	Request to W. J. Ozeroff to Increase Batch Limits in Task II and Task III - RMA Line - 235 Building	E. G. Pierick
HW-27485	234-5 Building - RMA Line Improvement Program	E. G. Pierick
HW-27487	Mixed Gas Heater for Task II - RMA Line	E. G. Pierick
HW-27606	Inadvertent Discard of Product in Waste Batch PW-110	V. R. Chapman

III. PERSONNEL

A. Organization

Effective March 1, 1953 the five units of the Separations Section were designated as Sub-Sections in accordance with the overall organizational plan now in effect in the Department.

B. Force Summary

	Start of Month	End of Month	Net Change
Section General	4	4	0
Operations Sub-Section	654	642	-12
Power & Maintenance Sub-Section	566	571	5
Process Sub-Section	213	210	-3
Radiation Monitoring Sub-Section	70	71	1
Plant Engineering Sub-Section	30	30	0
Section Total	1537	1528	-9

C. Safety Experience

The 200-W Area achieved a year (3,845,839 exposure hours) without a major injury on March 20. This is the fifth year for the area since start-up.

There were no major or sub-major injuries in the Separations Section during March.

D. Radiation Experience

There was one Class II Radiation Incident involving probable exposure above

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D. Radiation Experience (Continued)

the permissible limit to the forearm of an Engineer Assistant. Four Class I Radiation Incidents occurred and included one case of high-level plutonium skin contamination, uncontrolled exposure during decontamination of a cask without benefit of monitoring, spread of high-level contamination at the 155-TX diversion box and a blow back at the D-9 sample port in the Redox plant where concentrated fission product waste sprayed out of the sample riser, narrowly missing an Operations employee.

The west end of the Redox south sample gallery was still grossly contaminated at month's end. The maximum surface dose rate of 100 rep/hr was measured on top of the 2AW and 3AW sample boxes. Decontamination efforts are continuing but are hampered by short time limits.

Total Iodine ^{131} emission rates averaged less than 1 curie/day.

E. Personnel Activities

Procedures have been revised covering 200 Area Plant Defense Plans, 200 Area Plant Disaster Plans and 200 Area Evacuation Plans. Area evacuation practice tests will be conducted during April. Some progress has been made in establishing Rescue and First Aid crews. Signs designating nearest shelters and building directional signs are being posted. Shelters have been equipped with benches and plans for a rescue trailer are being formulated.

Two dinners have been held by the supervisory force of the TBP Plant. Speakers for the occasions included R. S. Bell and J. N. Dupuy.

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ENGINEERING DEPARTMENT

MARCH 1953

TECHNICAL SECTION

A single uranium slug, enriched to 1.75 percent U-235 and canned by normal procedures has been successfully exposed for three weeks at a power generation rate giving an axial core temperature of 560° C. This is equivalent to the maximum power slug in a tube operating at almost 1000 KW. It is planned to irradiate partial columns of this material for detailed investigation of higher slug power effects, including end cap boiling, which may become a factor limiting pile power level increases.

Preliminary water treatment studies with low pH water containing dichromate indicate little film formation and point to the possibility of eliminating pH adjustment entirely.

Accurate measurements of vertical height along the length of the D test hole in the DR pile have shown negligible graphite distortion effects over the 29-month period since start-up. This is believed due to start-up at higher power levels and higher graphite temperatures.

The Hot Semiworks carried out two dissolutions of 600 MWD/T irradiated material which were utilized to conduct two Redox flowsheet runs. Results were satisfactory with respect to waste loss but below production performance levels on decontamination.

One of six powder metal compact slugs from Sylvania Electric Products Company has shown evidence of bumping after exposure to 425 MWD/T. A tube containing three more of these slugs was discharged at 500 MWD/T. There was no evidence of bumping on these powder metal compact slugs or the lead-dip canned slugs from beta treated rod; however, several of the triple dip canned control pieces showed slight bumping.

Equipment for the ultrasonic bonding tests has been built. In its present form, the equipment scans an eight-inch slug in approximately ten seconds, during which time it checks about four thousand points on the slug surface. A comparison test between this equipment and the frost test will be made as soon as laboratory evaluations are completed.

Some 2000 four- and eight-inch slugs were tested for cap bonding with the Magnaflux Sonizon. It was found that 30 percent of the caps of four-inch slugs were unbonded after facing and an additional five percent were unbonded after welding. On eight-inch slugs, 26 percent were unbonded after facing and 46 percent after welding. These conditions have probably always existed. It is believed that compound layer and frost test reject investigations now in progress will reveal a way of eliminating this weakness.

Two different methods for avoiding the use of corrosive HF in the Metal

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Fabrication Process have been successfully demonstrated on 10 and 20 gram scales. In one, plutonium (IV) oxalate is treated with carbon tetrachloride vapor yielding plutonium (III) chloride which is reduced to the metal; in the other, the oxalate is treated with Freon-12 yielding plutonium (III) fluoride which can also be reduced to the metal with high yields.

A replica technique for the examination of uranium surfaces using the electron microscope has been developed. This method will permit the examination of uranium surfaces at magnifications up to 30,000. The method will be tried on irradiated uranium and, if successful, should aid in establishing the nature of fission damage and fission effects which occur during irradiation.

The flux measurements in the dry 7½-inch lattice with 0.926-inch diameter slugs have been completed. The buckling of this lattice is 95 microbucks. It is interesting to compare this to the dry lattice of K Pile which has twice as much uranium and the same lattice spacing. The K Pile buckling is 101 microbucks. Experiments on smaller lattice sizes in which the 0.926-inch slug is being used and which are expected to have higher values of buckling are proceeding.

Laboratory studies with Oak Ridge Purex uranium product solution have verified earlier observations made with synthetic solutions; ruthenium decontamination can be increased 500-fold and zirconium-niobium decontamination tenfold by treatments with copper sulphide and silica gel, respectively.

The results of an investigation to determine low-level radioruthenium in TBP-hydrocarbon diluent type solutions of uranium indicate that a direct reduction method and a modified reduction method are suitable.

The resolution and sensitivity from mass 200 to 300 were checked on the G. E. mass spectrometer. The results indicate that this instrument can be used for determining uranium isotopes in UF_6.

DESIGN SECTION

Direct engineering effort of the Section for March was distributed approximately 66% to the Expansion Program, 19% to other design projects, and 15% to research and development studies.

Design progress on Project CA-512-R, 100-K Reactor Facilities, was advanced 8% during March to 74.8% completion. During the month, 156 detail drawings were approved, bringing the total approvals to 1,232 drawings. A revised coring pattern was developed, based on symmetrical distribution of power made possible through improved process technology. Tests of the neutron absorption of vertical safety rods filled with boron carbide-graphite indicate that they are 96% as effective as rods containing all the boron in the outer periphery. Study of the Continuous Temperature Monitor System has resulted in the decision to acquire two twelve-point systems for in-pile testing and laboratory testing. The Design Committee approved the principle of discharging the effluent water directly to the river during shutdown discharge operations and increasing the size of the effluent water by-pass line from 24 to

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36 inches to accommodate this flow. This change will permit simpler and cheaper construction, and easier maintenance.

The scope configuration of inlet and outlet process water connectors was changed from a spiral spacial arrangement (pigtail) to a C-shaped arrangement, permitting easier construction and maintenance.

Responsibility for management of design for Project CA-513-B, UO_3 Plant Expansion, was transferred to Project Section on March 2, 1953, at the essential completion of design scoping. Design is approximately 60% complete, an advance of 35% during the month. Design was stopped at the end of the month pending the resolution of difficulties in obtaining the calcination furnaces.

Detail design of the Purex Waste Facilities and the Outside Facilities was continued and is 9% and 64% complete, respectively.

Technical management of architect-engineer services in the design of Project CA-514, 300 Area Expansion, was transferred to the Project Section on March 16, 1953. Design scope is still in progress and is approximately 95% complete, an advance of 19% during the month. Detail design for the 313 Building process equipment was started at the middle of the month and is approximately 3% complete.

Responsibility for technical direction of architect-engineer services for Project CA-535, Redox Capacity Increase, Phase II, was transferred to the Project Section at the essential completion of design scoping for this project. The design of eight columns is ready for approval while the overall design for the silo portion of the expansion being performed by the Design Section is approximately 60% complete. Detail design for the balance of Phase II Redox Expansion is being performed by the Vitro Corporation.

Detail design continued on the prototype fuel element canning machine for the Metal Preparation process and was approximately 93% complete, an advance of 3% during the month. Of 101 drawings to be prepared for the canning machine, 96 have been completed and 91 approved. The supplier's induction furnace design details were checked and approved, and fabrication is proceeding. Installation of the prototype complete for cold operation is scheduled for June 1, 1953.

Detail design of the Recuplex Installation, CG-496, is approximately 72% complete, an advance of 7% during the month. The design phase of the scope involving radiation shielding was approved by the AEC, and design is proceeding in accordance with the new requirements. A decision by the Radiological Sciences Department regarding waste disposal permits the substitution of a crib for the tank storage of CAW waste and thus eliminate the neutralizing station.

PROJECT SECTION

At the end of the month, construction completion status of major projects was as follows: CA-431-A, 100-C Waterworks, 99.8%; CA-431-B, 100-C Reactor,

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99.8%; CA-438, Ball Third Safety System, overall, 83%, 105-B, 105-D, 105-F completed and 105-DR, 95% completed; CG-483, Downcomer Repairs, overall, 90%, 105-B, 105-D, 105-F completed and 105-DR essentially completed; CA-506, Repairs to 100 Areas Retention Basins, overall, 69%, 107-B, 107-D, 107-F, completed and 107-DR, 99% completed; CA-512, 100-K Area Facilities, - Water Plants, KW, 8.57%, KE, 4.64%, - Reactor Buildings, 105-KW, 3.80%, 105-KE, 1.60%; CA-513, Part "C," Purex Prototype, 60%.

The sludge removal pumps (Nagle) being used on CA-362 have been studied and changed. Three of the six pumps on order have been modified and delivered. A new source of sludge pumps (Byron-Jackson) has been developed and an order placed.

Resignations of members of the Davis Panel were accepted by the President on March 2, 1953. A special panel appointed by the Federal Mediation & Conciliation Service was sent to Hanford Works to hear the dispute between machinists and millwrights on March 28. The panel is preparing a recommendation for settlement. Three work stoppages occurred during the month, the most serious of which involved picketing by machinists on March 4, and which was referred to the special panel. On March 19, the second work stoppage was caused when 17 plumbers terminated in protest against the assignment of work of loading excess materials. Most of the men re-appeared the following day as replacements from the union. The third stoppage was a one-day action by 300 carpenters employed by Kaiser Engineers. The exact cause was not stated, although it was believed to be their failure to obtain wage demands. Negotiations by Kaiser Engineers with technical engineers and office workers are proceeding slowly.

During March, Reproduction output was 811,753 square feet, which is higher than the best previous record established in October 1950 (742,685 sq. ft.). The March production total was more than 220,000 square feet better than February. This new production record was established with limited overtime as compared to a scheduled six-day week in October 1950.

Construction of the 2101 Building, 200-E Area, progressed 15% to a total of 50%. Procurement difficulties are delaying work seriously. In the 101 Building, Hanford, tool design progressed by 20% to a total of 70% complete. Other work progressed in the White Bluffs instrument shop, in the 105 Tube Shop, and on rehabilitation of machine tools in the 101 Building.

Title III Architect-Engineer services for the Purex Facility, CA-513, has been assigned to the Separations Projects Sub-Section. Design of CA-513-C, Purex Prototype, was completed, and construction is 60% complete.

ORGANIZATION & PERSONNEL

Total on Roll, March 1, 1953	1,503
Accessions	39
Separations	22
Total on Roll, March 31, 1953	1,520

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Effective March 1, reorganization of several organizational components of the Engineering Department was effected. An Engineering Administration Sub-Section headed by R. J. Schier, reporting to the Department Manager was established, and the responsibility for activities of the Technical Information Unit was transferred from the Technical Section to this new Sub-Section. A new Fuel Technology Sub-Section was established within the Technical Section with G. E. McCullough as Manager. R. B. Richards was appointed to head-up the existing Pile Technology Sub-Section and V. R. Cooper, the Separations Technology Sub-Section. An Advanced Technology Sub-Section was established within the Technical Section with W. K. Woods as Manager effective this same date.

Reorganization of the Project Section into four Sub-Sections and one Unit was accomplished during the month. The principal organization components within this Section are as follows: Minor Projects Sub-Section, Inspection, Drafting & Estimating Sub-Section, Reactor Projects Sub-Section, Separations Projects Sub-Section, and Project Control Unit, headed by J. M. Heffner, J. W. Brands, J. R. Kelly, G. C. Gabler, and B. K. Phillips, respectively.

Throughout the Engineering Department numerous other changes were effected in accordance with Company organizational plans.

A. B. GRENINGER, MANAGER
ENGINEERING DEPARTMENT

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ENGINEERING ADMINISTRATION SUB-SECTION

MARCH 1953

In accordance with GM-176, the annual inventory of SECRET Research and Development Reports was completed. This inventory included the document holdings of G. W. Watt, Consultant, the Yellow File, and the files of the Schenectady Office of the Hanford Operation. Results will be transmitted to the AEC Security Division and to the Technical Information Service at Oak Ridge, which will circularize other sites for items missing. The inventory indicated that a total of 28,452 copies of SECRET Research and Development Reports are held by the General Electric, of which 46 were unaccounted for. Thirty-eight of these unaccounted for documents had been previously reported so that there were only eight additional losses during 1952.

Approval was received from the AEC for setting up the Schenectady Office of the Hanford Operation as a document accountability and transfer station. This station is to be operated as a branch of the Hanford Classified Files, with supervision from Hanford in respect to methods of operation, procedures, and inventories. The station will be permitted to issue and maintain accountability of documents originated by personnel assigned to the Schenectady Office, and to receive and be responsible for incoming off-site documents intended for personnel in the Schenectady Office, and to authorized personnel who are directly connected with the activities of the General Electric Company.

The work load in the preparation of the "BI-WEEKLY LIST OF ADDITIONS TO THE CLASSIFIED FILES" was reduced some 25 percent by excluding from the listing all classified correspondence received and originated at Hanford and all RED LABEL documents originated at Hanford and all CIRCULATION LIMITED documents received from off-site.

A new preprinted cover sheet (C-3195-HS) for use with all types of internal reports was placed in Stores for Plant-wide use. It consists of a preprinted Duplimat master which will be run on red-bordered paper by the duplicating facilities. Use of the masters will reduce the clerical effort in the preparation of documents since only one typing operation will be necessary to produce multiple copies of the cover sheet.

During the month, the following contract activities were handled by the Sub-Section:

1. Special Agreement No. G-19 between Battelle Memorial Institute and General Electric Co. covering development of melting and fabrication techniques for uranium alloys was executed by G. E. on March 17 and was forwarded to the Commission for approval March 19.

2. Modification No. 1 to Special Agreement No. G-12 and Modification No. 3 to Special Agreement No. G-5 (both between General Electric Co. and

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National Carbon Company, covering production of purified graphite and physical incorporation of physical specifications) were executed by all parties.

3. Special Agreement No. G-23 between General Electric Co. and National Carbon Co., covering the supplying of 2,000 tons of unpurified graphite (executed by G. E. and approved by the Commission during February), was executed by National Carbon Co. on March 12.

4. On March 18, a formal request was forwarded to Industrial Models, Inc. of Arden, Delaware, requesting a lump sum quotation covering the furnishing of materials, fabrication and delivery of six scale models of various 100 Area and Purex Facility buildings. Formal quotations are expected from Industrial Models early in April.

5. The modification of Subcontract No. G-303 between General Electric Co. and Morrison-Knudsen, covering final settlement of claims, is still in the hands of AEC Legal. No definite word has been received from the Commission as to when action can be expected on this modification.

6. Modification No. 2 to Special Agreement No. G-12 and Modification No. 4 to Special Agreement No. G-5 (both between General Electric and National Carbon Co., covering the production of purified graphite) were executed early in March and forwarded to the Commission for approval on March 19. As of March 31, the Commission had not approved these modifications but promised to do so approximately April 2, 1953. These two modifications are drawn for the purpose of physically incorporating the process specifications which were formerly attached by reference and to alter the operating procedure by incorporating by reference a new secret document.

7. Special Agreement No. G-17 between General Electric Co. and the University of Washington School of Nursing, providing for field training of student nurses at Richland, was approved by the Commission March 31.

8. Special Agreement No. G-24 between General Electric Co. and the State College of Washington, providing for the acquisition of pigs for use in radiological research, has been executed by General Electric and was sent to the College for execution on March 16.

9. Approval has been requested from the Commission to negotiate a contract for inspection services of plant boilers and unfired pressure vessels. Negotiation and preparation of the contract will proceed as soon as approval is granted.

10. Consultant Agreement No. 110 between General Electric Co. and Dr. R. E. Zirkle, providing consulting services in the field of radiobiology, was approved by all parties.

11. Consultant Agreement No. 111 between General Electric Co. and Bailey Meter Co., providing consulting services in connection with metering in the 313 Building, has been approved by the Commission and forwarded to the contractor for execution.

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HW-27624

MONTHLY REPORT

PILE TECHNOLOGY SUB-SECTION

MARCH, 1953

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VISITORS AND BUSINESS TRIPS

E. E. Baldwin visited here March 24 through 27, from Knolls Atomic Power Laboratory, Schenectady, New York, for consultations on boron carbide engineering irradiation.

R. L. Cummerow visited here March 10 through 12, from Knolls Atomic Power Laboratory, Schenectady, New York, for graphite experiment consultations.

I. H. Dearnely visited here March 12 from Knolls Atomic Power Laboratory, Schenectady, New York, for consultations on knowledge of plant processes.

D. F. Klimas visited here March 18 through April 3, from General Engineering Laboratory, Schenectady, New York, for consultations regarding assembly of magnetic ball conveyor.

T. Whited visited here March 27 through April 10, from Los Alamos Scientic Laboratory, Los Alamos, New Mexico, to aid in Nutrino Corporation project.

J. C. Ballinger, D. H. Curtiss, and J. R. Townsend visited Oak Ridge National Laboratory, Oak Ridge, Tennessee, March 24 through 26, to attend Radiation Damage Symposium.

J. H. Rector attended the ASM Metals Congress Meeting in Los Angeles, California, March 22 through 27.

A. T. Whatley went to the Phillips Petroleum Company, Idaho Falls, Idaho, March 3 through 9, for measure property changes and re-expose samples in Materials Testing Reactor.

L. H. McEwen attended the American Chemical Society Meeting in Los Angeles, California, March 14 through 21.

H. F. Zuhr visited Knolls Atomic Power Laboratory, Schenectady, New York, March 2 through 6, for consultations on special requests and program Hanford does for Knolls Atomic Power Laboratory.

ORGANIZATION AND PERSONNEL

Personnel totals are as follow:

	March
Administrative	4
Pile Engineering	78
Pile Materials	70
Special Irradiations	25
Facilities Control	3
Total	180

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General: One Sub-Section Manager, twenty-seven Engineer Assistants, six Technical Graduates - Rotational, thirteen Engineers, twenty-eight Engineering Assistants, ten Metallurgists, two Technical Graduates, two field Clerks, five Secretaries, four Stenographers, one Laboratory Assistant, three General Clerks, and two Chemists transferred to Fuel Technology Sub-Section. One Chemical Engineer and one Technologist C transferred to Technical-General, and one General Clerk B went on Leave of Absence-Pregnancy. One Mechanical Engineer and one Secretary B transferred to Applied Research Sub-Section.

Administrative: One Sub-Section Manager and one Secretary B transferred in from Separations Technology Sub-Section.

Pile Engineering: One Secretary B transferred in from Applied Research Sub-Section, one Engineering Assistant was hired, and one Stenographer terminated.

Pile Materials: One Technical Graduate - Rotational transferred to Applied Research Sub-Section, one Technical Graduate - Rotational transferred to Manufacturing-Separations-Process, and one Technical Graduate - Rotational transferred to Lockland.

PROCESS CONTROL AND ANALYSIS

Higher Tube Power Operation

A single slug containing uranium enriched to 1.75 per cent U^{235} and canned by normal procedures has been successfully irradiated at C Pile for three weeks. The power output of this slug has been about 60.5 KW per foot of uranium, which is equivalent to the maximum power slug in a normal charge operating at almost 1000 KW. The core temperature calculated for this local power was 560 C. Partial columns of similarly enriched slugs are to be charged, starting at the next C Pile shutdown, for the detailed investigation of increased slug power output effects. Of immediate interest is the effect of end cap boiling on slug and tube behavior, since this condition may be reached in the operating piles within the next few months. This work is being done under Production Test 105-532-A-1 and A-2.

Modifications have been made to the flattening pattern at C Pile under Production Test 105-533-A to permit higher tube powers in a local, controlled zone of the pile. The maximum power tube in the resulting hot spot has operated ten per cent above normal tube power, while the average of the 38 hottest tubes has been about six per cent above normal. Experience to date with this type of pilot operation indicates that the roughly circular pattern originally chosen for the experimental zone is not optimum. A supplement to the production test has been prepared which redefines the shape of the experimental zone. It is expected that average pilot tube temperatures can be increased significantly with the revised zone shape and some additional flattening changes put into effect.

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Operation with Maximum Panellit Pressure Monitor Protection

To insure maximum protection against boiling it is necessary to have the high and low pressure trips on the pressure monitor system set much closer together than has been the practice, and maximum utilization of the available water supply requires considerable orifice pattern revision. At D Pile the entire orifice pattern was revised and all trip settings were changed during the Ball 3X outage in February to permit the investigation of pile operation with this increased boiling protection. Operation with the reduced trip ranges was satisfactory during March, with no pile shutdowns caused by the trip range changes. However, approximately seven hours of additional shutdown time was required for Panellit gage work, primarily for range adjustments on gages monitoring filmed fringe tubes which had been discharged. A survey was made of gage operability during the March outage. Fourteen high trips and one low trip failed to function on the test at shutdown, and four high trips and no low trips failed to function before start-up. This program is covered by Production Test 105-534-A.

If operation with reduced trip ranges continues to look feasible and if the Panellit system proves adequately reliable, the tube power limit at D Pile will be changed from an excess header pressure basis to a scram before boiling basis. Higher pile power should result.

Plans have been made for re-orificing and re-setting Panellit trips at H Pile during the April Ball 3X outage to obtain maximum power levels up to the limit of available water and to provide maximum pressure monitor protection.

Analysis of Project CG-482

This project called for installation of enlarged rear face piping components at DR and H Piles as a means of increasing maximum allowable tube powers. The program aimed at operation of the piles with maximum pressure monitor protection and elimination of the excess header pressure requirement made the project appear uneconomical. The major portion of the work had already been canceled on this basis. Flow tests of the larger outlet pigtails procured for H Piles were performed during the month by Heat Transfer Sub-Unit. The small increase in flow rate observed for simulated pile operating conditions was not sufficient to justify the expense of installation, and this phase of the work was also canceled.

Slug Rupture Experience for March

Four slug ruptures occurred during the month, all at F Pile. One rupture, a Group 8 slug, was in the central orifice zone while the remaining three were in fringe zones, and were the first fringe zone ruptures since July, 1952. During this time there had been 25 central zone failures at F Pile. Two of these fringe zone ruptures were Group 7 and one was Group 8. All four ruptured slugs were badly blistered.

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C Pile Rupture Rate

With one slug rupture to date, the rupture rate at C Pile, determined by the equivalent exposure method of analysis is 0.0019 ± 0.0019 ruptures power tube exposed to 600 MWD/ton. This rate compares favorably with recent rates at other piles, indicating that the higher tube power levels at C Pile has no gross effect on slug rupture rate. Slug ruptures at all piles have shown a tendency to occur in the higher powered tubes within each orifice zone. Since for any given orifice size, tube powers at C Pile are less than those in any of the other piles, it might be expected that C Pile would show a relatively low rupture rate. Although no relation between rupture rate and specific slug power has been observed, it still could be possible that there is a power threshold above which a radical increase in rupture rate occurs.

Group 9 Metal

The performance of the Group 9 slugs continues to be very satisfactory, with a calculated tube rupture rate approximately one-half that of the best Group 8 slugs.

Allocation of K Pile Graphite

Recommendations for the allocation of graphite for the K Piles were presented in HW-27462, "Some Economics of Graphite Allocation", R. O. Brugge to P. H. Reinker.

PILE PHYSICS

Pile Enrichment - H Pile - Production Test 105-531-A

An attempt has been made to interpret recent H Pile operating data in terms of the production gains which have been or are expected to be realized as a result of the enrichment program at that pile. The investment in enriched uranium-aluminum alloy slugs now totals about 23 kilograms of U^{235} charged in a "blanket" one lattice unit thick, located at the fifth lattice unit in from the reflector.

If production gains are defined as the increase in production rates in the H Pile over and above the expected rates with no enrichment, a 17 per cent increase in pile power and a 14 per cent increase in plutonium production rates are currently observed. However, H Pile is at a low point of the normal reactivity cycle induced by changing plutonium inventory, and thus the gains from enrichment are at a maximum. As the gains are averaged over the entire reactivity cycle, an average gain of 13 per cent in pile power and ten per cent in plutonium production rates are to be expected for the investment and loading configuration chosen for the H Pile experiment.

These gains indicate 2-1/2 grams of additional plutonium formed per gram of U^{235} depleted in the enriched material.

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Pile Enrichment - C Pile

The evaluation of the H Pile enrichment experience has been used as the basis for planning a large scale enrichment program at C Pile. It is planned to extend the flattened region out to the third lattice unit from the reflector; this loading requiring an anticipated investment of about 40 kilograms of U^{235} fabricated to the same specifications as the material previously utilized in the small scale enrichment of C Pile and in the fringe enrichment of H Pile. The expected gains in pile power and plutonium production are estimated to be 20 and 16 per cent respectively for this investment. A portion of these gains are now being realized as a result of the small scale enrichment at C Pile involving slightly in excess of nine kilograms.

Pile Control - Use of Hafnium

Hafnium has been considered as a neutron absorber for possible application in either the control or safety systems of the Hanford piles. This material will provide control comparable to a cadmium or boron rod; although it must be present to appreciably higher volume percentages. A major adverse consideration is the rather high level of induced gamma activity accompanying the neutron exposure of hafnium.

Pile Control - Use of "Half Rods" - Production Test 105-528-A

The production gains made possible through the improved pile power distribution accompanying the appropriate use of "half rods" has been determined to be four per cent. The observed pile power distributions at C Pile attributable to the removal of cadmium from the extreme "near-side" regions of two control rods were used as the basis for this evaluation.

Slug Rupture Detection

Major emphasis during the month was given the refinement of the multi-crossheader gamma spectrometer mechanical scanning unit. This unit is capable of cyclically scanning the effluent activity from 12 crossheaders with a cycle time of about six minutes. A single spectrometer is used in the unit and the presence of a rupture is indicated through an increased signal in the two to three Mev channel relative to that in the greater than four Mev channel which monitors pile background through the high energy N^{16} intensity. The response of this detector is therefore dependent upon the gamma spectrum from a single source; thus eliminating uncertainties arising from opposing signals from two independent sources or crossheaders.

Savannah River Fuel Element Jacket - Rupture Detector - Production Test 105-523-A

A series of experiments were performed in co-operation with duPont personnel to roughly establish the effectiveness of filters in concentrating fission product activity. Mechanical filters are a basic part of the Savannah River slug rupture detection system.

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In general the results confirmed expectations in that significant quantities of particulate matter were deposited in the filter. Vary extensive extrapolation from the experimental data is still required to predict the performance of the filters in the case of actual ruptures at either Savannah River or Hanford, however.

Plutonium Distribution in a Hanford Slug

An initial determination of the radial distribution of plutonium in a Hanford slug has been completed. Uranium detectors depleted in U^{235} were imbedded at predetermined radial positions in a specially designed slug which was irradiated in the Test Pile, and the plutonium distribution ascertained through the utilization of gamma ray spectroscopy techniques in monitoring the relative intensities of a plutonium-239 x-ray emitted from the various detectors as a result of the U^{238} (γ, gamma) reaction. The 109 Kev x-ray emitted from plutonium-239 arises from the internal conversion of gamma rays associated with the beta decay of neptunium-239.

The distribution of plutonium producing neutrons very closely coincides with the distribution of fission producing neutrons within the slug volume. As the slug surface is approached, however, the density of reactions leading to plutonium production rises rapidly relative to the fission distribution. This is to be expected since plutonium production through resonance capture is primarily a surface effect while production through thermal capture should follow the thermal fission distribution.

Automatic Tube Outlet Water Temperature Recording Facilities

The DR Pile IBM automatic tube outlet water temperature recording facilities maintained the routine schedule of traverses during the month. The Flexowriter tube outlet water temperature recording facilities at H Pile operated routinely in support of the H Pile enrichment experiment.

The recording equipment for the improved Flexowriter recorder, which is serving as prototype equipment for subsequent Reactor Section installations, is being installed at B Pile. Preliminary performance tests, which have utilized the Flexowriter from the H Pile recorder, indicate that the improved recorder performs as expected. Delivery of the Flexowriter for this system is expected early next month.

Test Pile - Routine Tests

Regular slug testing proceeded routinely during the month. Fifteen lots of Mallinckrodt billet eggs were tested with TDS values ranging from 13 to 16. Three lots of Fernald billet eggs were tested with TDS values ranging from 12 to 15. One Hanford billet egg lot yielded a TDS of 15.

Test Pile - Special Tests

J-2 enriched uranium-aluminum alloy slugs to be utilized in the DR-10 loading were tested to the extent of one slug per heat to spot check reactivity behavior. The reactivity values were quite uniform, dih values ranging from + 14.26 to + 14.77 inhours.

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Twenty-two P-10 heats (lithium-aluminum alloy slugs) have been reactivity tested according to a predetermined sampling plan to ascertain that specifications have been met. Two of the 22 heats were rejected on the basis of the pile tests.

Eighteen express shipments of TSGBF graphite have been reactivity tested. The purity of these heats has been uniformly high - the dih (purity) values ranging from + 1.00 to + 1.10.

A section of the proposed K Pile vertical safety rod was reactivity tested in the Test Pile. A rod core consisting of graphite impregnated with boron carbide was but slightly less effective than a rod design containing a boron carbide filled annulus.

SHIELDING STUDIES

Attenuation Studies

Experimental measurements of the shielding effectiveness of magnetite-limonite concrete were suspended during the month as a result of the extended outage at DR Pile to effect installation of the Ball 3X system.

Preliminary data describing the distribution of thermal and resonance neutrons in magnetite-limonite have been obtained and partially analyzed. Measurements to date indicate magnetite-limonite concrete to be significantly less effective than iron-limonite concrete as regards efficiency for particle attenuation. However, the magnitude of this decreased efficiency appears to be compatible with expectations.

A measurement of the distribution of thermal neutrons through the reflector and into the active pile regions was made in the "E" Test Facility at F Pile. This measurement confirms earlier results and yields basic information for use in shield design.

Radiation Damage Studies

Additional samples of iron-limonite concrete placed by the Prepakt method were exposed to pile radiations at elevated temperatures. In general, the water loss as a function of exposure and temperature confirms previous work in the field and is comparable to the behavior of Brookhaven concrete.

Shield Temperature Predictions

A semi-empirical relationship has been derived which quite accurately predicts the maximum temperature of the masonite in the biological shield at H Pile from the power output of the fringe tubes and the local thermoshield cooling water temperature. This work yielded adequate results in predicting biological shield temperature increases accompanying the various phases of the H Pile enrichment program as well as shield temperature changes accompanying specific tube power limit modifications.

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HEAT TRANSFER

Tube and Flow Studies

During the Ball 3X outage, the D Pile was reorificed so that an ultimate flow of slightly over 47,000 gpm was expected. At the present time the observed flow is about 2000 gpm less than this value. Investigation indicates a portion of this 2000 gpm will be gained when (a) the water inlet temperature increases this summer, (b) the remaining downstream solid dummy slugs are replaced by perforated slugs, and (c) the present air tubes are used for the exposure of uranium. Further, it is felt that a large gain might be made either by cleaning the cone screens or from the gradual removal of the film which is believed to have been deposited in the tubes. Before the orifice change, a summation of individual tube flows as obtained from orifice calibration curves very closely approximated the total pile flow. That condition does not exist now, and it is believed that the cause lies either with partially plugged cone screens or film deposition. A final answer may not be known for three or four months.

The investigation of the effects of the passage of air through a process tube is continuing although it has been slowed due to other work.

Plans are being made to determine a new orifice pattern for the H Pile. The pattern will tentatively be based on (a) a maximum permissable average Panellit reading of 275 psi in the central zone, (b) a flow of 52,000 gpm or less, and (c) Panellit trip settings such that the trips will be reached before the flow in any tube can decrease enough to permit boiling. Tests are being conducted in the laboratory to determine the flow through tubes for various sizes of orifices.

Equipment has been requisitioned for the installation of about 35 Mercoid differential pressure controls on pile process tubes. Present indications are that the controls will arrive about the middle of May. The design of the electrical and hydraulic circuits is expected to be completed soon by 100 Area Instrument and Electrical engineers. The electrical circuit must be designed quite carefully since it is anticipated that the controls will become, temporarily, an integral part of a pile No. 1 Safety Circuit.

Thirty additional Meletron pressure switches have been ordered for testing purposes. Delivery is expected to be in mid-April. If the results of the tests on reliability, dependability and sensitivity are satisfactory, it may be desirable to install the switches on a pile in conjunction with the Mercoid controls. A choice between the two types of switches may then be made for a device to serve as a back-up for the Panellit gages.

Equipment is being assembled and tested prior to installation of Mercoid differential pressure controls on certain of the tubes which will contain enriched, natural uranium slugs at the C Pile. The tubes in question are three in which end-cap boiling will be deliberately fostered. The use of the controls will provide added safety for this unusual operating condition.

The K Pile process tubes will be significantly different in size from those in the other piles. Consequently, apparatus is being designed which will permit the use of a K tube in conjunction with the full-scale mock-up to study heat removal problems in that tube. The cost of this apparatus will be quite small.

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Tests were conducted in the 105-F Flow Laboratory to determine the increase in flow which would result from the use of somewhat larger pigtails and associated fittings at the H Pile. It was found that the flow for the enlarged pigtail was on the order of two per cent greater than that for standard fittings. This was for the case of constant header-to-header pressure drop, no orifice in the tube and isothermal, low temperature conditions. However, the tests were conducted with pigtails and fittings which were made at various locations by various methods; inconsistent results were obtained. Attempts were made to analyze the data obtained from one such pigtail mounted on a pile, but the data were of insufficient accuracy to permit the formation of definite conclusions. No further studies are planned along these lines for the near future.

Slug Studies

It has previously been reported that the temperature drop from the surface to the axis of the irradiated thermocouple slug increased about five per cent during exposure. An investigation was made to determine whether plutonium build-up in the slug might have an appreciable effect on this five per cent figure. Indications are, however, that the effect of product formation was only on the order of 0.5 per cent.

New designs for thermocouples slugs are being investigated. The study is aimed at obtaining such slugs in which the possibility of in-pile failure is significantly decreased. An aluminum dummy prototype of one such design is being made for flow lab testing.

The equipment to permit measurement of the thermal conductivity of slug bonding layers is being redesigned. The modification is intended to permit the use of heat fluxes as high as those encountered in the pile.

During recent boiling studies in which D Area process water was used, a very high film build-up rate was encountered. The build-up occurred in a region of the tube wherein a mixture of steam and water at a temperature of about 200 C was flowing. This particular type of film had never been previously encountered, and the reason for its existence is unknown. Its occurrence is of interest primarily because experimental data indicated that the heater tube surface temperature was increasing at a rate of 30 to 60 C per hour with all other known conditions held approximately constant.

An investigation of possible gains in production level resulting from the use of slugs with 0.350-inch end-caps in place of the present 0.175-inch caps is being made. It is being assumed that boiling limits will be raised significantly at all of the areas. A further assumption is that boiling at the end-cap may or may not turn out to be a real limit.

J slugs, having heat generation rate 50 per cent above that of normal uranium slugs, will be used as part of the DR-10 program. An examination has been made of the probable temperatures throughout the slugs. Preliminary indications are that no limiting conditions will be imposed by these slugs.

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Calculations have been made to determine the slug temperature effects of the use of zirconium as a slug jacketing material. These are reported in "Temperatures of Zirconium Jacketed Slugs", D. E. Amos, HW-27416, March 16, 1953. The results show that the temperature drop across a 0.035-inch jacket would increase from about 4 C for an aluminum jacket to 39 C for a zirconium jacket for 30 KW/foot (475 KW/tube maximum). This increase is due to the fact that the thermal conductivity of zirconium is only about one-tenth that of aluminum. Further results show that the temperature drop from the center of the end-cap to the local water would be about three times greater for zirconium as for aluminum. Information on the use of insulated end-caps in conjunction with zirconium end-caps is also included in the report.

Calculations are being made to determine the slug surface temperatures which would result if a slug were "mis-positioned" such that it rested against the top of a tube along the entire slug length. In one example, it was assumed that the slug was effectively insulated over 20 C of its periphery; the surface temperature under this insulated strip was found to be about 100 C above the normal surface temperature.

It is planned to investigate the heat transfer aspects of hollow slugs. Primary emphasis will be place initially on slugs cooled both internally and externally.

Graphite and Shield Studies

No significant data to correlate channel thermocouple temperatures with normal graphite temperatures have been obtained during the month.

During a recent shutdown at the D Pile, loops of thermocouple wire were partially inserted in the pile in such fashion that each end of each wire terminated on the pile front face. The purpose was to determine whether irradiation of a lead wire might affect a thermocouple reading. However, the data which have been taken indicates that the glass braid insulation on the wires has broken down and that all of the wires are shorted to the graphite. Whether this failure is due to moisture or irradiation is unknown; it is known, however, that the insulation will withstand temperatures well above 400 C outside the pile. Although the wires are apparently shorted, a neutron flux still appears to have some effect on the emf output of a constantan wire. During a shutdown, distinct discontinuities in the constantan wire indications were recorded. In order to investigate this problem further, additional loops of wire have been installed in the DR Pile. Some have glass braid insulation and some have asbestos insulation.

Efforts are continuing to calculate lattice unit temperatures on the electrical analogue which will compare favorably with those measured in an old pile. At the present time, the procedure is being delayed until accurate values of the thermal conductivity of helium-carbon dioxide mixtures can be obtained.

Work on the production tests to study cooling in the thermal shields and the horizontal control rods is receiving only limited attention.

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General Heat Transfer Problems

The temperatures to be expected in various metallurgical samples during pile exposure have been calculated and are reported in "Temperature Distribution in Metallurgical Samples", D. E. Amos, HW-27451, March 19, 1953.

An investigation is being made of the heat transfer aspects of the possibility of the elimination of crossheader valving during charge-discharge operations.

Final reports are being written on production tests dealing with (a) the determination of radio carbon^{14} in the pile gas atmosphere and (b) Project C-410, and in-pile controlled atmosphere experimental facility.

MECHANICAL DEVELOPMENT

Charging and Discharging Studies

Tests have been run to determine the flow resistance of a slug coating material proposed for use in protecting slugs during charging. Since this coating measures about five mils, it would be expected that it would increase the pressure drop through a tube appreciably. With flows between 30 and 35 gpm, it was not possible to measure the difference in pressure drop between coated and uncoated slugs. Since this is entirely contrary to expectations, further work will be done along this line. The material "FLEXOGRIP" abrasive wheel adhesive, washes off very well and seems to protect the slugs from scratching during charging.

A modified charging head has been fabricated which will make possible charging with flows sufficient to prevent boiling shortly after shutdown. This charging head used a pressurized, ribbed sphincter seal. As long as the pressure in the seal is kept higher than the tube pressure, it will be possible to maintain tube flow while charging. Further studies utilizing high speed motion pictures have indicated that with flow up to 35 gpm slugs do not raise off the ribs as they are washed down stream. Cocking may occur when these rifling slugs strike the ones ahead of them. It has been demonstrated that it is possible for a slug to lie cocked in a tube even though it is not restrained by the slugs on either side of it.

The final phase of the out-of-pile buckling tests has been completed and it has been demonstrated that curvature in the upper pile tubes enhances the possibility of buckling considerably. Forces of only 500 pounds are sufficient to lift the slugs from the ribs at the high points in the tube.

Horizontal Rod Studies

The development of a modified horizontal rod system for the old piles is continuing. Some difficulty is being experienced in the procurement of certain components, expecially the rod itself. Negotiations are under way with the Aluminum Company of America to work out a design for the rod extrusion which they feel will be feasible from the fabrication standpoint and still meet operational requirements. The sintered powder metallurgy method of applying boron to the rod appears quite promising.

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There have been indications recently that the washer seal on the No. 5 rod at C Pile is leaking about two cubic feet of gas per hour. The seal will be removed as soon as possible to determine the cause of this leak and to determine if the rubber has deteriorated due to radiation.

Vertical Rod and 3X Studies

A C Pile sphincter seal housing has been modified to use a washer type seal assembly and it is planned to install this type seal on one rod of the C Pile in the near future. It is hoped that this will eliminate the need for lubrication of the vertical rods. There is some evidence that the HYDROGRAPH lubricant is contributing to the large amount of contamination in the ventilation ducts.

The experimental step plug removed from the VSR-20-D position during the Ball 3X outage at D Pile has been cut open to determine if the polythene plastic used for shielding had deteriorated after 30 months' irradiation. Cursory examination did not indicate any deleterious effect.

The electromatic ball conveyor has been completely assembled in the 189-D Test Laboratory and will be in operation by the first of April. Considerable difficulty was experienced in the assembly since it was desired to make the system water tight so that tests with wet balls could be conducted. Apparently this was not done when it was originally assembled at the General Engineering Laboratory and therefore some of the connections had to be rebuilt.

Supplemental Control Studies

Inasmuch as the DR Pile has been shut down during the entire month, it has been impossible to run any further control tests with the "Ink" system. This extended outage has been used to modify the system considerably to eliminate those parts which were giving trouble. A flow controller has been installed which will make it possible to very the ink solution flow while the pile is operating. Changes have also been made to the Densitrol system to prevent plugging of the hydrometer chamber. It is expected that the system will be ready to continue the testing when DR Pile starts up.

Samples of BF_3 gas and aluminum, which were irradiated in quartz capsules, have been analyzed and there is no evidence that the BF_3 broke down under irradiation or that the aluminum was attacked. Since three out of six samples were lost in handling, it is planned to repeat the irradiations to confirm the data taken to date.

P-13 Removal

The Project Proposal which authorizes funds for the preparation of equipment necessary to remove the P-13 Facility from the H Pile has been approved and the Work Directive has been received. This project only provides for the removal of the rig to a cave on the experimental level. The eventual removal from the 105 Building and disposition will have to be done on a subsequent project.

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Underwater Slug Examination Equipment

The slug cleaner has been completed and sent to B Area. The modifications to the slug breaker are nearing completion, and it will be ready for use soon. The underwater slug weigher has been tested in the test tank and is being removed for slight modifications before installation in B Pile Basin.

Slug Stress Studies

Computations are continuing to determine the optimum configuration for split hollow slugs. The equations for these calculations have been worked out and the IBM Computing Group is performing the detailed computations. Experimental work is being carried out to find a method of actually measuring the stresses in such slugs. The greatest obstacle to be overcome is fastening strain gages on the uranium. Tests with uranium plated with three mils of nickel have not been successful to date.

IRRADIATION ENGINEERING

Plant Assistance

Leakage of the process water into the experimental assembly necessitated the discharge of the slug for measuring in-pile uranium temperatures. All uranium components from this experiment and those from the experiment discharged earlier from H Pile have been weaseled.

Alterations in the water cooling system for the controlled temperature, controlled atmosphere facility are complete. The fabrication of the emergency cooling system has been finished; tests of this component are now in progress.

Series three and four of the graphite samples being irradiated under controlled temperature conditions in D Pile continue to be exposed.

The third set of samples for the study of gas-graphite reactions are still undergoing exposure in H Pile.

The exposure of uranium-oxide for use in the evaluation of ruptured slug detection equipment was successfully completed in the Snout I Facility at H Pile.

Off-Site Tests

Studies will be made of the reduction in the rate of oxidation of reactor materials by injecting hydrogen into the high pressure, high temperature recirculating loop (ANL 140). Practice procedures for the injection have been successfully performed.

Samples for the investigation of radiation damage to various reactor materials (ANL 179) have been discharged from DR Pile.

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Preliminary mock-up studies for the irradiation of Savannah River prototype thorium rods (DPI 103) have been made using dummy slugs.

Preparations for the precharging tests for the next speciment study of the creep rate of fuel pins for SIR (KAPL 105) have commenced.

The studies pertaining to the release of fission gases from U^{235} continue at DR Pile. Data to date indicates at most a small quantity of gas has been generated.

Design of experimental equipment for the evaluation of the use of control rod and shield cans containing boron carbide (KAPL 114) for SIR have been completed. Removal equipment is now being fabricated at this site. Details of pre-operational testing and mock-up operations have been formulated.

The experimental assembly containing crystals for the study of power generation in germanium p-n junctions bombarded by fission particles (KAPL 115) is now being prepared for testing preliminary to charging.

The fourth zirconium creep sample (WAPD 111), which exhibited erratic in-pile behavior, developed a leak in the experimental assembly and was discharged at the last shutdown of B Pile. Preparations are being made to charge a fifth sample.

The studies of the change of electrical resistivity in samples of metallic alloys (WAPD 112) has been completed at B Pile. These samples will be discharged at the next shutdown.

The fourth Bluenose irradiation continues at DR Pile.

Out-Of-Pile Irradiations

The fabrication of special exposure facilities for the gamma irradiation of non-metallic materials (GEL 100) was completed; six additional facilities were received from GEL and are now being installed in the basin at F Pile. Exposure of two samples of lubricating oils was completed.

Gamma irradiations of Kel-F and masonite were commenced.

Studies to detect the neutrino continue. High background levels due to cosmic rays have necessitated numerous revisions in equipment.

Development and Facilities

A new experimental assembly is being fabricated to study the effect of pile radiations on the calibration of chromel-alumel and iron-constantan thermocouples.

Laision with the design of experimental facilities for the K Piles continues. The design of the general purpose test holes has been issued for comments. Design of the pneumatic facility in conjunction with an off-site vendor continues. A design study of the sample carrier has been started.

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Two water-cooled facilities have been charged into the B and D test holes in DR Pile and are now ready for use. Equipment for controlling the temperature of the cooling water for the facility in the B hole is now operating.

SPECIAL IRRADIATIONS SUMMARY

Special Request Exposures

	SR	10-66	P-10-A	P.A. (Test Holes)
Pieces charged during month	44	140	562	18
Pieces discharged during month	146	5	431	0
Pieces shipped during month	22	0	—	0
Curies shipped during month	7.629	—	—	—

GRAPHITE STUDIES

Pile Monitoring

A series of powdered graphite samples was removed from process channel 2680-DR on March 17. This process channel is one of four which were overbored on Production Test 105-373-P. These four channels, 2580, 2680, 2581, 2681 of DR Pile, were overbored in the fringe region.

Physical property measurements are being made in order to evaluate the effectiveness of overboring as a means of decreasing the rate of graphite damage in the fringe regions of the piles. Traces of aluminum oxide were found in the powdered graphite samples taken from positions eight and one-half feet, nine feet and 14 1/2 feet from the front Van Stone flange. A bore diameter traverse was made after the channel had been mined. From this traverse, the block junctions are clearly detected.

The traverse also indicated that the process channel had no over-all ellipticity. In addition, at two points along the process channel, 15 - 16 feet and 20 feet from front Van Stone, the traverse indicated the possibility of constrictions in that the bore diameter was about five mils less than normal.

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A traverse of the vertical height of the D test hole of DR Pile was also made on March 17 and shows no indication of filler block expansion. The vertical clearance between process tube blocks was found to average about 20 mils greater than the nominal 4.307 inches. The difference in the clearance between the process tube blocks and the filler blocks is the result of a 120 mil undercut of the process tube blocks. No explanation for the greater clearance of the process tube blocks over the nominal value is available.

Graphite - Carbon Dioxide System - Reaction Rates

Two additional series of runs in the reaction rate determinations of the system carbon dioxide and graphite at 1000 C have been made. One run was continuous for a period of approximately 38 hours at a temperature of 1000 C up to a maximum of 16 per cent oxidation. This run shows a rapid initial rise in reaction rate to a value of 0.10 gm/gm sample per day at a two per cent oxidation. At this point the rate held constant until about seven per cent of the sample had been oxidized. The reaction rate then increases at a linear rate of approximately 0.006 gm/gm sample per day per per cent oxidized. The second run which is a series of eight-hour runs was obtained by outgassing the sample in Vaccuo at 1000 C between each eight-hour run. In this series of determinations each successive eight-hour run has an initial reaction rate considerably less than the final rate of previous determination. The results from a series of these eight-hour runs when plotted as reaction rate vs per cent sample oxidized indicate that a curve consisting of an exponential and straight line might be fitted to the data. It is interesting to note that the reaction rates in each of the two runs are essentially equivalent in the range of 10 - 16 per cent sample oxidation. These results emphasize the necessity of developing a standard method for such a rate determination.

Pile Graphite Exposure

Examination of recent papoose exposure data indicates that of the various common pile graphites, KC material has the highest expansion rate and WSF the lowest. The rates are about 3.8 per cent per 1000 MD/CT and two per cent per 1000 MD/CT equivalent cold test hole exposure, respectively. The KC exposures have been carried to about 4500 MD/CT and the WSF to about 3000 MD/CT. CSF and CSGBF materials have been exposed to about 1700 MD/CT and expand with rates intermediate between those of KC and WSF. Indications from the relatively low papoose exposures on TSGBF indicate that it will have an expansion rate close to that of WSF.

The 4500 MD/CT exposures of KC material have a total expansion of about four and one-half per cent and the physical expansion curve shows no tendency toward saturation.

Graphite Purification

With one objective being to develop a simple method for screening prospective pile graphites as to purification properties, a limited investigation into the purification process is being undertaken. Samples of various carbon materials made from Texas coke and Standard pitch have been analyzed by a semi-quantitative spectrographic method. Various neutron absorbing impurities are being classified

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as to whether they are removed by simple heat treatment between 900 C and 2500 C or whether they require "F" treatment. Similar comparisons will be made with different cokes and various processes in order to determine fundamental differences in ease of purification of various coke types.

These and similar results will be of value in studies of the ultimate degree of purification to which graphite may be brought.

Physical Expansion as a Function of the Temperature of Irradiation

A re-examination of data from Production Test 105-269-P and from hot test hole irradiations indicates that the slopes of the physical expansion versus temperatures of irradiation curves becomes increasingly large with increasing exposure. The data from Production Test 105-269-P are obtained from 20 C to 60 C and it is apparent that the increasing slope with increasing exposure is expecially pronounced in this region. By drawing a smooth curve through these experimental points and through those points obtained from hot test hole irradiations at approximately 380 C, it is indicated that the increasing slope with increasing exposure is also important for the range of temperatures which exist in the fringe regions of the pile.

Graphite Expansion - Empirical Relations

It has been known for sometime that the plot of graphite physical expansion versus cold test hole exposure consists of two straight lines with different slopes which intersect about 900 MD/CT equivalent cold test hold exposure. An empirical relationship has been obtained to relate the slopes of the lines before and after the break. The relationship holds for seven different kinds of graphite which initial cold test hole expansion rates of 0.4 to 0.9 per cent per 1000 MD/CT. All are pile type graphites cut from extruded bars. It will be attempted to fit other types of graphites with this relationship. To the extent to which the relation holds it provides the basis for a simpler, more economical method for screening prospective pile graphites as to cold test hole expansion characteristics.

As reported previously, the TSGBF graphite to be used in the K Piles expands parallel to the axis of extrusion. Use of the empirical relationship predicts that the expansion of TSGBF parallel material will cease and will be followed by a contraction in the parallel direction.

Materials Testing Reactor Evaluation of AGHT and Speer Graphite

Limited quantities of AGHT and Speer graphite are being considered for use in the K Piles. A rapid, rough method of evaluating these graphites as to physical expansion under irradiation is being attempted in the MTR at Arco. The first sample discharges have been obtained from these irradiations. Tentative conclusions based on examination of samples from this discharge is that the Speer graphite is roughly comparable to TSGBF and that the AGHT graphite is comparable to CSGBF material for expansion in the perpendicular direction. The AGHT material does, however, exhibit an expansion in the

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parallel direction which is not characteristic of CSGBF. These conclusions are to be considered as preliminary to more complete and more reliable information which will be obtained from further irradiations. It is to be emphasized that because a Hanford correlation is being sought simultaneously with the irradiation, it is possible that even the qualitative aspects of the above conclusions may be radically changed by results from future irradiations.

WATER PLANT DEVELOPMENT

In-Pile pH Tests

The in-pile dichromate-film test was completed this month. The purpose of this test was to establish the film-forming effects of alum-treated water containing two ppm sodium dichromate as a function of pH. Early theoretical considerations indicated that below pH 7.5, dichromate would be reduced by radiation to form a hard, difficult-to-purge film. Preliminary evaluation of the test results indicates that no serious film formation effects occur at pH 7.1 or above, and that film formed at pH's as low as 6.7 is readily removed by standard purging techniques. These test results clear the way for long term in-pile corrosion tests using dichromate water without lime addition, in which the pH will vary between about 7.2 and 7.6.

A caustic addition system has been developed for the Flow Laboratory. In-pile evaluation of caustic is being made in order to determine the feasibility of caustic pH adjustment at the K Areas. The lime-free water line to the Flow Laboratory was completed in time for use with the caustic and dichromate evaluation tests, which began on March 28, 1953.

Flow Laboratory Tests

Installation of a steam jacketed "C" process tube in 105-F Flow Laboratory is 70 per cent completed. The effects of alum-treated water at a flow rate of 50 gpm will be studied in this tube. A "K" tube will be substituted for the "C" tube as soon as one is available. Equipment has been obtained for the installation of a test apparatus to study the effects of reduced dichromate concentration on slug corrosion. The low pH corrosion test in 183-F was started up, but a leak in the tube caused by the steam jacket forced a discontinuance of the test.

The "C" horizontal rod mock-up operated satisfactorily. An interim report was prepared which describes corrosion effects on the 61-S aluminum alloy, which appears to be more susceptible to corrosion than does 2-S aluminum.

A model of the "K" downcomer has been received from the Design Section for testing. The tests are aimed at checking results obtained when the model was tested at Washington State College; also, recent changes in the downcomer design will be evaluated.

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Recirculation Studies

The in-pile recirculation test operated normally during the month. Discharge of the current test using water with a maximum impurity content of 12 ppm is scheduled for October, 1953, after the slugs reach an exposure concentration of 600 MWD/T. The flow laboratory test using water with 66 ppm impurities was completed and the results are being analyzed. The ion exchange equipment has been checked out and is now ready for use with the flow laboratory recirculation system.

Process Water Quality Evaluation Tests

Operation of the C, D, DR, and F Water Plants continued under the conditions of the various alum-activated silica production tests. High filter rate tests were initiated at D, DR, and F Areas to confirm a similar test conducted last spring at F Area and to obtain additional economic data concerning the alum-activated silica water treatment process. Coagulant feed rates were higher at C and D Areas than at F and DR for several days during the month. Efforts are being made to determine the effect of lower chlorine feed rates on treatment costs.

Examination was made of a total of 333 front tube sections, including tubes in each pile. Front tube corrosion attack is occurring at the D, F, B, DR, H, and C Piles in order of decreasing severity; this relative status has not changed from the previous examination period. No significant change in the absolute amount of corrosion was detected, except at B and F. At B, an increase in the number and severity of stuck front cap inserts was noted. Two examinations at F showed increased amounts of corrosion in about one-half of the 63 tubes inspected; the other half showed a minor decrease. The far side of F Pile appears to be more corroded than the near side.

Maximum Capacity Studies and 100-K Flow Laboratory

Maximum capacity tests of the 181, 182, and 183 pumping stations at 100-B Area were conducted during the month. By using an existing steam pump at the 183 station, it appears that the maximum process flow to 105-B is 51,000 gpm, as limited by the 190 pumps at governor speed.

Progress in K Flow Laboratory design was limited to the arrangement of a meeting with a water plant consultant concerning optimum design of the model settling basins.

PILE COOLANT EFFECTS

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Slug Corrosion

Mock-up tests to determine the relationship between F Pile pitting and turbidity in the water have been modified to use 23 gallons per minute per tube. Data to date, all with ten ppm diatomaceous earth in water flowing at 15 to 17 gpm, show no pitting in the presence of two ppm dichromate and severe pitting without the dichromate.

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Slugs have been exposed to 24 feet per second filtered water at 70 to 80 C containing mercuric nitrate at one to 100 ppm. After 24 hours the slugs in ten and 100 ppm showed severe pitting, while thise in one ppm were unattacked after 62 hours. The pitting is unlike F Pile pitting in that the pits are perfectly round, instead of having the characteristic tear drop shape of the in-pile pits and those formed in turbid water.

A comparison of the corrosion of autoclaved and unautoclaved slugs is being made in dichromate-free water at 90 C. To date the unantoclaved slugs have exhibited ten times the weight loss of autoclaved slugs exposed simultaneously for the same length of time.

Tube Corrosion

Inspection of the front tube corrosion mock-up showed no corrosion product barnacles in the tubes containing 0.2, 0.5, and 1.0 ppm dichromate water. The tubes at 0.1 and 2.0 ppm dichromate have less than on barnacle per foot whereas those with no dichromate have about 35 barnacles per foot.

The four tubes at F and D Piles that were cleaned with chromic acid under Production Test 105-516-E were inspected and show no regrowth of barnacles.

Improved shielding, a tube cleaning tank, and new tongs were installed at the 108-B tube examination cave. More rapid observation that resulted made it possible to examine four tubes in one week. Several samples were taken for special examination. It will probably be possible to maintain a minimum schedule in the future of two tubes per pile per month.

Tube 3666-C had two barnacles near the front Van Stone flange that were probably present in the pile. Several pits were found in tubes from DR Pile at points corresponding to slug junctions.

General Studies

All available information has been obtained and reviewed, preparatory to reaching a decision on corrosion limits evaluation.

A new test assembly was charged into H Pile, March 15, 1953, to study further the effect of irradiation on corrosion of aluminum. Information to date is being published as HW-27531.

Analyses of films from perf slugs at 100-F and 100-H showed no apparent difference in composition. Aluminum, iron, and silicon were the main constituents in each case.

INVENTIONS

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

Signed: R B Richards
R. B. Richards
Manager, Pile Technology

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April 8, 1953

SEPARATIONS TECHNOLOGY SUB-SECTION

MONTHLY REPORT
MARCH, 1953

VISITORS AND TRIPS

J. R. Farmakes visited here from Argonne National Laboratory, Chicago, Illinois, March 25, for consultations on discussions and inspection regarding plutonium.

R. C. Feber, Jr. visited here from Knolls Atomic Power Laboratory, Schenectady, New York, March 11 through 13, for consultations on Purex problems.

S. C. Furman visited here from Knolls Atomic Power Laboratory, Schenectady, New York, March 3 through 5, for consultations on RW and Purex processes.

D. R. Miller visited here from AEC, Research Division, Washington, D.C. March 23 through April 3 to discuss informally research and development activities.

J. F. Facer, Jr. visited the American Chemical Society, Los Angeles, California, March 14 through 21, to attend the American Chemical Society Meeting.

M. K. Harmon visited the American Chemical Society, Los Angeles, California, March 13 through 23, to attend the American Chemical Society Meeting.

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F. W. Woodfield visited the American Chemical Society, Los Angeles, California March 15 through 22, to attend the American Chemical Society Meeting.

R. W. Wirta visited Metals and Controls Corporation, Attleboro, Massachusetts, Baker and Company, Newark, New Jersey, and Micrometallic, Glen Cove, New York, February 23 through March 5, for consultations on mechanical equipment problems related to the 234-5 Building.

ORGANIZATION AND PERSONNEL

Personnel totals are as follow:

	February	March
Administrative	5	3
Chemical Development	79	78
Process Assistance	56	55
Total	140	136

Administrative: One Sub-Section Manager was transferred to Pile Technology, one Technical Assistant was transferred to Technical General, one Secretary B was transferred to Pile Technology, one Unit Head was assigned from Process Sub-Unit to Sub-Section Manager.

Development: One Mechanical Engineer was hired, two Technical Graduates - Rotational transferred in from Management General, one Technical Graduate - Rotational transferred to Metal Preparation Section - Process Sub-Section, one Technical Graduate - Rotational transferred to Management General, one Technical Graduate - Rotational transferred to Project - Reactor Project, one Technical Graduate was converted to Engineer Assistant, one Laboratory Assistant C went on leave of absence - pregnancy.

Process: One Unit Head transferred from Applied Research, one Mechanical Engineer transferred from Pile Technology, one Stenographer transferred from Utilities and General Services, one Stenographer terminated, one Chemical Engineer transferred to Fuel Technology, one Mechanical Engineer transferred to Fuel Technology, one Unit Head was converted to Sub-Section Manager.

PUREX DEVELOPMENT

Process Studies

Solvent Nitration Studies - Experimental work has been completed which has demonstrated that extremely rigorous and off-standard process chemical conditions are required in the TBP and Purex systems to produce a self-sustained nitration reaction similar to that experienced in the Savannah River pilot

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plant. Chemical Unit data (HW-27492) have shown that appreciable quantities of nitrated TBP hydrolysis products ("red oil") must be present at elevated temperatures (incipient calcination temperatures of over 140 C) before an explosion occurs. It has also been proven that TBP and diluent are quantitatively steam distilled and explosive conditions are not formed when "fresh" solvent and RCU are boiled down to incipient calcination conditions.

In light of the above data the TBP and Purex Plants were again examined to determine whether explosive conditions could arise during off-standard operating periods. The Purex Plant, like the TBP Plant, is considered safe, with one tank, the utility tank, requiring special operating precautions.

In the Uranium Recovery Plant stagnant organic layers in certain tanks (RCU receiver, RCU sampler, RCU Pump Tank, and Uranium Product Storage Tank X-1) should be purged before prolonged standing and (as presently practiced) the product inventory before steam stripping should be maintained at a minimum.

Purex Plant Design Liaison

The following specifications or recommendations were transmitted to the Purex Project Unit during the month:

1. Purex Chemical Flowsheet HW #2, which combines addenda issued subsequent to HW #1 and coordinates the approved Purex design scope with the most recent process chemistry.

2. Specification revisions for 2A Column diameter, (reduced from 7.5 in. to 7 in.) pulse leg length, and packing type (Raschig rings in lieu of perforated plates).

3. Specification revisions for 1BS and 2B Column diameters from 7.5 in. to 7 in.

4. Authorization to lengthen HA, IA, and 2D Column pulse legs to allow cascade overflow of pulser leakage.

5. Specification revisions for IO and 20 Column pulse leg diameters, column diameters, and other dimensions to allow design of a single "O" Type contactor for Purex, with the possible exception of packing or perforated-plate details.

6. Request for piping in concrete to allow concentration and return of 2AW to IAF at some later date.

7. Comments on Purex pulse generator and associated mock-up shop test stand design.

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Process Chemistry

Emulsion Studies - The effect of Redox Plant lubricating oils and greases on disengaging time was determined in a series of experiments, and it was concluded that these could be a definite source of difficulty if allowed to contact either the scrub or extractant streams.

The non-volatile residue produced in hexone in the absence of radiation (i.e., by contact with ANN or UNH) was shown by infra-red absorption spectra to be different from that obtained from Redox Plant hexone. It has now also been found that the two types of residue are markedly different in their effect on disengaging time. Spiked into a synthetic 3AS-3AP system in equal concentrations, the former gave a disengaging time of 12 seconds; the latter gave 60 seconds. Studies were continued on the causes for emulsion formation in 2A and 3A Columns wherein a 2 inch diameter column with 4 inch diameter disengaging section were employed. To date the emulsion condition existent in the Redox Plant cannot be reproduced.

Effect of Up-draft vs. Down-draft Dissolving - Preliminary laboratory studies of solvent-extraction behavior under Redox flowsheet conditions, on both a continuous and a batch basis, indicate that fission product decontamination obtained with down-draft dissolving is approximately equal to or slightly (less than 2-fold) better than that obtained with up-draft dissolving. However, in both the batch and the continuous experiments, the down-draft IAF was more acid-deficient than the up-draft IAF. This fact may account for some of the possible benefits derived from the former, but data are not available to estimate quantitatively the amount of improvement expected from the greater acid deficiency.

Chemical Engineering Development

Solvent-Extraction Studies - Sixty Purex solvent-extraction pulse column studies were carried out with "cold" uranium in the 321 Building pilot plant. These included fifty-three HA, HC, IO, 2A, and 2B Column H.T.U. and flooding determinations in a 3 inch diameter glass column, and four HC H.T.U. and three HC and IO Column flooding determinations in an 8 inch diameter stainless steel column. The approximate conditions of Purex Chemical Flowsheet HW #2 were employed. Shell Deodorized Spray Base was used as the diluent. In the 2A and 2B Column studies uranium was used as a stand-in for plutonium. The highlights of the new findings are as follows:

1. The performance of a 3 inch diameter HA Column with a "standard cartridge" (stainless steel plates with 0.125 inch holes, 23% free area, 2 inch plate spacing) was not impaired by increasing the diametric clearance between the plates and the column wall from 0.017 inch to 0.125 inch.

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2. Unimpaired HA Column performance (0.9 ft. H.T.U., 0.003% U loss from 9 ft. of extraction plate section) was obtained with the "standard cartridge" at a volume velocity as low as 200 gal./(hr.)(sq.ft.), sum of flows, corresponding to 4 tons U/day in a Purex plant size (24 inch diameter) column. (This result was obtained with a 3 inch diameter extraction section at 1 inch amplitude, at a frequency of 60 cyc./min.).

3. In 36 hours of continuous operation with 1.5 M HNO_3, in lieu of 3.0 M HNO_3, as the scrub stream (HAS), the HA Column (with a 3 inch diameter extraction and 4 inch scrub section) gave no indication of emulsion-induced instability. With the "flowsheet" HAS:HAX flow ratio (1:5 by volume), excessive internal reflux resulted in high uranium losses (about 4% from a 9 foot extraction section); but a 20% reduction in the scrub flow rate sufficed to establish normal, good performance (0.01% U loss, 1.0 ft. H.T.U.).

4. Use of 1 inch fluorothene, rather than polythene, Raschig rings in a pulsed 3 inch HC Column resulted in no significant change in H.T.U. values and only a slight (0 to 20%) increase in capacity.

5. 1.9 inch O.D. polythene Raschig rings in an 8 inch diameter pulsed HC Column exhibited a capacity at least about 40% higher than that of 1 inch O.D. polythene rings in a 3 inch column. Preliminary indications were that, with an adequate aqueous-to-organic phase flow ratio, H.T.U. scale-up effects were insignificant (10% or less). However, wide fluctuations of uranium losses (0.07 to 10% from an 8.5 ft. packed height), tentatively correlated with the phase flow ratio, suggests the occurrence of pronounced channeling of the phases in the larger column.

Mechanical Development

Pump and Bearing Development - The 5 horsepower G.E. & C.L. submerged, "canned" motor pump has accumulated over 5,000 hours of running time in various process solutions. The pump has recently completed 3,400 hours as an in-line pump pumping Purex 2EU solution at 18 gal./min., 11 lb./sq.in. discharge pressure, and 1,750 rev./min. Over this period no measurable wear was detected on the graphitar sleeve bearings or stainless steel journals.

A comparison of the rate of wear between graphitar and glass has been determined by operating a Peerless 4 LA deepwell turbine pump equipped with Graphitar No. 2 and glass bearings lubricated by water containing 0.75% by weight of 500 and 200 grit carborundum powder. Graphitar bearings wore up to 3 times as much as the glass bearings.

Pulse Generator Development - An Askania Regulator Company hydraulic pulse generator drive mechanism has been in test operation for 400,000 cycles at an average frequency of 100 cyc./min. and an amplitude of 1.0 inch (piston stroke length). This unit is capable of remote amplitude control over a range of

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0 to 1½ inch and frequency control over a range of 0 to 135 cyc./min. In addition the wave shape (time vs. piston position) may be varied between a sharp saw tooth wave form and an approximately square wave form. Wave shapes intermediate between these two extremes are expected to approximate a sine wave.

Jet Feeder for 2EU Concentrator - A Schutte and Koerting and a special (Savannah River type) Penberthy steam jet have been tested as devices for feeding the Purex 2EU concentrator from the 2E Column by throttling of the jet suction. Evaluation was based on four criteria: (1) the jet must be capable of emptying the column (jet-out), (2) a 4 to 1 range of flow must be obtained by throttling the suction, (3) the discharge flow rate must be uniform, and (4) with a continuous steam supply to the jet, complete closure of the jet suction (and subsequent opening) should not cause the jet to become inoperable. The Schutte and Koerting jet would not empty the column and would become erratic in operation as the jet heated up. The Penberthy jet behaved satisfactorily in test.

Materials Testing

Dual Face Plates - Perforated plates (3 to 4 inch diameter) coated on one side with Kel-F NW-25 have been exposed to total radiation in the pile cooling basin up to 10^8 R. There was no visible change in the coated plates.

URANIUM RECOVERY DEVELOPMENT

Process Studies

Uranium Recovery Master Plan - A "master plan" is currently being prepared which embraces the entire recovery period during which the Uranium Recovery Plant will be in operation. The completed plan is intended to include consideration of the manifold process, equipment, and scheduling variables which require coordination for removal and processing in a systematic manner of the uranium remaining in the underground tanks. Since the wastes in the storage tanks vary in age from tank to tank, one of the objectives of the planning is to specify a removal schedule which is compatible with the equipment available or specify the equipment and process changes required to produce adequately decontaminated uranium. For the development of the plan, it is assumed that December 31, 1954, is the goal for completion of the Uranium Recovery Operation. This allows 22 months for uranium processing, beginning with March 1, 1953.

An operating scheme which appears capable of producing decontaminated uranium at the required processing rates involves waste processing in the following three periods:

1. An initial period of 6 months' processing of aged wastes (an "effective" age greater than 4 years) at an average instantaneous rate of approximately 10 tons/day. During this period no equipment revisions are required to produce in-specification product.

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2. A period of 7 months during which an instantaneous rate of approximately 13.5 tons/day is required and the "effective" age of the waste processed is approximately 2½ to 4 years (a D.F. of 6 to 8 above that believed possible in the present solvent-extraction equipment is desired). During this period one of the present RC Columns would be converted to additional RA Column scrub section. The uranium solvent-extraction equipment during this period then would be two RA Columns in parallel followed by an RC Column converted for additional scrub height and a regular RC Column in series.

3. A period of approximately 9 months when series operation (two RA-RC cycles) is required at reduced plant processing rates (7.5 to 8 ton/day) to decontaminate the one to two year aged waste. (An additional D.F. of approximately 60 is required during this period.)

Continuous Calcination

Two runs made in laboratory-size (3 inch diameter fluidizing reactor) calcination equipment revealed that vibration improved fluidization (as revealed by by visual inspection of the bed).

MISCELLANEOUS SEPARATIONS PROCESS DEVELOPMENT

Chemical Engineering Development

The following memorandum was issued:

HW-27399-Recuplex Pulse Column Specifications, by G. Sege, dated March 13, 1953.

321 BUILDING OPERATION

Construction of the Purex Prototype Facility was approximately 50% complete at the end of the month.

HOT SEMIWORKS

Full Hanford radioactivity level operation of the Hot Semiworks was initiated March 9, with the starting of run HR-5. Equipment modifications are continuing, with the aim of obtaining safer and smoother operation, and hence more reliable data.

While the data obtained by the running of HR-5 are clouded by operational upsets, considerable insight into the operational characteristics of the Semiworks was gained. The feed stock for this run was prepared by combining 525 pounds of "hot" uranium with about 50 pounds of "tracer" uranium from the last run. This feed stock was oxidized, centrifuged, and processed by solvent extraction under O.R.N.L., June, 1949 Redox Flowsheet conditions, using chemicals from the Redox Plant.

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The salient findings of this run are noted below.

1. The decontamination factors obtained were approximately 5-fold lower than expected. Additional operation is necessary to establish the cause of the poor decontamination. Representative Redox Plant performance is quoted for comparison.

Stream	Gama dF (Log Values)		
	Run HR-4	Run HR-5	Redox Plant
ICU	3.0	2.85	3.7
2EU	-	5.1	5.6
IBP	4.0	3.1	3.9
2BP	-	5.2	5.6

2. Losses of uranium and plutonium were satisfactorily low (0.02 and 0.4% U and Pu losses, respectively in the IAW).

METAL RECOVERY PLANT ASSISTANCE

Tank Farm Operation - Feed Preparation - Waste Disposal

During the calendar month 911,000 gallons of stored alkaline wastes containing 188.2 tons of uranium were removed from "B", "C", and "U" tank farms with an age of five to seven years. Added to this volume was a total of 214,000 gallons of water employed in test sluicing and sludge - softening operations carried out in 101U and 101C. This material was acidified and concentrated to furnish 853,000 gallons of feed (RAF) to the solvent extraction system. A maximum removal rate of over 3.7 tons uranium/day was reached in 101C using water as sluicing agent. Significant improvement in uranium removal rate as each of four successive batches was sluiced in 101C may indicate that when sodium salts, normally present in supernatant solution, are displaced from the sluicing system the solubility of sodium uranyl carbonate (HW-19140, Fig. II-4) may be expected to approach 0.26 M (ca. 0.5 lb.U/Gal). Production curtailments were experienced due to mechanical (3) and electrical (2) failure of Nagle slurry pumps. It is expected that the recurrence of mechanical failures due to sheared shafts (2) will be minimized in the future by eliminating backwelding of impellors to the shafts.

It is estimated that 902,000 gallons of neutralized concentrated waste containing 6.1 tons U were transferred to underground storage (109 BX - 107 BY) amounting to 0.99 gallons per gallon of metal waste removed. With pH control maintained at 9 to 10, concentration of neutralized waste was increased from specific gravity 1.30 at 80 C to 1.33 at 80 C on March 19. Saturation temperatures (crystallization or clear point) have increased from ca. 0 C to ca. 20 C with no line pluggage experienced to date. Difficulty due to insufficient heat transfer in waste evaporators resulted in sending some dilute waste

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to storage. A 10 per cent HNO_3 flush of the tubes restored the required heat transfer values. No lost time was experienced in waste processing operations.

Uranium and beta activity in ROW (5 wt.% Na_2SO_4) were found to be approximately one-half and three times, respectively, the cribbing limits as described in Document No. HW-18700.

Solvent consumption amounted to 8.3 gallons of TBP and 23 gallons of diluent per ton of uranium processed. Satisfactory solvent quality has been maintained using 5 wt. % Na_2SO_4 as RO column scrub supplemented with approximately once-weekly 5 wt. % Na_2Co_3 batch washing.

Plant Performance

The solvent extraction batteries processed 178 tons of recovered uranium with a waste loss of 3.4 per cent. Essentially TBP #4 Flowsheet conditions were employed using nominal 30 volume per cent TBP in hydrocarbon diluent as A Line extractant (RAX) and 12.5 volume per cent TBP in hydrocarbon diluent as B Line extractant (RAX).

Summary data are:

Line	Nominal Production Rate T, U/Day	Tons U Processed		Average Rate T, U/Day	Average Loss % RAF U(a)	On Stream Efficiency Per Cent
		New	Rework			
A	2.5 - 5.0	65	0.6	2.1	1.6	60
B	2.5 - 6.0	113	1.4	3.7	3.2	97
Total		178	2.0	5.8		

(a) Based on RAW, RCW, and ROO stream samples.

Production rate curtailments and shut downs were principally due to lack of feed from tank farms.

Waste Losses and Decontamination

Erratic high uranium losses to A Line RAW (5 to 15%) near month end are believed due to general column instability caused by suspended solids, perforated plate surface conditioning effects, or to partial RAX distributor orifice pluggage similar to infrequently recurring pluggage experienced in ROF pumps. Six hours of down time were employed to flush the perforated plates and RAX distributor by pulsing the column full of fresh RAS. Initial RAW uranium waste losses after establishment of steady normal 4.5 T/D flow rates were approximately 2 per cent.

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Gross beta, gamma, and plutonium log decontamination factors were about 4.1, 4.3, and 1.4, respectively, for A line, and 4.4, 4.5, and 1.3, respectively, for B line. Average product (RCU) fission product activity for A and B lines, respectively, were 35 and 17 per cent of natural uranium beta, and 148 and 98 per cent natural uranium gamma. The A line RA column waste losses averaged about 1.3 per cent of the feed uranium with the number of theoretical uranium extraction stages decreasing from 2.7 at rates of 2½ tons uranium per day to 2.0 at rates of 5 tons uranium per day. The B line RA column waste loss averaged 2.2 per cent with about 2.3 uranium extraction stages over the entire range of production rates. Uranium in the RC column organic effluent (RCW) was 0.4 per cent of the feed for A line and 1.2 per cent for B line, with no significant variation due to processing rate. Spectrochemical assays of selected product batches from both lines showed the sum of metallic impurities generally less than 130 parts per million parts of U.

Analysis for Plutonium in RCU Batches

An evaluation of the TTA and fluoride precipitation analytical methods employed for determination of plutonium in RCU was completed. The TTA method has given an average value since startup of ca. 40 ppb Pu for RCU whereas UO_3 produced from this RCU has indicated $< \sqrt{5}$ ppb Pu. Analyses of several RCU samples by the TTA method resulted in reported plutonium contents eight fold greater than the value reported by fluoride precipitation procedure. The presence of TBP in the RCU samples is reasoned to cause extraction of uranium into the TTA system with resulting high spurious plutonium values.

Equipment Problems

No major equipment pieces in 221-U have been found limiting at rates operated to date. Several rotameters and valves will need replacement or enlarging. A possible processing limitation was observed at 75 gallon water/min. (11 T U/D), when one demineralizer unit was being regenerated. A larger water storage tank may be required.

Four failures of the top seal on the 100 per cent UNH Pot Loop Header Feed Pump (P-X-19) in the 224-U Building occurred during the report period; each was attributed to failure of the graphitar bearings and subsequent shaft whip. Service life before failure was from five minutes to nine days. Glass bearing material (Type 7740-Pyrex) is currently being installed in a spare pump.

Concentration - Calcination

Total production through the calcination step was 284 tons of uranium as UO_3 from 1,114 calcinations. Of the total production 48 tons of uranium were produced from TBP source uranium and 236 tons of uranium were produced from a blend of 50 per cent TBP and 50 per cent Redox source uranium. Nine

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carloads of UO_3 were shipped to Harshaw Chemical Company since the metal impurity content, mainly iron and chromium, exceeded K-25 specifications. Product, UO_3; beta, gamma and plutonium specifications were met.

The charges to the calcination pots averaged 510 pounds of uranium. The production rate ranged from a low of 0.34 tons of uranium to a high of 14.9 tons of uranium with an average daily production of 9.2 tons of uranium. The minimum rates were due to severe foaming, hard cake formation and an X-19 pump (100% UNH pump) failure. The first two causes occurred while processing a blend of stored, 60 per cent UNH solution (which is seriously contaminated with solvent), with fresh feed. Calcining time cycles ranged from 13.2 hours for severe foaming pot feeds to 5.5 hours for non-foaming feeds with an average of 7.1 hours for non-foaming feeds.

The investigation to determine the best type of deentrainment section for the calcination pot fume-vent lines was concluded. A detailed report, "Calcination Pot Vent Line Deentrainment Sections," was issued. The installation of a baffled deentrainment chamber, removable elbow flange with powder scoop, and a vent line entrance baffle on each calcination pot was recommended.

The RCU Steam Stripper (T-B-4) was tested using seven plates for stripping and two plates for uranium deentrainment. Total butyl phosphates (TBP, DBP and MBP) in the bottoms averaged 0.027 g/l over a 15 day test period. Nine plate stripper performance averaged 0.018 g/l of equivalent TBP in the bottoms. Condensate Receiver (TK-C-5) analyses indicated a 100-fold improvement in uranium deentrainment when using only seven plates for stripping. Uranium accountability records indicated 15 to 30-fold improvement in uranium deentrainment. Thus, further tests are planned for a final verification of seven plate stripper performance.

Maximum capacities of the 60 per cent UNH Concentrators was established at 40 g.p.m. (ca. 7.2 tons U/day) for E-B-1 and 35 g.p.m. (ca. 6.3 tons U/day) for E-D-1. The 100 per cent UNH Concentrator (E-D-2) required maximum steam flow at a feed rate of approximately 5.5 g.p.m. (ca. 16 tons U/day). Corrosion-product pickup across the 60 per cent UNH Concentrators dropped to approximately one-half the normal rate during a three day test period when the cathodic protection to underground pipelines in the vicinity of the 224-U Building was discontinued. A repetition of this test over an extended period was recommended, since potential difference measurements from vessel to vessel and from vessel to ground have failed to indicate the presence of stray currents or of current drain to ground.

Waste Evaporators - B and T Plants

The waste evaporator at T Plant processed 613,252 gallons of feed (second pass) into 444,125 gallons of concentrate and 209,100 gallons of condensate with a beta dF of ca. 4.0 and a waste volume reduction of 31.3 per cent.

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The only major processing difficulty encountered during the month was a failure of the 118-TX underground feed pump, which is in the process of being replaced.

The waste evaporator at B Plant processed 361,632 gallons of feed (second pass) into 290,125 gallons of concentrate and 175,811 gallons of condensate with a beta dF of ca. 4.0 and a waste volume reduction of 38 per cent.

Process Chemistry

Solvent Extraction - Additional data on the decontamination of one-year-old waste have been obtained, and from these results, it is apparent that increased acidity in the RA Column is probably the most effective means of increasing fission-product decontamination, but whether this should be done in the feed or the scrub or both, has not been definitely established.

Supernatant from Tank 102-BX (15 g/l U, approximately 2 years old) was obtained and acidified to 3 M HNO_3. This material, as RAFS, was extracted, scrubbed, and stripped. The radioactivity determinations for the RCU produced (about 30 and 400% of natural uranium beta and gamma, respectively) indicate that this supernatant could be successfully blended with old (5 to 6-year) waste currently being processed.

UO_3 Reactivity - The reactivity of recent lots of UO_3 (in the hydrofluorination step carried out in the laboratory employing plant-produced UO_3) is continuing to run in the neighborhood of 90% UF_4 (conversion ratio of approximately 1.0 relative to the new Mallinckrodt UO_3 "standard").

Continued experimentation with UO_4 (uranium peroxide), UO_3 prepared from UO_4, and the reactivities of each, has brought a number of interesting points to light. The most important are:

1. UO_3 prepared from calcined UO_4 exhibits slightly lower reactivity in the reduction-hydrofluorination step than the UO_4 itself.

2. Values for UO_4 reactivity (compared with the Mallinckrodt T-268 standard) represent essentially 100% conversion to UF_4.

3. Within the limits imposed by the extremely high reactivity of UO_4, no discernible difference exists between UO_4 prepared from Redox (E-12) and TBP Plant (C-1) uranium product solutions.

4. In the precipitation of UO_4, considerable (on the order of 10-fold) decontamination from metal impurities (Ae, Fe, Ca, K, Na) is obtained.

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REDOX PLANT ASSISTANCE

Plant Performance

The Redox Plant operated at a 85 per cent on-stream efficiency (IAF Basis) and averaged 4.8 tons of uranium per operating day during the month. Equipment modifications made during the month have permitted instantaneous rates of 5.5 tons of uranium per day, however, at the possible sacrifice of reduced plutonium decontamination. The following is an overall summary of plant production performance for the month of March:

	Approximate
Tons Uranium Shipped	126.9
Plutonium Processed (Batch Equivalents)	177.3
Per Cent Uranium to Waste	1.18
Per Cent Plutonium to Waste	2.05

Operating Performance

The Redox Plant was shut down for brief periods at the end of February while several equipment changes were made to allow for increased capacity. Production was established at a 5.0 ton U/day rate (with IA Column operating at a 3.5 ton U/day rate in parallel with IS Column operating at a 1.5 ton U/day rate) on February 28 and continued until March 3 when the IA and IS Columns were flooding. Instead of being water-flushed, the columns were only stripped of plutonium and uranium, drained, and refilled. Following 36 hours of operation at a 3.5 ton U/day rate, the IA Column flooded again on March 5. The procedure described above was repeated, and production continued at a 5.0 ton U/day rate until March 8. During the period from March 8 to 12, the production rate was limited below 5.0 tons U/day by the G-3 (Organic Still) steam trap capacity. The trap was readjusted on March 12, and a production rate of 5.5 tons U/day achieved on March 13. With the exceptions of brief (approximately 5-hour) shutdowns on March 17, 20 and 24 for IA Column water flushes, production at a 5.5 ton U/day rate was maintained until March 25.

A complete shutdown of the Redox Plant was necessitated on March 25 due to the discharge of approximately 600 units of plutonium from the 2A Column into the waste header system as a result of apparent flooding of the column. An additional 120 units entered the waste header system in the same manner on March 26. The product containing wastes were segregated for rework via the IS Column. The rework operation was successful in recovering all the product with the exception of waste batch PW-110, which was erroneously diverted to the 241-S tank farm.

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The cause of the 2A Column flood is not definitely known at the time of writing. Since further investigation is necessary, details will be reported next month.

Equipment

Capacity tests of D-12 (Waste Concentrator), F-2 (ICU Concentrator) and G-3 (Organic Still) were performed recently under the direction of Manufacturing Process Control and Technical Plant Assistance personnel. Estimated maximum capacity under current flowsheet conditions for these three pieces of equipment were 6.6, 9.3-11, and 7.2 tons of uranium per day, respectively.

Process Performance

The following table summarizes decontamination performance data by the solvent extraction cycles. Because samples of individual column aqueous waste streams cannot be obtained (due to gross contamination of samplers which occurred last month), overall waste losses only are given.

Period covering 3/17/53 to 3/20/53; nominal production rate of 5.5 tons U/day (IA Column at 3.75 tons U/day in parallel with IS Column at 1.75 tons U/day), processing 120-day "cooled" metal.

Cycle	Gamma Decontamination Factors (dF)		% to Waste	
	U	Pu	U	Pu
1st	3.7	3.9	---	---
2nd U	1.9	---	---	---
3rd U	0.8	---	---	---
2nd Pu	---	1.7	---	---
3rd Pu	---	0.9	---	---
Total	6.4	6.5	1.1	1.6

Feed Preparation

Pile exposures of metal charged have ranged from 222 MWD/T to 640 MWD/T, averaging 595 MWD/T. The procedure of dissolving 4.95 tons of uranium in two cuts has continued, and overall time cycles as low as 32 hours have been achieved. The average age of 37 IAF batches prepared was 104 days, with a range from 95 to 126 days.

Two batches of 231 Building oxalate supernatant recycle were added to IAF Batch HE-24 and processed through the IA Column on March 20 on a test basis. Although the IA Column required a flush shortly afterward, it is believed that the addition of recycle had no effect; further testing is planned.

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Uranium Extraction and Decontamination

In general, nominal conditions of the ORNL June, 1949 (acid-deficient) Flowsheet (Document HW-22834) were employed for the First Extraction Cycle and Second Uranium Cycle. The flow ratios and solution compositions were approximately the same as those employed last month with the exception that the use of HNO_3 in IAX has been discontinued since no significant improvement in IA Column mechanical performance was observed during its use, and deleterious effects on IA Column decontamination performance were noted.

Plutonium Extraction and Decontamination

The flowsheet currently employed in the Plutonium Cycles is summarized below:

1. Solution Specifications

   2BX and 3BX - demineralized water
   2AF, 2AX, 3AF, 3AS, 3AX - same as HW #4 Flowsheet, and
   2AS - same as 3AS (dichromate removed from 2AS)

2. Flow Rates

   2A and 3A Columns

Feed rate, gal./min.	Scrub rate, gal./min.	Extractant rate, gal./min.*
less than 0.42	twice feed rate	(Feed + scrub rates)/1.4
greater than 0.42	0.84	(Feed + scrub rates)/1.4

   * The extraction section L/V has recently been reduced from 1.5 to 1.4 in order to assure low 2AW and 3AW plutonium losses at higher production rates.

Solvent Treatment

The plant solvent recovery system, IO Column and Organic Still (G-3), operated satisfactorily with water as a scrub solution in both units. Considerable recycling (up to 20%) of hexone without distillation was required until March 12 because of the limiting capacity of the G-3 steam trap. Caustic washing of three consecutive batches on a bi-weekly basis has continued. Solvent losses for the period have averaged approximately 1.4 per cent of throughput.

Process Engineering and Chemistry

A method has been devised to calculate the path of nitric acid in the continuous plutonium concentration equipment to be used in the Redox (Phase II) and

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Purex Plants. It appears that in Redox, because of the high HNO_3:Pu ratio, either steam stripping or over-concentration and back dilution, is required to reduce the HNO_3:Pu ratio in the Redox Plant product to the 5 M HNO_3 and 50 g. Pu/l. required for further plant processing.

Z-AREA - ISOLATION, PURIFICATION, AND FABRICATION PLANT ASSISTANCE

Isolation Building

Production Test 231-15 - S Plant Runs

A single peroxide precipitation cycle for S Plant runs having H-ion concentrations initially below 5 N appears feasible with lower sulfate conditions. The first peroxide precipitation with adjustment of H-ion by dilution to 1.85 N, sulfate-ion to 0.10 M, and pre-reduction with one per cent hydrogen peroxide, and followed by cake washing with six per cent nitric acid, has given a cake solution with 0.09 to 0.31 mols SO_4-ion per mol plutonium and 1,600 to 80,000 ppm sodium. The recycle was two to four per cent. These values are in the same range as previously obtained. The second peroxide cycle recycle from these runs was high (30 to 70 per cent), even when the starting solution was butted with sulfate ion to 0.10 molar.

Plutonium IV Oxalate Filter Boat Process

Filter times ranging from 6 to 14 hours were encountered during the month as contrasted with the normal one to three hour filtering time. Six runs were made where the 15 minute pre-reduction digestion and strike temperature were held at 50 C, followed by chilling to 10 C prior to filtering. The filter times were reduced to 3/4 to 1-1/4 hours. This procedure will be continued.

PURIFICATION AND FABRICATION BUILDING

Task II - Hydrofluorination

Approximately 95 per cent of production passed through the RM Line Task II equipment. The rehydrofluorination rate based on poor fluoride color was 31 per cent. This hydrofluorination rate compares with the 30-35 per cent rate obtained when HF-powder contact depended upon diffusion. Studies of the data show that 44 per cent of the runs requiring rehydrofluorination were processed in four boats handling 26.5 per cent of the total runs. Further studies are in progress.

At the end of the 600 C temperature hydrofluorination cycle, for RMX-13-2-119, a pressure surge in the Task II furnace expelled the furnace door and the boat containing the fluoride powder. The cause of this incident was not established. Two possible causes are (1) introduction of liquid HF into the hot furnace, (2) introduction of water into the hot furnace.

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Task III - Reduction

Approximately 95 per cent of Task III production passed through the RM Line. Reduction yields averaged 95 per cent compared with 95.3 per cent in February and 97.0 per cent in January. A revised heating element and manifold including a self cleaning orifice have been installed in the furnace No. 1 piping system in an effort to reduce the iodine condensation in the lines.

RMX-13-1-129 and 131 passed through the Task III cycle without calcium and iodine. Laboratory reductions of the resulting materials gave poor yields. This material is to be recycled by way of the skull dissolver. Run RMX-13-2-113 was processed through Task III using calcium and iodine which had been mixed for 2 to 3 days. The slag and metal did not separate. This material will also be recycled by way of the skull dissolver.

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MISCELLANEOUS

Crucible Development

Crucible Modifications

The CD1101 crucibles received from the Norton Company had a flattened inside bottom, requiring ca. 50 units more plutonium than customary to give a casting satisfactory for direct machining. Approximately 110 crucibles were ground under water with a shaped quill grinder to form the proper radius on the inside bottom. These crucibles were then fired to 2500 F to preclude any possible formation of $Mg(OH)_2$. The Norton Company, upon being informed of the deficiencies has agreed to fabricate a new die mandrel to meet the required radius, and to grind the inside bottom of crucibles fabricated prior to receipt of the new mandrel.

Filter Boat Design

Several firms were visited to obtain information regarding special alloys and manufacturing techniques applicable to the filter boats used in the "Z" Area processes (See HW-27598) and tests to evaluate these have been formulated. The suitability of base metal alloys clad with precious metal alloys and the use of wire cloth for filter media are among those to be investigated. A gold-platinum-palladium alloy identified as Baker and Company, Inc. alloy No. 413 is among the most promising. A test vessel of Haynes alloy No. 25 clad with Baker and Company alloy No. 413 has been ordered.

RECUPLEX

Revision II of the Recuplex Project Proposal (HW-26341), requesting funds in the amount of $1,410,000 for all design, procurement, and construction costs

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through start-up of the facility, was approved by the Appropriations and Budget Committee on March 16, 1953 and by the Atomic Energy Commission's Project Review Board on March 19, 1953. Issuance of the directive for the funds by the Atomic Energy Commission awaits written approval of the budgetary status from the Washington, D.C. office of the Atomic Energy Commission.

234-5 DEVELOPMENT

Solids in Redox PR Solution

In laboratory examination of several samples of Redox PR solution, only occasionally have filterable solids appeared in the solution as received in the 231 Building. With every sample, however, concentration to 200 or more grams of plutonium per liter, by evaporation in a glass flask, has resulted in formation of a small amount of solid material, chiefly alumina and silica, which could be removed by filtration through a medium (15μ porosity) sintered glass funnel. Experimental details will appear in a forthcoming report (HW-27562).

Plutonium IV Oxalate Precipitation

Decontamination factors of two to six and ten to fifteen for ruthenium and zirconium-niobium, respectively, have been obtained by single plutonium(IV) oxalate precipitations from Redox 3BP solution containing one to 60 grams of plutonium per liter. Zirconium-niobium gamma activity is reduced three-fold by evaporating 3BP solution to 300 grams of plutonium per liter, diluting and filtering out the precipitated alumina and silica.

Plutonium Peroxide Precipitation - High Solubility in MRC Runs

Recent laboratory work has pointed to the presence of excessive amounts of fluoride (1.2 and 5.4 moles per mole of plutonium in Runs T-52-02-MRC-6 and T-53-03-MRC-9, which gave losses of 20 and 90 per cent, respectively) as the principal cause of high recycle from processing MRC runs in the 231 Building. Preliminary results have indicated that the fluoride effect may be at least partially overcome by addition of aluminum nitrate prior to the strike. That the presence of Mn^{++}, found in MRC-6 and MRC-9 in concentrations of 6600 and 2×10^5 ppm, respectively, may also increase plutonium peroxide solubility was shown when the addition to synthetic MRC solution of 20,000 and 160,000 ppm of manganese increased the losses in laboratory peroxide precipitations from one-half to three and twelve per cent, respectively.

Reduction - Large Scale Reductions of PuF_4

Plutonium was introduced into the large reduction hood during the month to investigate double-batch size reductions. Six reductions of PuF_4 on the nominal 800 gram scale have been made. A stepwise reduction in the amount

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of iodine from 0.25 to 0.05 moles per mole of PuF_4 has not resulted in a significant decrease in per cent yield of metal. Yields of 97.8 to 99.0 per cent

When the iodine was entirely eliminated in one run, a yield of 97.7 per cent was realized. However, a misshaped button resulted which was very difficultly removed and cleaned of accompanying slag. A memorandum report (HW-27488) is being prepared to summarize this work.

Skull Recovery - Skull Reactivities

A laboratory investigation of the extreme reactivity of certain of the skulls from the casting process has been started. Preliminary results indicate that the green powder, which often results upon storage of the skulls, is plutonium dioxide rather than containing any appreciable amounts of plutonium hydride, and that the metal in those skulls which disintegrate upon storage is much more reactive to concentrated nitric acid than is the green powder. An attempt is being made to correlate storage behavior and reactivity with impurity content of the skulls.

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April 13, 1953

APPLIED RESEARCH SUB-SECTION

March, 1953

VISITORS AND BUSINESS TRIPS

Prof. D. McLachlan, Jr., University of Utah, Salt Lake City, spent March 16-20 at Hanford as a Consultant on metallurgy problems.

R. J. Brouns and M. B. Leboeuf spent March 2-6 and March 2-4, respectively, attending the Pittsburgh Analytical Conference.

M. B. Leboeuf spent March 5 at KAPL and March 6 at MIT, Cambridge, discussing instrumental analyses.

D. P. O'Keefe spent March 13 at American Cyanamid Company, Arco, Idaho, discussing J-slug processing and March 25-26 at ANL inspecting laboratory facilities.

D. P. O'Keefe and L. D. Turner spent March 23-24 at ORNL attending a conference on radiation damage.

D. D. Lanning spent March 24-25 at ORNL discussing critical mass data and March 26-28 attending an APS meeting in Durham, North Carolina.

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F. W. Albaugh, L. L. Burger, D. G. Miller and H. H. Van Tuyl spent March 16-20 in Los Angeles, California, attending an ACS meeting; in addition, Miller presented two technical papers.

F. W. Albaugh spent March 26 at UCRL, Berkeley, discussing radiochemical research.

G. W. Riedeman spent March 20 in Los Angeles, California, attending an American Association for Metals convention.

L. L. Burger spent March 20 at the North American Aviation Corporation, Downey, California, discussing alternate separation methods and procedures. He also spent March 24 at the California Research and Development Corporation Laboratory, Livermore, discussing solvent extraction and March 23 at UCRL discussing isotope separation.

ORGANIZATION AND PERSONNEL

Personnel totals as of March 31 were as follows:

	Exempt	Technical Graduates		Non-Exempt	Total
		Permanent	Rotational		
Physics Unit	28	2	4	10	44
Metallurgy Unit	39	4	4	27	74
Chemistry Unit	54	-	3	15	72
Administration	4	-	-	1	5
Total	125	6	11	92	195

On March 1, the 234-5 research group of Chemical Research was transferred to Metallurgy and the service groups of Analytical Research were transferred to Technical Services. Simultaneously, Chemical Research and Analytical Research, less these transferred groups, were combined to form a new Chemistry Unit within Applied Research. The Chemistry Unit is divided into three Sub-Units: Separations Chemistry, Radiochemistry and Chemical Instrumentation.

PHYSICS UNIT

Lattice Studies

The measurements in the dry lattice with 0.926" diameter slugs have been completed. The buckling obtained with the BF_3 counter is 95 microbucks. A rough check on this value, using a small fission chamber, gave a result of 95.6 microbucks. The reduction in slug size to 0.926" from the Standard Hanford size corresponds to halving the amount of uranium in this lattice. It is remarkable that the buckling should change only from 101 microbucks to 95 microbucks.

The small slugs have now been loaded into the 6-3/16" lattice and measurements are in progress. Upon completion of this dry lattice, water will be added to

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the process tubing and wet lattice measurements will be taken for both the 6-3/16" size and the 7-1/2" size.

A document has been prepared discussing the feasibility of increasing the flux level of the exponential piles by the addition of a layer of enriched slugs near the bottom of the graphite stack.

The investigation, reported last month, of the dependence of thermal neutron diffusion length on the size of graphite stack in which the measurement of the diffusion length is made, has been completed. The values obtained are as follows:

Graphite Stack Size		Diffusion Length		
		Thermal Source Theory		Fast Source Theory
Cross Section	Height	$L_{meas.}$	$L_{1.6}$*	$L_{1.6}$*
4' x 4'	9'	57.4	57.5 +	55.6
8' x 8'	9'	56.0	56.0	55.1
12' x 12'	9'	56.1	55.8	54.8
9' x 12'**	12'	55.9	55.6	
16' x 16'	9'	56.0	55.5	
9' x 16'**	16'	56.7	56.0	
Hanford Standard Pile (8' x 8' x 8')				54.4

* Graphite Density = 1.6
** Measurements taken horizontally in previous stack.

The uncertainty in most of the measurements is of the order of ± 0.5 cm, except for the 4' x 4' stack which is somewhat worse on account of the sensitivity of the answer to effective pile size.

With the exception of the horizontal measurement in the 16' square pile, the diffusion lengths, calculated on the basis of fast source theory and for graphite density of 1.6 g/cc, all fall in the range 55 to 55.5 cm as compared with the Hanford Standard Pile value of 54.4 cm. The 9' x 16' pile measurement recalculated by fast source theory would probably be of the order of 55.8 which is not unreasonable, considering the precision of the measurement. These values are then about 1/2 - 1 cm higher than those obtained in the Hanford Standard Pile, but all are in agreement with one another. This seems quite convincing proof that there is no appreciable effect of pile size on the measured diffusion length.

In considering the small discrepancy between the unmachined graphite values and the Hanford Standard Pile value of diffusion length, the effect of neutron streaming in the small spaces between the rough surfaces of the unmachined graphite bars and down open test holes was investigated. Although this effect turned out to be only of the order of 0.1 to 0.2 cm, it suggested that in the 105 Piles the

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streaming might be a serious effect. When the streaming correction is applied to DR Pile measurements, it is found that the measured diffusion length should be reduced by 2.5 - 3 cm, depending somewhat on the details of the interpretation of the hole structure. The effect in H Pile and C Pile will be even greater because of the larger number of holes and the greater amount of undercutting.

It should be noted too that calculations point out the reason streaming cannot be detected in the 105 Piles experimentally was the fact that it was nearly the same in all directions for a source position near the center of the pile. Calculations have not been extended as yet to source positions displaced appreciably from the center of the pile, but this will be done.

This correction for streaming seems to account in a large part for the discrepancy between 105 Pile values and Hanford Standard Pile values. It is believed that some omissions in calculating the void volume and improper weighting of void volume may have accounted for the remainder. Recalculation is now in progress.

Experimental Physics

The metal xenon separator line has operated as expected during the month. All instrumentation has been tested and calibrated. No major design changes seem to be necessary and, upon completion of current tests, the metal line will be removed to the X-2 level at DR Pile. The first separation run with the enriched generator slug was made this month. The slug was exposed for four hours in the test pile at a power level of about 100 watts. After 8 hours of cooling and xenon buildup, the gases were extracted into the separator line and a partial separation between krypton and xenon was achieved. An unexplained leak in the system made it impossible to complete the test.

A new detector, consisting of an anthracine crystal placed in the center of a coil of copper tubing, has been prepared for obtaining elution curves for the xenon generator and various charcoal traps.

The remote capacitance liquid level indicator has been tested in conjunction with the separator; it was found that the mercury level could be positioned from the control board with an accuracy of ± 0.2 mm.

A high speed coincidence circuit, for use with scintillation counters, is being developed for the purpose of short time measurements involved in radioactive decay. The circuit operates fairly well when used with controlled pulses from fast pulse generators. The circuit is similar to that reported by Bell, et al., in the Canadian Journal of Physics, January, 1952. A helical delay unit with a total delay of the order of 50 millimicroseconds is used to measure times of the order of 10^{-9} seconds. The delay unit was built in the 300 Area Instrument Shop.

The installation of the beam catcher, step plug assembly and collimator shield for the neutron diffraction spectrometer has been completed.

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A redetermination of the weights of the uranium and plutonium foils, used in the measurement of the plutonium-239 fission cross section, has been carried out at KAPL. They report a weight of 1.83 mg for the plutonium foil. The originally reported weight of this foil was 1.76 mg. The values of the fission cross section with this new weight assignment agree better than before among one another, however, a discrepancy, still unexplained, remains.

Several improvements in the instrumentation for the plutonium fission cross section experiment have been initiated. A new outside shell for the fission chamber has been constructed to eliminate leakage and contamination of the counting gas. A remotely operated filter holder has been designed to facilitate exchange of filters without interruption of data taking. A set of vertical slits of a resolution approximately that of the beryllium crystal has been designed. This slit system will be accurately adjustable on the spectrometer arm and will allow improvement of resolution by a factor of about 5, when better resolution is desired.

The low energy beta ray spectrum of Tl^{204} was measured with the beta ray spectrometer. The data allows the tentative determination of the decay scheme of this isotope.

Theoretical Physics

The transport theory formulation, determining the thermal flux on the center line of a fuel slug fixed in a lattice, is presented in integral equation form. The geometric symmetry of this problem allows an explicit construction of the appropriate two region Green's function. One substitutes the diffusion theory solutions under the integral sign and, upon performing this operation, obtains a first iterated value of thermal flux at the slug center. This method has been extended to three coaxial regions with a corresponding three region Green's function to allow for the thermal barrier effect of an interposed water layer, isotropic scattering in the water being assumed. By interchanging various media, the value of flux at the center of a hollow, water-filled slug may be derived without additional analytical manipulation. Finally, expression of the relevant Green's functions in an energy dependent representation coupled with the assumption of a Maxwellian thermal neutron distribution, in zero order throughout the lattice cell, allows reproduction of the first iterated thermal spectrum at the slug center. Unfortunately, several of the integrals generated by the above technique are not analytically integrable, primarily on account of the form of the various Green's functions. These expressions are currently being numerically evaluated by the computing group.

The neutron absorption efficiency of a control rod, in which two annuli filled with boron carbide cover 240° of the total circle was compared with the absorption efficiency of a rod with 360° coverage. The experimental value of the relative absorption efficiency of these two rods was 93%. The calculated value is in good agreement with this.

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Applied Research Sub-Section

The integral over a cylindrical pile of the cube of the neutron flux has been calculated for various flux distributions.

Calculations on the control rods for the Lattice Test Pile have continued. It appears that 8 control rods, located just outside the uranium driver rods, are necessary to yield the range of control required.

The ratio of fast to slow flux in the Lattice Test Pile has been calculated for different thicknesses of graphite between the driving layer and the core lattice, when the driving layer is backed with an infinite reflector. The graphite thickness required to make the ratio of fast to slow neutron fluxes constant in the core is about 10 cm, according to two group theory.

From the ratio of the neutron flux in an empty pile to the flux in the pile with a layer of rods of P-10 (both measured above the layer containing the P-10) the sink strength of the P-10 rods can be determined in terms of the strength of the sources driving the pile and the lattice spacing. From this value of the sink strength of each rod, the blackness of the P-10 slugs can be calculated if the process tubes are assumed to be line sinks. From first measurements of the fluxes, a value of 0.50 was obtained for the blackness of the dry process tube loaded with P-10 slugs. The fact that this value is as close as it is to the actual value is encouraging, and further work on this problem is continuing.

CHEMISTRY UNIT

Separations Process Studies

According to present thinking, the current Metal Recovery Process cannot adequately decontaminate feed solutions aged much less than four years. Several lines of research work are directed towards process changes that would provide adequate decontamination and thus eliminate the necessity of employing two-cycle operation. To this end, a five-month old waste solution was processed in the miniature mixer-settler simulating current plant operation. The uranium RCU product obtained had a beta activity 220 times greater than the specification limit. A second run carried out with higher acid concentrations -- 6 M in place of 2.6 M -- yielded a product having a beta activity only 16 times greater than specification. Modification of acidity thus provided a 14-fold improvement.

Several studies were carried out with actual Purex solutions obtained from Oak Ridge in order to verify observations made with synthetic solutions. Tail-end scavenging of the two-cycle LEU product with copper sulfide provided a ruthenium decontamination of about 500, which is somewhat in excess of that found with synthetic solutions. Silica gel scavenging of the same solution yielded a 10-fold decontamination of zirconium-niobium, a result which is in parallel with studies on synthetic solutions. The effectiveness of beta-mercaptopropionic acid as a complexing agent for ruthenium was tested using Oak Ridge LEU solution. Previous studies had indicated that this reagent would complex ruthenium and prevent its extraction in the subsequent cycle. This behavior was confirmed in the present

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experiments by a 16-fold improvement in decontamination factor.

Since the recent explosion at Savannah River was reportedly due to the decomposition of "red oil" during the concentration of UNH solutions, an investigation was undertaken to find if any parallel hazard exists in the coming Hanford Purex process. UNH samples were concentrated under various conditions and in the presence of various additives in an attempt to define hazardous conditions. The results indicated that a reaction of explosive violence occurred only in the presence of "red oil" and only during incipient calcination at a temperature of 150-160 C. The intensity of the reaction is related to the quantity of "red oil", and Hanford operations are considered safe if a preliminary steam strip is employed to remove TBP before concentrating UNH solutions. The results of the investigation are reported in HW-27492.

Consideration of the dry fluoride procedure for processing irradiated slugs led to an investigation pertinent to that subject. The technique involves treatment of the irradiated slugs with bromine trifluoride and subsequent volatilization of the residual hexafluoride and volatile metallic fluorides, leaving partially contaminated plutonium fluoride as a residue. Since bromine trifluoride reacts violently with water, it is not desirable to use aqueous media for recovering the plutonium residue. As a consequence, the solubility of plutonium trifluoride in anhydrous hydrogen fluoride was determined with the thought that the latter reagent might be employed as a solvent. The results were discouraging. At 20 C the solubility of plutonium was only 11 mg/l. Likewise, the solubility in an HF-KF mixture was low.

Consideration has been given for some time at Hanford to methods for reducing the Pu-240 content of product thereby permitting higher total pile exposures and substantial cost reduction. A preliminary investigation by physics personnel of a "burnout" technique whereby neutron bombardment selectively converts the 240 isotope to fissionable Pu-241 yielded unpromising results. As a result, a literature survey was carried out in the Chemistry Unit to explore the prospects of employing chemical or physical isotopic separation techniques. It was concluded that the hexafluoride might be used in a centrifuge system but that the compound is not sufficiently stable for diffusion separations. The trichloride is considered to be the most volatile plutonium compound, with possible application in a calutron separation process. It was concluded that the separation would be difficult but that one promising approach based on rates would be through solvent extraction cycles with the nitrate. These observations are highly preliminary.

Physical Chemistry

Several current investigations are directed towards a fundamental understanding of solvent extraction systems. One is concerned with the degree of bonding between TBP and various organic diluents. In a TBP-diluent solution that is saturated with water, the solvent and water molecules are competing with each other for bonding to the TBP. It follows that a higher water solubility is indicative of a weaker TBP-diluent bond. Of the three diluents studied, a long, straight

chain hydrocarbon, one of the principal constituents of Amsco, yielded the highest water solubility; a long, straight chain bromide that is polar but exhibits no hydrogen bonding had slightly less water solubility; chloroform, which is polar and exerts strong hydrogen bonding, had appreciably less water solubility. A parallel approach directed toward the same objective invqlves determination of the partial molal volume of TBP in various diluents. In this study it was found that the total volume of the solution was equal to the sum of the volumes of the components. This observation indicates that the extent of bonding between the TBP and the various diluents is relatively small.

Another line of physical chemical research involves the study of the interfacial tension at a water-organic interface in the presence and in the absence of various additives. The results are summarized as follows:

Phases	Additives	Interfacial Tension (dynes/cm)
Water-Amsco	None	45
Water-TBP in Amsco	UNH	17.6
Water-TBP in Amsco	HNO_3	11.5
Water-TBP in Amsco	None	10.5

Critical examination of all the data shows that TBP reduces the interfacial tension and that the extent of reduction is very closely related to the quantity of free, uncomplexed TBP available in the system. This suggests that the ease of dispersion in TBP extraction systems is related through interfacial tension effects to the quantity of uranium and/or nitric acid in the organic phase, and thus to the extent to which equilibrium is established.

Waste Treatment

Resin column adsorption is being investigated for application to the decontamination of several process waste solutions. One case involves clean up of the condensate obtained during self-boiling of highly active solutions in the Purex waste tanks. A simulated solution consisting of extremely dilute metal waste was passed through an anion resin exchange column to yield a beta decontamination of 2-3. Subsequent treatment in a cation exchange resin effected a beta decontamination of greater than 100-fold and reduced the effluent to background activity. The promising results dictate further studies of the column capacity and regeneration.

An attempt to provide additional decontamination for Metal Recovery product when processing green feed solutions involved treatment with a cation exchange resin. Somewhat unpromising results were obtained when an RCU solution containing a trace of dissolver solution was treated in this manner; Cs and Sr activities broke through quite readily.

There is some concern regarding plutonium contamination in the HCP distillate

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obtained during concentration step that yields Purex IAF solution. A synthetic solution of the distillate, containing added plutonium, was treated in a cation resin exchange column. Promising results were obtained in that plutonium in the effluent was below background level.

Several scavenging studies have been made in an attempt to find simple treatments for reducing the activity of RAW streams to cribbing levels. Since cesium is the principal activity not separable as the hydroxide, various reagents known to react with the alkalis were investigated. Ammonium perchlorate and ammonium calcium phosphate were ineffective; however, promising results are being obtained with sodium cobaltinitrite.

Fission Product Studies

Fission product studies are currently being directed towards an elucidation of the involved chemistry of ruthenium. One phase of the work concerns the stability of Ru(IV)-Cl ion species. Of the various such species that do exist in aqueous solution, $RuCl^{+3}$ and either $RuCl_5^{-1}$ or $RuCl_6^{-2}$ are most stable.

Parallel investigations with the Ru(III)-OH ions have shown the ruthenium to be soluble at higher acidities and to precipitate at lower acidities.

Analytical Separations

A rather extensive problem in the field of analytical separations involves an attempt to determine with increased sensitivity and accuracy the concentration of impurity elements in uranium. Of particular concern are those elements which may have a bearing on metallurgical properties or neutron economy. One approach to this problem is that of extracting uranium from the sample and leaving the impurity elements in an aqueous phase in suitable form for spectrographic decontamination. Tests with essentially all metallic elements in the periodic table show that only Sc, Y, La, and rare earths are extractable to any significant extent by TBP solutions. The next phase of the work will involve a study of the separation of these elements from uranium solutions; synthetic solutions will be employed containing the various elements in the concentration range corresponding to the respective detection limits.

A unique separations technique under investigation is that of scavenging impurity elements from an organic solution by co-precipitation with ice crystals formed in situ. In preliminary experiments a uranium-containing hexone solution that was saturated with water was treated with radioactive cesium to give a solution containing 12,000 c/m/ml. The temperature was then lowered to freeze water from the solution, and the ice crystals were removed by centrifuging. A decontamination factor of 10-15 was obtained in a single treatment.

Instrumentation

X-ray photometric techniques have proven to be very satisfactory in routine

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laboratory practice for the determination of heavy metals. In-line applications of the technique have appeared less promising because of the size and cost of the instrument required for each application. An attempt to eliminate these difficulties is that of gamma ray absorption employing a compact gamma source and a gamma scintillation counter. Studies with a synthetic Recuplex product employing the 0.6 Mev gamma radiation from 0.5 ug of Am-241 indicated that the technique is feasible and that plutonium in the range of 10-200 g/l could be determined with a precision of ± 2, when employing a 10 mg Am source.

Other developments in the field of radiochemical instrumentation include design of a continuous alpha counter that is potentially available for direct application in process streams; establishment of typical gamma spectrometer scans for all Redox and Metal Recovery streams to provide later references when studying off-standard conditions; and determination of the abundance of the 0.14 Mev gamma radiation from Ce-Pm-144. This abundance was found to be about 25%.

On two separate occasions in the past yttrium has proven to be the offender in raising the activity of UO_3 product above specification limits. A radiochemical technique developed to determine this fission product was previously developed and reported. Although the method is reliable, it cannot supply immediate results because it depends on decay rate measurements. A more rapid chemical determination was developed and made available for control laboratory application.

Spectrochemistry

Further work on the previously reported procedure for the determination of dibutylphosphate in RCU streams has been very encouraging, and a tentative method has been developed and is being employed in connection with process studies. The procedure involves treatment of the sample with zirconium nitrate, contacting with carbon tetrachloride to form an emulsion and measurement of the disengaging time which proves to be a function of the DBP content of the sample. The method is applicable in the range 0-30 ppm with a precision of about ± 1. Relatively minor interferences result from the presence of phosphate and monobutyl phosphate.

An appreciable quantity of data has been collected in an attempt to define and interpret the theory involved in the carrier concentration technique for the spectrographic excitation of samples. The technique involves combination of the powdered sample with some carrier which aids in carrying the refractory elements into the high temperature zone of the arc. Since selection of the carrier employed for various purposes is empirical, data have been collected under a variety of conditions involving six different carriers at two different concentrations, 10 different impurity elements, and two different excitation temperatures. No correlations are readily apparent from the mass of data so collected. Steps are now under way to obtain a critical examination by use of the IBM machine.

Further tests have been made in an attempt to apply direct photometric absorption measurements to the determination of uranium in Metal Recovery feed and waste

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streams. Iron, nickel, and chromium nitrate provide no interference. However, moderately large variations in phosphate and total nitrate concentrations interfere to some extent.

Investigation has started on two interesting applications of infrared absorption to solid materials. In one case the atomic bonds and bonding energies in uranium peroxide and various uranium oxides are being determined with the expectation of relating the structure of UO_3 to the reactivity as determined by the procedure established at Oak Ridge. In a second case the inclusions recovered from uranium metal are being examined in an attempt to provide an identification.

Electrochemistry

Initial tests with a Sargent Oscillometer indicate that dielectric constant measurements may be employed to good advantage in determining 20-40% TBP concentrations in organic streams. The technique is relatively simple and quite sensitive.

Mass Spectroscopy

Operation of the research mass spectrometer was brought to a highly satisfactory state and currently allows determination of U-235 in natural uranium with a precision of ± 0.001% absolute. As a result, analyses were carried out on samples selected at fixed radial distances in an irradiated uranium slug. The outer surface yielded a U-235 content of 0.670, and the center yielded 0.686%. When compared with a concentration of 0.71 in normal uranium, these data provide a measure of the U-235 burn-out.

It was reported last month that analyses of atmosphere from the C Pile allowed a calculation which indicated that approximately one pound of graphite per day was reacted and lost to the pile through gas escape. Following a shutdown period during which time the carbon dioxide in the pile was nearly completely replaced by air, analyses were resumed. After establishment of a steady state, the CO content reached the same level as previously, thus verifying the former results.

A detailed mass spectrometer operating manual was prepared to provide maintenance and troubleshooting assistance to control laboratory operators.

A document, HW-27344, was issued during the month describing the feasibility of applying in-line techniques to P-10 analyses, and describing the procedure and modifications necessary to employ them.

METALLURGY

Fabrication

The shaped rolls which are to be used for fabricating cast uranium ingots were received from the manufacturer. The driving shank on one of the rolls was slightly

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oversize and is being machined to fit the rolling mill.

Cold-worked uranium specimens having a high degree of preferred orientation are being canned for autoclave testing to determine what the effect of autoclave temperatures will be on similar samples which are being prepared for in-pile testing.

Bonding Studies

The properties of the mechanical bond formed by cold pressing aluminum into an etched uranium surface indicate that this bond has adequate strength and heat transfer characteristics for jacketing fuel elements. Studies are in progress to determine the effect of anodic etching variables involved in the preparation of the uranium surface and to determine the diffusion rates of uranium into aluminum at elevated temperatures.

Electroplated coatings of copper-tin, zinc-tin, copper-lead-zinc, and iron-lead on uranium were prepared during the report period. Two iron-plated wafers have been pressed into an aluminum can and subsequently heated to 400 C for two and a half hours to determine whether or not diffusion occurs under these conditions. Metallographic examination of these specimens is in progress.

Alloy Studies

The electrical resistivity of cylindrical specimens of uranium chromium alloys has been determined. The data obtained to date does not indicate any marked change in electrical resistivity with varying chromium content.

Single Crystal Studies

A method for preparing replicas of uranium surfaces for examination by electron microscopic techniques has been developed. The method consists of pressing a polished wafer of high purity aluminum on the surface of uranium, anodizing the aluminum surface after its removal and dissolving the aluminum metal from the oxide film. Replicas prepared on unirradiated uranium samples using this technique have been examined by optical and electron microscopic methods and all evidence indicates that this replica technique gives a faithful reproduction of the original uranium surface. Electron microscopy has several obvious merits for the examination of irradiated uranium. The high resolving power of the electron microscope will aid in establishing the true nature of fission damage and the examination technique should not require extensive shielding and remote control apparatus.

Radiometallurgical Facilities

All of the working cells for Building 327 were received and installed in the 272-E Building. Preliminary radiographic testing of the (3) intermediate level cells is complete with two being acceptable. The two voids which were observed in the third cell will be further evaluated by film techniques to determine the

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amount of repair necessary to reach the original shielding specifications.

The equipment which was designed to selectively remove the can wall jacket and the Al-Si layer from irradiated slugs was installed in the 222-S multicurie cell. After experiments with an unirradiated 4" slug and 8" slug, one 4" normally discharged, irradiated slug was successfully stripped without incident. A final report is in progress.

The slug profilometer or surface surveyor has been designed and estimates for its construction received. This equipment has been designed to measure any diameter along the length of a slug or cylinder and also any surface irregularities on this selected specimen. This equipment will be used in cell #1 in 327 Building to permit a numerical evaluation of the length and diameter changes resulting from irradiation and subsequent thermal testing of these selected specimens.

Attempts to remove side wall sections of irradiated slugs by means of a punch were unsuccessful and a report was issued as document HW-27484 concerning the possible change in the ductility or hardness of the compound layer which results from irradiation.

Radiometallurgical Examinations

A transverse sample was obtained from an irradiated (alpha rolled, triple dip process) slug which had an exposure of 383 MWD/T. The uranium microstructure was observed to be similar to that observed in unirradiated uranium except for the large amount of twinning lines present.

A cursory examination of rupture #250 which failed in tube 2179-C was conducted in the slug examination cave in 111-B Building. This failure was the first of the group IX material to fail by a split instead of by a side blowout. The split occurred along the side, near the bottom of the slug, in such a way as to reflect upon the quality of the uranium. A preliminary report of this investigation has been issued as document HW-27392.

A wafer which was cut from a gamma extruded, triple dip process, irradiated slug after an exposure of 750 MWD/T was polished and examined. The microstructure was indefinite and resembled samples of alpha-rolled, triple dip process irradiated uranium after high exposure. Near the center of the wafer, some grain boundaries could be identified but a large amount of twinning was also observed.

A number of process tube sections from the 105-F Pile were examined to determine the extent of the removal of the 72-S cladding layer. An undocumented report was issued to C. W. Botsford covering this brief examination.

Portions of two horizontal shim rods which failed in service were examined to determine the cause of failure. The possibility of a corrosion effect was observed to be more critical than the possibility of radiation damage, and these observations were reported to J. M. Roberts by document HW-27032.

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The reported (HW-26274, "Technical Activities Report - Pile Coolant Effects") increase in corrosion rate of aluminum samples as a result of radiation damage was questioned after the samples were metallographically examined at the request of S. Goldsmith. Previous temperature data had indicated that the specimens had not become heated to more than 85 C but the hardness data and microscopic observations indicated that the samples in the highest flux had recrystallized; a phenomena which usually indicates temperatures in excess of 200 C. This investigation will continue, in cooperation with Pile Technology, to evaluate this effect.

Tensile Properties of Plutonium

A billet of cast δ stabilized plutonium alloy with 1 wt % gallium was cold rolled to break up the cast structure and then annealed at 350 C for 70 hours. This specimen was then reduced 90% in area by cold rolling. The resulting square rod, 0.116" on a side, was divided into four pieces, two of which were annealed at 350 C for 48 hours. Average values for the yield point, tensile strength, % elongation over 1.0" gauge length, and % reduction in area at the fracture of the annealed specimens were 8900 psi, 15,800 psi, 28%, and 62.5%, respectively. The strain was measured across the grips rather than over a standard gauge length on the specimen itself. The Modulus of Elasticity calculated from a plot of unit strain versus ram travel is 500,000 psi which is considered to be low by a factor of 2 - 15.

A plutonium wire, 0.090" in diameter, was extruded from a billet of cast 1 wt % gallium plutonium alloy 0.375" diameter at 250 C and 117,000 psi. The ram travel was 0.1 in/sec. Values obtained for the tensile strength, % elongation, 1.0" gauge length, and % reduction in area at room temperature for unannealed extruded wire were 27,500 psi, 9.4% and 32.4%, respectively. Values for the tensile strength, % elongation, 1" gauge length, and % reduction in area for wire annealed at 350 C for 48 hours were 12,300 psi, 25% and 76%, respectively.

Plutonium Metallurgy Facilities

Preparation of the metallographic hoods for plutonium work is nearly completed. Hood 13 has been leak-tested and is ready for service. Hoods 14 and 15 are being leak-tested at the present time. Equipment testing will soon be underway.

A lucite work surface is being installed in the Tukon Hood. The remote focusing controls for the microscope have been installed and operate satisfactorily.

Special slip-cast magnesia crucibles of low porosity have been ordered from Norton and Company for the thermal analysis apparatus. Since these crucibles have a thin wall, heat capacity and heat transfer effects are minimized. The furnace for thermal analysis has been assembled and some heating runs have been made. Parts of the apparatus have been rebuilt, and now the entire assembly is nearly ready for testing.

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The Machining Hood has been delivered to the laboratory, and the lathe has been installed in it. The lucite panels, air locks, glove ports, and ventilation system are yet to be installed.

Modification of the vacuum system of the High Vacuum melting furnace is nearing completion. Since replacement bell jars have been received, hood sealing may now be started.

Metal Fabrication Process Studies

X-ray diffraction techniques are being employed to investigate "off-standard" plutonium (IV) fluoride produced in the plant during the hydrofluorination of ignited plutonium (IV) oxalate. These studies should provide information concerning fluoride purities, crystalline modifications, and particle size distribution. In addition, an attempt will be made to correlate metal reduction data with the diffraction data.

Freon-12 is under study as a replacement for HF in 234-5 operations. Twenty grams of plutonium as a plutonium (IV) oxalate slurry was dried in a stream of Freon-12 for 1-1/2 hours at 225 C, and then converted to PuF_3 by increasing the temperature to 400 C for 35 minutes. The product was reduced to a well shaped plutonium button by 33% excess calcium and a calcium-iodine booster with 1 mole iodine per mole of plutonium. The metal yield was 97% based on PuF_3 weight.

Another possible way to eliminate HF is the use of carbon tetrachloride vapor. Ten grams of plutonium as a plutonium (IV) oxalate slurry was dried in a stream of argon saturated with carbon tetrachloride vapor for 2 hours at 200 C, and then converted to $PuCl_3$ by increasing the temperature to 400-450 C for three hours. This compound was reduced to plutonium metal by 33% excess calcium and a calcium-iodine booster with 1 mole iodine per mole of plutonium. The plutonium button was well shaped, and the metal yield was 94-95% based on $PuCl_3$ weight.

The electrolytic reduction of plutonium halides to plutonium metal from molten salt baths is being investigated. Cerium halides are being used at present for plutonium "stand-ins". The first electrolytic run was carried out in a stabilized zirconia crucible containing an eutectic mixture of 20 mol % CeF_3 and 80 mol % LiF. The anode and cathode were protected by a blanket of argon during cell operation and were fabricated out of graphite and molybdenum, respectively. A two hour electrolysis run was carried out at 750 to 800 C using an electrode potential of 4.5 volts and a cell current of 7.5 amperes. Eight grams of cerium metal were recovered representing a current efficiency of 30%.

Laboratory work has been initiated to develop aqueous precipitation conditions for the preparation of a plutonium fluoride salt suitable for reduction to the metal by the stationary bomb technique. Plutonium trifluoride and tetrafluoride precipitated from aqueous solution are found to be very difficult to filter, and cake badly when air dried. When plutonium (IV) fluoride is precipitated in the

presence of ammonium ion, the solid, presumed to be a double salt, is easily filtered. The air-dried double salt appears caked, but can be easily crumbled to a fine powder. Plutonium (III) fluoride precipitated in the presence or absence of ammonium ion is difficult to filter and yields a hard cake upon drying.

Hanford Structural Materials

A proposed specification for the use of a new oxalic etch test for screening stainless steel from the Huey test was recommended. This recommendation was based on the findings of a trip to E. I. du Pont de Nemours, which is presently using it in screening stainless steel. In order to inaugurate the test, a training program was set up to acquaint several of the personnel from the Inspection and Material Unit in the details of the new test.

In the proposed ruthenium decontamination treatment of the first cycle uranium stream from the plutonium separation processes, there is the possibility that the process vessels and associated lines will be seriously attacked by hydrogen sulfide and/or the other sulfur compounds which are to be used in the treatment. In order to obtain corrosion data in this connection, a study is being made of the corrosion rates of four stainless steels in various simulated process solutions. After 240 hours exposure, no measurable attack has occurred under three different test conditions.

The corrosion study of bearing material in 100% UNH solutions from the metal conversion process showed that Purebon #9 and Graphitor #2 are unsatisfactory under the conditions of the test. Indications from a limited number of short duration tests are that Corning Glass #7280, Corning Glass #7740, titanium and boron carbide should be satisfactory as bearings, at least from a corrosion standpoint.

Laboratory tests were undertaken to duplicate the corrosion rates which are observed in concentration of UNH solution preceding UO_3 production. This corrosion is causing the uranium oxide to be high in chromium, iron and nickel. The initial study has investigated the possibility of concentration cell effects which could develop between the various solutions used in the process. Preliminary indications are that such effects could be the cause of the high impurity pick-up of the oxide.

Weld deposits from several different heat of type 308L stainless steel welding electrodes were made. Indications are that the weld craters are not as severely attacked as in the case of columbium stabilized grades, that the carbon content of the electrodes can be as high as 0.04% carbon without any loss of corrosion resistance of the deposits, and that the chromium of the electrode must be on the high side if corrosion resistance deposits are to be produced.

A study was undertaken to determine the most suitable method for joining tubes to tube sheets in heat exchange equipment. This program is directly applicable

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to present maintenance replacement work which is being done at Hanford as well as new exchangers for the Purex process. Specimens are now being prepared to determine the mechanical properties of different joint-designs which will be made by welding, rolling and combination of both.

INVENTIONS

All Applied Research Sub-Section personnel engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and believe, no inventions or discoveries were made in the course of their work during March, 1953 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
Meinhard, J. E.	Decontamination of Organic Solutions with Ice Crystals
Upson, U. L.	Multiport Valve
Wilson, A. S.	Silver as a Catalyst for the $KMnO_4$ Oxidation of Ruthenium

Signed: F. W. Albaugh

F. W. Albaugh, Manager
APPLIED RESEARCH SUB-SECTION

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TECHNICAL SERVICES UNIT

MARCH 1953

VISITORS & BUSINESS TRIPS

No trips were made by members of this Unit during the month.

Off-site visitors sponsored by this Unit during the month were as follows:

A.R. Farmakes of the Argonne National Laboratory visited Laboratory Equipment Development March 23 - 27. The purpose of his visit was to inspect and discuss facilities for the remote handling of plutonium.

On March 2 - 3, J.R. Wiesler and J.E. Bradley from the Mounds Laboratory, Miamisburg, Ohio, visited Laboratory Equipment Development to review remote handling devices and techniques.

ORGANIZATION & PERSONNEL

Personnel totals for this Unit are summarized as follows:

	February	March
Technical Information	86	-
Laboratory Engineering	60	61
Analytical Services	-	43
Administration	3	3
Unit totals	149	107

Effective March 1, the Technical Information Sub-Unit transferred to the Engineering Administration Sub-Section.

Effective March 1, the functions and personnel of Analytical Services of the Applied Research Unit was transferred to this Unit.

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LABORATORY ENGINEERING SERVICES

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

Work volume statistics for the Mechanical Shops are as follows:

	Customer Unit or Program	February No. of Jobs	February Man-Hours	March No. of Jobs	March Man-Hours
Work Done on Jobs Completed	Applied Research	33	892	33	701
	Pile Technology	36	635	46	1077
	Separations Technology	7	77	9	190
	Technical Services	13	181	8	197
	Others	21	98	25	274
	Sub-Totals	109	1883	121	2439
Work Done on Jobs Not Completed	Applied Research	9	390	6	224
	Pile Technology	16	526	18	367
	Separations Technology	5	423	2	209
	Technical Services	5	386	5	354
	Others	5	206	8	111
	Sub-Totals	40	1931	39	1365
Total Work Done			3814		3704
Work Backlog					Man-Hours To Complete
Jobs Started	Applied Research	9	1026	6	810
	Pile Technology	16	664	18	605
	Separations Technology	5	259	2	379
	Technical Services	4	485	5	491
	Others	5	523	8	385
	Sub-Totals	39	2957	39	2670
Jobs Not Started	Applied Research	1	481	12	366
	Pile Technology	4	468	23	554
	Separations Technology	1	34	0	0
	Technical Services	2	42	3	68
	Others	3	44	3	100
	Sub-Totals	43	1809	41	1348
Total Backlog			4766		4018
These figures include:					
Cross-orders		5	271	3	187
Outside Vendors		1	341	1	341
Total Net Backlog			4154		3531

The net backlog of 3,531 man-hours requires approximately 18 man-days to complete.

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The following work was completed for the Technical Units:

Applied Research

An X-ray film holder, a Unicam base and support, a holder for an X-ray collimator, several shielding blocks, and a mold for vulcanizing neoprene corner channels were fabricated for the plutonium metallurgy group. All of these units will be used in a new installation in the 200-West Area.

A drive unit for a pulse generator and a saw tooth pulse mechanism were fabricated for Chemical Research and will be used in pulse column studies.

Fabrication of many small items required for startup of the Radiometallurgy Building, plus the completion of the first Hanford Slave Manipulator for the subject building required 184 man-hours of machine shop time.

The Exponential Pile welding program was resumed upon receipt of the loaded can tubes from the 300 Area.

Pile Technology

Eight cans were modified for use as standards for can penetration studies on the non-destructive testing program. They were machined with annular rings and round holes at predetermined locations on the inside of the .035" process can wall. Special cutters were required and close tolerances were maintained to prevent complete penetration of the can wall. An eddy-current balancing unit and an eddy-current detector support unit were also fabricated.

Two devices for rapid machining of graphite thermal conductivity samples were developed and constructed. These units will machine the specimens to the required dimensions and within required tolerances at a single pass. Machining of each individual sample on a lathe has become obsolete through use of these machines, and considerable cost savings will result. Moreover, the samples may now be prepared in quantity by laboratory personnel in accordance with testing program schedules. One of the devices will be used to machine samples of .425" OD, and the other for samples of .250" OD. A third device is being fabricated to machine the ends and overall length of these samples. Sample diameters must be held with .002" and sample lengths within .032".

A revised carriage for the scanning mechanism and crystal holders for the ultrasonic inspection of canned slugs was fabricated and installed in the previously reported ultransonic testing tank.

A washer seal for a vertical safety rod and a typical rod section were fabricated for testing a new design.

Other completed jobs were, eight gamma irradiation tubes, a modified thermalconductivity apparatus, a sample holder for an X-Ray gonimeter, a vertical rod rack, a chamber for rupture tests, and a roll storage rack.

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Separations Technology

Fabrication of the basic UO_3 calciner and fluidizer and associated equipment was completed. Additional equipment for this unit fabricated during the month included two special pipe assemblies, three tanks, two commutator adaptors for the screw type conveyor, and revisions to the turbine.

A mold for butt welding ½" Teflon rod into an "O" ring shape was designed and fabricated for the Separations Technology Mechanical Development Group.

Technical Services

Fabrication of various pieces of equipment for research and development studies required 231 man-hours of shop assistance.

Others

A track and base unit for the revised falling drop apparatus to be used in the 222-S Building was completed. Work on additional parts for the reversing mechanism of the Hanford slave manipulators for the Radiometallurgy Building continued.

Special painting services rendered included the application of the G.E. cocoon to the insides of several hoods and centrifuge bowls in the 222-S Building and the application of D-1000 to two hoods in the 222 Laboratory, 200-East Area.

Glass Shop

Work volume statistics for the Glass Shop are summarized as follows:

	February	March
New Jobs	78	103
Revisions	13	21
Repairs	17	11
Total	108	135

Of this total, 19 jobs required quartz or vycor fabrication. The shop is currently operating with a backlog for glasswork and is able to provide immediate service on all fabrication except quartz or vycor.

Curtailment of operations in the 108 Building, 100-F made it necessary that the glassblower previously assigned full-time to this location be moved to the 300 Area main Glass Shop for three days each week. This schedule is to be continued until further notice.

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Equipment Development

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

	February			March		
	Eng.	Misc.	Drafting	Eng.	Misc.	Drafting
Pile Technology						
Pile Materials	-	-	27	-	-	80
Pile Engineering	12	5	208	22	22	213
Pile Fuels	76	49	185	51	35	159
Separations Technology						
Chemical Development	100	84	59	74	62	78
234-5	48	45	229	-	-	-
Applied Research						
Analytical Research	57	83	120	28	26	9
Chemical Research	243	167	186	210	104	200
Metallurgy	537	115	275	321	135	293
Manufacturing						
Analytical Control	104	203	31	112	159	22
Technical Services						
RDS #TC-1	839	305	21	945	329	152
Engineering	408	232	315	317	248	159
Tech. General	-	-	-	-	-	179
Totals	2424	1288	1656	2080	1120	1544

Principal development activities are indicated below:

Pile Fuels

A chart drive recorder mechanism was designed for recording eddy-current signals from a slug testing device. A design of a slug can holding device was altered.

Chemical Development

A remote serum bottle cap remover was designed, and several "brickpile" alterations were made.

Chemical Research

A heavy shipping cask for liquids was redesigned. The sampling condenser for the collection of vapor from a Redox waste storage tank was followed through fabrication and testing. Shielding calculations and the layout of shielding and structural framework for the experimental irradiation facility were completed.

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Metallurgy

One Hanford slave manipulator was fully revised and tested for use. The fabrication of the remote electropolishing machine was completed, and the device was very successful in operating tests made at Building 1707-D. A control panel for this device is under development. Design and fabrication of the X-ray shielding and controls for the double crystal X-ray machine were completed. The preliminary design of a high speed sampler of hot slug jackets was completed and shop drawings were started.

Design of the corrosion test bonnet assembly for use in Redox waste tanks was completed. A die for pressing 2-S aluminum was designed.

Analytical Control

Several equipment modifications were made.

RDS TC-1

Remote handling tools developed during March included: A remote airclamp bottle holder, a vacuum-release pipetter, a remote sealed liquid disconnector (an invention) which is positively drop-proof and can be remotely flushed-back from the broken coupling to reduce radiation, a vacuum pickup tong for handling smooth objects up to four pounds, a remote hydraulic knife, a remote sealer for liquid-filled plastic tubing, a remote manipulator for glass ball-joint clamps, and an operating test model of a downdraft "brickpile" and table.

The detection chambers of the continuous airborne alpha monitor were revised to provide integral counting standards. If successful, the detector performance can be tested at any time by turning a lever. This alteration was found necessary as a result of roughly three weeks routine operation of the air monitor in Building 3706. At the end of this period the chambers became inoperative due to a deposit formed on the counter-wire, showing the need for a routine calibration test at about two-week intervals. This difficulty was never experienced in Redox laboratory operations.

Preliminary investigations have been made for a detection chamber to be used with the continuous recording monitor, which can detect airborne beta emitters in the presence of a relatively high gamma field. A scintillation counter employing a liquid phosphor in a cylindrical shell is being prepared for test.

The in-line liquid alpha sampler for Purex and Redox waste streams, developed as a bread-board operating model, by Equipment Development has been turned over to the Design Section - Process Engineering to be developed into an industrial-type instrument.

New Laboratory Planning

Mechanical Development Building - Project C-406

This building is approximately 50% complete and is scheduled to be complete June 13, 1953. No material difficulties have been reported which could affect building completion on or before this date. The interior structural steel

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is essentially erected and the construction effort is now directed toward erection of interior wall and flooring panels.

Radiochemistry Building - Project C-381

This building is approximately 83% complete with beneficial occupancy scheduled for this fall. Although the work has gone slowly, the three types of work which have shown the most progress this month are the partitions, laboratory piping, and exhaust ductwork. The oxychloride cement floor in the toilet and locker rooms has been completed and the glass wall panels are being installed.

Radiometallurgy Building - Project C-385

This building is approximately 95% complete. The Commission has granted the contractor an official extension of time on his contract from November 8, 1952 to April 18, 1953. The building is now in its final stage of completion with the acceptance of separate systems and components being rapidly made. The Intermediate and High Level Cells have been tested to insure adequate shielding efficiency. Only one Intermediate Level Cell will require further study as it is apparent from the initial tests that a slight amount of porosity is present in the base plate of this cell. It will be necessary to "film" this plate before final disposition can be made. All other phases of work associated with this building are proceeding with a view toward occupying the building on or before May 15, 1953.

Outside Facilities and Utilities - Project C-394

This project is approximately 97.6% complete. The Neutralization Building is almost ready for testing. Paving was laid on the roads around Radiometallurgy and near the 340 Building. The east end of the parking lot is being levelled. During the month some of the walkways in the west end of the parking lot were paved.

Pile Research and Development Building - Project C-414

This building is approximately 83% complete and is being estimated by the Commission to be complete by June 1, 1953. Delays in heating and ventilation work are suppressing other craft work and for this reason the Commission has requested the contractor to increase this craft within the building.

Laboratory Supply Building

The Stores Unit at month's end was determining the internal arrangement for this building. The present plan is to renovate the northeast wing of 3706 to accommodate this facility using minor Construction forces.

Solvent Storage Building - Project CA-441

The project proposal at month's end was being circulated for the necessary signatures prior to submission to the A & B Committee.

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Building Services

Building 3706

	February	March
Purchase Requisitions		
Total number processed	68	95
Number requiring emergency	0	0
Work Orders Processed	67	67
Miscellaneous Services		
Stores Stock request	1	1
Office Furniture requests	2	6
Office Machines sent in for repair	8	10
Precious Metal transactions	16	13
Trips to 200-W for disposal of contaminated waste	8	8
Special Messenger trips	38	44
Standards Laboratory		
Number of standards solutions prepared	39	29
Stock solutions dispensed	76	71
Calibrations Laboratory		
Number of calibrations performed	68	51
Number of calibrated glassware dispensed	29	17
Number of checked glassware dispensed	101	37
Photographic Services		
Number of work requests	23	43
Number of negatives	115	201
Number of prints	348	930
Number of slides	29	67
Color Photos	8	7

The first shipment of rental instruments, on the "Assistance to Hanford" program, were received from the General Engineering Laboratory in Schenectady.

All customers were requested to inventory their stock of precious metals to uncover any "unaccounted for" items.

ANALYTICAL LABORATORIES

The Analytical Laboratory in support of Research and Development continued the routine analyses of the Purex column runs. The results of an investigation to determine low-level radioruthenium in TBP-hydrocarbon diluent type solutions of uranium were reported. The results indicate that the direct reduction method and a modified reduction method are suitable for use in determining low-level ruthenium activities as it exists in the TBP-hydrocarbon diluent type uranium solutions. Each

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week samples of RAF and RCJ are analyzed to determine the profile of individual fission products. The plant is still using 5½ - 6 yr. old material so the distribution is the same as it was at start-up with Y^{90}, Sr^{90} and Cs^{137} being the main activities present. In support of waste treatment and process scouting problems, individual fission product analyses were made. This work required the use of a gamma ray energy spectrometer during off-shift hours. "Bluenose" analytical work continued on a routine basis.

The emission spectroscopy laboratory completed all AEC scrap uranium analyses. P-10 slug samples were received for impurity analyses. Routine work continued to be normal for 300 Area Metal Preparation process samples.

The Special Analytical Laboratory continued to render analytical service to a wide variety of problems. A number of samples composed of "minute inclusions" separated from uranium slugs were analyzed for C, H, N, Cu and U to assist the investigators in identifying these particles. Powder samples produced from the irradiation of BF_3 gas in quartz tubes with and without contact with an aluminum coupon were successfully analyzed for B, F, Al, Li, etc. A sedimentation method was used to classify UO_3 particles passing 325 mesh (44 micron) sieve. While the results were generally satisfactory there is some question concerning hydration of the particles during this operation and an investigation is under way to find a more suitable suspending medium. The present medium is 1:1 mixture of glycerine and water. A program was undertaken to assist in determining the amount of gas which may be outgassed from uranium slugs and the composition of the gas. A number of miscellaneous uranium alloy samples were analyzed for the alloying metal and impurities. Many organic samples were successfully analyzed by combustion methods. Corrosion products, film samples, soil samples and many other miscellaneous samples were analyzed to assist the many interested parties in more successfully completing their jobs.

The Water Quality Laboratory continued to support the programs of Water Plant Development and Pile Coolant Effects. In addition a series of analyses of water from fish spawning tanks were completed for Aquatic Biology.

The Mass Spectrometer Laboratory continued gas and isotopic analyses in support of the various Pile and Radiological Science programs. It was found necessary to install a new filament and replace two vacuum pumps in one of the mass spectrometers. Primary work is underway in preparation for anticipated analyses on the dissolved gas contained in P-13 cooling water. Tetradecafluoromethylcyclohexane and hexadecafluoroheptane were run in the G.E. instrument to check for resolution and sensitivity from mass 200 to mass 300. The results were very good and indicate that UF_6 could be analyzed for uranium isotopes. The resolution between He^4 and D_2, and between CO and N_2 was checked. It was found that He^4 and D_2 will give two distinct peaks and that CO and N_2 cannot be resolved on the instrument.

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Work volume statistics for the Analytical Laboratories are as follows:

	February		March	
	No. of Samples	No. of Det'ns.	No. of Samples	No. of Det'ns.
Research and Development				
Applied Research Unit	1701	3017	1767	3093
Pile Technology Unit	617	2767	387	3542
Sep. Technology Unit	997	1570	608	1008
Technical Service Unit	0	0	0	0
Process Control	771	6240	781	4828
Others	39	514	397	1814
Total	4125	14108	3940	14285

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(s)	Title(s)
John F. Gifford Richard E. Field	Remote Sealed Liquid Disconnect

Signed J.W. Underwood

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MONTHLY REPORT
DESIGN SECTION

VISITORS AND BUSINESS TRIPS

R. B. Clendenning, Bristol Company, Waterbury, Connecticut, visited Hanford February 25 through March 13 for inspection and repair of instrumentation for 105-C.

Robert L. Tower, Tower Equipment Co., Seattle, Washington, visited Hanford March 5 to inspect a faulty alarm system provided by Panascan Inc.

E. B. Bohlmann and E. C. Miller, Oak Ridge National Laboratory, Oak Ridge, Tennessee, visited Hanford March 9-11 for metallurgical consultation.

Chas. K. Shanks, Pacific Scientific Co., Portland, Oregon, visited Hanford March 12 for examination of space and facilities available for installation of gas analysis equipment in the 105-C Building.

J. H. Barnwell and D. F. Klimas, General Electric Company, Schenectady, New York, visited Hanford March 30-31 and March 19-25, respectively, to discuss the Electromagnetic Ball Conveyor Prototype.

J. R. Farmakes, Argonne National Laboratory, Chicago, Illinois, visited Richland March 24 to discuss high-density concrete.

E. S. Day, Jr. visited Pacific Scientific Co., Portland, Oregon, February 26-28 for inspection of 105-C gas analysis equipment.

A. J. McCrocklin visited Puget Sound Naval Shipyard, Bremerton, Washington, March 1-2 to review design of canning machine; General Electric Co., Schenectady, New York, March 8-20 to assist with AC Network Analyzer study of 100-K electrical system; and Ajax Engineering Corporation, Trenton, New Jersey, March 17 to review furnace drawings.

M. H. Russ attended a convention of the American Society of Civil Engineers, San Francisco, California, March 2-6.

R. K. Bollinger visited Panellit, Incorporated, Chicago, Illinois, to discuss temperature monitor equipment; and attended a G.E. Radiation Instrument Meeting at Argonne National Laboratory, Chicago, Illinois, March 3-6.

E. Hollister visited Puget Sound Naval Shipyard, Bremerton, Washington, March 3 and March 20 to inspect canning machine fabrication; and Ajax Engineering Co., Trenton, New Jersey, March 12 for discussion and approval of induction furnace drawings.

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G. M. Roy visited Consolidated Vultee Aircraft Corp., Ft. Worth, Texas, March 4-5 for a Reactor Safeguard Committee Meeting.

J. H. Snyder visited General Electric Company, Schenectady, New York, March 7-12 to discuss pump specifications.

E. P. Peabody visited General Electric Co., Schenectady, New York, March 8-15 to assist with AC Network Analyzer Study of 100-K Electrical System.

W. J. Love and C. A. Pursel visited Washington State College, Pullman, Washington, March 9 to evaluate hydrodynamics of revised downcomer and approach section design.

H. S. Davis visited Puget Sound Naval Shipyard, Bremerton, Washington, March 9 for a technical discussion on crate fabrication; and Boundry, Washington, and Montello, Nevada, March 10-13 to verify limonite sources.

B. R. Elder visited The Aluminum Company of America, Lafayette, Indiana, and New Kensington, Pennsylvania, March 10-13 to discuss fabrication of process tubes; and American Society for Metals, Los Angeles, California, March 23-27 to review zirconium and titanium technology.

H. J. Bellarts visited Washington State College, Pullman, Washington, March 16 for consultation on downcomer.

G. L. Locke and W. J. Love visited Bingham Pump Co., Portland, Oregon; Peerless Pump Co., Los Angeles, California; and Byron-Jackson Pump Co., Los Angeles, California, March 23-27 to select a manufacturer for development of a new waste metal recovery pump.

G. L. Locke visited Stanford University, Palo Alto, California, March 23-27 to obtain information on new mechanical design methods.

J. M. Fox, Jr., attended a convention of the American Society for Metals, Los Angeles, California, March 23-27.

W. L. Pearl attended the American Chemical Society Convention in Los Angeles, California, March 16-19. He visited the following places in Seattle, Washington, to contact water treatment experts and vendors of water treatment chemicals and equipment: Permutit Co. and Wallace & Tiernan Co. on March 9, and Proportioneers, Inc. March 20. He visited the following places in California for the same reason: University of California, Berkeley; Oliver United Filters, Inc., Oakland; Shell Chemical Corp. and Hardinge Co., Inc., San Francisco; and Flox Co., Inc., Alameda, March 10-13; U. S. Regional Salinity Laboratory, Riverside; University of California, Los Angeles; Metropolitan Water District of Southern California, LaVerne; California Electric Power Co., Higrove; Dorr Co. and National Aluminate Corp., Los Angeles, March 16-19.

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ORGANIZATION AND PERSONNEL

Personnel Statistics:

	February 28			March 31		
	Exempt	Non-Exempt	Total	Exempt	Non-Exempt	Total
Design Management	4	2	6	3	2	5
Process Engineering Sub-Section	58	14	72	59	14	73
Design Planning Unit	15	13	28	15	12	27
Design Engineering Sub-Section	85	10	95	84	12	96
Total Section Personnel	162	39	201	161	40	201
Technical Graduates (Rotational)	-	12	12	-	9	9
TOTAL	162	51	213	161	49	210
Personnel on loan to Design Section			5			3

Accessions = 5
Separations = 8

J. L. Boyd was appointed Head - Design Planning Unit on March 1, 1953, vice W. J. Dowis who assumed the position of Electrical Engineer, Design Section. Also effective this date, the Process Engineering and Design Engineering Units were changed to Sub-Section status.

GENERAL

Design Section engineering effort for March was distributed approximately as follows:

	Man Months Expended	% of Total
1952 Expansion Program	106.1*	65.2
Research and Development	25.9	15.7
Other Projects & Design Orders	31.3	19.1
	163.3	100.0

DESIGN DEVELOPMENT

Statistics:

The total number of engineering man months expended on research and development during March was distributed as follows:

		Man Months Expended	% of Total
RDS-10	Reactor Design Development	1.6	6.2
RDS-11	Water Plant Design Development	2.2	8.5
RDS-12	Separations Design Development	3.8	14.7
RDS-13	Mechanical Design Development	13.4	51.7
RDS-14	Utilities & Services Design Development	2.1	8.1
RDS-15	Engineering Standards and Materials Development	2.8	10.8
		25.9	100.0

* Equivalent man months expended reflects amount of overtime on Expansion Program.

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The preparation of Research and Development Program Proposals for Fiscal Year 1954 and 1955 was completed during the month.

RDS-D-11 - Water Plant Design Development

A definite well drilling program for exploration of groundwater resources was formulated. An outline of the program and drilling specifications was transmitted to the AEC as a basis for the negotiation of a well drilling contract.

Study of protective coatings for steel retention basins and effluent lines is continuing. Inspection of sample coatings placed in the 100-H Area retention basin revealed that, after 65 days of exposure, only seven out of 23 coatings could effectively withstand further testing. Only one of 20 samples placed in the 100-H flow laboratory was in first class condition after 32 days immersion time. Eight samples had failed, and 11 other samples appeared as if they would fail in the near future.

RDS-D-12 - Separations Design Development

Work continued on the preparation of scope information on the portion of design to be performed by the Vitro Corporation on Redox Capacity Increase, Phase II. Emphasis was placed on jumper and equipment arrangement sketches for the revised canyon facilities.

Development Committee review and agreement on the scope of the aluminum nitrate back-cycling proposal was completed. This proposal was included in the revised C-187-D project and approved by the Design Committee. Savings will result from reduced aluminum nitrate and caustic soda consumption, and corresponding reduction in waste volumes required for permanent storage. These savings will pay for the revisions in less than three months under the minimum saving conditions.

Further study of back-cycling under Phase II conditions was made. Considerable savings are indicated by alternative proposals which involve maximum back-cycling and the "precycle" flowsheet which result in the greatest possible reductions in raw materials and waste volumes.

A final report by the Development Committee on the final processing steps for plutonium was completed and issued. This report, approved by the Design Committee, supported the current proposals for construction of the new PR Building in the Phase II Redox proposal, construction of a new Task I and Recuplex in 234-5 Building, and, on the basis of anticipated capacity increases, additions and revisions to Task II and III in the 234-5 processes.

Shielding calculations were made for design of the Purex canyon wall gallery. Review of line sizing continued to assure "debottlenecking" at rates 50% above the nominal design rate.

RDS-D-13 - Mechanical Design Development

Detail design continued on the prototype fuel element canning machine for the Metal Preparation process and is approximately 93% complete, an advance of 3% during the month. Of 101 drawings to be prepared for the canning machine, 96 have been completed and 91 approved. The supplier's induction furnace design details were checked and approved, and fabrication is proceeding. Installation of the prototype complete for cold operation is scheduled for June 1, 1953.

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Tests were continued on a solvent-extraction column interface indicator which was designed in the laboratory. Arrangements were made with the Technical Section to set up a test on pilot plant process equipment in the 321 Building.

Two separate designs for modifications to the Nagle pumps used in the Metal Recovery process were prepared for use in contacting prospective pump vendors. These sketches are being expanded into scope drawings. The sludge pump is being modified to permit the motor and shear coupling to be mounted on top of the tank with extended telescoping shaft and housing.

The electro-magnetic ball conveyor, which is being studied as a return mechanism for the Ball Third Safety System, was assembled in 189-D Building and preliminary tests were started.

RDS-D-15 - Engineering Standards and Materials Development

Cost plus estimated commitments to date for development of engineering standards is $65,830.

The HW Standards Committee approved the following standards, revisions to standards and design guide during March:

HW-4798-S	Specification for Forming, Placing, Finishing and Curing Portland Cement Concrete, Revision 1
HW-4799-S	Specification for Batching and Delivery of Concrete, Revision 1
HW-4870-S	Specification for Lubricants
HW-4924-S	Specification for Welding Stainless Steels
HW-5309-S	Specification for Marking Stainless Steels
DG-104-M	Design Guide for Stainless Steels

The progress on standards and materials development work for March is as follows:

a. Work on four Standard Welding Specifications was advanced 10% during the month to 95% complete.

b. Development of a new standard to color-code stainless steel was completed, an advance of 20% during the month.

c. An extended test of the feasibility of substituting nitrogen for argon as a purging gas in stainless steel welding has started, and the preparation of weld samples was advanced 25% during the month to 100% complete. Laboratory work was started on the samples with final results expected in May.

DESIGN PROJECTS:

Statistics:

Design effort on projects by the Section for the month of March was expended in the following categories:

		Man Months Expended	% of Total
CA-512-R	100-K Reactor	75.5*	55.0
CA-512-W	100-K Water Plant	8.2	6.0
CA-513	Purex Separations Facility	19.5	14.1
CA-514	300 Area Expansion	2.9	2.1
Major Projects - Other than Expansion Program		16.8	12.2
Minor Projects and Design Orders		14.5	10.6
		137.4	100.0

*Equivalent man months expended reflects amount of overtime.

CA-512-R - 100-K Reactors

Design progress on Project CA-512-R, 100-K Reactor Facilities, was advanced 8% during March to 74.8% completion. One hundred and fifty-six drawings were approved during the month bringing the total to 1,232 drawings which have been approved.

Expenditures to date for design scope and detail design are approximately $1,211,800 against an authorized amount of $2,781,500. At the present level of activity, expenditures are in the order of $130,000 per month.

Six hundred and eighteen requisitions have been issued to date by the Design Section for procurement of engineered items for the 105-KW and 105-KE facilities. The total value of this equipment is approximately $13,475,000.

Tests of the neutron absorption of vertical safety rods filled with boron carbide-graphite compound indicate that they are 96% as effective as rods containing all the boron in the outer periphery. The satisfactory high control together with the simplicity and low cost of construction justify the acceptance of this new design.

A revised graphite coring pattern was developed, based on symmetrical distribution of power. Earlier asymmetrical distribution has been overcome by revised horizontal rod design and improved operating technique, thus allowing the revision in pattern to take advantage of the improved process technology.

Study of the continuous temperature monitor system has resulted in the decision to acquire two twelve-point systems for in-pile testing and laboratory testing. The in-pile system will be used to gain operating experience while the laboratory system will be used to obtain statistical data and for destructive testing.

The downcomer arrangement drawings were reworked and checked before submission to the Project Committee. Major changes included a simplified orifice plate, lightened approach section and strengthened overflow lines.

Investigation of the feasibility of a water activity monitoring system to survey the rear face for the location of process tubes containing high fission product activity was continued. Recent progress in gamma-type water activity monitoring devices was also followed. Both studies are related to application of sampling taps on individual process tube nozzles for water monitoring purposes.

Tests on transition joint mock-up for the biological shield system were completed and revealed that the joint designed is adequate and leakproof.

A motion picture record of the construction progress for the 100-K Area expansion is in progress. Approximately 3200 feet of 16mm film has been exposed and filming is scheduled for two days per week.

The Design Committee approved the principle of discharging the effluent water directly to the river during shutdown discharge operations. The scope configuration of inlet and outlet water connectors was changed from a spiral spacial arrangement (pigtail) to a C-type arrangement, permitting easier construction and maintenance.

CA-512-W - 100-K Water Plant

A conference on the secondary process water pump drive requirements was held in Schenectady and was attended by engineers from Chas. T. Main, Inc., General Electric Motor Design and Sales at Schenectady and General Electric Company, Hanford Works. The design criteria established that the motors and liquid rheostats will remain in accordance with the original specifications. Other items will be designed to meet the requirements as established in the document "Secondary Pump Modifications", (HW-27251).

Work continued on the scoping and preliminary design of a caustic soda system for pH correction subsequent to the filtering process. Studies continued on a system for the removal of sludge from the clearwells.

The Design Committee approved the increase in the size of the by-pass process sewer line from the "K" Reactors from 24 inches to 36 inches. This increase is necessary to handle the flow of discharge water during shutdown discharge operation. The change in scope of the electrical system from phase comparison relays to directional comparison relays to conform to the system used in the other areas was also approved.

Assistance was given in the study which was made of the stability of the 100-K emergency generator system on the a-c network analyzer at Schenectady.

CA-513 - Purex Facility

Responsibility for management of design for Project CA-513-C, UO_3 Plant Expansion, was transferred to Project Section on March 2, 1953, at the essential completion of design scoping. Design of this facility is approximately 60% complete, an advance of 35% during the month. Design was stopped at the end of the month pending the resolution of difficulties in obtaining the calcination furnaces.

Detail design of the Purex Outside Facilities was continued and is approximately 64% complete. The AEC approved five detail drawings and one specification, and five detail drawings and one specification were issued for comment. The study of four alternate proposals to handle and store coal needed to meet the boiler demands was completed, and a report was issued.

Detail design of the Purex Waste Facilities continued and is approximately 9% complete. Preliminary studies were made on the waste storage tanks, diversion boxes, and cooling water facilities and storage tank. Drawings have been started on these items.

Scope and design criteria revisions approved by the Design Committee include the changing of the 202-A Building Service Area construction from poured concrete to frangible type construction. The packing of the IIA pulse column was changed from perforated plates to dumped Raschig rings and the 1T and 2T columns were replaced by centrifuges. The ion exchange bed treatment of process condensate prior to cribbing was also eliminated. A design basis for remodeling the 272-E Building to serve as an Interchangeability and Jigging Building for the Purex Plant was also approved.

CA-514 - 300 Area Expansion

Technical management of architect-engineer services in the design of Project CA-514, 300 Area Expansion, was transferred to the Project Section on March 16, 1953. Design scope is still in progress and is approximately 95% complete, an advance of 19% during the month. Basic design guides for the utilities systems, administration building and badge house, and design criteria for the process equipment and alterations to the 313 Building were approved by the Design Committee. Detail design for the 313 Building process equipment was started at the middle of the month and is approximately 3% complete.

CG-431-B - 100-C Area Production Facilities

Special effort was made during the month to expedite delivery of the gas analysis system.

CA-535 - Redox Capacity Increase, Phase II

Responsibility for technical direction of architect-engineer services for Project CA-535, Redox Capacity Increase, Phase II, was transferred to the Project Section at the essential completion of design scoping for this project. The design of eight columns is ready for approval while the over-all design for the silo portion of the expansion being performed by the Design Section is approximately 60% complete. Detail design for the balance of Phase II Redox Expansion is being performed by the Vitro Corporation.

CA-539 - Redox 241-SX Tank Farm

Design work was delayed three weeks due to the change in diversion box design which was necessary to provide for separate fill lines for each tank. Provision is being made to allow for the addition of three tanks to the present 15 tank design. Tank design capacity was increased to 1,000,000 gallons based on the same tank dome design as in the past and increasing the depth approximately nine feet. Four drawings were issued for comment during the month. A revised drawing schedule is being prepared for issue.

D.O. 100329 - New 2101 Fabrication and Storage Facility

Checking of drawings and specifications submitted by the architect-engineer continued through the month. Approval of drawings for the switchgear was withheld pending receipt of more complete data from the manufacturer.

D.O. 100362 - Underground Waste Line Between "S" Area and "U" Area - 200-W

Plans and specifications were advanced 20% during the month to approximately 30% complete and were issued for comment.

D.O. 100402 - Repair of 105-D Reactor Effluent Line

Final design on the pipe line, pipe line supports, and basin distribution was advanced 5% during March to 82% complete, and drawings were issued for comment.

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D.O. 100438 - Personnel Meter Gate House Facility Improvement

Work on the final design of alterations to the personnel meter gate houses was advanced 5% during the month to 80% complete, and drawings and rough draft specifications were issued for comment.

D.O. 100458 - Aquatic Biology Laboratory

Design work on the piping at the outside ponds was completed, and three drawings were issued for approval.

D.O. 100461 - Alterations to Building 713

Preliminary design was advanced 60% during the month to 100% complete.

D.O. 100476 - Positive Ion Accelerator Laboratory

Final design of this building was started and is approximately 12% complete.

D.O. 100483 - Two Phase Flow Equipment

Design work was started on the design of a cosine curve heating tube. Six drawings will be required.

D.O. 100498 - Jumpers for Redox Expansion, Phase I

Design was started on four jumpers needed in connection with Redox Expansion, Phase I, and advanced to approximately 50% complete.

D.O. 100500 - Combined Civil Defense and Plant Disaster Mobile Control Center

Preliminary design for the conversion of two trucks into facilities suitable for use as a combined civil defense and plant disaster mobile control center and as a service unit was started and is approximately 30% complete.

D.O. 100503 - Moisture Detection System for Location of Leaking Process Tubes - 100 Areas

Work was started on several design approaches to the problem of detecting moisture in the rear face gas sampling lines at the request of the Manufacturing Department.

D.O. 100507 - Effluent Water Junction Box Vent - 100-D

Design was started and advanced to approximately 70% complete with drawings forwarded for approval.

D.O. 100510 - Redox Capacity Increase, Phase I

Work was started on design of six jumpers and the modification of a 1A spare column which is for Redox Capacity Increase, Phase I. Design was advanced to approximately 65% complete.

D.O. 100511 - Biophysics Laboratory

Design was started on the revision of gas supply systems and existing vacuum pump. One of four drawings was completed and forwarded for approval.

D.O. 100513 - UNH Stripper

Mechanical Design work was started at the end of the month on UNH stripping facilities for the 224-U Building.

DESIGN SECTION WORK IN THE CLOSING STAGES OR COMPLETED DURING MARCH

D.O. 100346 - Auxiliary Civil Defense Control Center
D.O. 100474 - Dock and Partition 300 Area Library and Files Building
*D.O. 100497 - Revise Monorails 105-C Metal Examination Facility

*Design Section Work Completed During March.

INACTIVE PROJECTS

No active design work was performed during the month on the following assignments:

D.O. 100355 - Extension of Flagler Avenue and 720 Building Site Parking Lot
D.O. 100444 - Fuel Element Pilot Plant

INVENTIONS

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

NONE

R K Beaton

MANAGER, DESIGN

DESIGN SECTION WORK STATUS

PROCESS ENGINEERING UNIT
ENGINEERING MAN MONTHS *

Description	Backlog Start Of Month	Orders Received During Month	Time Spent During Month	% of Total Effort	Backlog End of Month	Apr.	May	June	July	Aug.	Sep.	Balance
CA-512-R	483.5		29.8	53.5	453.7	30	30	30	22	18	14	309.7
CA-512-W	43.0		3.9	7.0	39.1	2	2	2	1	1	1	30.1
CA-513	31.7		2.2	3.9	29.5	2	1	1	1	1	1	22.5
CA-514	34.1		0.9	1.7	33.2	2	2	2	1	1	1	24.2
RDS Program - FY 1953	103.0		15.5	27.8	87.5	20	23	23				21.5
RDS - Anticipated FY 1954 Design Orders	14.0	3.0	3.4	6.1	13.6	2	2	2	33 2	38 2	42 2	1.6
TOTALS	709.3	3.0	55.7	100.0	656.6	58	60	60	60	61	61	409.6

DESIGN ENGINEERING UNIT
ENGINEERING MAN MONTHS *

CA-512-R	227.3		30.0	37.3	197.3	23	22	20	20	18	15	79.3
CA-512-W	50.2		3.4	4.2	46.8	4	4	3	3	3	3	26.8
CA-513	131.8		15.7	19.7	116.1	16	16	16	14	12	10	32.1
CA-514	60.8		2.0	2.5	58.8	5	5	4	4	3	2	35.8
RDS Program - FY 1953	48.0		4.1	5.1	43.9	9	10	13				13.9
RDS - Anticipated FY 1954 Major Projects - Other	79.4	21.0	14.5	18.0	85.9	15	15	15	13 15	17 12	20 12	1.9
Minor Projects and Design Orders	69.5	8.0	10.6	13.2	66.9	9	9	10	12	12	12	2.9
Available for Anticipated Future Work										3	7	
TOTALS	667.0	29.0	80.3	100.0	615.7	81	81	81	81	80	81	192.7

Present Total Backlog is distributed over the five engineering branches in terms of man months as follows:

	Authorized Projects	Anticipated Future Work	Total
Architectural & Civil	117.0	36.0	153.0
Mechanical	187.0	58.0	245.0
Electrical	148.0	46.0	194.0
Instrument	123.0	38.0	161.0
Standards	40.7	14.0	54.7
TOTALS	615.7	192.0	807.7

*Exclusive of technical graduates and people on loan from other sections.

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MONTHLY NARRATIVE REPORT - MARCH 1953

PROJECT SECTION

I. SUMMARY

A. ORGANIZATION AND PERSONNEL

Effective March 1, 1953, the Project Section was reorganized into four Sub-Sections and one Unit which report to the Manager, Projects. Major changes were the combining of Minor Construction Management and Project Engineering Units into Minor Projects Sub-Section, and a similar combination of Inspection, Drafting and Estimating into a Sub-Section. The Project Control Unit was established, and material control functions were consolidated. Distribution of the 493 people on the payroll at the beginning of March was: Management, 2; Inspection, Drafting, and Estimating Sub-Section, 250; Minor Projects Sub-Section, 117; Reactor Projects Sub-Section, 64; Separations Projects Sub-Section, 27; Project Control Unit, 33. There were also seven Technical Graduates - Rotational assigned to the Project Section.

Following is a summary of personnel data for the Project Section covering March, 1953:

	March 1, 1953	March 31, 1953	Net Change
Employees on Payroll	493*	510	+17
Technical Graduates-Rotational	6	7	+ 1

The end-of-month status involved these changes:

	Project Sectional Personnel	Tech. Grad. - Rotational
Payroll Additions	11	1
Payroll Removals	5	
Transfers into Section	11	
Transfers from Section	0	
Transfers within Section	26	

* Increased by one over February total through transfers which were effective March 1, 1953.

B. SCOPE OF ACTIVITIES

At the end of the month, construction completion status of major projects was as follows: CA-431-A, 100-C Waterworks, 99.8%; CA-431-B, 100-C Reactor, 99.8%; CA-438, Ball Third Safety System, overall, 83%, 105-F, 105-B, 105-D completed and 105-DR, 95% completed; CG-483, Downcomer Repairs, overall, 90%, 105-F, 105-B, 105-D completed and 105-DR essentially completed; CA-506, Repairs to 100 Areas Retention Basins, overall, 69%, 107-F, 107-B, 107-D, completed and 107-DR, 99% completed; CA-512, 100-K Area Facilities, - Water Plants, KW, 8.57%, KE, 4.64%, - Reactor Buildings, 105-KW, 3.80%, 105-KE, 1.60%; CA-513, Part "C", Purex Prototype, 60%.

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C. MATERIAL PROCUREMENT

Considerable time was devoted to inspection of materials and equipment being procured for Redox, TBP, and other projects, as well as the Expansion Program. The sludge removal pumps (Nagle) being used on CA-362 have been studied and changed. Three of the six pumps on orders have been modified and delivered. A new source (Byron-Jackson) of sludge pumps has been developed and an order placed. Arrangements have been made to select corrosion coupons as a better means of controlling incoming orders. An Oxalic Acid Screening method has been instituted to allow rapid approval of materials and eliminate some of the expensive Nitric Acid Corrosion Tests. There has been a marked increase in types and quantities of spare parts materials being ordered, for examples, inlet and outlet nozzles, gun barrels, lug rings, pumps, remote-control connectors, and vessels.

D. CRAFT LABOR

Resignations of members of the Davis Panel were accepted by the President on March 2, 1953. A special panel appointed by the F.M.C.S. was sent to Hanford Works to hear on March 28 the dispute between machinists and millwrights. The panel is preparing a recommendation for settlement. Three work stoppages occurred during the month, the most serious of which involved picketing by machinists on March 4, and which was referred to the special panel as noted above. On March 19, the second work stoppage was caused when 17 plumbers terminated in protest against the assignment of work of loading excess materials. Most of the men re-appeared the following day as replacements from the union. The third stoppage was a one-day action by 300 carpenters employed by Kaiser Engineers. The exact cause was not stated, although it was believed to be their failure to obtain wage demands. Negotiations by Kaiser Engineers with technical engineers and office workers are proceeding slowly.

E. SAFETY AND SECURITY

There were eight regular meetings for discussion of safety, security, and health topics; and they were attended by about 370 personnel. Other meetings held were: Monday "Tool Box" meetings for contractor personnel - 4, Foreman's meeting - 2, Oreientation for new employees - 1, Special Hazards meetings - 1.

F. HIGHLIGHTS OF UNIT ACTIVITIES

Inspection, Drafting and Estimating Sub-Section was organized to provide services implied in the title as well as Reproduction, Field Surveys, and Material Control. The Inspection and Materials Unit completed inspection on 21 orders, assigned 250 orders to inspectors, and transmitted 215 requisitions for the Expansion Program. Drafting production was 342 new drawings and 173 revisions. The drafting room average was 5.6 man-days per drawing. During March, Reproduction output was 811,753 square feet, which is higher than the best previous record established in October, 1950, (742,685 sq.ft.). The March production total was more than 220,000 square feet better than February. This new production record was established with limited overtime as compared to a scheduled six-day week in October, 1950. The Estimating Unit completed 45 estimates, including six project proposals. Field Surveys completed additional monumentation at the Purex site and completed the coal inventory in seven areas.

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F. HIGHLIGHTS OF UNIT ACTIVITIES - (Cont'd.)

Minor Projects Sub-Section worked on 69 project items and three informal requests, totaling $22,197,300. Completed work consisted of six projects, and six engineering requests. The Sub-Section accepted and began work on one project and five engineering requests. Five project proposals were transmitted to sponsors. Five project proposals and two informal requests were approved by the A&B Committee. Eight authorizations were granted by the A.E.C. Important projects now in progress include the Ball 3X Program, Pile and Pile Water Plant Improvements, Downcomer Repairs, Recuplex Installation, Repairs to the 100 Areas Retention Basins, 300 Area Expansion Program, and Fuel Element Pilot Plant. Work was generally delayed by the three work stoppages during the month.

Reactor Projects Sub-Section: Interior structural steel for CA-406, Mechanical Development Building, was substantially complete, and the interior partitions have been received. In 100-C Area, work was limited to listing and reviewing incomplete items. For CA-512, 100-K Area, progress consisted largely of:

KW Water Area, placing of reinforcing steel and concrete,
KE Water Area, rough excavation and minor concrete pours,
105-KW, placing of structural concrete, which is now about 30% complete,
105-KE, placing of structural concrete, which is now about 17% complete.

Construction of the 2101 Building, 200-E Area, progressed 15% to a total of 50%. Procurement difficulties are delaying work seriously. In the 101 Building, Hanford, tool design progressed by 20% to a total of 70% complete. Other work progressed in the White Bluffs instrument shop, in the 105 Tube Shop, and on rehabilitation of machine tools in the 101 Building.

Separations Projects Sub-Section was delegated the responsibility to provide Title III Architect-Engineer services for the Purex Facility, CA-513. Scope for CA-513, was complete. Overall design was 21.8% complete. Construction completion of CA-513-B, 224-U Building Expansion, was scheduled for July, 1953. Design of CA-513-C, Purex Prototype, was completed, and construction was 60% complete. The railroad contractor for Purex began moving in equipment on March 18. For CA-187-D, Redox Production, Revision IV to the project proposal was submitted to the A&B Committee on March 13. The revised project proposal has been forwarded to the A.E.C. A Work Authorization was received March 4 for CA-535, Redox Capacity Increase, Phase II. However, the main project proposal is still being reviewed by the A.E.C. in Washington.

Project Control Unit functioned as a Unit during the first month following reorganization. The Control group continued its routine functions of preparing Manpower and Construction Budgets, coding drawings and requisitions, and unitization of the 100-C project. The History group issued three histories, bringing the cumulative total to 86.

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G. MONTHLY REPORT OF INVENTIONS AND DISCOVERIES

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

Inventor	Subject	Invention Reported (Date)
C. F. Quackenbush	Reactor Cooling	March 27, 1953

J. S. McMahon, Manager - Projects

March 31, 1953

II. STATISTICAL AND GENERAL

A. Significant Assignments

1. Initial Reporting

CA-546 (ERA-3099), Fuel Element Pilot Plant

Scoping was 90% complete; neither detailed design nor construction has begun. The project proposal for this facility has been approved by the A&B Committee, and was submitted to the A.E.C. on March 9, 1953. The estimated total cost of this project was about $1,810,000.

ERA-746, Reactivation of P-10 Facilities - 108-B Building

Neither design nor construction has begun. The project proposal is being prepared for work necessary to reactivate the P-10 facilities. Present plans are to have the facilities placed on the third floor, and to remove the glass lines. The sponsor has requested that this work be completed for beneficial use by October 1, 1953. The sponsor is requesting an advance of funds to complete design, procurement and dismantling.

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ERA-747, Hot Semi-Works Conversion

Preliminary scoping has begun for the conversion of the Hot Semi-Works for Purex Pilot Plant work. Current plans are to revise Project CA-513, 200 Area Facilities Expansion, to include this proposed work.

ERA-1195, Two Phase Flow Equipment

Design was 5% complete; construction has not begun.

ERA-1203, Manipulator for Cave in 108-B Building

Neither design nor construction work has begun. The engineering request has been received, but only preliminary investigation has been done.

ERA-1204, Panellit Gauge Testing Facilities

Neither design nor construction has begun, but scoping is progressing. This project proposal is to be submitted by June 1, 1953. It is to include the installation of a high pressure and constant discharge pressure pump, toggle valves, and snubbers in each gauge line of the pressure monitoring systems in all existing 105 buildings. These installations will provide adequate testing facilities for accurate and quick calibration of all Panellit gauges. The project is estimated to cost $150,000. This item has been included in the fiscal year 1954 budget.

2. Final Reporting

CG-442, X-Ray Machine - 3745-A

All work has been completed and accepted. The x-ray unit is now operating satisfactorily after the latest adjustment by the High Voltage Engineering Corporation.

CG-454, Spectrometer Shielding

Work on this project was completed March 25, 1953 with the exception of "as-built" drawings. Revision #3 of the project proposal is being submitted requesting an extension of time to April 15, 1953, since this work was delayed for higher priority pile maintenance work.

CA-473, 100-B Automatic Dial Telephone Exchange

Completion status remained at design 100%, construction 0%. The revised project proposal was approved for the disposition of design funds expended, and the Physical Completion Notice for AEM services was issued on March 24, 1953.

CG-526, (DO 100325) Activated Silica-Alum Preparation Facilities, 183-D

This work was physically completed on March 2, 1953.

CG-540, Lime-Free Water Facilities for 105-D Flow Laboratory

Design had been completed previously; construction progressed 40% to completion. The work was accepted on March 25, 1953, and acceptance papers are being routed for project close-out.

CG-541 (ERE-482), Phase Comparison Relaying 230 KV Loop

Completion status remained at design 95%, construction 0%. The project was returned by the A&B Committee and will not be re-submitted, since additional information has been received. The directional comparison relaying is being retained and specified for the 230 KV extensions to the 100-K Area.

ERA-663, Pile Technology Test and Storage Building

Completion status remained at design 15%, construction 0%. Since this facility has been removed from the construction budget, the Pile Technology Sub-Section has discontinued the request.

ERA-732, Final Design Auxiliary Civil Defense and Plant Disaster Control Center

Design progressed 14% to a total of 95%. All final design work is being completed under Project CA-525, Auxiliary Combined Civil Defense and Plant Disaster Control Center.

ERA-1185, Car Puller and Car Shake-Out

The sponsor has requested that this request be closed out. The project proposal which was being approved, will be filed for reference.

ER-2720, Fire Protection Equipment, Building 234-5 Filter Rooms

With design completion status at 20%, the proposed work has been cancelled. This study was directed toward the use of CO_2 for fire protection. Other methods now seem more promising.

ER-2738, High Spot Estimates for RMA Line Improvements

Following the submittal of eight estimates during February 1953, no further work was done. The request was closed out during the month.

ER-6019, Review of 700 Area Steam Study

Design progressed 10% to completion. The work order for the preparation of the memorandum letter of February 26, 1953 was closed out on March 23, 1953.

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3. Current Projects

CA-192, Biology Laboratory 108-F

Completion status remained at design 98%, construction 88%. The bid opening for lump sum work for conversion of the train shed was held March 24, 1953. The low bid was $93,480. This portion of the work is being managed by the A.E.C. Material procurement is progressing for work to be performed by Minor Construction forces.

CA-431-A, New Reactor - 100-C Plant (Waterworks)

Completion status remained at design 100%, construction 99.8%. A list of incomplete items has been submitted for an estimate of the total cost involved.

CA-431-B, New Reactor - 100-C Plant (Reactor)

Completion status remained at design 100%, construction 99.8%. A review of punch list items and other incomplete work is being considered by the Estimating group.

CG-438, Ball Third Safety System

Design had been completed previously; construction progressed 14% to an over-all total of 83%. Major installation of the ball system on the 105-DR reactor was begun March 2 on a two-shift, six-day basis. Several difficulties arose which caused some delay in installation of hoppers. These difficulties were as follows: (a) all existing step-plug bolt holes in the top of the unit were mis-aligned. The hoppers were rotated, and all holes were redrilled and tapped, (b) "T" section interference at eleven hopper locations required that 1/2" be removed from one side of the lower hopper flange, (c) the vertical safety rod hole plugs tended to slip down the weep channel, thus ineffectively blocking the vertical safety rod channel. Also, mis-alignment of the second layer of graphite allowed sufficient clearance to pass balls. To correct these conditions, lead wool and additional vertical safety rod hole plugs were installed. Installation at 105-DR was 95% complete at the end of the month.

CG-482, Pile and Pile Water Plant Improvements

Design progressed 1% to completion; construction began and progressed to 5% complete. Flow tests performed with enlarged pigtail assemblies (procured for installation at 105-H) were very inconsistent and indicated a flow increase of 2% to 3%. Previous extrapolated increases were 4%. Since it was evident that immediate production gains would not be obtainable, pigtail modifications at 105-H have been cancelled. If future evaluations warrant, the pigtails can be replaced during scheduled shut-downs. The temperature monitoring system is being replaced because of the rapid deterioration of the existing thermocouple lead wires. The estimated total project cost is now $500,000.

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CG-483, Downcomer Repairs in 100-B, D, DR and H and Replacement in 100-F

Design had been completed previously; construction progressed 16% to a total of 90%. Downcomer repairs at 105-DR are scheduled for completion on or about April 4, 1953. SWP conditions permitted approximately one hour average man-day in the DR downcomers. A design change has been made for repair work at 105-H which is expected to reduce the amount of work. The baffle vent guides at each baffle have been changed from interior guides to exterior guides. This permits the use of the existing vent pipes without cutting them. The number of vent supports is being reduced as a result of fewer individual pipe pieces. Repairs to vents in the 105-H far side downcomer have been made previously. The only work required in that downcomer is minor repair and patch painting.

CG-506, Repairs to the 107 B, D, F, and DR Retention Basins

Design progressed 15% to completion; construction progressed 23% to a total of 69%. Repairs in the 107-DR basin were completed on March 31, 1953. Preliminary work was begun on March 23 in the 107-H basin. Excessive leakage rates in both sides of the basin made it impossible to drain either side by pumping. At present half of the west side is being sand-bagged in an effort to start repair work in the first three bays.

CA-512, 100-K Area Facilities

100KW and 100KE Water Plants

The over-all design of the water plants was 60% complete. Construction progress was as follows: KW progressed 2.10% to a total of 8.57%; KE progressed 1.68% to a total of 4.64%. The total excavation in the KW water area was 519,260 yds., and in KE water area 310,600 yds. Total concrete placed in the KW water area was 24,311 yds., and in KE water area 9,197 yds. On all the buildings in the KW area, and in 181-KE, work accomplished during the month consisted largely in the placement of reinforcing steel and concrete. In the remainder of the KE area, rough excavation has been in progress, and minor concrete pours have been completed.

105-KW and 105-KE Buildings

Over-all design was 75.5% complete. Construction progress was as follows: KW progressed 1.32% to a total of 3.80%; KE progressed 1.02% to a total of 1.60%. Approximately 30% of the entire structural concrete required for 105-KW is in place. The corresponding figure for 105-KE is 17% of which 80% was poured during the month of March. In 105-KW there have been placed 7,120 cu.yds. of concrete and 540 tons of structural and miscellaneous steel. The corresponding figures for 105-KE are 3,530 cu.yds. concrete and 271 tons of steel. Total cubic yards of excavation for backfill for 105-KW was 141,600 cu.yds., for 105-KE 51,000 cu.yds.

2101 Building, 200-E Area (A.E.C. administered)

Construction progressed 15% to a total of 50%. The construction contractor has several difficulties of procurement which need to be resolved. It seems certain that the May 1 completion date can not be met.

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101 Building, Hanford

Total accomplishment of 101 Building tool design was increased by 20% during the month bringing the accumulated total to 70%. Design of erection and inspection tools and devices was approximately 20% complete. Structural modifications of the White Bluffs Instrument Shops and the 105 Tube Shop were completed during the month. The rehabilitation of machine tools in the 101 Building was 50% complete.

(New 2101 Fabrication and Storage Facility - ERA-728)

Design completion status remained at 95%; construction progressed 30% to a total of 45%. The raw storage area was almost completed, and material shipments are expected at the site by early April 1953. The steel for the mock-up area has been erected. Other phases of the facility are progressing satisfactorily, although minor labor difficulties have caused some delay.

CA-513-A, Purex Facility

Over-all design was 21.8% complete, which includes design of the 282-E pump house. Design on the 181-B and D and the 182-B and D pump installation has been stopped until a new design criteria has been prepared and approved. Design of the 241-A waste disposal system has been initiated. The revised scope criteria for this facility has been prepared and forwarded to the Design Committee for approval.

CA-513-B, Uranium Oxide Conversion Facility

The over-all design, procurement, and construction has been scheduled for completion in July 1953. A new cost estimate is being prepared, and the project proposal is being revised. The A.E.C. has authorized use of the $120,000 originally allocated for design and procurement to include preliminary construction. Of the amount, about $20,000 remains for preliminary construction.

CA-513-C, Purex Prototype 321 Building

Design work was completed during the month; construction progressed 30% to a total of 60%. The construction contractor started clearing the TC area on March 13, and the railroad contractor started moving in equipment on March 18. The machinist strike from February 24 to March 6 seriously delayed the schedule of the Purex Prototype. The new schedule is based on an "essentially complete" date of June 1, 1953.

CA-514, 300 Area Expansion Program

Over-all scoping progressed 16% to a total of 88%; detailed design progressed 2% to a total of 7%. No construction has been done. On March 16, 1953 the responsibility for this project was transferred from the Design Section to the Project Section. Work is proceeding in accordance with the A.E.C. Work Authority #CA-514 (2) dated February 27, 1953. Progress on Project CA-514 was as follows, according to its various parts:-

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A. Process Facilities
Scoping 93%, detailed design 8%. The Architect-Engineer has estimated that information for a bid assembly on the design and erection of the building shell will be completed by April 3, 1953.

B. Acid and Caustic Facilities
Scope 90%. The design criteria for this work are awaiting final approval of the A.E.C.

C. Methanol Still
Scope 90%. Design criteria for this work are awaiting final approval of the A.E.C.

E. Decontamination Station
Scope was 80% complete.

F. Electrical Distribution
Scope 95%, detailed design 2%. The requests for purchase of material are prepared and ready for issuance when funds are made available by the A.E.C. Other work has been done on specification and procurement.

G. Railroad
Scope was 98% complete.

H. Process Sewer
Scope was completed, and detailed design was 55% complete.

J. Operations Change House
Both scope and detailed design were completed; construction progressed to 1% complete. The bid opening for lump sum construction was held March 25, 1953. The apparent low bid was about $134,000. The Notice to Proceed is scheduled for issuance in early April 1953.

K. Administration Building, Gate House, and Parking Lot
Scope was 91% complete. The design criteria for these items are being prepared.

L. Change House Renovations 3707 A and B
Scope was 75% complete. The design criteria are being prepared for the renovation of the 3707-A Building. Scope of renovation of 3707-B Building is awaiting decision on a combined area for oil, solvent, paint and janitorial storage building.

M. Oil, Paint, and Solvent Storage
Scope 75% complete. Scoping is awaiting decision on a combined 300 Area Solvent Storage Building.

N. Steam and Water Facilities
Scope was 93% complete. The design criteria for the installation of the new 12" water supply line from North Richland are being prepared. Detailed design of the steam line is to be performed by G.E.

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P. Hutment Removal and Expansion of the Coal Pile
Scope was 75% complete. Further work awaits decision on evacuating all of the hutments and of construction of a new facility for the graphite machining tests.

Q. Fire Alarm System
Scope has been completed. Design of the fire alarm system to include the 300 Area expansion structures is to be performed by G.E.

R. Telephone and Security Alarm
Scope had been completed. Consideration is being given to exchange equipment for 100 new lines in the 300 Area.

B. Other Assignments

CG-187-D, Redox Production Plant
Revision #4 to the project proposal was sent to the A&B Committee March 13. The approved revision is now being reviewed by the A.E.C. Drafting for the redesign of the agitator is almost complete. Procurement of pumps progressed to the stage of placing the order.

CG-361, Metal Conversion Facilities
The vapor handling system for the UO_3 facilities has proved faulty, and a serious shut-down resulted from the plug in the main fume vent header. It is believed that the "knock-out" pots to be installed in the fume vent lines will solve the problem. A work order request was issued by Manufacturing Department for installation of "knock-out" pots in the fume vent lines from each of the eighteen calcining kettles. The estimated cost was $13,700.

CA-362, Waste Metal Removal and Recovery Plant (TBP)

During March 1953 the major problem of the sludge removal pumps was attacked vigorously. Some new design features, increased shaft size where the impeller is connected and a new connection for supply of dry air to the motor casing, have been incorporated. A representative of the pump manufacturer (Nagle) attended a meeting at Hanford Works during which all troubles with Nagle pumps were reviewed. As a result of this meeting several items were changed on the six pumps now on order. A new source (Byron-Jackson) of sludge removal pumps was developed, and an order was placed with the manufacturer. Present indications are that these pumps will be less prone to mechanical failure, although they cost considerably more.

CA-406, Phase II, Mechanical Development Building
Design had been completed previously; construction progressed 13% to a total of 35%. The interior structural steel was substantially complete. All partition materials have been received. General Electric engineers are reviewing and commenting upon all vendors' drawings and are preparing to inspect the installation of the interior.

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CG-431-C, Metal Examination Facility 105-C

Design progressed 1% to a total of 11%; construction has not begun. The Work Authority dated March 20, 1953 has been received; it authorizes $375,000 for this project. Design criteria are being developed for the cleaning, "weaseling", slug-fracturing, packaging, and assorted items of handling equipment. A manipulator and gamma ray unit for slug surface photography is nearly completed. The prototype slug dolly is to be tested in early April 1953.

CA-434, New Bio-Assay Laboratory

Completion status remained at design 20%, construction 0%. The A.E.C. and G.E. have agreed that detailed final design will be performed by an Architect-Engineer.

CA-441, Solvent Building

Design completion status remained at 25%. The submittal of the project proposal has been delayed pending review of justification which has just been completed. The proposal is being submitted in early April.

CG-447, Portable Meteorological Mast

Completion status remained at design 99%, construction 97%. Equipment is being tested. All material and equipment is on hand with the exception of one specialized instrument. The project is being completed with this exception.

CA-455, Replace Two Elevated Water Tanks in 200-E Area

Completion status remained at design 90%, construction 0%. The contract for $12,000 has been awarded, and completion is scheduled for August 1, 1953.

CG-477, Building 284-W - Fifth Boiler Addition

Design had been completed previously, construction progressed 31% to a total of 88%. Contract modification #2, authorizing extension of completion date to May 25, 1953 has been approved by the A.E.C. The boiler pressure parts have been installed and have met the requirements of the A.S.M.E. Code. Acceptance test procedures have been approved. Drawings of modification to blow-down piping and 150# steam supply were submitted and approved.

CA-489, Neutron Monitoring Calibration Facilities

Design progressed 10% to a total of 20%; construction has not begun. Final detailed building design was started March 9, 1953. A bid on the 2MEV accelerator has been received from the High Voltage Engineering Corporation. Actual placing of the order has been temporarily delayed pending approval of funds by the A.E.C. in Washington.

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CG-495 (ERE-483), Outlet Tube Temperature Monitoring Thermocouples

Design progressed 12% to a total of 97%; construction progressed 17% to a total of 75%. Revision #2 of the project proposal to include the 100-DR reactor in the replacement program is awaiting action of A.E.C. However, a letter requesting advance approval was submitted to the A.E.C., and the work is now completed in the B, D and DR Areas.

CG-496, Recuplex Installation, 234-5 Building

Design progressed 8% to a total of 68%; construction has not begun. Revision of the project proposal was approved by the A&B Committee and the A.E.C. Review Board. Commission approval has been received to spend design funds for the scope, including shielding. A letter requesting additional design, pending approval of Revision #2 of the project proposal, was submitted to the A.E.C. during late March 1953. The possibility of cribbing process wastes has been studied with very favorable results. This disposition will allow substantial saving because of the elimination of the neutralization facility as well as avoiding the use of one of the present tanks in the TX tank farm.

CA-497, New Substation Fences and Grounding of Existing Fences

Design had been completed previously; construction progressed 18% to a total of 30%. Work progressed satisfactorily although somewhat behind schedule.

CA-500, Lubrication Pits, 1716-D and 1716-F Garages

Design had been completed previously, construction progressed 55% to a total of 65%. Progress was satisfactory.

CA-511, Completion of Minor Construction Fabricating Shops

Design progressed 10% to a total of 25%; construction began and progressed 2%. A work release has been issued for roofing, asbestos shakes, and the painting of certain buildings in the Minor Construction Shops Area. Design work is being scheduled as scoped in the project proposal.

CA-516, Gable-Butte Railroad

Design completion status was revised downward to 50% complete. The Manager of the Transportation Section has requested that the current project proposal be withdrawn and revised to include the following work only: (1) re-align the portion of the existing track as originally scoped, (2) rehabilitate the balance of existing Gable-Butte trackage. The parallel track has been eliminated and the project proposal is being prepared on the basis of the revised scope.

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CA-517, Fire Protection Buildings, 272 E and W

Completion status remained at design 30%, construction 0%. The submittal of a revised project proposal has been delayed pending completion of other high priority work.

CG-519, Replacement of 100-D Reactor Effluent Line

Design progressed 5% to a total of 95%; construction progressed 11% to a total of 22%. All design was completed except electrical work. The 60" steel pipe has been scheduled to arrive June 1, and the 60" valves are scheduled to arrive in September 1953. Procuring of steel plate for fabrication is progressing.

CG-520, (ERA-1182) P-13 Pressure Assembly Removal

Neither design nor construction has begun. A Work Authority was issued March 23, 1953, and a design request has been forwarded to the Design Section.

CA-525, Permanent Auxiliary Combined Civil Defense and Plant Disaster Control Center

Design progressed 11% to a total of 95%; construction has not begun. Comment prints and specifications are being reviewed.

CA-527 (ER-2718), Fire Protection - 200 East and West Spare Parts Warehouse

Completion status remained at design 100%, construction 99%. The work by plant forces on the installation of detectors was complete with the exception of final tie-ins to the area fire alarm loop.

CA-529, Personnel Meter Gatehouse Facility Improvements

Design progressed 30% to a total of 95%; construction has not begun. Completed detailed design and specifications are being reviewed.

CG-530, (ERA-3096) 314 Building Revision for Canning Development

Design had been completed previously, construction progressed 6% to a total of 60%. The canvas curtain has been installed and the overhead structure was vacuum cleaned. Work is progressing slowly due to lack of electrical materials; however, they are expected in time to meet completion commitments.

CG-533 (ERE-479) Hanford Works Official Telephone Exchange

With design completed, this project is still waiting approval by the A.E.C.

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CG-534 (ER-2732), Removal of Recovery Equipment, Rooms 221, 222, & 223, Bldg. 234-5

Completion status remained at design 95%, construction 0%. Funds for this work are indicated to come from the Recuplex budget item. A letter has been prepared to the A.E.C. requesting early approval so that construction may start.

CA-535, Redox Capacity Increase, Phase II

The Work Authorization for Part I was received March 4. The project proposal is being reviewed by the A.E.C. in Washington.

CG-536 (ERA-686), Painting High Tanks - 105-B and 105-F

Design progressed 35% to a total of 75%; construction has not begun. The specifications and field release have been issued. The painting is scheduled to be done between May 15 and September 1, 1953.

CG-538 (ER-2734), Install Underground Waste Line between "S" Area & "U" Area 200-W

Design progressed 30% to a total of 50%; construction has not begun. Expenditure of $90,000 for design and procurement was authorized during March. A construction project proposal requesting $500,000 has been submitted to the A&B Committee. Procurement of critical material is in advanced stage and design drawings and specifications for the lump sum portion are essentially complete. Present indications are that the entire job may be done by Minor Construction forces, since contamination has been noted in the area. Manpower requirements for the Minor Construction work are being reviewed.

CA-539, Additional Waste Storage for Redox

Detailed design was 38% complete. A Work Authorization for $20,000 for a portion of design was received March 23. It is expected that the directive will amount to four million dollars, but no Work Authority for purchase of critical materials and construction has been received.

CG-543 (ER-2733), Replace Sanitary Tile Field 200 West Administration Area

Completion status remained at design 35%, construction 0%. Consideration is being given to reducing the size of the tile field. The revised design was supplied by the sponsor.

CG-545 (ERA-724), Soil Science Laboratory Facilities

Completion status remained at design 22%, construction 0%. The A.E.C. has requested that all proposed outside work be deleted from the project scope. A Work Authority for $15,200 is being issued to complete the balance of the Laboratory work.

IR-116 (015), Combined Civil Defense and Plant Disaster Control Center

Design progressed 5% to a total of 20%; construction has not begun. Final design is progressing, and the project proposal is being prepared.

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IR-128, Remote Supervisory Control 100 Area Water Plants

Completion status remained at design 15%; construction 0%. The project proposal is being routed for signatures. The request for an extension of time to April 1, 1953 was granted.

IR-133, Water Quality Laboratory - Building 108-B

Both design and construction had been completed previously. Problems that have developed since acceptance on February 20, 1953 have made it necessary to delay close-out and to request an extension of time.

* * * * * * * * * * * * * * *

The following studies and Engineering Requests, involving preparatory work and scoping of future projects, were active during the month:

ERA-661, Central Distribution Headquarters

Design completion status remained at 25%. Consideration is being given to the possible usage of the existing 212-R Building if contamination can be satisfactorily removed.

ERA-725, Particle Problem Animal Exposure Equipment

Design completion status remained at 5%. Further work has been suspended pending receipt of firm scope data from the sponsor.

ERA-727, 313 Building Roof Repair or Replacement

Design completion status remained at 50%. No work was done during the month, but the sponsor has requested preparation of the project proposal.

ERA-730, Solvent Storage Building Rescoping

Design completion status remained at 25%. Preparation of the project proposal is continuing as outlined under CA-441, Solvent Building.

ERA-733, Asbestos Shakes - 100-B, D, and F Buildings

Design completion status remained at 50%. The project proposal is being reviewed by the A.E.C.

ERA-735, Graphite Hot Shop and Storage Building

Design progressed 2% to a total of 8%. The rough draft of the project proposal is being reviewed. The total estimated project cost was $93,000 for a concrete building which contains approximately 2,000 square feet of floor area.

1215726

ERA-736, Transportation Garage and Facilities - 2713-E

Design progressed 1% to a total of 5%. The rough draft of the project proposal is being reviewed. The total estimated project cost was $26,000.

ERA-741, Renovation of 3722-A, 3702, and 3703 Buildings

Design progressed 20% to a total of 50%. The project proposal for estimated cost of $22,000 is being routed for approval. It is scheduled for submittal to the A&B Committee at its first meeting in April 1953.

ERA-742, Remodeling First Aid Buildings 100-B, D, and F

Design began and progressed to 1%. Preliminary scope and justification review are in progress.

ERA-743, Installation of Coal Meters, 100-B, D, F, and H

Neither design nor construction work has begun. Further work is being delayed pending a decision from the sponsor regarding economic justification.

ERA-744, Installation of Steam Meters, 100-B, D, F and H

Design was 2% complete. Work is progressing toward establishing firm scope and justification data.

ERA-1188, Xenon Generator

Design completion status remained at 10%. With the aid of the Legal Department it has been determined that a project proposal is not necessary. A letter of request is being prepared.

ERA-1192, Vertical Rod Test Tower

Design completion status remained at 20%. The project proposal is now scheduled for submittal to the A&B Committee about April 15, 1953. Bids are being requested for alternate design with and without a personnel elevator. After receipt of bids, the project will be re-evaluated for construction at less than $100,000.

ERA-1193, Slug Rupture Detection Instrumentation

Design progressed 85% to a total of 95%. Scoping studies have been made to provide "order of magnitude" estimates of equipment and installation cost for the following ruptured slug detection instrumentation: (1) detailed neutron detector, (2) scintillating gamma-ray detection, (3) "C" reactor type beta system at B, D, F, DR and H. Pertinent information has been forwarded to the Estimating group.

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ERA-1197, X Level Cask Handling Facilities, 105-B, C, D, DR, F & H

The work order has been received, but no work has been performed.

ERA-1198, E Test Hole Facility, 105-B

The work order has been received, but no work has been performed.

ERA-1199, Heat Transfer Process Tube Mock-Up

The work order has been received, but no work has been performed.

ERA-1200, Heat Transfer Laboratory

The work order has been received, but no work has been performed.

ERA-1201, X Level Controlling and Recording Equipment

Neither design nor construction has begun. Scoping is proceeding to determine the most economical means of providing water services and drainage from the "X" levels and the most feasible arrangement of controls and instrumentation for recording test data.

ERA-3098, Cobalt 60 Source for Radiation Studies

The Technical Section is continuing development work.

ER-2723, Steel Handling System - 272-W

Design completion status remained at 20%. Work toward submittal of this request is being scheduled.

ER-2726, Adaption of 200-W Laundry Building to Branch File Use

Design completion status remained at 20%. Work has been suspended at the request of the sponsor.

ER-2727, 235 Building Laboratory Revisions

Design completion status remained at 20%. The project proposal has been submitted to the A&B Committee.

ER-2731, Activate Task I, RMA Line - Building 234-5

Design completion status remained at 15%. The project proposal is being routed for signatures. The total estimated cost on a "high spot" basis is $525,000.

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ER-2736, Replacement of Mixing Equipment Task III, RMA Line, 234-5 Building

Design completion status remained at 5%. Work has been suspended at the request of the sponsor.

ER-2737, Fiscal Year 1954 Water Tank Replacements

Design progressed 5% to a total of 15%. The rough draft of a study to determine the economic feasibility of using three elevated tanks now in Richland has been prepared. The report indicates that savings effected by use of these tanks are not sufficient to warrant their removal.

ER-2739, Redox Cooling Water Disposal Basin

Design progressed 3% to a total of 5%. Comparison estimates based on large crib-type seepage disposal pits for "S" and "U" facilities cooling water indicate a total cost of $162,000 for the "S" facility alone, $300,000 for the "S" and "U" facilities using a common crib, and $270,000 for the "S" and "U" facilities using separate cribs. The current plan is to include the disposal basin for the "S" facility as revision #5 to the Redox project proposal, and the basin for the "U" facility as a revision to the TBP project proposal.

ER-6020, Future Records Storage Study

Design completion status remained at 50%. The sponsor was provided details of the cost of rehabilitating a portion of either the new 2101 Building or the 271-B Building for records storage space to be used by 1955. The cost for either project is about $95,000. The analysis of operating costs is being made to complete the study.

ERE-484, Flexowriter Temperature Recorder, 105-D, DR and F Areas

Design progressed 50% to completion. The project proposal is being prepared to include installation in 105-D, DR and F Areas similar to experimental models for the B and H Areas.

CC-5054, Repair 60" Effluent Line Expansion Boxes - 105-DR

Work began March 3, 1953, and five (5) boxes on west line are completed. Shop fabrication was completed for east line.

CC-5285, Mock-Up Cells - 300 Area

Cell erection was complete. Installation of step plugs and testing of cells has continued. Shortage of step plugs has retarded progress.

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C. RELATED FUNCTIONS

Inspection functions continued to increase during the month. Arrangements have been made to transfer on May 1 three (3) qualified personnel from Manufacturing to serve as inspectors, and requisitions are being submitted for four (4) applicants to begin work the same date. Continued difficulties through rejection of tubing and stainless steel have been partially overcome by conducting preliminary tests before the order is completed. Arrangements have been made to select corrosion test coupons early in the fabrication process and to apply Oxalic Acid Screening methods to provide rapid approval of materials and to eliminate some expensive Nitric Acid Corrosion Tests. There has been a great increase in types and amounts of spare parts materials, particularly such items as inlet and outlet nozzles, gun barrels, lug rings, pumps, remote control connectors, and process vessels.

The following is a resume of inspection activities during the month:

ITEM	NUMBER
Open requisitions requiring inspection	179
Orders assigned to inspectors	250
New orders received	68
Orders completed	21
Sub-vendor orders assigned to inspectors	16
Total requisitions for Program "X" transmitted	215
Total orders for Program "X" placed	125

At the end of March there had been a grand total of 896 Program "X" requisitions transmitted.

Drafting production for the month was 342 new drawings and 173 revisions. The drafting room average was 5.6 man-days per drawing. Since the drafting work load is increasing during the next few months, steps have been taken to increase personnel by five and to obtain a drafting assistance contract to handle the peak. Drafting personnel in the 760 Building and in the 101 Building worked 90% full force on three Saturdays of the month.

The Reproduction group set a new production record of 811,753 square feet during the month of March. This was an increase of more than 220,000 square feet over the February total. The previous record, set in October 1950 was 742,685 square feet. The October 1950 record was established on a scheduled six-day week as compared to limited overtime work during March 1953. The largest orders processed during March were 24,377 prints for CA-512-R and 13,597 prints for CA-512-W. An Audit Inventory crew was activated on March 16. These personnel completed the 200-E Area and are now engaged in 300 Area and 3000 Area.

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C. RELATED FUNCTIONS - (Cont'd.)

The Estimating group completed 45 estimates during the month. The completed estimates comprised the following: 6 project proposal, 14 comparative, 5 bid price, 5 fair cost, 7 revised, 2 for work orders and 6 miscellaneous.

The Field Surveys group completed additional monumentation at the Purex site and completed coal inventory surveys in seven areas. This group also worked on preliminary surveys for the new 300 Area facilities as well as numerous miscellaneous jobs.

The Project Control Unit performed its routine functions during the first month following reorganization. The Control group continued preparation of manpower and construction budgets, coding drawings and requisitions, and unitization of the 100-C project. The History group issued three histories, bringing the cumulative number published to 86. The A.E.C. has requested the G. E. History group to complete histories for Projects CA-199, 204-AB, 257, 353, 364, 381, 385, 394, 406, 414, 421, and to write full histories for Projects CA-192, 362, 431, 434, 441, 491, 512, 513, and 516.

D. CRAFT LABOR

On March 2, 1953 resignations of members of the Davis Panel were accepted by the President. On March 24, President Eisenhower directed the establishment of an Atomic Energy Labor Relations Panel to function within the Federal Mediation and Conciliation Service. This new panel has not been confirmed, but some members of the F.M.C.S. served as a special panel at Hanford Works to hear the dispute between machinists and millwrights.

Three work stoppages occurred during the month, the most serious of which included picket lines. On March 4, the Machinists' Union established picket lines at the North Richland bus lot and at all entrances to Hanford Works. The picketing continued to a lesser degree on the following day, and the machinists returned to work on March 6 on the basis of a "status quo" settlement. The Federal Mediation and Conciliation Service sent two members to Hanford on March 16 to mediate the dispute, as noted above. On March 28, this panel heard the dispute; and it is now preparing a recommendation for settlement.

The second work stoppage, on March 19, involved 17 plumbers in Minor Construction, White Bluffs Shop, who terminated in protest against the assignment of work connected with loading of excess material. On the following day, the Plumbers' Union dispatched replacements, most of whom were the men who had resigned. The White Bluffs Shop resumed normal production by March 23. The stoppage did not affect Minor Construction work outside the shop.

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D. CRAFT LABOR - CONSTRUCTION (Cont'd.)

The third work stoppage was a one-day action by 300 carpenters employed by Kaiser Engineers. The carpenters failed to report for work on March 26. Their exact complaint was not stated, although it was believed to be their failure to obtain wage demands. They returned to work on March 27.

Negotiators between Kaiser Engineers and two Unions, Technical Engineers and Office Workers, are moving slowly. Both Unions voted to impower their negotiations with strike authority against Kaiser, if strike action should become necessary.

Voluntary termination of construction contractor (Kaiser Engineers and associated contractors) personnel increased to 4.5% as compared to 1.6% for February.

The cumulative effect of jurisdictional disputes and work stoppages has seriously affected several phases of the Expansion Program. It is estimated that disputes between machinists and millwrights have delayed graphite processing by three weeks of productive manhours. The machinists' walkout from February 24 to March 9 delayed by five days their work on the concentrator for Purex Prototype. This delay was overcome by working on a three-shift basis and on Saturdays and Sundays.

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April 10, 1953

FUEL TECHNOLOGY SUB-SECTION

MARCH, 1953

INFORMATION

VISITORS AND BUSINESS TRIPS

Visitor	Date	Address	Purpose
S. Starchheim	3-9/10-53	Sylvania Electric Products Company	Inspection of Slugs for Canning
C. R. Geetjen	3-11/13-53	Air Reduction Pacific Company	Welding Consultations
L. R. Hayward	3-11/13-53	Air Reduction Pacific Company	Welding Consultations

Name	Date	Place Visited	Purpose
L. J. Lucas	3-11/23-53	Etna Machine Company	Technical Discussions with Swagging Machine Manufacturers. Attend Technical Conference at American Society of Tool Engineers Convention
R. S. Dalrymple	3-18/19-53	Argonne National Laboratory	To Attend Conference on Corrosion Problems
	3-20/27-53	Knolls Atomic Power Laboratory	To Attend Conference on Corrosion Problems

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Name	Date	Place Visited	Purpose
E. A. Eschbach	3-19/20-53	Sylvania Electric Products Company	Fuel Element Development Consultations & Attend Radiation Damage Conference at Oak Ridge
	3-20-53	Knolls Atomic Power Laboratory	Fuel Element Development Consultations & Radiation Damage Conference
	3-23/24-53	Oak Ridge National Laboratory	Fuel Element Development Consultation & Radiation Damage Conference
	3-25-53	Battelle Memorial Institute	Fuel Element Development Consultation & Radiation Damage Conference
	3-26/27-53	Ames Laboratory	Fuel Element Development Consultations & Radiation Damage Conference
H. L. Libby	3-20/30-53	National Institute of Radio Engineers	To Attend National IRE Meeting
W. L. Schalliol	3-21/28-53	ASM-AIME-SNT	Co-Chairman of Technical Session Western Metals Congress
A. T. Taylor	3-21/30-53	Los Angeles, Calif.	American Society for Metals - Western Metals Congress
F. B. Quinlan	3-22/28-53	Los Angeles, Calif.	To Attend Meeting of American Society of Metals
W. T. Kattner	3-23/31-53	Feed & Materials Production Center	To Discuss Fabrication of Metals
	3-23/31-53	Argonne National Laboratory	Discuss Fabrication of Metals

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Name	Date	Place Visited	Purpose
W. T. Kattner	3-30/31-53	New York Operations Office	To Discuss Fabrications of Metal
R. W. Benoliel	3-26/27-53	Fernald National Lead Co. of Ohio	Discussion on Fabrication and Handling of Metals
	3-30/31-53	New York Operations Office	Discussion on Fabrication and Handling of Metals
W. F. Ekern	3-27/30-53	Phillips Petroleum Co. - A.E.C. Reactor Test Sta. #8 MTR	Inspect Facilities and Discuss Experiment
E. C. Wood	3-27/30-53	Phillips Petroleum Co. - A.E.C. Reactor Test Sta. #8 MTR	Inspect Facilities and Discuss Proposed Experiment
H. L. Libby	3-27-53	New York Operations Office	Consultation on Non-Destructive Testing
G. E. McCullough	3-30/31-53	New York Operations Office	Discussion on Fabrication and Handling of Metals

URANIUM DEVELOPMENT

Fabrication of Uranium

Fifty slugs fabricated directly from uranium hydride powder by Sylvania Electric Products Company have been received. Tests in the 305 pile show that the slugs have a reactivity comparable to recovered production slugs from canning rejects. The ultrasonic grain size test indicates that all of the slugs have a grain size of less than 0.0075 mm. as compared to 0.200 mm. for triple dip canned uranium. The density of this material as measured on the four-inch slug have agreed with those determined by Sylvania with an average of about 18.90 grams per cubic centimeter. This density is slightly lower than that of production metal.

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A tube containing three slugs produced from uranium metal powder by Sylvania Electric Products Company was discharged at an exposure of 500 MWD/T. There was no evidence of bumping on the powder metal compacts or the lead-dip canned slugs from beta treated rod; however, several of the triple dip canned control pieces showed slight bumping. The remaining tubes of this metal will be discharged at an exposure of 600 MWD/T in April. A status report, HW-27437, on the Evaluation of Fuel Elements produced by Powder Metallurgical Techniques, was completed and issued.

Alpha phase extrusion of uranium is being investigated as a method of fabrication because of its adaptability to extrusion cladding with zirconium and to the production of hollow fuel elements. Special uranium ingots are being prepared for extrusion trials at the Massachusetts Institute of Technology.

Uranium Alloys

The salt-bath heat treated lead-dip canned uranium plus 0.4 atomic per cent chromium alloy slugs from rods received from Battelle Memorial Institute and the Knolls Atomic Power Laboratory have passed all canning inspection tests and have been shown to have a uniformly small grain size by ultrasonic testing. Two ingots of uranium 0.4 atomic per cent chromium alloy were cast by Metal Preparation Section in the 314 Melt Plant facility. Tests will be performed on these billets to determine the distribution of chromium prior to fabrication into standard rods for further testing.

Process Tube Metals

To obtain preliminary corrosion data in the flow laboratory, arrangements have been completed to test a 16 foot non-ribbed zirconium tube. It has been reported that the 63S aluminum process tubes will be shipped from the Aluminum Company of America during the third week of April, 1953. Production tests to irradiate both zirconium and 63S aluminum process tubes are being circulated for approval.

COATINGS AND CORROSION

Building Conversion

All contaminated areas in Building 222-B have either been decontaminated or sealed off. The Flow Cup Laboratory is ready for placement of the equipment. After the installation of Hauserman partitions to segregate the active hoods and to partition Room 9 into offices, the major building conversion will be finished.

The equipment for development of new coatings for slugs or cans has been installed, and the electrical and other connections will be completed in the next few weeks.

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Flow Cup Laboratory

Laboratory experiments to determine the range of pH values which will be encountered in the Flow Cup Laboratory have been started. These experiments will indicate any possible changes which may be required in the final design of the Flow Cup Laboratory. Several hundred samples of various alloys are being cut and prepared for test.

Anodic Film

It had been found previously that the anodized films contained a high percentage of sulfate. Quantitative tests during the past month showed that this sulfate amounted to about 16 per cent of the total weight of the anodized layer and was more or less uniformly distributed throughout the coating. In the case of extremely thin films, the concentration was lower, possibly because these thin films were more porous.

Corrosion Studies

A simplified circuit for measuring the polarization curves of galvanic couples has been developed. This consists essentially of a modification to permit the momentary interruption of the current flow so that the potential of the electrode can be measured.

Two new designs for reference electrodes were tested during the month in an attempt to devise a reversible electrode with known characteristics. A U-tube containing mercury has not been satisfactory; a silver-silver chloride electrode is still being tested.

Thermogalvanic studies have continued. With a cell fabricated from two slug jackets a maximum peak of 2500 microamperes was attained. Results from thermogalvanic studies under pressure agree in general with results obtained previously. An apparatus to determine the effect of sodium dichromate on thermogalvanic potential gave widely scattered results. Additional experiments are planned in which thermogalvanic currents and weight losses will be determined over time intervals of greater length.

Two tubes of anodized slugs being irradiated in the pile to test the abrasion and corrosion-resistance of anodized coatings were discharged during the month at about 80 MWD/T. The slugs in the hotter portions of the tubes had lost a weight equivalent to the weight of the anodized film. No localized corrosion was evident on any of the slugs.

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Zirconium Canning

Some work has been done on the sleeveless canning of uranium in zirconium with little success. This will be tried again next month under different conditions, probably with longer immersion times.

FABRICATION TECHNIQUES

Hot Press Canning Studies

Canning of Slugs Coated by the Triple Dip ("A") Process

The can walls of triple dipped production slugs are being machined away until the Al-Si coating is exposed and the slugs are then hot press canned.

C

Compound Layer Studies

The examination of Al-Si molded hot pressed slugs for cracking in the compound layer was continued during the month. The two types of slugs

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The undercutting test revealed a wide variation in resistance to undercutting among slugs of a given type. In general, however, the 590 C molded slugs perform better than those molded at 640 C. A comparison of hot pressed molded slugs with regular triple dipped slugs shows that some molded slugs perform equally well as the triple dipped. The average resistance to undercutting of the molded slugs as determined by the testing of some 30 samples still remains below that of the triple dipped material.

Uranium-Aluminum Bonding by Hot Press Canning

The testing of hot pressed slugs utilizing a uranium-aluminum diffusion bond without a diffusion barrier was continued. A hot pressed slug of this type has been baking at 250 C for 13 days without any apparent effects to the bond as yet.

Cap Closures

Experiments employing beveled punches to affect the Al-Al closure by extrusion of the can wall and cap were initiated. Examination of the welds disclosed good welding between can and cap, but considerable necking down of the can just under the cap occurred. A modification of the technique which uses the beveled punch to make the initial closure by a slight extrusion of the cap and can followed by final pressing with a flat punch produces an excellent weld without discernible necking down of the can wall.

Uranium Deformation Studies

A study of the deformation characteristics of the uranium slug in a die under the action of the punch used in hot pressing was continued during the month. It was found that the top half of the slug deformed first, as was anticipated from results of previous experiments.

Furnace and Die Studies

The calrod furnace for hot pressing work was tested and found to be very satisfactory. It heats faster, is safer to handle, and has only a 15-20 C temperature variation over a slug length. Two old furnaces are being adapted for Calrod operation and six new furnaces are to be designed and fabricated by the electrical shop.

The second tapered, triple segmented, split die arrived from off-site during the month. Tests are continuing with the first such die in order to evaluate the best handling procedure and lubricant. Cursory examination indicates that a baked mixture of corn syrup and molybdenum disulfide provides a uniform continuous lubricating surface for mating parts.

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Service Work

The centerless ground slugs to be shipped to Sylvania were inspected and prepared for shipment. Samples were hot pressed for determinations of bond strength and diffusion data for Cu-Cu and Ni-Ni couples. Nine nickel coated samples (7 by carbonyl process, 2 by electroplating) were hot press canned.

Insulated End Caps for Unbonded Slugs

Preliminary feasibility tests were made on installing commerically supplied ceramic insulators in cold-sized uranium slugs. Twelve centerless ground, four-inch uranium slugs were cold sized in cans that had recesses containing 1.130 inch diameter by 0.10 inch thick ceramic discs in the can bottoms. The top end cap contained the ceramic disk enclosed in an aluminum washer covered by a standard 0.10 inch thick aluminum wafer.

Welding of these slugs was satisfactory in that no blow holes were apparent and radiography revealed only one gas void which appeared to be below the weld area.

Insulator Attachment for Bonded Slugs

Development work continued on methods of securing ceramic wafers in caps and can bottoms for use in Al-Si, dip-canned slugs. At present two methods are under consideration. One is to mechanically crimp the ceramic in place and the other is to completely seal the ceramic in aluminum. The second method would yield an insulated cap more satisfactory for use in the present canning process, so some techniques of completely enclosing ceramic discs in end caps have been investigated.

Experimentation with hot pressure welding techniques must be delayed until equipment which is on order and in the process of design is obtained. Optimum values of temperature, pressure, and deformation, as well as die design, component design and preparation, and techniques need to be determined for this type of pressure welding.

Metal Fabrication Laboratory

The machining section of the laboratory is now in a more favorable position with respect to back-log than at any time in the past six months. However, this condition is believed to be temporary.

During a visit at the Carboloy Company it was determined that dies used in the warm pressing project could be fabricated from carboloy.

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New Facilities

Project CG-530, revision of 314 Building for Canning Development, is reported as 50 per cent completed. A project proposal, CA-546, for the design and construction of a Fuel Element Pilot Plant has been approved by the Hanford Atomic Energy Commission and forwarded to Washington, D. C., for review by the Atomic Energy Commission.

URANIUM QUALITY

Uranium Rod Quality

Slugs for a production test to evaluate the pile behavior of uranium rolled at the Feed Materials Production Center are being triple-dip canned. Test slugs and control pieces to be irradiated to predetermined exposures were measured to determine their length, diameter, and warp while bare. The measured slugs have been triple-dip canned and subjected to the regular canned slug inspections.

The practice initiated in December at Simonds Saw and Steel Company of directing a small stream of water on the rolls to prevent uranium oxide adherence to the rolls has no apparent ill effect on the metallurgical properties of rods. Tests on rods from this rolling showed ultimate strengths, elongations, and reductions in area to be slightly higher than previous averages while yield strengths and hardness values were slightly lower. A greater proportion than usual of light and moderate carbide and nitride inclusions and smaller amounts of heavy stringer inclusions of unknown composition were present. The orientation and grain structure, except for a slight decrease in the maximum grain diameter, were comparable to that of metal previously rolled.

Heat Treatment of Uranium

Studies on routine samples from triple-dip canned slugs have shown that while all slugs are completely transformed, there is a variation in the macrostructure from sample to sample. Further tests will be made to determine whether the observed variation in macrostructure is indicative of the suitability of uranium with such a structure as a pile fuel.

Investigation has disclosed that 30 seconds is the maximum allowable time between salt bath beta phase heat treatment and water quenching which will result in fine grains on slug peripheries.

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Thermal Cycling Studies

A large internal void results in slugs when thermal cycled twenty to forty times between 20 C and 720 - 730 C.

Seventy-six thermal cycles of uranium slugs of selected diameters and with different processing histories between 485 - 500 C have produced no warping or dimensional changes in the slugs. It may be concluded that any stresses which may have been in these samples were insufficient in magnitude or of such a regular distribution that no dimensional changes resulted from the stress relief anneal.

CANNING TECHNIQUES

Fractured Bond Rejects and Compound Layer Investigations

Periodically, during canning of standard production material, a high incidence of frost test rejects is encountered as a result of the slug bonds fracturing. As part of the effort to determine the cause for the fractured bonds, a test, MFR 319-A, was run on two hundred slugs. One-half were canned under a combination of conditions within the specifications thought to be conducive to bonds susceptible to fracture; the other half were canned under conditions thought not to cause bond fracture. Of the 100 slugs canned under conditions believed conducive to bond failure, 42 were frost test rejects. There were no frost test rejects among the other 100 slugs. Present normal plant operation averages about 5 per cent frost test rejects.

Metallographic examination showed that the primary difference between the bonds was that bonds susceptible to fracture were about three times as thick as the others. Both were of the modified layer type.

Water autoclave tests showed that thick, layered, compound layers are rapidly undercut if fractured and highly resistant to undercutting if not fractured. Thin segmented compound layers, which are not susceptible to fracture, are susceptible to undercutting at an intermediate rate. The conditions conducive to bond fracture will be narrowed down in succeeding experiments and an attempt made to obtain bonds not susceptible to fracture with a process not conducive to non-seating.

Welding

Experimental welding, by adding filler 2S aluminum to the welding puddle during inert tungsten arc welding, was done with good success on simulated grooved Tru-line slugs.

Welding, by use of a consumable 2S electrode for filler metal and using the inert-metallic arc welding process, was done with fair success. The weld was sound, free from braze metal but rough.

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Cast Bismuth Slugs

Mound Laboratories have developed a procedure for casting bismuth directly into standard Hanford cans and sealing the top with a cold pressed aluminum cap. One hundred eighty virgin metal slugs, canned by this method, were received, welded, and evaluated. The method looks entirely satisfactory and the Radiological Sciences Department anticipates no special problems in welding pieces containing recovered bismuth slightly radioactive due to polonium.

Cap Wetting

A cap wetting device for insuring better Al-Si wetting of the cap has been tested and found satisfactory for trial on the production lines. A pneumatic vibrator, using an amplitude of about 0.020 inch at about 3,000 cycles per minute, was arranged so that the vibrations can be transferred to the tongs holding the cap and thence to the tongs. The device is simple and, when automatically timed for ten seconds of vibration, gives good wetting with very little erosion of the cap.

Mechanized Canning - Prototype

A document (HW-27264) was issued evaluating the prototype mechanized slug canning machine that has been built in the 314 Buidling. Recommendations for future design of similar equipment are included.

An induction heating unit for preheating can-sleeve assemblies is about 50 per cent complete. A transfer device for heated can-sleeve assemblies, with electro-magnetic pickup of the assemblies, is being made.

The thermowell coated with glass by the Pfaudler Company is still unattacked by Al-Si after about sixty days in the Al-Si bath.

Fluxes For Uranium Dip Coating

Sodium bifluoride has been tested as a flux ingredient but was rejected because of instability and because the residual sodium fluoride inhibits wetting. Cuprous and cupric chlorides were tried and improved wetting, but the copper apparently combined with other metals present such as aluminum, iron, or uranium to form an insoluble sludge.

Ultrasonic Cap Bond Testing

At the time the Sonizon ultrasonic equipment was developed, it was determined on a small sample of slugs that a high percentage of caps were unbonded, either containing voids under the caps, or having cracked compound layers under the

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cap. During this month approximately fifty slugs were ultrasonically tested and the results checked by drilling through the cap and autoclaving. This experiment confirmed the accuracy of the Sonizon in detecting unbonded caps.

Six hundred thirty-six 4-inch slugs were then tested with Sonizon, and it was found that 30 per cent were unbonded after facing and an additional 5 per cent or a total of 35 per cent were unbonded after welding. Similarly on a test of 1,328 eight-inch slugs, 26 per cent were unbonded after facing and 46 per cent after welding. This condition has probably always existed. The compound layer and frost test reject investigation should find the causes for unbonded caps of the cracked layer type and help in eliminating this weakness in a slug.

Alternate Canning Methods

Laboratory-type equipment for investigation of a possible alternate method of canning is being designed. The method involves induction heating of the slug, can, and a small, measured amount of Al-Si in a high vacuum, and assembly of these components without breaking the vacuum. Preliminary wetting experiments are in progress.

TESTING

Destructive Testing

Statistical analysis of sidewall undercutting in the autoclave has shown that anisotropy of the uranium cannot account for the variations in resistance to undercutting between different positions on the same slug, but that a definite correlation exists between resistance to undercutting and the inclusion count of the uranium beneath the can wall penetration.

Al-Si Penetration Test

Functional tests on the prototype Can Wall Thickness Measurement instrument, MIZ-1, were completed and the various components of the equipment assembled and operated. Although no exhaustive tests have been made, it appears to be considerably more sensitive to Al-Si penetration than the breadboard equipment which has been used in previous tests. Other components that will be required for a production run are now being built in Technical Shops.

Tests with the breadboard equipment were verified by caustic stripping during the month. In general, the results show a need for increased resolving power of the probes. Shielded coils are now being prepared for testing with the MIZ-1 to accomplish this.

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Ultrasonic Tests

Equipment for the ultrasonic production test for unbonding has been built, checked out, and is being evaluated. In its present form the equipment permits scanning of an eight-inch slug in approximately 10 seconds. During this time it checks approximately four thousand points on the slug surface. It is planned to place the equipment in the 313 Building for a comparison between its results and those of the frost test.

FUEL EXAMINATION

Slug Examination Facilities

Project funds for equipment for the 100 C Slug Examination Facility, which were approved by the A & B Committee in January and by the A.E.C. during February, were authorized during the latter part of March, 1953. Changes to equipment specifications are now in preparation based on development work carried out during the past six months. Working arrangements are being made both at Hanford and at the General Engineering Laboratories for the necessary engineering designs and construction of the equipment.

Procurement and fabrication of equipment for the 105-B Slug Examination Facility are continuing. The present slug viewer is to be replaced with an improved version which is now being constructed. The slug manipulator which is remotely operated with underwater hydraulic cylinders is ready for installation. A redesigned version of the standard slug cleaner intended for this facility has been temporarily installed in the 105-DR basin. A bench mock-up of the optical dimensioner (shadowgraph) has been constructed. Tests of the slug air weigher this month indicate that a number of revisions will be necessary prior to its installation in the 105-B facility.

Arrangements are being made to have slugs stripped of their jackets at the 200-W Area for later examinations at the 105-B facility. Consideration is also being given to eventually stripping the jackets in special equipment at the inspection basins. It is desirable to examine bare slugs when measuring grain size and orientation with the ultrasonic testing device as well as when determining the extent of blistering and other possible changes to the uranium metal.

Slug Examination

Visual examination of some four- and eight-inch normally discharged production material from C Pile showed that a thin red-brown film was present on about 80 per cent of the slug jackets. In addition, about one-half per cent of the

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four-inch slugs examined were slightly blistered. Most of the four-inch slug jacket surfaces that were examined after discharge from H Pile were covered with a thin, dark red-brown film. Less than one per cent of the slugs showed evidence of blistering; however, a few "donuts" were observed on several slugs.

The majority of the slugs discharged from tube 2473-C under P.T.-105-9-P, "Corrosion of Slugs and Tubes", had quite badly scratched jackets. The scratches were made prior to pile exposure as shown by pre-exposure examination records. These scratches, as well as the rest of the jackets, were covered with the usual red-brown film indicating that the scratched areas were not subject to preferential corrosion.

Two tubes of slugs were discharged from DR Pile on March 1, 1953, at an exposure of about 80 MWD/T under P.T.-105-515-E, "In-Pile Behavior of Anodized Slugs". The anodized coating appeared to have been removed from most of the slugs during pile exposure. However, some of the anodized coating was partially intact on slugs located at the upstream end of the tubes.

INVENTIONS

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

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

GEMcC:jm

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MEDICAL DEPARTMENT

MARCH 1953

Personnel Changes
The roll decreased from 261 to 257.

Visits
Dr. Sachs attended the executive board meeting of the Washington State Public Health Association.
Four members of the Public Health and Welfare unit attended a community health panel sponsored by the Washington State Health Council at Yakima.
A sanitarian attended a milk institute at Pullman.
Two nurses attended a board meeting of the Washington State Nurses Association in Seattle for discussion of civil defense and nurses' policies and practices.
One representative of the State Department of Agriculture and one from the State Department of Health conferred here on matters of sanitation.
The student field nursing consultant of the University of Washington School of Nursing visited for the purpose of discussing the student nurse training program.
Our head anesthetist attended the institute for nurse anesthetists in Dallas, Texas. The chief dietitian attended the dietary institute in Chicago. The hospital administrator attended a regional hospital council meeting in Dayton, Washington.

Employee Relations
Twenty-five meetings were held during the month with a total attendance of 333.

General
A proposal was made to the chairman of the Benton-Franklin County Health Department Board of Health that Richland Public Health and Welfare Unit activities become a part of the Benton-Franklin Unit. This proposal will be considered.

Industrial Medicine
Request was made that a portion of the Medical Dental Clinic building be assigned as quarters for the Industrial Medical Section. This space was vacated by the clinic physicians when they moved to the new clinic building, constructed with their own private funds. The old clinic building could house industrial medical activities and still leave office space for several physicians who might wish to do private practice in Richland. The request is being given consideration by the A.E.C.
There was a slight increase in medical examinations and in dispensary treatments.
General Electric employees were treated for 3 major and 1 sub-major injuries, while contractor employees were treated for 2 sub-major injuries only.
Sickness absenteeism was 2.28% as compared to 2.83% for February. Total absenteeism was 2.88% as compared to 3.46% for February.

Kadlec Hospital
The average daily adult census was 101.3. This was a new high and resulted in an occupancy percentage of 100.6% for the mixed services. Thirty-two patients had to be admitted to hall beds.
The nursing hours per patient per day were low at 2.87 on the mixed services and the number of in-patient hospital employees per adult patient was 1.68.
In spite of the heavy patient load, employee morale appeared good and patient comments favorable.

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MEDICAL DEPARTMENT

MARCH 1953

Public Health

Conditions were satisfactory with a decrease in contagious diseases and in upper respiratory infections.

Costs-February

Medical Department costs before assessments to other departments were as follows:

	Jan.	Feb.	Feb.Budget
Industrial Medicine (Oper.)	$38,265	$33,300	$41,751
Public Health (Oper.)	10,840	10,133	11,334
Kadlec Hospital (Net)	15,604	11,096	30,020
Hospital Expense Credits	4,369	4,369	2,735
Sub-total-Medical Department (Oper.)	69,078	58,898	85,840
Construction Medical (Industrial and Public Health)	13,492	10,852	13,492
Total-Operations and Construction	$82,570	$69,750	$99,332

The net cost of operating the Medical Department before charges were assessed to other departments for services rendered was $69,750, a decrease of $12,820. The decrease was largely due to the shorter month resulting in less expense, without a proportionate reduction in hospital revenue. There was a difference of $29,582 between total costs and budget. In addition to high hospital census, the loss in revenue from Hospital Pharmacy and X-Ray services was not as great as expected due to delay in move to the new clinic building. There was also some unexpected revenue for sale of laboratory services to Dr. C. C. Cutting.

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MEDICAL DEPARTMENT

MARCH 1953

Industrial Medical Section

Medical examinations increased from 895 to 1063 in March. General Electric employees sustained 3 major injuries and 1 sub-major. Contractor employees sustained 2 sub-major injuries but no majors. Dispensary treatments increased from 5173 to 5322.

One physician is still on loan to those providing contractor industrial medical services. We have been asked by the Commission to continue dispensary medical services for certain contractors whose contracts were made prior to August 1, 1952, until such time as their contracts expire and for certain other contractors whose work will be in the operating areas.

The Industrial Physicians' Scientific Meeting was held on March 25th and Dr. Norwood reported on the New York meeting of General Electric physicians. Overall company policies were discussed as related to the Hanford Operation.

An information meeting was held for industrial nurses regarding company plans and policies for future hospital operation and the effects that might result from this change.

Examination frequency schedules are in the process of being revised and study continues as to ways and means to provide for more emphasis on employee behavior problems. It is planned to spend more time on interpersonal relationship problems with the objective of decreasing absenteeism and increasing employee efficiency and morale.

The Health Activities Committee met on March 19th and the health topic on mental health "Psychosomatic Medicine" was presented. Material on this subject was prepared for distribution throughout the plant. The plant sickness absenteeism was 2.28% for March as compared to 2.83% for February.

Gross costs for February totaled $34,285 as compared to $39,031 in January, a decrease of $4,746. Following are the details:

Costs-Operations	February	January	Increase (Decrease)
Salaries	$24,394	$27,678	$(3,284)
Continuity of Service	2,439	2,768	(329)
Laundry	388	332	56
Utilities, Transportation, Maintenance	3,574	3,754	(180)
Supplies and Other	3,490	4,499	(1,009)
Total Gross Costs	34,285	39,031	(4,746)
Less: Revenue	985	766	219
Expense Credits	4,900	4,930	(30)
Net Cost of Operation	28,400	33,335	(4,935)

Actual net costs for fiscal year 1953 to date total $260,695 with a budget of $279,397 or 93.3%.

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Industrial Medical Section (Continued)
Costs (Continued)
Industrial Medical - Construction

Gross costs in February were $9,977 as compared to $12,942 during January, a decrease of $2,965 detailed as follows:

	Feb.	Jan.	Increase (Decrease)
Salaries	$8,305	$10,454	$(2,149)
Continuity of Service	830	1,045	(215)
Laundry	0	62	(62)
Utilities, Transportation, Maintenance	361	60	301
Supplies and Other	481	1,321	(840)
Total Gross Costs	$9,977	$12,942	$(2,965)

Responsibility for the Industrial Construction Medical program was transferred to Dr. Cutting early in February; however, in order to give him time to recruit personnel, our employees were loaned to him during the month. No charges were made for laundry or drugs during the month. However, this will be billed at a later date when it is determined what percent of overhead can be added to actual cost.

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Industrial Medical Section (Continued)	February	March	Year to Date
Physical Examinations			
Operations			
Pre-employment	73	71	212
Rehire	12	12	51
Annual	288	392	1035
Interim	142	178	528
A.E.C.	31	36	97
Re-examination and rechecks	103	159	390
Termination	99	129	335
Sub-total	748	977	2648
Contractors			
Pre-employment	0	0	665
Rehire	59	10	108
Recheck	4	1	180
Termination & Transfer	66	75	539
Interim	18	0	54
Sub-total	147	86	1546
Total Physical Examinations	895	1063	4194
Laboratory Examinations			
Clinical Laboratory			
Government	197	153	456
Pre-employment, Termination, Transfer	2262	2476	9859
Annual	1791	2463	6396
Recheck (Area)	763	1133	3328
First Aid	0	11	20
Clinic	505	432	1397
Hospital	4758	5868	15831
Public Health	4	18	29
Total	10280	12554	37316
X-Ray			
Government	26	22	77
Pre-employment, Termination, Transfer	158	86	1080
Annual	300	415	1098
First Aid	76	101	358
Clinic	232	240	757
Hospital	392	464	1261
Public Health	1	7	27
Total	1185	1335	4658
Electrocardiographs			
Industrial	22	32	99
Clinic	2	5	13
Hospital	52	47	157
Total	76	84	269

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MEDICAL DEPARTMENT

MARCH 1953

Industrial Medical Section (Continued)	February	March	Year to Date
First Aid Treatments			
Operations			
New Occupational Cases	354	386	1108
Occupational Case Retreatments	1298	1334	3881
Non-occupational Treatments	3007	2972	8690
Sub-total	4659	4692	13679
Construction			
New Occupational Cases	100	116	608
Occupational Case Retreatments	296	328	1982
Non-occupational Treatments	71	154	658
Sub-total	467	598	3248
Facility Operators	47	32	128
Total First Aid Treatments	5173	5322	17055
Major Injuries			
General Electric	1	3	4
Contractors	1	0	1
Total	2	3	5
Sub-major Injuries			
General Electric	1	1	3
Contractors	0	2	11
Total	1	3	14
Absenteeism Investigation			
Calls Made	9	4	26
Employee Personal Illness	8	4	24
No. absent due to illness in family	0	0	0
No. not at home when call was made	1	0	2

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MEDICAL DEPARTMENT

MARCH 1953

Hospital Section

The average daily adult census increased from 98.4 to 101.3, as compared to 90.5 a year ago. This represents an occupancy percentage of 92.9, broken down as follows: Mixed Service (Medical, Surgical, Pediatrics) 100.6%; Obstetrical Service 61.0%. The minimum and maximum daily census ranged as follows:

	Minimum	Maximum
Mixed Service	73	103
Obstetrical Service	8	18
Total Adult	84	115

The average daily newborn census increased from 10.1 to 12.9, as compared to 12.6 a year ago.

Nursing hours per patient per day:

Medical, Surgical, Pediatrics	2.87
Obstetrical	4.27
Newborn	2.79

The ratio of in-patient hospital employees to patients (excluding newborn) for the month of February was 1.68. When newborn infants are included, the ratio is 1.52.

The net expense for the operation of Kadlec Hospital for February was $11,096, as compared to $15,604 for January. Summary is as follows:

Kadlec Hospital net expense $11,096
This is a decrease of $4,508 from the previous month due primarily to decreased costs of $5,806. This resulted from the shorter work month. Revenue decreased $1,298 due to the shorter month and this would have been a greater reduction if it had not been for a higher than usual census.

The very high patient census experienced during February was further increased during March to an all-time high as reported above.

Seventeen employee relations meetings were held by the hospital during the month with approximately 220 people in attendance.

Miss Roselma Swift, R.N., Head Anesthetist, attended the Institute for Nurse Anesthetists in Dallas, Texas. This Institute was sponsored by the American Hospital Association and the American Association of Nurse Anesthetists.

Miss Marjorie Clark, Chief Dietitian, attended the Dietary Institute in Chicago, Illinois, sponsored by the American Hospital Association and the American Dietetic Association.

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Hospital Section (Continued)

Mr. O. E. Bakko attended the midyear meeting of the Southeastern Washington Regional Hospital Council in Dayton, Washington.

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MEDICAL DEPARTMENT

MARCH 1953

Hospital Section (Continued)	February	March	Year to Date
Kadlec Hospital			
Average Daily Adult Census	98.4	101.3	95.8
Medical	34.1	32.0	31.5
Surgical	33.3	37.7	33.8
Pediatrics	19.7	18.8	18.1
Mixed	87.0	88.5	83.4
Obstetrical	11.4	12.8	12.4
Average Daily Newborn Census	10.1	12.9	12.3
Maximum Daily Census:			
Mixed Services	108	103	108
Obstetrical	16	18	20
Total Adult Census	120	115	120
Minimum Daily Census:			
Mixed Services	68	73	50
Obstetrical Service	6	8	6
Total Adult Census	77	84	62
Admissions: Adults	598	690	1933
Discharges: Adults	590	675	1893
Newborn	62	79	217
Patient Days: Adult	2755	3141	8626
Newborn	282	399	1111
Total	3037	3540	9737
Average Length of Stay: Adults	4.7	4.7	4.6
Medical	5.0	4.5	4.3
Surgical	4.4	5.2	4.8
Pediatrics	4.8	4.1	4.5
Mixed	4.7	4.7	4.6
Obstetrical	4.2	4.3	4.4
Newborn	4.5	5.0	5.1
Occupancy Percentage: Adults	90.3	92.9	87.9
Medical	92.2	86.5	85.1
Surgical	104.1	117.8	105.6
Pediatrics	103.7	98.9	95.3
Mixed	98.9	100.6	94.8
Obstetrical	54.3	61.0	59.0
Newborn	38.8	49.6	47.3
(Occupancy Percentage based on 109 adult beds and 26 bassinets.)			
Avg. Nursing Hours per Patient Day:			
Medical, Surgical, Pediatrics	2.87		
Obstetrics	4.27		
Newborn	2.79		
Avg. No. Employees per Patient (excluding newborn)	1.68		
Operations: Major	93	116	293
Minor	71	117	264
E.E.N.T.	73	61	204
Dental	0	1	1

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MEDICAL DEPARTMENT

MARCH 1953

Hospital Section (Continued)	February	March	Year to Date
Kadlec Hospital (Continued)			
Births: Live	59	80	218
Still	1	0	4
Deaths	1	5	11
Hospital Net Death Rate	0	.13%	.14%
Net Autopsy Rate	0	0	18.2
Discharged against advice	0	0	0
One Day Cases	131	148	445
Admission Sources:			
Richland	79.1	76.2	78.3
North Richland	9.7	10.7	9.6
Other	11.2	13.0	12.1
Admissions by Employment:			
General Electric	73.8	73.2	74.4
Government	3.0	2.2	2.7
Facility	4.0	3.6	3.7
Contractors	10.5	11.9	10.4
Schools	2.7	2.3	2.1
Military	.8	1.0	.9
Others	5.1	5.8	5.8
Hospital Outpatients Treated	436	431	1318
Physical Therapy Treatments			
Clinic	188	315	840
Hospital	197	208	656
Industrial: Plant	156	286	582
Personal	5	11	26
Total	546	820	2104
Pharmacy			
No. of Prescriptions Filled	3254	3102	9692
No. of Store Orders Filled	502	550	1638
Patient Meals			
Regulars	3910	4743	12793
Children under 8	735	819	2164
Specials	1746	1602	4901
Lights	1	0	1
Softs	1016	1255	3150
Tonsils	148	113	406
Liquids	245	191	693
Surgical Liquids	61	104	253
Total	7862	8827	24361
Cafeteria Meals			
Noon	1779	1985	5823
Night	227	274	821
Total	2006	2259	6644

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MEDICAL DEPARTMENT

MARCH 1953

Public Health Section

The communicable disease picture remains about the same with chickenpox and mumps remaining diseases of highest incidence. There is a slight decrease in the number of scarlet fever cases reported. With the reduction in other morbidity, particularly in upper respiratory diseases, home visits made by the nurses was reduced by approximately 25%.

The chairman of the Benton-Franklin County Health Department, Board of Health, was contacted in regard to the proposal of transferring the activities of the section to county sponsorship. The chairman stated he would be happy to call a special meeting of the Board of Health to discuss this matter in the very near future. Until such meeting is held, no progress can be reported as to further steps to be taken in the transfer of the activities. A verbal agreement was also made with representatives of the Atomic Energy Commission that the Richland Community Council be contacted in regard to discussing this proposal.

An open house was held for members of the ten P.T.A. organizations in Richland. Public Health & Welfare's program was reviewed for them by various staff members, exemplifying by various audio-visual aids.

The Health Officer was appointed to the Board of Directors of the Southeastern Washington League for Nursing.

Mr. Mel Crawford of the State Department of Agriculture and Mr. Roger James of the State Department of Health visited this section with regard to matters of sanitation.

Miss Julia Anderson, student field nursing consultant of the University of Washington School of Nursing, visited the department with regard to the student nurse training program.

Mrs. E. Mayfield, field supervisor of the Department of Social Service, visited this section in regard to matters of social service activities.

Mrs. E. Reese and Mr. Wm. Savin, representatives of the United Defense Fund, visited this department in regard to Public Health & Welfare activities in the Tri-City areas.

A trip was made to Seattle by the Health Officer to attend the executive board meeting of the Washington State Public Health Association.

Two nurses attended a board meeting of the Washington State Nurse's Association with regard to Civil Defense and nursing policies and practices.

A sanitarian attended a milk institute at Pullman.

Four members of the staff attended a community health panel sponsored by the Washington State Health Council in Yakima.

The supervisor of public health nurses resigned because of dissatisfaction with company practices and policies.

Public Health Section (Continued)

General

One staff meeting was held with 18 members in attendance, six section meetings were held with 48 in attendance. Three meetings were held by the section chief with 24 different individuals present at which time matters in regard to the job were discussed.

Inspection of food handling establishments showed most to be operating in a sanitary manner. Two restaurants were warned of degrading unless improvement is shown. A permit was issued to the local drive-in theatre to conduct a restaurant.

One additional producer was approved for the shipping of Grade A milk. Results of other dairy farm inspections indicated most to be in excellent condition. Pasteurized milk samples from distributors supplying this area were examined in the laboratory and results were very good. Average bacteria count was less than 3000 per cc.

Water samples taken in new residential construction areas have all been negative after proper sterilization and flushing.

An inspection of the Riverside swimming pool was made by the district engineer of the State Health Department. His recommendations, which included renovation of the pool and bath houses, better distribution system of chlorine throughout the pool and that skum gutters be supplied with more drains, were forwarded to the community division for their consideration.

Plans for the new American Legion building were inspected and approved. The proposed addition to Spalding School was also examined and approved.

Mosquito control activities were started. Work thus far has consisted of clearing and burning approximately 200 acres of land and burning five miles of ditch. Beavers continue to present a problem in the clear lake area. Considerable time has been spent cleaning culverts and ditches which they dam up. A representative of the State Game Department has been contacted on this matter and we will attempt to move the beavers to another area. Insecticides which will be used this season have been received.

Bacteriological results of water samples were satisfactory with the exception of North Richland E Well which showed a b.coli contamination. It was recommended that the chlorine content be increased in this well.

The social service counselors have been working closely with school teachers and counselors to solve the problems of children who are showing poor social or academic adjustment in school. Parents have been called upon for active participation so that home problems that affect school adjustment can be modified. Other community organizations have also been used to provide supervised experiences, such as group activity, recreation, etc.

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MARCH 1953

Public Health Section (Continued)	February	March	Year to Date
Education			
Pamphlets distributed	9,990	10,989	31,968
News Releases	27	8	42
Staff Meetings	1	1	5
Classes	14	6	30
Attendance	87	33	150
Lectures & Talks	12	16	43
Attendance	349	383	1,693
Films Shown	20	22	49
Attendance	402	491	1,515
Community Conferences & Meetings	35	80	145
Radio Broadcasts	5	1	9
Immunizations			
Diphtheria	12	2	57
Diphtheria Booster	168	133	312
Tetanus	17	0	108
Tetanus Booster	242	136	416
Pertussis	6	0	6
Pertussis Booster	125	1	126
Smallpox	16	32	69
Smallpox Revaccination	384	122	681
Tuberculin Test	3	4	20
Immune Globulin	6	1	9
Social Service			
Cases carried over	83	85	246
Cases admitted	10	14	42
Cases closed	8	15	36
Remaining case load	85	84	252
Activities:			
Home Visits	15	8	33
Office Interviews	311	335	915
Conferences	52	27	134
Meetings	8	4	21
Sanitation			
Inspections made	162	120	396
Conferences held	25	20	63
Bacteriological Laboratory			
Treated Water Samples	175	228	571
Milk Samples (Inc. cream & ice cream)	35	36	104
Other bacteriological tests	471	588	1,551
Total	681	852	2,226

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MEDICAL DEPARTMENT

MARCH 1953

Public Health Section (Continued)	February	March	Year to Date
Communicable Diseases			
Chickenpox	48	42	128
German Measles	6	11	24
Gonorrhea	8	5	25
Impetigo	0	2	4
Influenza (U.R.I.)	0	2	4
Measles	1	0	3
Mumps	38	39	193
Pinkeye	2	3	6
Ringworm	1	1	5
Roseola	1	0	1
Scabies	0	0	1
Scarlet Fever	12	6	26
Syphilis	0	5	5
Tuberculosis	0	2	2
Total	117	118	427
Total No. Nursing Field Visits	1,081	729	2,552
Total No. Nursing Office Visits	139	133	341

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Radiological Sciences Department

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RADIOLOGICAL SCIENCES DEPARTMENT

MARCH 1953

Summary

Four Class I and three Class II radiation incidents were reported. One of the more serious incidents occurred at another project site, and involved a somewhat indeterminate hand exposure perhaps as high as 150 rep. All three of the Class II incidents also involved radioactive contamination.

The control activities of the department proceeded without unusual incident, except for a continuation of high active particle counts in the vicinity of the Redox plant.

An important finding in biological research cast some doubt on the previous conviction that 5 μc I^{131} per day could be supported by sheep without damage. The new findings will necessitate changes in the experimental plan at the animal farm.

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Radiological Sciences Department

RADIOLOGICAL SCIENCES DEPARTMENT

MARCH 1953

Organization

The month end force of 373 included 30 supervisors, 100 engineers and scientists, 18 clerical, and 225 other personnel.

Number of Employees on Payroll		
Beginning of month	-	374
End of month	-	373
Net decrease	-	1

General

The first training course for inspectors, under the new organization regime, was satisfactorily completed, and a second one begun.

Plans for the holding of an open house function in the biophysics laboratory were abandoned. Informal visits to the laboratory by members of other sections, whose work would be facilitated by a better understanding of the services available in the biophysics laboratory, were substituted.

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
F.P. Hungate	Laboratory glassware washer.

RADIOLOGICAL ENGINEERING

A re-examination of waste disposal data, together with good collaboration with Engineering Department forces, led to timely proposals that should save about $550,000 in direct construction costs, and about $55,000 per year in operating costs. These potential savings were distributed between the Purex, Redox, and Recuplex operations.

The basic data for design of a good P-10 plant have been established. The proposed start-up date of 10/1/53 for this operation may force compromises in preparation.

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Radiological Sciences Department

RADIOLOGICAL RECORDS AND STANDARDS SECTION

1. Radiation Monitoring Services

General Statistics

	February	March	1953 To Date
Special Work Permits	455	445	1,403
Routine and Special Surveys	1,034	1,482	3,453
Air Samples	1,119	1,214	3,210
Skin Contamination Cases	10	15	33

Process leaks at the Hot Semi-Works resulted in high level plutonium skin and clothing contamination of one employee and spread of contamination to the floor of two operating cells. The skin contamination was successfully removed.

An employee of the Pile Technology Unit received whole body and hand exposure exceeding permissible limits during experimental work at the Reactor Testing Station at Arco, Idaho. Preliminary estimates indicated that the dose to the hands may have been as high as 150 rep. Widespread contamination at the Materials Testing Reactor also resulted from the incident.

A chemist in one of the Applied Research laboratories became extensively contaminated with fission products and received an overexposure during work with curie level dissolver solution. This was the third incident of a potentially serious nature in these Applied Research laboratories this year.

During special calibration work by the Biophysics section, a half gram radium source was dropped on the floor. Fortunately, the source did not rupture.

2. Radiological Standards

(a) Exposure Investigation

Three Class II and four Class I radiation incidents were reported. Two of the Class II incidents were the overexposures discussed under Radiation Monitoring Services above. The third involved a skin overexposure on the arm from spot contamination on the coveralls of an employee at the Redox laboratory. The Class I incidents included the dropping of the radium source discussed above, a plutonium skin contamination case at the Redox laboratory, contamination spread at a diversion box, and contamination of two operators during sampling at the Redox building.

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(b) Graphical Index

A study to determine where radioactive material has been placed in the ground was completed for the 100 Areas. In total, 45 locations were reported, charted, and summarized in Document HW-27337.

3. Exposure Records

(a) Personnel Meters, and Records and Photometry

General Statistics	February	March	1953 To Date
Gamma pencils read	245,008	218,024	694,858
Potential overexposures	10	8	24
Confirmed overexposures	0	0	0
Slow neutron pencils read	1,494	1,066	4,212
Potential overexposures	0	0	2
Confirmed overexposures	0	0	0
Beta-gamma film badges processed	41,641	35,772	115,694
Potential overexposures	98	26	154
Confirmed overexposures	1	2	8
Fast neutron badges processed	428	506	1,201
Potential overexposures	0	0	0
Confirmed overexposures	0	0	0
Lost readings (all causes)	40	86	151

(b) Bioassay

1. Plutonium Analyses

	February	March	1953 To Date
Samples assayed	439	667	1,858
Results over detection limit	5*	6	14*
Maximum d/m/sample	1.00	1.38	2.08
Resamples of previous months	5*	11	34*
Maximum d/m/sample	1.19*	0.74	1.19*

* Previous figure did not include special samples above detection limit.

High resamples are under investigation.

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Radiological Sciences Department

2. Fission Product Analyses

	February	March	1953 To Date
Samples assayed	427	650	1,446
Results above 10 c/m/sample	0	0	1

3. Uranium Analyses

Results of 456 samples were as follows:

METAL PREPARATION - 300 AREA

Job Description	End of 4th Day Exposure µg/liter Maximum	Average	Number Samples	End of 2 Days-No Exposure µg/liter Maximum	Average	Number Samples
Canning	17	4	43	12	3	32
Machining	51	15	31	16	4	15
Melt Plant	50	11	42	20	9	35
Material Handling	29	8	46	14	5	40
Testing	17	6	25	6	3	17
305 Building	1	1	1	-	-	-
Coverage	6	3	6	7	5	5
R.M.U.	12	8	3	7	5	2
Technical	11	8	3	35	13	3
Maintenance	2	2	2	2	2	2

	Before Job Maximum	Average	Number Samples	After Job Maximum	Average	Number Samples
Car unloading	11	7	3	1	1	3
Rod unloading	9	7	3	1	1	3
Billet loading	-	-	-	28	5	8

	Miscellaneous Samples Maximum	Average	No.Samples (µg/liter)
224-U	12	3	83

4. Tritium Analyses

	Activity Density (µc/cc x 10^3) <2	2-20	>20	Total	1953 To Date
Number of samples	56	1	0	57	223

(c) Thyroid Checks

All thyroid checks reported were below the warning level.

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(d) Hand Score Summary

There were 49,132 alpha and 54,951 beta scores reported. About 0.05% of the alpha and 0.03% of the beta scores were above the warning level. Decontamination of each of the reported high scores was attempted and was successful.

4. Calibrations

	Number of Routine Calibrations		
	February	March	1953 To Date
Fixed Instruments	73	212	383
Portable Instruments	1,746	2,036	5,118
Personnel Meters	7,297	9,931	20,973
Total	9,116	12,179	26,474

BIOPHYSICS SECTION

CONTROL UNIT

Regional Survey

The general findings are summarized in the following table:

SAMPLE TYPE AND LOCATIONS

Drinking Water	Activity Type	Average Activity Density (uc/cc)
Benton City Water Co. Well	alpha	1.3×10^{-8}
Richland, N Richland, Benton City Wells	alpha	<0.5 to 1.3×10^{-8}
100 Areas	beta	<0.5 to 2.5×10^{-7}
Pasco, Kennewick, McNary Dam	beta	<0.05 to 1.5×10^{-6}
Backwash Solids-Pasco Filter Plant	beta	3×10^{-2} uc/gm
Backwash Liquids-Pasco Filter Plant	beta	8×10^{-7} uc/gm
Anthracite Filter-Pasco Filter Plant.	beta	2.4×10^{-4} uc/gm

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Radiological Sciences Department

CONTROL UNIT (Continued)

SAMPLE TYPE AND LOCATIONS	Activity Type	Average Activity Density (μc/cc)
Other Waters		
300 Area Wells #1, 2, 3	alpha	<0.5 to 3.8×10^{-8}
300 Area Well #4	alpha	1.1×10^{-7}
Miscellaneous Wells on the reservation	beta	<0.5 to 1.6×10^{-7}
Columbia River-Hanford Ferry	beta	9.0×10^{-6}
Columbia River-Below reactors	beta	3.0×10^{-5}
Columbia River-Patterson to McNary	beta	7.0×10^{-7}
Columbia River-Shore mud	beta	5.0×10^{-5} μc/gm
Raw Water-Operating areas	beta	<0.5 to 6.6×10^{-7}
Reactor Effluent retention basins	beta	2.5 to 4.5×10^{-3}
Reactor Effluent retention basins	alpha	<0.05 to 1.2×10^{-7}
I^{131} in farm wastes	I^{131}	4.5×10^{-6}
I^{131} in Columbia River-Hanford	I^{131}	1.5×10^{-7}
Atmospheric Pollution		
Gross alpha emitters	alpha	<0.4 to 2.9×10^{-14}
Gross dose rate-Separations areas	beta-gamma	0.3 to 2.2 mrep/day
Gross dose rate-Residential areas	beta-gamma	0.3 to 0.7 mrep/day
Filterable beta-Separations areas	beta	1.4 to 8.2×10^{-13}
I^{131}-Separations areas	I^{131}	<0.4 to 3.8×10^{-13}
I^{131}-Separations stacks	I^{131}	0.85 curie/day
Active particles,Wash.,Ida.,Ore.Mont.	--	0.002 to 0.008 ptle/m^3
Active particles-Hanford Works	--	0.009 to 0.085 ptle/m^3
Tritium (as oxides)-Reactor stacks	T	0.06 to 0.3 curie/day
Vegetation		μc/gm
Environs of Separations areas	I^{131}	<3.0 to 5.0×10^{-6}
Residential areas	I^{131}	$<3.0 \times 10^{-6}$
Eastern Wash. and Oregon	I^{131}	<0.3 to 1.0×10^{-5}
Non-volatile beta emitters-Wash.&Oregon	beta	4.0×10^{-5}
Alpha emitters-Separations areas	alpha	5.6×10^{-7}
Alpha emitters-300 Area	alpha	1.7×10^{-5}

Measurements of airborne particles, made within 0.5 mile of the Redox plant, during periods of low dilution of the stack effluent from that facility, showed concentrations ranging from 7.6×10^{-2} ptle/m^3 to 13 ptles/m^3, with seven of twenty-seven measurements in excess of 1 ptle/m^3. Preliminary laboratory analyses indicated that the particles were composed of mixed fission products. Seven of thirty portable scrubber samples collected under the same conditions showed detectable concentrations of I^{131} in the air, ranging from 5×10^{-10} to 1.1×10^{-9} μc/cc.

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Radiological Sciences Department

CONTROL UNIT (Continued)

Surveys completed on March 26 and 27 in the area east of the 241-S tank farm and north of the Redox plant showed ground contamination in that area with readings ranging up to 80,000 c/m on VGM and Thyac meters. A similar survey conducted in the area east of the plant showed readings of over 1,000 c/m to predominate with isolated cases over 80,000 c/m.

Samples of Columbia River water collected between Arlington, Oregon, and Portland, Oregon, had detectable concentrations of beta particle emitters with maximum measurements found between Arlington and Bonneville Dam ranging from 2 to 3 x 10^{-7} μc/cc, while values in the region below Hood River ranged from 2 to 7 x 10^{-8} μc/cc.

Sludge samples, obtained from the bottom of the 107-DR retention basin after some of the material of this type had been washed to the river, showed the activity density of gross beta particle emitters to range from 8.4 x 10^{-2} μc/gm to 2.0 μc/gm. Efforts to detect this activity at downstream locations were confined to sampling at the Pasco Filter Plant, where no increment in activity was found.

Analytical Control Laboratory

Routine and special analyses were carried out as follows:

Laboratory	Analyses Completed March	Analyses Completed 1953 To Date
Type Sample		
Vegetation	1062	3073
Water	1607	5303
Solids	307	871
Air samples	154	504
Uranium (fluorophotometer)	54	836
Oil fog (fluorophotometer)	0	182
Special survey samples (RMSS)	22	68
Special survey samples	117	429
Phillips Petroleum-Tritium oxide in water samples	0	12
Total	3323	11278
Counting Room		
Beta measurements (recounts included)	5794	17522
Alpha measurements (recounts included)	2538	7253
Control points (alpha and beta)	2813	7335
Decay curve points	3581	12597
Absorption curve points	412	1001
Total	15138	45708

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Radiological Sciences Department

Control Services

A statistical evaluation of activity density data from reactor effluent water analyses on samples from six locations across the 107-H basin outlet weir, was completed to determine the reliability of Regional Survey sampling at such locations. Computations were completed to indicate the relationship between water flow from the reactors and the retention times in the 107 basins.

A correlation analysis resulted in establishing the reliability of using a single fluorophotometer measurement for each oil fog sample instead of an average of four measurements on each sample currently used in the Control laboratory. Factors for the calculation of results from the analysis for I^{131} by PdI_2 precipitation in the Control laboratory were defined.

Synoptic Meteorology

Forecasts	Number made	March Percent reliability
Production	93	85.7
24-hour	62	82.4
Special	98	81.6

The temperature averaged 46.2°F; this was near the March normal of 45.8°F; the highest and lowest were, respectively, 69° on March 9, and 23° on March 14.

ENVIRONMENTAL HAZARDS AND GENERAL STUDIES UNIT

Experimental Meteorology

The thermocouple circuits on the portable mast were tested and found satisfactory. The calibrated anemometers were received from the National Bureau of Standards. Except for the cascade impactor system, the mast is expected to be ready for field testing in April.

Geology-Hydrology

One additional well was completed near the 241-T second cycle crib to determine the extent of eastward spread of contamination. The well in which ground-water contamination at this location was first detected had been jammed with sampling equipment one year ago and only recently reopened for sampling. No change in the degree of contamination of the ground water in that period was shown by the samples in spite of the constant use of the crib during the past year.

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Radiological Sciences Department

Geology-Hydrology (Continued)

Direct field evidence was obtained, supporting earlier laboratory results, of the importance of the inactive salt content of a liquid waste. Thus, in the 241-B second cycle crib area, contamination in the ground water continued as before. In such areas, the high salt content of the wastes decreased the adsorption of radioactive ions from solution and increased their removal from the soil while a 5-6 waste stream of large volume and with fifteen times as much radioactive material, but with low salt concentration, did not detectably contaminate the ground water.

Soil Science

Twelve successive applications of 112-T waste solution to a soil sample indicated that 0.15 μc of radioactive yttrium-rare earths per gram of soil was adsorbed with no indication of approach to a saturation value for these elements. The experiment indicated that the soil removed all of the yttrium-rare earths from that volume of 112-T waste solution long before cesium was removed, that element reaching a saturation value after five similar applications.

A soil sample from the 5-6 tile field in 200 East Area was analyzed. It contained 0.086 μc of radioactive cesium per gram of soil. This is similar to the laboratory-determined maximum adsorption value of 0.093 μc/gm of soil in 112-T waste. The correspondence suggests that about 0.09 μc/gm of soil is a maximum for adsorption of cesium from both 112-T and 5-6 wastes (assuming no change in inert cesium amounts present). The radioactive strontium content of the same soil sample was 0.025 μc/gm, a value which is probably well below the maximum.

The feasibility of using a "self-sealing" underground crib for the storage of a Recuplex liquid waste stream was investigated. The reaction of the waste solution with the soil constituents raised the pH from 2.5 to approximately 6, and reduced the percolation to one-sixtieth of the former rate; experimental evidence, however, indicated a lack of sufficient precipitation of insoluble hydrous oxides to plug the pore space and insure a permanent "self-seal".

Industrial Hygiene

A preliminary study was made of the possible exposure to beryllium in the canning operations of 313 building. Due to the high toxicity of this metal and the contemplated process procedures, a simulated run was made in a spare pot line to determine the extent of atmospheric contamination prior to undertaking production tests under normal operation. Laboratory analyses of the air samples were not completed in this period.

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Radiological Sciences Department

Industrial Hygiene (Continued)

The oscillating electric precipitator head was obtained from fabrication. The device permits the collection of airborne particulates directly on electron microscope screens. In operation, the screens travel throughout the length of a precipitator collection tube in which the particulates are distributed selectively by size; the screen movement through this field causes the specimen to be collected in a random fashion on the screens with respect to particulate sizes. This feature is expected to be of considerable assistance in size analysis.

Outdoor air samples were collected experimentally at 329 building continuously for several days with the oscillating electric precipitator during part of the period of the Nevada tests. The specimens were found by electron microscopy to contain about 1% spherical particulates; the source of these is presently unknown but they are believed to be endemic.

Methods

The electrodeposition of Cu^{64} was studied further and data were obtained for correcting the counting rates for the weight of copper plated on the cathode.

A procedure for determining Mn^{56} in reactor effluent was developed in which a cation exchange resin was used to remove interfering radioactive isotopes after converting the Mn to permanganate. The permanganate was then reduced to MnO_2 for counting. Decontamination from other activities was virtually complete as determined by half-life measurements. The electrodeposition of Mn as MnO_2 resulted in a loose deposit causing difficulty in counting.

Valence state studies of I^{131} in Separations stack effluent showed that Ru^{103}-Rh^{106} isotopes were probably interfering with the IO_3^- measurement. The application of palladium iodide precipitation for I-131 analysis in 50 gram vetetation samples proved unsuccessful because of organic material which is carried with the precipitate.

The study of improvement in ether extraction of Pu in 500 ml water samples showed that good yields were obtained if 10 ml HNO_3 is added to the sample previous to evaporation and if extraction is carried out using the centrifugal pump mixer. The resulting acid concentration after evaporation was between 9 and 10 N.

Work continued on procedures for the analysis of 112-T liquid samples. A modified procedure for Zr in this waste was developed which recognizes the fact that Zr is present as the fluoride complex.

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Radiological Sciences Department

Radiochemical Standards

The mass absorption coefficient for C^{14} beta particles was found to be lower for air than for aluminum, thus supporting similar data recently reported for S^{35}. Sources of C^{14} essentially carrier-free gave coefficients lower than those measured for thick sources.

The radioactive aerosol generating and collecting technique used in self-absorption self-scatter experiments was examined to try to explain certain anomalous results. Some penetration of the sintered stainless steel filters was found to be occurring. Preliminary tests using a molecular filter over the sintered filter gave significantly improved retention. Self-absorption self-scatter factors for P^{32} were determined.

Backscatter and absorption coefficients were determined for Y^{91} and Cu^{64} for mica window counters. Similar data were redetermined for P^{32}. Measurements using the 2 π and 4 π counters were made for these isotopes with generally good agreement with the mica window counter results.

The degree of tritium depletion in hydrogen generated by the calcium-water reaction was found to be essentially constant when the amount of water reacted was varied from 45% to 96%. In each experiment, a satisfactory tritium balance was achieved, the unreacted water and the resulting $Ca(OH)_2$ showing an enrichment to a degree required by the depletion in the gas phase. A complete determination was started which will extend the study to greater than 96% and less than 45% reaction.

RADIATION MEASUREMENTS UNIT

Physics

Development of the K source continued with interest centered on minimizing the scattered radiation in those cases where the emitting material was in powder form and embedded in plastic.

Several types of gases, gas pressures, and wire sizes were tested for use in a thimble chamber to be operated in the proportional region. A circuit was built and tested for use with this chamber; it appeared to be satisfactory.

The photon monitoring system for the Van de Graaff was modified so as to use less sensitive, and therefore less expensive, instruments for current measurements. Calibration of the ion chambers for use with the system was completed. A CP chamber was modified to be used in this system as a

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Radiological Sciences Department

Physics (Continued)

monitor for exposures to the electron beam; calibration was made against a Sr^{90} source previously calibrated with the beta ray external extrapolation chamber.

It has been shown in the scientific literature how penetration problems of electrons could be solved by the same mathematical methods as used in neutron age theory. These methods have been applied to the beta ray surface dose problem. This problem is to determine the dose rate at the interface of an emitting medium and a backscattering medium when the scattering properties of the two media are quite different. Calculations of the resulting formula show good agreement for the dose between uranium and a graphite backscatterer, which has been measured at Hanford, and uranium and a series of backscatterers of atomic numbers between graphite and lead, which were measured at Oak Ridge.

Calibration of the total emission of a new Po-B source was made by comparison with a Ra-Be standard in two different ways: (1) with the Sigma Pile; and (2), with a long counter in a Hanson moderator using corrections for the asymmetrical emission of the source. The two methods agreed within their probable errors. The result was 7% greater than that given by the manufacturer of the source; in the case of the last previous source obtained from this manufacturer, the result was 15% less than that quoted. These examples emphasize that off-site neutron source calibration is not yet a highly developed procedure and that to obtain consistent results, exact calibration must be done locally.

A further type of geiger counter was subjected to age testing. The characteristics were similar to those of other tubes tested.

Instrument Development

Laboratory work on a single crystal gray wedge gamma ray analyzer was nearly completed. Photoelectric peaks corresponding to the 5 principal I^{131} gamma rays were photographed satisfactorily as were the Co^{60} and Cs^{137} spectra. The equipment will be used experimentally for the qualitative and quantitative isotopic analysis of certain waste streams.

Experimental work to determine an optimum arrangement of detectors for the monitoring of pig thyroids was completed.

A working model of a scintillation type portable poppy was completed. In this case, the light shield was made from aluminum foil glued to the cast phosphor plate; while this is not as damage-resistant as an evaporated film of aluminum, further work is required with the preparation of evaporated films to avoid pinholes. The present model has 20% geometry.

Laboratory tests of Amphenol type 82 connectors have indicated that they may be a partial solution to the 107 basin monitoring problem. One connector was immersed alternately in hot and cold water for 12 cycles and then soaked for 95 hours without giving any trouble in a Beckman Rx G micro-microammeter circuit.

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Radiological Sciences Department

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BIOLOGY SECTION

AQUATIC BIOLOGY UNIT

Biological Chains

Substantial algal populations developed during the five weeks from initiation to March 26, in the ten aquaria containing uniform amounts of synthetic nutrients, and various concentrations of phosphate in de-ionized waters. Tracer P^{32} was introduced on March 26, and periodic samples of community fractions have since been taken. Preliminary results suggest a general pattern of uptake similar to that of the previous experiment which utilized Columbia River water, and indicate the strong effect of isotopic dilution on the accumulation of P^{32} by the organisms.

Ecology

Survey of the Columbia River

Rising river levels as the freshet season approaches curtailed sampling of bottom organisms from the littoral zone. All other phases of the river survey were continued without interruption. Average activity density of small fish (3.2×10^{-4} μc/g) was approximately the same as last month. Averages for plankton (27.3×10^{-3} μc/g) and bottom algae (11.9×10^{-3} μc/g) were 1.5 and 2 times the activity density found during February. A rainbow trout sampled from the Hanford Area contained 5.3×10^{-4} μc/g of bone, and 3×10^{-5} μc/g of muscle. Chinook salmon fry appeared along the river's edge in abundance during the middle of the month, which is earlier than observed in the previous 3 years. The presence of these small fish indicates successful natural spawning last fall. The young salmon sampled at Richland and near the 300 Area are two and three times, respectively, more radioactive than those samples near Hanford, indicating a downstream migration.

Effluent Monitoring

Routine monitoring of the area effluent with juvenile chinook salmon continued. Some increase in mortality rate persisted at 5% and greater concentrations. Reactor influent water substantially increased mortality and retarded growth at 25% concentration, and was lethal at 50%. Filtering through charcoal to remove residual chlorine resulted in good survival even in undiluted influent but may have slightly inhibited growth at and

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above the 50% level. Mortalities of the young salmon held at temperatures simulating river temperature and higher levels were insignificant during the month. Cumulative mortalities to date are inversely related to temperature with best survival in the coldest condition, 5°F below the river's temperature at 100-B.

BIOLOGICAL SERVICES UNIT

Biological Monitoring

No significant difference was noted between two groups of waterfowl frequenting, respectively, the Redox swamp and the 221-T swamp, indicating a decrease in the Redox swamp contamination. Total beta activity densities of about 7×10^{-4} μc/g were noted in bone and other tissues.

Rodent thyroid activity densities continued to decrease during the month with maximum values well below the chronic MPC for I^{131} in man. Hottest samples were taken from near the meteorology tower and showed an average activity density of 2×10^{-3} μc/g.

Clinical Laboratory

One thousand and twenty-five determinations.

Microscopy

Routine histological preparations and photomicroscopy plus approximately 110 autoradiographs.

Electron microscopy service to Biophysics included studies of carbon particles from burned amyl acetate, and of dust collected from the 300 Area. For Pile Fuels methods were developed and applied to the study of uranium surfaces and of reactor corroded aluminum.

Radiochemistry Laboratory

Services included 400 TTA extraction determinations of Pu in biological samples, the preparation of 51 isotope solutions, and the analysis of special and routine samples involving approximately 4800 alpha and beta counts.

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Radiological Sciences Department

METABOLISM UNIT

Animal Metabolism

Feedings in the high-level plutonium absorption experiment continued throughout the month. Two animals died of causes as yet undetermined.

The absorption of plutonium through the skin of rats was studied over time periods up to one week. When applied as a 10 N nitric acid solution of $Pu(NO_3)_4$, approximately 10% of the plutonium was absorbed by the animal at the end of one week. About 4% of the plutonium was absorbed during the first 24 hours. Rats similarly contaminated were subjected to a permanganate-sulfuric acid decontamination procedure which removed approximately 90% of the plutonium from the skin. The absorption of the remaining 10% was then followed over the ensuing week. Absorption during the first hour after decontamination was greatly increased over that observed in the animals which were not decontaminated. Over more extended periods the percentage absorption of plutonium remaining after decontamination was about the same as that observed in the undecontaminated animals with some indication, however, of an increase in percentage of absorption occasioned by the decontamination procedure.

Rats previously injected with various levels and combinations of zirconium citrate and Ca EDTA were sacrificed during the month. Analyses are in progress. Thirty-six additional rats were injected with various levels and combinations of zirconium malate and Ca EDTA to determine the effects of these agents on the retention and distribution of plutonium.

Microbiology

Previous studies on the ferrous-ferric and cerous-ceric systems for chemical radiation dosimetry had indicated that, when applied to tritium oxide solutions, an initial reaction occurred which was postulated as being due to accumulated products of the irradiation decomposition of water. This postulate was confirmed by the finding that distilled tritium oxide solutions showed no evidence for such an initial reaction.

Studies on the destruction of very dilute solutions of folic acid (10^{-8} g/ml) show 90% destruction at 1.15 and 3.05 kilorep in oxygen and nitrogen atmospheres, respectively. Similar incomplete studies on the destruction of biotin indicated a radiosensitivity of the same order as that exhibited by folic acid.

Thirty rats were exposed simultaneously to an atmosphere of tritium gas in an effort to obtain animals in which the retention of fixed tritium following such an exposure could be studied over a relatively long time-period. Only

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ten animals were alive a week following exposure. Deaths were attributed to heat prostration and pneumonia resulting from the exposure conditions employed.

The presence of dissolved calcium chloride was shown to decrease markedly the exchange of molecular tritium with hydrogen of water. Exchange in a 5 M solution of calcium chloride was less than 1% of that observed in pure water.

Further studies on the comparative metabolism of protium and tritium by bacteria indicated that the tritium was more rapidly metabolized than protium.

Plant Nutrition

Red kidney beans were grown in nutrient solutions containing plutonium. The uptake of plutonium by the plants was found to be quite pH sensitive. Uptake at a given pH was linearly related to the concentration of plutonium in the nutrient solution.

The maximum removal of ruthenium from an Ephrata fine sandy loam by barley plants grown to exhaustion of the soil nutrients was approximately 0.01% to 0.02% of the total ruthenium present. This result is somewhat higher than would have been anticipated from previously obtained nutrient culture data. Further experiments are in progress to investigate the discrepancy.

The outdoor plots used to study the effect of reactor effluent on cereal plants were planted during the month, using seed harvested from the same plots last year.

Plant Metabolism

Previous indications of an increased synthesis of fatty acids by radiation damaged algae were confirmed in C^{14} incorporation studies which showed that previously irradiated cells synthesized about six times as much fatty acids as control cells. The non-saponifiable fractions from the algae grown in the presence of C^{14} following irradiation were combined with tomato carotenes and colorless polyenes and the mixture separated chromatographically. The results suggest that tracer quantities of certain carotenes and polyenes may occur in algae.

Studies were made of the adsorption of carrier-free radiophosphorus on

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glass. From preliminary data, it appears that "dri-filmed" glass may adsorb more P^{32} than does untreated glass.

TOXICOLOGY UNIT

Experimental Animal Farm (Toxicology of I^{131})

Sixty-four of sixty-seven ewes expected to lamb gave birth to 113 lambs. The ratio of ewes to lambs was 1.77, which is an excellent yield. Two of the ewes remaining in the group previously fed 240 μc of I^{131}/day for 450 days gave birth to single lambs. One animal was of average size and normal appearance but weak and unable to arise. The other lamb was stillborn following 120 days of gestation.

The mean monthly ratios of (I^{131} in thyroid)/(I^{131} fed daily) of all groups of adult ewes appear below:

	Treatment Started	30 μc/day group	15 μc/day group	5 μc/day group	0.15 μc/day group
5 yr.old ewes	Apr.1950			1.9	2.8
3 yr.old ewes	Apr.1950*	1.1	0.92	0.9	2.9
2 yr.old ewes	Jan.1951*			1.7	2.8
1 yr.old ewes	Jan.1952*		1.1	1.4	3.0

The results of a test for difference between groups in the ratios indicate a significant divergence for the ewes fed 5 μc/day when compared with those fed 0.15 μc/day. This difference was greatest in the 1951 female offspring of the 5 μc/day group. This important result may imply that some damage occurs at the 5 μc/day level, not otherwise detected. This would lower the estimated permissible exposure.

Physiology

Preliminary results indicate 11% to 43% of an intravenously administered dose of plutonium in dogs appeared in the urine within 24 hours following single injections of varying levels of zirconium citrate. Ca EDTA administered at levels of 0.07 and 0.14 g per kg body weight caused 0.72 and 13% of an administered dose of plutonium to appear in the urine in 24 hours. The control value was less than 1% of the administered dose in the urine in the same period.

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* In these, treatment began in utero and was continued through the mother's milk. Direct feeding began at weaning.

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FINANCIAL DEPARTMENT MONTHLY REPORT
MARCH, 1953

Summary

The reorganization of the Financial Department into three sections was completed in March. The Accounting Section, of which K. L. Robertson is manager, consolidates into one group the former General Accounting, General Cost, Manufacturing Cost and Engineering Cost Sections, each of which is now a unit in the larger section, and to these has been added the newly organized Reimbursement Unit, which will handle matters relating to reimbursability under the AEC-GE prime contract. The Appropriations Section, of which P. D. Lee is manager, has been set up to handle financial planning, and Mr. Lee also serves as secretary of the Appropriations and Budget Committee. The Payroll and Auditing Section, of which J. P. Holmes is manager, consolidates the former Payroll and Internal Audit Sections, each of which is now a unit in this group.

A physical inventory of stand-by materials and spare equipment held in storage in custody of Stores Unit was taken as of March 25, 1953. This was part of a program for taking physical inventories of all Hanford Atomic Products Operation materials (excluding SF materials) by June 30, 1953. The complete schedule of inventories taken or to be taken is shown below:

January 16	Special Materials (platinum, silver, gold beryllium and zirconium)
January 23	Fuels and Lubricants
January 29	Graphite
February 5	Medical Supplies
February 19	Bulk Steel
February 28	Essential Materials
March 25	Stand-by Materials--Stores Unit
March 25	Spare Equipment Held in Storage (Capital Account)
April 16	Stand-by Materials--Electrical Distribution and Telephone Section
April 30	General Maintenance Materials--Stores Unit
May 18 (approx.)	Stand-by Materials--Transportation Section
June 1	Excess Materials
To be scheduled	General Maintenance--Community Operations and Real Estate Department

The physical inventories taken as of March 25, 1953, representing 23,135 line items with book values aggregating $3,784,000, required the participation of 100 Financial Department and Purchasing and Stores Section employees, and required 517 man-days during the period March 16 to April 10.

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The inventories taken to date have proceeded in accordance with scheduling of manpower and detailed procedures prepared in advance, and have been accomplished according to plans. At the close of March, reports were being prepared for all of the inventories taken prior to March.

The management information meetings for Financial Department personnel, begun in February, were continued in March. Exempt employees of the Payroll and Auditing Section met in the library on March 11. A session for all members of the Manufacturing Cost Unit was held on March 24, and meetings were scheduled for all employees of various other units in April as follows: April 2--Engineering Cost; April 10--General Accounting; April 14--General Cost and Reimbursement; and April 16--Payroll.

On March 27 the Atomic Energy Commission issued a reimbursement authorization approving a general salary increase of 1.79%, effective March 16, 1953, for employees not represented by unions. First payment of the increase to the weekly-paid employees affected was scheduled for April 10, and for monthly-paid employees, April 30. At the month-end, the unions representing bargaining-group employees had not accepted the increase.

Work on the preparation of the budget for the FY 1955 and revision of the budget for the FY 1954 continued during March. The summary of personnel requirements was submitted to the Atomic Energy Commission on March 11, having been approved by the Appropriations and Budget Committee. The Medical Department's budget went to the AEC on March 13, and the consolidated budget for Equipment Not Budgeted in Construction Projects was transmitted to the Commission on March 31.

A copy of the Company's annual report, and a statement of his account, was distributed to each of the employees participating in the G. E. Employees Savings and Stock Bonus Plan at the close of 1952.

Payroll deductions for telephone charges were made for the last time in March, and beginning with April billings, all charges will be payable in cash in the same manner as billings for electricity.

In order to reduce the number of purchase orders issued and thus reduce clerical expenses, a $500 petty cash fund was established in the Purchasing and Stores Section from which purchases of less than $25.00 may be made. Arrangements were also made for emergency purchases of pharmaceuticals costing less than $25.00 and for perishable foods by Kadlec Hospital without the issuance of formal purchase orders.

In connection with the unitization of construction costs, physical inventories of plant equipment were made during March of the 100-C area and 222-S Redox Laboratory.

Statistics

A summary of cash disbursements and receipts (excluding reimbursements by AEC) for the months of March and February, 1953, is shown below:

Disbursements	March	February
Payrolls (net)	$2 584 326	$2 578 995
Materials and Freight	1 454 564	1 539 855
Pension Plan--Employers' Portion	-0-	1 523 313
Payroll Taxes	684 653	890 809
U. S. Savings Bonds	109 047	169 838
Payments to Subcontractors	103 612	129 513
Group Insurance Premium	126 169	126 694
Pension Plan--Employees' Portion	87 982	119 800
Stock Bonus Plan	181 232	-0-
Other	117 986	147 193
Total	5 449 571	7 226 010
Receipts		
Rents	114 135	104 467
Hospital	87 864	55 554
Sales to AEC Cost-Type Contractors	58 690	51 684
Electricity	91 260	51 076
Telephone	26 432	22 392
Bus Fares	8 658	7 602
Scrap Sales	273	6 801
Refunds from Vendors	8 376	1 231
Other	30 373	22 822
Total	426 061	323 629
Net Disbursements	$5 023 510	$6 902 381

Advances as of March 31 and February 28 may be summarized as follows:

	March	February
Cash in bank--contract accounts	$4 301 490	$3 422 619
Cash in bank--salary accounts	50 000	50 000
Travel advance funds	125 000	125 000
	4 476 490	3 597 619
Disbursements not reimbursed	5 023 510	6 902 381
Total	$9 500 000	$10 500 000

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Personnel and Organization

	Current Month	Prior Month
Personnel Changes during Month		
Employees at beginning	343	351
Additions and transfers in	7	6
Removals and transfers out	(6)	(14)
Employees at end of month	344	343
Personnel by Unit at Month-End		
General	9	9
Reimbursement Unit	4	3
General Accounting Unit		
General Accounts	24	24
Plant Accounts	29	28
Accounts Payable	35	36
Accounts Receivable	22	22
General	3	3
	113	113
General Cost Unit		
Consolidated Costs and Budgets	7	5
Plant Auxiliary Operations	16	16
Community Operations and Real Estate	11	11
Radiological Sciences and Other	7	7
Medical	3	3
General	2	2
	46	44
Manufacturing Cost Unit		
Costs and Budgets	35	34
General	7	7
	42	41
Engineering Cost Unit		
Project Section Costs	19	19
Design Section Costs	7	7
Technical Section Costs	9	9
General	5	4
	40	39
Payroll Unit		
Preparation and Employee Records	36	37
Confidential Payroll Records	14	16
Employee Benefit Plans and Payroll Reports	22	21
IBM Procedures	1	1
General	2	3
	75	78
Internal Audit Unit	14	14
Rotational Trainees	1	2
Total	344	343

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Unit Reports

The monthly reports of six of the units of the Financial Department, as listed below, are shown on the following pages:

General Accounting Unit	Ia-1 through Ia-10
General Cost Unit	Ib-1 through Ib-2
Manufacturing Cost Unit	Ic-1 through Ic-2
Engineering Cost Unit	Id-1 through Id-3
Payroll Unit	Ie-1 through Ie-8
Internal Audit Unit	If-1

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GENERAL ACCOUNTING UNIT
MONTHLY REPORT - MARCH, 1953

ACCOUNTS PAYABLE

The volume of all accounts payable work reflected a significant increase this month. As compared with February, the number of vouchers recorded increased from 3,484 to 3,852, and the number of checks issued increased from 2,120 to 2,355. Number of purchase orders received in March was 1,961, amounting to $2,896,864, as compared with 1,443, amounting to $504,173, received in February.

Cash discount earned in March amounted to $4,548. Fiscal year to date total of earned cash discount is $37,318, representing a monthly average of $4,146.

The accounts payable voucher form was redesigned this month and will be reordered with two less copies than heretofore. One less copy results from arrangements with the Atomic Energy Commission whereby we will retain and file the originals, together with supporting details, instead of forwarding these copies to them.

This month a $500 petty cash fund was established in the Purchasing Unit for local purchases of items costing less than $25. Disbursements from the fund will be controlled through approved petty cash vouchers, and no formal purchase orders will be issued. Reimbursement of the fund will be made at least monthly by Accounts Payable based on the supporting petty cash vouchers.

Notice was received this month that several additional purchase orders placed by General Electric Company for engineered materials and equipment to be used in the current construction program are to be assigned to Blaw-Knox Company. As of March 31, 1953, 11 orders totaling $2,120,998 have been assigned.

New procedures in connection with procurements by Kadlec Hospital were approved and made effective this month. The hospital Administrator was authorized to make local emergency purchases of pharmaceutical items costing less than $25 without the issuance of purchase orders. The Administrator was also authorized to purchase perishable foodstuffs from local vendors based on the best prices offered, without the issuance of purchase orders. Invoices covering purchases thus made are to be obtained by the hospital Administrator, approved and cost coded, and forwarded to Accounts Payable for payment. Approval of the Atomic Energy Commission was obtained for both these new procedures.

Detailed records and controls were established and procedures were developed with field personnel in connection with shipments of graphite from Union Carbide and Carbon Corporation under subcontracts G-5, G-12, and G-23, which provide for total shipments in excess of $10,000,000.

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General Accounting Unit

ACCOUNTS PAYABLE (CONTINUED)

As of March 31, 1953, invoices amounting to $397,600 had been received, of which $70,719 was paid, $167,996 was returned to the vendor unpaid due to incorrect pricing, and $158,885 is being held pending receipt of supporting data and further price clarification.

ACCOUNTS RECEIVABLE

An analysis of all accounts receivable balances at March 31, 1953, shows that 61% of the total amount represents current month's charges, 21% charges one to two months old, 4% charges two to three months old, and 14% charges over three months old. Charges over three months old include accounts which have been forwarded to collection agencies totaling $14,045.

The gross accounts receivable balance at March 31, 1953, amounted to $390,342, a decrease during the month of $34,507, or 8%, with all accounts except Sundry and Atomic Energy Commission Cost-type Contractors showing a decrease. Increase in Accounts Receivable - Sundry, $10,115, was principally due to an unusually large number of invoices being issued relative to tenant service charges - 502 as compared to 304 in February. Increase in Atomic Energy Commission Cost-type Contractors, $4,799, was due to normal fluctuations in amount of invoices issued and cash receipts.

Final payroll deductions for telephone accounts were made from checks received by weekly paid employees on March 20, 1953, and from checks received by monthly paid employees on March 31, 1953. An article was printed in the Hanford Works News, and a notice was attached to telephone statements, stating that payroll deduction of telephone accounts is being discontinued effective April 1, 1953, and payments should be made to the Works Cashier. The article explained the reason for this change and outlined the policies regarding issuance of statements and collection policies.

A reminder notice was designed and printed during March. This notice will be forwarded to telephone subscribers, calling their attention to past due telephone accounts.

During the month, 51 uncollectible accounts, in the amount of $2,571, were transferred to the Atomic Energy Commission. In view of letters to our collection agencies requesting that they return to us accounts which they feel there is little possibility of collecting, 16 accounts, in the amount of $4,462, were returned from Yakima Adjustment Service, and 25 accounts, in the amount of $206, were returned from Credit Bureau of Benton and Franklin Counties. Since there appears no possibility of collection, these accounts will be assigned to the Atomic Energy Commission.

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ACCOUNTS RECEIVABLE (CONTINUED)

Out-patient invoices issued in March at Kadlec Hospital numbered 1,978 and totaled $9,584, as compared to 1,873 in February amounting to $8,820. In-patient revenue totaled $75,949, which is the highest sales month in the history of the hospital. The Kadlec Hospital receivable balance decreased $9,310, due primarily to payment of an exceptionally large number of claims by insurance companies.

GENERAL ACCOUNTS

The advance account was decreased $1,000,000 this month, from $10,500,000 to $9,500,000, bringing the balance down to the amount which had been carried for the several previous months. During February, the advance account was increased from its normal balance to $10,500,000 to insure adequate funds for the payment of the Company portion of pension plan costs for 1952 of $1,523,313.

During the month, assistance was given to the Internal Audit Unit in the preparation of open document reports of the Stand-by inventory account. This work consisted of tabulating source documents covering receipts and withdrawals of materials that had not been booked in the general ledger or entered in Stores Unit stock records. Two additional employees were also loaned to the Internal Audit Unit to assist in taking of the physical inventory.

Work in connection with standardization of journal entries and assignment of permanent numbers to certain types of entries was started this month. As a result of this work, it is expected that the number of entries issued each month, as well as number of copies of each entry, will be considerably reduced, and that entries will be prepared in better form, thus reducing both labor and material costs.

General ledger account reconciliations were thoroughly analyzed during March, resulting in revisions to the form of presentation in order to better present account activity. Also, reconciliations of several general ledger accounts were issued this month that had not been issued previously.

A total of 358 travel advances, amounting to $55,312, were issued to employees during March, indicating a considerable increase in activity as compared with last month's travel advances of 198, amounting to $35,678. Outstanding advances to employees at March 31, 1953, amounted to $46,731, of which $6,958 represents advances open thirty days or more. This shows a decrease of $10.471 over the amount open over thirty days at February 28, 1953, which is the result of increased efforts during the month requesting employees to settle open balances.

The total amount of travel expenses reported for the three-month period ending March 31, 1953, was $90,500, which does not include cost of interview trips of prospective new employees and transfer expenses of employees transferred from

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GENERAL ACCOUNTS (CONTINUED)

other locations. Approximately 250 employees traveled on business trips during this period, with approximately 45 attending meetings of professional and technical societies and seminars. The average amount spent per day by each employee, exclusive of transportation costs, amounted to $14.73, which consists of the following: $6.51 for hotel, $6.17 for meals, $2.05 for other expenses. The average per diem expense of $14.73 is, by coincidence, the exact figure which the General Office informed us represented the average per diem cost throughout the Company for living expenses while employees are in travel status.

The final journal entry for February, 1953, affecting general ledger accounts was received on the afternoon of March 9, 1953, and the February trial balance was issued on March 10, 1953.

PLANT ACCOUNTS

During the month, meetings were held regarding the capitalization of minor items of telephone equipment and hospital equipment.

Small items of telephone equipment, due to their long service life and high aggregate value, will be capitalized. The Telephone Subunit maintains extensive detailed records on such equipment in order to properly assess charges to each subscriber. The records will not be duplicated. A joint review will be made of the Plant Accounts records by personnel of the two units to determine into what broad classes of equipment the present records should be grouped.

A similar review was conducted for items of medical equipment which have formerly been considered expense. Due to comparison made of Kadlec Hospital's operating costs with the costs of other hospitals, it is desirable that we follow capital or expense classification policy similar to that of other hospitals. An agreement was reached to classify certain units as capital equipment of an uncatalogued nature.

In connection with unitization of construction projects, inventories are being conducted of the 100 C Area and the 222 S Redox Laboratory. Also, during the month inventories were conducted of the Richland Sewage Disposal Plant and well houses in Richland and North Richland.

Construction costs relating to projects which were unitized during the month and transferred from unclassified property to property in service accounts are as follows:

AEC-106	Yakima River Bridge (lighting only)	$ 647.50
CG-422R	Skull Recovery Facilities for Building 234-5	44 384.88
C-470	200 W Area Badge House Remodeling	23 587.61
C-509	Final Shape Machining Equipment, RMA Line	23 598.88
	Total	$92 218.87

General Accounting Unit

PLANT ACCOUNTS (CONTINUED)

During the month, analysis of the allocation of depreciation expense was completed, relative to associating asset amounts according to processes or programs.

Spare equipment withdrawn from Stores on a temporary basis for use in the 227 S and U Mock-up Buildings was transferred from Unclassified Property to Account 29X, "Spare Equipment Temporarily Withdrawn from Stock," in the amount of $366,527.74.

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General Accounting Unit

	March	February
Accounts Payable		
Balance at Beginning of Month	$ 346 578	$ 465 119
Vouchers Entered	2 799 461	4 357 406
Cash Disbursements	2 756 198 DR	4 477 178 DR
Cash Receipts	8 376	1 231
Balance at End of Month	$ 398 217	$ 346 578
Number of Vouchers Entered	3 852	3 484
Number of Checks Issued	2 355	2 120
Number of Freight Bills Paid	1 486	1 346
Amount of Freight Bills Paid	$ 321 969	$ 288 990
Number of Purchase Orders Received	1 961	1 443
Value of Purchase Orders Received	$2 896 864	$ 504 173
Cash Disbursements		
Payrolls (Net)	$2 584 326	$2 578 995
Payroll Taxes	684 653	890 809
Material and Freight	1 454 564	1 539 855
Stock Bonus Plan	181 232	-0-
Group Insurance Premium	126 169	126 694
United States Savings Bonds	109 047	169 838
Lump Sum and Unit Price Subcontracts	103 612	129 513
Pension Plan - Employees' Portion	87 982	119 800
Pension Plan - Employer's Portion	-0-	1 523 313
All Other	117 986	147 193
Total	$5 449 571	$7 226 010

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General Accounting Unit

	March	February
Cash Receipts		
Prior Month's Expenditures Reimbursed by Atomic Energy Commission	$5 902 381	$5 948 856
Rents	114 135	104 467
Electricity	91 260	51 076
Hospital	87 864	55 554
Sales to Atomic Energy Commission Cost-type Contractors	58 690	51 684
Telephone	26 432	22 392
Sundry Accounts Receivable	11 890	17 214
Bus Fares	8 658	7 602
Refunds from Vendors	8 376	1 231
Surplus, Salvage, and Scrap Sales	273	6 801
Advances from Atomic Energy Commission	-0-	1 000 000
Other	18 492	5 608
Total	$6 328 451	$7 272 485
Bank Balances at End of Month		
Chemical Bank and Trust Company - New York Contract Account	$1 182 676	$ 782 405
Seattle-First National Bank - Richland		
Contract Account	2 239 445	1 832 299
United States Savings Bonds Account	152 454	225 595
Salary Account No. 1	20 000	20 000
Salary Account No. 2	30 000	30 000
Travel Advance Account	61 095	63 366
National Bank of Commerce - Richland Contract Account	879 369	807 915
Total	$4 565 039	$3 761 580

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General Accounting Unit

	March	February
Accounts Receivable		
Hospital	$ 144 203	$ 153 513
Atomic Energy Commission Cost-type Contractors	108 864	104 065
Sundry	49 864	39 749
Equipment Sales to Facilities	38 012	38 563
Electricity	22 693	43 652
Rents	13 107	28 303
Telephones	12 335	15 634
Safety Shoes	943	1 034
Loans to Employees	321	336
Subtotal	390 342	424 849
Reserve for Bad Debts	37 966 CR	40 690 CR
General Ledger Balance	$ 352 376	$ 384 159
Hospital		
Number Out-patient Invoices Issued	1 978	1 873
Charges During the Month	$ 85 553	$ 75 051
Collections - Cash	87 864	55 554
- Payroll Deductions	4 989	4 858
Atomic Energy Commission Cost-type Contractors		
Number Invoices Issued	53	67
Amount of Invoices Issued	$ 63 488	$ 69 116
Cash Received	58 690	51 684
Sundry		
Number Invoices Issued	502	304
Amount of Invoices Issued	$ 22 133	$ 24 761
Cash Received	11 890	17 214
Electricity		
Number of Bills Issued	6 159	6 125
Amount of Bills Issued	$ 69 714	$ 73 415
Cash Received	91 260	51 076
Rents		
Houses		
Number Houses Occupied	6 046	6 043
New Leases and Lease Modifications	106	74
Lease Cancellations	89	65
Charges During the Month	$ 245 716	$ 246 054
Collections - Cash	46 644	44 246
- Payroll Deductions	205 598	211 457

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General Accounting Unit

	March	February
Accounts Receivable		
Rents		
Dormitories		
Number Rooms Occupied	1 042	1 054
New Assignments	61	79
Removals	73	76
Charges During the Month	$ 16 018	$ 16 118
Collections - Cash	3 847	3 756
- Payroll Deductions	12 764	12 817
Facilities		
Number Facility Leases	141	139
Revenue	$ 63 644	$ 56 464
Telephones		
Working Telephones (excludes official telephones)	5 959	5 935
Telephone Work Orders Processed	295	326
Charges During the Month	$ 48 114	$ 51 383
Collections - Cash	26 432	22 392
- Payroll Deductions	24 143	27 415

	Number	Amount
Uncollectible Accounts (Total to Date)		
Accounts Forwarded to Collection Agencies	485	$ 42 727
Accounts Returned as Uncollectible	130	22 093
Collections	170 -1)	6 589 -2)
Balance at Collection Agencies March 31, 1953	212	$ 14 045

(1- Includes 143 accounts collected in full and 27 accounts partially collected.

(2- Represents total collections, half of which is remitted to General Electric.

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General Accounting Unit

	March	Total to Date
Surplus, Salvage, and Scrap Sales		
Number of Sales	1	593
Revenue (excluding Sales Tax)		
Materials or Equipment	$ 273	$ 644 511
Tract Houses		
Revenue to Atomic Energy Commission	-0-	36 174
Revenue to General Electric	-0-	15 773
Total	$ 273	$ 696 458

	March	February
Travel Advances and Expense Accounts		
Cash Advances - Beginning of Month	$ 46 545	$ 55 300
Advances During the Month	55 312	35 678
Expense Accounts Submitted	43 880 CR	32 249 CR
Cash Refunded	11 246 CR	12 184 CR
Cash Advances - End of Month	$ 46 731	$ 46 545
Outstanding Cash Advances		
Current	$ 39 773	$ 29 116
Over 30 Days	6 958	17 429
Total	$ 46 731	$ 46 545
Travel and Living Expenses		
Paid Employees	$ 38 936	$ 28 908
Billed to Government	36 851	27 671
Balance in Variation Account at End of Month	17 174 DR	15 089 DR

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GENERAL COST UNIT
MONTHLY REPORT

MARCH, 1953

Consolidation of the expenditures for Research and Development, Community and Production Programs for FY 1955 and revision of the budget for FY 1954 were completed. The indicated fluctuations in cost as compared to FY 1952 actual and FY 1953 estimated were analyzed and explanations provided in transmittal letters. Comparisons of elements of production costs, allocation of general overhead, cost ratios and other management aids were provided to assist in the review of the consolidated budget. The consolidated budget for Equipment Not Budgeted in Construction Projects was transmitted to the Atomic Energy Commission on March 31, 1953. The consolidated inventories budget will be completed early in April. The summary of personnel requirements, as approved by the Appropriations and Budget Committee, was transmitted to the Atomic Energy Commission on March 11, 1953. The Medical Department budget was sent to the Atomic Energy Commission on March 13, 1953.

Consolidated Costs and Budget

Budget consolidation and presentation has progressed as indicated above.

Recommendations were made to Cost Units that would standardize code locations on source documents for material procurement. This will speed up and improve the accuracy of the key punching operation in the Statistics and Computing Unit.

Plant Auxiliary Operations

In order to avoid the heavy work load just prior to final closing dates, we are establishing earlier dates for issuing all liquidations that are based on a standard rate. These include: Bus Service, Road Maintenance, Printing, Duplicating, Office Machine Repair and Railroad.

New liquidation rates resulting from analyses of cost, were established in March as follows:

1. 200-W Laundry - Cost per pound laundered reduced from $.155 to $.145.
2. Office Machine Repair - Cost for repair increased from 75% to 100% of commercial price.
3. Computing - IME rate increased from 110% to 125%.
4. Graphics - Cost per hour increased from $3.50 to $3.85.

Because of organization changes within the Stores Unit, a recast of year to date expenditures was necessary. During the month this recast was completed and, as a result, the report for period ending March 31 will include both current month and year to date costs.

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Community Operations and Real Estate

Preliminary work is being done on the proposed transfer of Electrical, E-4 contract, responsibility on April 27, 1953. It is anticipated that these duties can be absorbed with no increase in personnel.

Unitization of projects, delayed during budget preparation, is progressing. Unitization of Project C-425 Park Development Program is near completion.

Staff

A detailed analysis was prepared of the budget overrun occurring in Biological Research and Development and copies of the analysis were submitted to the Director, Radiological Sciences and the Manager, Finance. Additional funds in the amount of $26,000 were allocated by the Appropriations and Budget Committee to cover the budget overrun.

The recast of Financial Department costs was completed, and issued to the two Section Managers in March and was available for use in the current budget preparation.

Medical

During the month most of the Industrial Medical Construction personnel were transferred either to the Hospital or Industrial Medical Operations. At month's end one industrial doctor still remained on loan to Construction until such time as he could be replaced and three medical records people were still on construction until such time as the record work can be completed, which will probably be for a few months.

The Medical Department budget was completed early in March and submitted to the Consolidations Sub-unit.

1215796

MANUFACTURING COST UNIT
MARCH, 1953

GENERAL

Following the Security Meeting on March 24 an hour was devoted to a general information meeting at which, among other things, Mr. Smith discussed the employee attitude survey and Mr. Robertson outlined and reviewed the functions and responsibilities of the Financial Department.

PRODUCT COST ACCOUNTING

Considerable time was used in budget work. Unit costs for all facilities were calculated using budget assumptions and amounts for the Fiscal Year 1955 and Revision of the 1954 Manufacturing Department budgets. Charts were made for the major facilities.

Preparation of data for Manufacturing Department Management Control charts is now done by this group. This work was formerly performed by the Manufacturing Department Staff.

BUDGETS AND SPECIAL REQUESTS

The Manufacturing Department budget for FY 1955 and Revision of FY 1954 was completed during the month of March. Details of these budgets by operating units and sub-units including data by quarter for FY 1954 have been submitted to Section Management. Considerable time was spent during the month in preparing schedules to justify Manufacturing Department charges to the Technical Section for landlord responsibilities, operating costs, and work order charges.

A breakdown of the 4th Quarter FY 1953 Mid-Year Budget Review, by months, was started and will be completed early in April.

Invoices on Special Requests for the month of March were greatly delayed due to absence of employees for illness and the use of other personnel to meet budget dead line. No further delay is expected.

MAINTENANCE AND PLANT IMPROVEMENT

The Work Order Control group experienced considerable difficult and extra work during the month due to IBM machine trouble. Undistributed work order costs at March 31 has decreased $57,000 from the previous month end.

REPORTS AND RECORDS

The cost by building of landlord responsibilities for Metal Preparation Section was brought up to date.

Accounting Methods and Procedures for Inventory - Special Materials has been submitted for approval and signatures. The Procedure for Inventory - Essential Materials is still being reviewed.

Some time was again spent with Internal Audit the first part of the month on the physical inventory of essential materials. At the end of the month 3 persons were loaned to Internal Audit for 4 days -- 3/26, 3/27, 3/30 and 3/31 on the physical inventory for other departments.

1215797

REPORTS AND RECORDS (Continued)

As the result of Power and Maintenance both receiving Sub-Section status in the Reactor Section, effective March 1, 1953, Code 6150 - Power and Maintenance Unit General was cancelled and Code 6170 - Maintenance General was opened. Year-to-date costs have been recast to reflect this organization change.

On March Operating Reports the terminology is being changed on all reports from "Unit" to "Sub-Section" in accordance with the new Organization Chart.

METAL PREPARATION SECTION ACCOUNTING

Preliminary standards for 4" and 8" slugs canned by triple-dipped process have been completed. Preparations are being made for recasting January, February and March actual costs based on current standards.

Operations Budget for FY 1955 and Revision of FY 1954 have been completed.

REACTOR SECTION ACCOUNTING

Schedule F, "Organization Write-Up," was completed for the Budget for FY 1955 and Revision of FY 1954.

Arrangements were made with IBM for printing of unit identification codes on clock cards and checks for the Mechanical Maintenance Sub-Section. This will greatly facilitate handling of these items by area personnel.

At a Maintenance Sub-Section staff meeting, reasons for and methods of making accruals were discussed with unit superintendents. The operation of the work order control system was also discussed and it is anticipated that, through a better mutual understanding of area and accounting problems, a more efficient operation of work order control will develop. A procedure for handling unmatched work order charges was issued by this office for the Reactor Section in order to eliminate duplication of effort and speed up processing of actual costs in the current month's operating reports.

SEPARATIONS SECTION ACCOUNTING

Monthly Variance reports covering those portions of Separations Section costs now under the standard program were prepared. These reports cover labor and material for 221-T, 224-T, 231, 202-S and 222-S.

The narrative for the Budget for FY 1955 and Revision for FY 1954 was submitted.

The unit cost explanation and forecast covering the period, February through July, for $BiPO_4$, Redox, 234-5, TBP, and UO-3 were prepared and submitted in the monthly cost meeting held on February 20, 1953, in the 200-W Area.

A revaluation of the distribution of Redox, Plutonium and Uranium cost, HW-27469, was prepared and distributed.

ENGINEERING COST UNIT
MONTHLY REPORT - MARCH, 1953

DESIGN COST

Cost transfers from General Electric to Kaiser Engineers increased in number but decreased in dollar volume. This is the result of a decrease in transfers of Major Construction Program Equipment and a reduction of stores withdrawals. Cost transfers from Kaiser Engineers to General Electric decreased in number and also in dollar volume. The decrease in number is due to the consolidation of billings for stores withdrawals which were previously billed by caption account. Costs in connection with graphite fabrication which covered a three months' period accounted for some increase in dollar volume but was more than offset by a decrease in stores withdrawals.

	Number of Invoices		Total Cost Billed	
	To Kaiser	From Kaiser	To Kaiser	From Kaiser
March	63	20	$132 492.32	$111 175.20
February	51	30	$229 742.31	$116 060.40

Cost transfers to Kaiser Engineers from General Electric include:

	March	February
Major Construction Program Equipment - Net Book Value	$ 49 260.07	$140 733.38
Services - Telephone and Telegraph, Printing, Fire, Patrol	37 290.90	34 535.24
Store Issues Other Than Excess	16 225.84	
Excess Material Withdrawals	11 579.04	47 817.67
Coal	6 185.22	6 876.00
Railroad Car Handling	5 280.00	4 280.00
Work Order Costs	2 937.57	8 930.61
Other	2 482.47	2 144.39
Major Equipment Overhaul and Repair - Monthly Accrual	(11 389.11)	(10 178.57)
Charges for Major Equipment Overhaul and Repair	12 883.14	
Kaiser Engineers Inventory Declared Excess	(242.82)	(5 396.41)
	$132 492.32	$229 742.31

Cost transfers from Kaiser Engineers to General Electric include:

	March	February
Graphite Fabrication	$ 27 614.53	$
Stores Issues	43 328.84	74 707.82
Transfer of Major Equipment and Shop Equipment	23 609.35	17 163.83
Work Order Costs	10 832.25	18 244.04
White Bluffs Utilities and Services Cost	4 061.28	4 837.76
Transfer of Office Equipment	1 728.95	242.95
Correction of Charge Billed in Error		864.00
	$111 175.20	$116 060.40

1215799

Engineering Cost Unit

DESIGN COST (continued)

The Design Section budget for Fiscal Year 1955 and Revision of Budget for Fiscal Year 1954 was completed during the period. The Design Section Manager reviewed and approved the budget on March 27, 1953. Copies of the budget were prepared for presentation to the Appropriations and Budget Committee.

PROJECT COST

Preparation of the Fiscal Year 1955 Budget and Revision of the Fiscal Year 1954 Budget was completed and it is expected that consolidation for the Engineering Department will be completed early in April.

Personnel requirements forecast for period ending June 30, 1956 was completed and it is expected that consolidation for the Engineering Department will be completed early in April.

Safety and Security Meeting was held on March 31, 1953 with stress given to safeguarding information while on vacation.

New accounts were established to record and report costs in accordance with the reorganization of the Project Section. This reorganization consisted of, for the most part, a consolidation of the Minor Construction Management Unit and the Project Engineering Unit.

Financial Closing Statements were issued covering the following Projects during the month:

CG-404	Primary Electric Power Lines for Hanford Works Laboratory
CG-419	Experimental Induction Heating, Building 304
CG-420	CO_2 Bulk Storage Facilities, 105-B, F, D and DR Areas
CG-501	Repair 105-DR Effluent Line Junction with 107 DR
IR-134	Additional Facilities in the 189-D Building

Construction Work in Progress - Engineering report for the month of February was furnished the Atomic Energy Commission on March 9, 1953. All other financial statements were issued on March 10, 1953.

TECHNICAL COST

Monthly cost reports were issued to the Manager, Technical Section on March 7, 1953 followed by a cost analysis letter on March 10, 1953 and Research and Development detailed reports on March 13, 1953.

Numerous analyses of budget data and several revisions of the budget delayed issuance of budget "short forms" several days. Inventory budgets were submitted on schedule but the Equipment budget was also delayed by revisions.

On March 1, 1953, cost accounts were established to give effect to portions of the reorganization of Technical Section. The Technical Information Sub-Unit was transferred to the newly formed Engineering Administration Sub-Section and the Analytical Laboratories were organizationally shifted to Laboratory Engineering and Facilities Unit, the new name for Technical Services.

1215000

Engineering Cost Section

TECHNICAL COST (continued)

Changes in cost accounting for other organizational changes will be effective April 1, 1953. Pile Technology Unit is split into two parts - Pile Technology Sub-Section and Fuel Technology Sub-Section. Advance Technology Sub-Section is also a new organization within Technical Section.

During March a summary of cost codes and coding instructions applicable to Technical Section only was prepared and distributed to members of the Section.

1215801

PAYROLL UNIT
MONTHLY REPORT - MARCH, 1953

In preparation for the conversion of the monthly payroll to the IBM system a master personnel punched card file of monthly-paid employees was prepared. This card file contains for each employee, all basic payroll data including payroll number, social security number, service date, etc.

Forms were designed and an IBM procedure was established in March for accumulating statistics and preparing reports of payroll deductions for contributions to the Good Neighbor Fund. Under the new procedure we are able to furnish the Treasurer of the Fund with all the statistics necessary for administration of the Fund.

The IBM procedure for reconciling Salary Account No. 1 was reviewed and changes were made for control purposes in March. The new procedure has been set forth in writing and will be included in a Payroll Procedures Manual to be issued.

Changes in methods of summarizing information with IBM equipment concerning the work location of employees, segregated by areas, resulted in a savings of approximately 50 man hours in Payroll in addition to a savings in machine time in the Computing Unit for this work.

A review of the payroll procedure for handling statements of claim under the G. E. Insurance Plan resulted in improvements to the procedure and tightening of controls so that claim forms now remain in Payroll only two days prior to transmittal to the insurance company.

More than one thousand claims for benefits under the G. E. Insurance Plan were received in Payroll during the month of March. This is the highest number of claims received in any one month since December 1, 1950, the effective date of the new G. E. Insurance Plan.

Statements of accounts of participants in the G. E. Employees Savings and Stock Bonus Plan were delivered through supervision to all participating employees in the month of March. In the case of weekly-paid employees statements were delivered with salary checks distributed on Friday, March 27, and in the case of monthly-paid employees, statements were delivered with checks distributed on March 31. Included with each statement was a copy of the Company's annual report for 1952 and a letter from Ralph J. Cordiner, President.

Reimbursement Authorization was requested from the Atomic Energy Commission to cover the general increase of 1.79 per cent of base salary rates of employees not represented by unions. The Commission issued Reimbursement Authorization No. 201 on March 27, 1953, authorizing the increase effective March 16, 1953.

At the request of the Legal Department, work was begun on calculations of certain payroll data in connection with the case of Rivers v. General Electric Company and in the case of Connoly and Black v. General Electric Company.

Four Payroll employees were loaned to the Internal Audit Unit for the period March 16 through April 3 to assist with physical inventory work.

Payroll Section (continued)

STATISTICS	Total	Monthly Payroll	Weekly Payroll
Employees on Payroll at beginning of month	8 744 (b)	2 279	6 465 (b)
Additions and transfers in	88	10	78
Removals and transfers out	(124)	(15)	(109)
Transfers from weekly to monthly payroll		11	(11)
Transfers from monthly to weekly payroll		(2)	2
Employees on payroll at end of month	8 708 (a)	2 283	6 425 (a)

Number of Employees	March	February
Bargaining group - HAMTC	3 471	3 456
- Building Services	66	67
- Two Platoon Firemen	46	45
- Hanford Guards	494	522
Other weekly - non-bargaining	2 394 (a)	2 420 (b)
Executive, administrative and operating	1 751	1 742
Professional	485	491
Other Monthly	1	1
Total	8 708	8 744

Number of Employees		
Engineering	1 520	1 501
Manufacturing	3 310	3 313
Plant Auxiliary Operations	2 216	2 257
Community Operations and Real Estate	419	416
Financial	344	343
Employee & Public Relations		
Technical Personnel	103	110
Other	117	118
Radiological Sciences	373	375
Medical	257	261
General	18 (a)	19 (b)
Law	5	5
Accountability	21	21
Property Management and Control	5	5
Total	8 708	8 744

Overtime Payments		
Weekly Paid Employees	$ 84 963 (c)	$108 668 (d)
Monthly Paid Employees	33 204 (e)	32 676 (f)
Total	$118 167	$141 344

Number of Changes in Salary Rates And Job Classifications	1 441	911

(a) Includes 6 non-exempt Schenectady employees.
(b) Includes 7 non-exempt Schenectady employees.
(c) Includes 4 weeks ended 3-22-53.
(d) Includes 4 weeks ended 2-22-53.
(e) Payments cover period March 1 through March 31, 1953, and includes overtime for the month at the rate of time and one-half on the first $7 500 of annual base compensation.
(f) Payments cover period February 1 through February 28, 1953, except in the case of Patrolmen in the Plant Security and Services Section of the Plant Auxiliary Operations Department who were paid for period January 1 through January 31, 1953. Includes overtime for the month at the rate of time and one-half on the first $7 500 of annual base compensation.

Payroll Section (continued)

Gross Amount of Payroll	March	February
Engineering	$ 722 828	$ 722 234
Manufacturing	1 489 838	1 486 664
Plant Auxiliary Operations	852 372	851 582
Community Operations & Real Estate	161 074	167 033
Other	495 188*	497 511*
Total	$3 721 300 (a)	$3 725 024 (b)

Annual Going Rate of Payroll		
Base Plus Overriding Adjustment	$42 735 855*	$42 799 397*
Overtime	1 354 463	1 879 685
Isolation Pay and Area Differential	1 921 242	1 982 014
Shift Differential	446 991	451 333
Other	34 120	40 850
Total	$46 492 671	$47 153 279

Average Hourly Base Rates (includes overriding adjustment)		
Bargaining group - HAMTC	$2.226	$2.223
- Building Services	1.711	1.708
- Two Platoon Firemen	2.159	2.173
- Hanford Guards	1.942	1.941
Other Weekly - non-bargaining	1.896*	1.891*
Executive, administrative and operating	3.077	3.063
Professional	3.410	3.431
Other Monthly	2.525	2.525
Total	$2.352	$2.346

	March (c)			February (c)		
Average Earnings Rate Per Hour	Weekly	Monthly	Total	Weekly	Monthly	Total
Engineering	$2.066	$3.265	$2.717	$2.031	$3.264	$2.697
Manufacturing	2.477	3.243	2.629	2.441	3.244	2.595
Plant Auxiliary Operations	2.140	3.006	2.260	2.117	2.995	2.237
Community Operations & Real Estate	2.159	2.724	2.356	2.155	2.720	2.352
Other	1.950*	3.428	2.321*	1.944*	3.406	2.296*
Total	$2.245*	$3.211	$2.494*	$2.219*	$3.205	$2.466*

* Includes non-exempt Schenectady employees.

(a) Includes payments for four-week period ended March 22, 1953 in the case of weekly paid employees.

(b) Includes payments for four-week period ended February 22, 1953 in the case of weekly paid employees.

(c) Includes shift differential and isolation pay in the case of weekly paid employees and area differential in the case of monthly paid employees. Excludes overtime premiums, commissions, suggestion awards, etc.

Employee Benefit Plans	March	February
Pension Plan		
Number participating at beginning of month	7 587	7 563
New participants and transfers in	56	76
Removals and transfers out	(84)	(52)
Number participating at end of month	7 559	7 587
% of eligible employees participating	95.0%	94.9%

1215804

Payroll Section (continued)

Employees Retired	March	Total to Date
Number	5	260 (a)
Aggregate Annual Pensions Including Supplemental Payments	$1 162	$60 044 (b)
Amount contributed by employees retired	2 906	73 288

(a) Includes 13 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.

	March	February
Number who became eligible for participation	46	52
Number who applied for participation	43	46
Number who elected not to participate	3	6

Insurance Plan (c)

Personal Coverage

Number participating at beginning of month	8 805	8 846
New participants and transfers in	72	64
Cancellations	(15)	(19)
Removals and transfers out	(91)	(86)
Number participating at end of month	8 771	8 805
% of eligible employees participating	98.8%	98.7%

Dependent Coverage

Number participating at beginning of month	5 735	5 749
Additions and transfers in	54	36
Cancellations	(14)	(22)
Removals and transfers out	(34)	(28)
Number participating at end of month	5 741	5 735

Claims - Disability Benefits (d)

Number of claims paid by insurance company:		
Employee Benefits		
Weekly Sickness and Accident	252	96
Daily Hospital Expense Benefits	235	99
Special Hospital Services	272	111
Surgical Operations Benefit	171	69
Physicians' Attendance	170	66
Dependent Benefits		
Daily Hospital Expense Benefits	288	218
Special Hospital Services	340	261
Surgical Operations Benefits	239	188
Amount of claims paid by insurance company:		
Employee Benefits	$51 773	$24 658
Dependent Benefits	39 537	28 785
Total	$91 310	$53 443

(c) Current month statistics include 174 insured employees not active on the payroll while prior month statistics include 185 insured employees not active on the payroll.

(d) Statistics cover only claims paid and not all claims incurred during the month.

Payroll Section (continued)

Number of Disability Claims Forwarded to Insurance Company	March	February
Hospital Benefits		
Kadlec Hospital	644	493
Other Hospitals	119	112
	763	605
Weekly Sickness and Accident Benefits	261	199
Total	1 024	804

Claims - Death Benefits (a)	March	Total to Date
Number	2	115
Amount	$16 000	$697 013

Group Life Insurance

The Group Life Insurance Plan was discontinued November 30, 1950. As of March 31, 1953, 4 employees who are absent due to total disability are still participating in the Group Life Insurance Plan. They were not actively at work December 1, 1950, and therefore were not eligible to participate in the new Insurance Plan. However, they will become eligible upon their return to work.

Claim Payments	March	February
Number of Checks	1 513	960
Number of Claims	1 104	758
Amount of Benefits	$91 310	$53 443
Total benefits paid since December 1, 1950 to date	$1 697 342	$1 606 032

Vacation Plan

Number of employees granted permission to defer one week of their 1953 vacation to 1954

	March			Year to Date		
	Weekly	Monthly	Total	Weekly	Monthly	Total
Engineering	7	10	17	7	14	21
Manufacturing	95	29	124	133	35	168
Plant Auxiliary Operations	22	3	25	117	16	133
Community Operations & Real Estate	3	2	5	7	5	12
Financial	3	0	3	5	0	5
Employee and Public Relations	0	0	0	0	0	0
Radiological Sciences	1	1	2	2	1	3
Medical	2	1	3	3	1	4
General	0	0	0	0	0	0
Total	133	46	179	274	72	346

(a) Total to date includes all claims under the old and new Insurance Plans and 9 deaths on which accidental death benefits were paid.

1215006

Payroll Section (continued)

Employee Benefit Plans (continued)

U. S. Savings Bonds	March	February
Number participating at beginning of month	4 356	4 332
New authorizations	64	79
Voluntary cancellations	(61)	(39)
Removals and transfers out	(28)	(17)
Transfers in	1	1
Number participating at end of month	4 332	4 356
Percentage of Participation		
G. E. Employees Savings and Stock Bonus Plan	43.6%	43.7%
G. E. Savings Plan	11.1%	10.9%
Both Plans	49.8%	49.9%
Bonds Issued		
Maturity Value	$187 575	$239 000
Number	3 855	4 330
Refunds Issued	83	75
Revisions in Authorizations	35	43
Annual Going Rate of Deductions		
G. E. Employees Savings and Stock Bonus Plan	$1 669 795	$1 684 723
G. E. Savings Plan	483 255	479 308
Total	$2 153 050	$2 164 031

Withdrawal of U. S. Savings Bonds From G. E. Employees Savings and Stock Bonus Plan	March	Year to Date
Number of participants withdrawing Bonds	121	380
Maturity value of U. S. Savings Bonds withdrawn	$62 800	$172 875

Check-Off of Union Dues

Number of Payroll Deduction Authorizations in Effect	2-28-53	Cancellations And Terminations	Additions	3-31-53
Hanford Atomic Metal Trades Council	1 431	12	51	1 470
Building Service Employees International Unit, Local 201 (Medical Department Employees)	26	0	0	26
Hanford Guards Union, Local 21, of the International Guards Union of America	232	10	5	227
Total	1 689	22	56	1 723

Special Absence Allowance Requests	March	February
Number submitted to Pension Board	4	5

Military Allowance Payments	March	Total to Date
Number	5	53
Amount	$1 899.03	$18 802.78

1215807

Payroll Section (continued)

Employees Who Have Entered Military Service

	Total to Date				
	Called to Duty	Volunteered for Duty	Number Reactivated	Number Resigned -a)	Total
Reserve Officers	38	3	(3)	(1)	37
Enlisted Reserve	56	6	(23)	(2)	37
National Guard	6	0	(4)	0	2
Selective Service	71	0	(20)	0	51
Voluntary Enlistments	0	116	(3)	(1)	112
Total	171	125	(53)	(4)	239

-a) Employees who were removed from the roll to enter Military Service and subsequently had their continuous service broken.

Number of Rent, Telephone and Hospital Deductions from Salaries	March	February
House Rent	5 067	5 035
Dormitory Rent	826	847
Barracks Rent	55	67
Trailer Space Rent	191	192
Telephone	3 933	3 969
Hospital	451	489
Total	10 523	10 599

Annuity Certificates (for duPont Service)	March	Total to Date
Number Issued	0	96

Suggestion Awards		
Number of awards	5	1 924
Total amount of awards	$395	$39 120

Employee Sales Plan

	March		
	Major Appliances	Traffic Appliances	Total
Certificates Issued	42	176	218
Certificates Voided	22	5	27

	March	Year to Date
Applications for normal retirement pensions	3	9
Applications for optional retirement pensions	1	3

Patent Award Payments

Number of award	0	2
Amount	0	$50.00

% Absenteeism	March	February
Weekly - Men	2.99%	3.55%
Weekly - Women	4.27%	5.17%
Total Weekly	3.31%	3.96%
Monthly	1.50%	1.99%
Grand Total	2.88%	3.46%

Payroll Section (continued)

Salary Checks Deposited	March		February	
	Weekly	Monthly	Weekly	Monthly
Richland Branch - Seattle-First National Bank	734	936	736	940
North Richland Area Office - Seattle - First National Bank	9	4	9	4
Richland Branch - National Bank of Commerce	560	402	546	396
Out of state banks (Schenectady Staff)	0	1	0	1
Total	1 303*	1 343	1 291**	1 341

Preferential Rates	March	February
Number Eliminated	6	6
Number Currently in effect	804	810

* Week ended 3-22-53
** Week ended 2-22-53

1215809

INTERNAL AUDIT UNIT
MONTHLY REPORT - MARCH 1953

Work continued on the physical inventory program which is to be completed by June 30, 1953. The principal activities during the month are shown below:

1. A procedure for making physical inventories of Hanford Atomic Products Operation materials was developed and issued. This general procedure, together with detailed procedures for different types of materials, is being used in making the physical inventories.

2. Stand-by Materials, and Spare Equipment Held in Storage, in the custody of Stores Unit were physically inventoried as of March 25, 1953. This inventory, representing 23,135 line items, required the participation of 38 Financial Department employees and 62 employees of the Purchasing and Stores Section.

3. Inventory tags were distributed and preliminary instructions issued for the physical inventory in April and May of Stand-by Materials in the custody of Electrical Distribution and Telephone Section and Transportation Section.

4. Verification was made of the disposition of some of the items of unrecorded materials indicated by managers of custodial departments (see monthly report for February).

1215010

PLANT SECURITY AND SERVICES SECTION

MONTHLY REPORT - MARCH 1953

ORGANIZATION AND PERSONNEL

Number of employees on payroll:

	Beginning of Month	End of Month	Increase	Decrease
Staff	2	2		
Administration Area Maintenance	66	68	2 (a)	
Patrol and Security	579	549		30 (b)
Safety and Fire Protection	153	153		
Office Services (Laundry and Building Services, Clerical Services, Records Control and Procedures Analysis)	340	337		3 (c)
TOTALS	1,140	1,109	2	33

NET DECREASE: 31

(a) - Administration Area Maintenance

1 - New Hire
3 - Transferred in
1 - Transferred out
1 - Termination

(b) - Patrol and Security

1 - Reactivated
18 - Transferred out
3 - Deactivated
10 - Terminations

(c) - Laundry and Building Services

2 - New Hires
2 - Deactivated
3 - Terminations

Clerical Services

4 - New Hires
1 - Transferred in
4 - Transferred out
2 - Deactivated

Procedures Analysis

1 - New Hire

SAFETY AND FIRE PROTECTION UNIT

	FEBRUARY	MARCH	YEAR TO DATE	COMPARATIVE PERIOD, 1952
Major Injuries	2	3	5	3
Sub-Major Injuries	1	1	3	9
Minor Injuries	341	373	1,067	1,170
Exposure Hours	1,366,866	1,482,345	3,960,309	4,561,517
Major Injury F/R	1.46	2.02	1.26	0.66
Major Injury S/R	0.012	0.10	0.04	0.006
Penalty Days	0	75	75	0
Actual Days Lost	17	80	97	29
Minor Injury F/R	2.49	2.52	2.69	2.56
Estimated Medical Treatment Time Required	1,372 hours	1,500 hours	4,302 hours	4,752 hours

Industrial Fires

Department	Area	No. Of Fires	Cause	Loss
Manufacturing Dept. (Reactor-Maintenance)	100-D	1	Flammable liquids and gases	Nil
Manufacturing Dept. (Reactor - Maintenance)	100-H	1	Spontaneous Ignition	Nil
Manufacturing Dept. (Reactor - Operations)	100-H	1	Burning & Welding	Nil
Manufacturing Dept. (Separations - Analytical)	200-W	1	Smoking and matches	Nil
Manufacturing Dept. (Separations - Process)	200-W	1	Flammable liquids & gases	Nil
Manufacturing Dept. (Separations - Fabrication)	200-W	1	Combustibles too near heat or flame	Nil
Manufacturing Dept. (Metal Prep - Operations)	300	1	Process	Nil
Engineering Department (Technical - Pile Tech.)	300	1	Process	Nil
Engineering Department (Project - M. C. Management)	Outer	1	Combustibles too near heat or flame	$23.00
Radiological Sciences (Biophysics - Control)	300	1	Flammable liquids or gases	Nil
Utilities & General Services (Transportation)	Outer	1	Controlled Burning	Nil
Utilities & General Services (Transportation)	1100	1	Electric	Nil
TOTAL		12		$23.00

Safety Activities

There were three major injuries during March. One occurred in 100-D Area on March 2, one in 1100 Area on March 26, and one in 300 Area on March 30.

The 1100 Area won the Area Injury Reduction Award for the month of February with a reduction of 26%.

The Area Accident Prevention Committee in the 200-E Area is conducting a survey of streets and roads for the purpose of recommending the corrections of hazardous conditions that have been created by Construction activity. A similar activity is planned for 200-West Area.

The first week of April has been set up as "Clean Up For Safety Week" in the 200-West Area.

The 300 Area proposes to hold another "S" day in June, in which a limerick contest will be conducted for publicity on "S" day. Three prizes from our present stock of leftovers from 1951 Award will be given as prizes.

The Supervisors' Safety Training Program is continuing throughout the 100 Areas successfully.

Fire Protection Activities

Eighteen fires were reported during the month. Six were the result of construction activities and resulted in losses of $360. Operations reported twelve fires with a loss of $23.00. The $23 was from one fire in the Minor Construction Unit. A tarp in contact with gasoline motor exhaust caught fire and damaged the tarp and the radiator of the motor.

Fire protection surveys were completed on Buildings 181-F and 2705-Z.

The use of the Chemox mask was demonstrated to 30 members of 100-B and C Power Unit.

A fire extinguisher demonstration and talk were given to 60 members of 100-D Maintenance group.

A fire detector system is being installed in the construction warehouse which is being used to house one-half million dollars worth of spare parts.

Fire detectors for the cell in the canyon section of the TBP plant that contains flammable liquids is being studied.

A fire detector system for the TBP flammable liquid tank farm is being studied.

New water lines around the 2101-E (graphite machinery and storage) Building have been connected into the 200-E water system.

Work has started on the installation of the CO_2 fire extinguishing system for 234-Z (inactive waste storage hutment).

Fire procedures on the 303 Area have been reviewed and necessary changes made.

Fire hydrants in the 300 Area were flushed.

Substandard valves on the large Propane storage tank in the 300 Area were removed and approved valves installed.

A separate building for the storage of sodium nitrate was recommended for the Purex Plant.

OFFICE SERVICES UNIT

Laundry and Building Services

200-West Laundry	February	March
Pounds Delivered	295,061	270,321
Pounds Rewashed	10,750	5,496
Total Dry Weight	305,811	275,817
Monitoring Section		
Poppy Check - Pieces	179,155	157,502
Scaler Check - Pieces	359,178	345,101
Total Pieces	538,333	502,603
Rewash Pieces	8,125	6,340
700 Area Laundry		
Flatwork - Pounds	44,481	34,863
Rough Dry - Pounds	23,214	21,126
Finished - Pounds	3,073	2,738
Total Weight	70,768	58,727
Estimated Pieces	92,706	76,932

Clerical Services

Central Mail and Addressograph

Postal and inter-office mail volume continued to increase during March, and the weight load also increased. Reports, blueprints and mail associated with the construction program accounted for a part of the registers and special delivery postal mail increase.

Types and Pieces of Mail Handled	March	February
Internal	1,243,981	1,307,153
Postal	75,780	85,021
Special	1,842	1,967
Total Mail Handled	1,321,603	1,394,141

	March	February
Total Postage Used	2,392.91	3,041.95
Total Teletypes Handled	3,089	3,162
Total Store Orders Handled	269	396

Addressograph

Type of List	March		February	
	Number of runs	Total Copies	Number of Runs	Total Copies
Plant Name List	103	191,843	96	176,278
Housing List	14	28,654	14	28,799
Payroll List	9	32,996	6	34,805
Total New Plates		3,645		6,483
Total Corrected Plates		396		396
		4,041		6,879

Office Equipment

Furniture

The FY 1954 and 1955 Budget for additional and replacement office equipment was completed and submitted for review and approval. Request for Appropriation No. 53-S-12 for the amount of $33,000 was approved by the A & B Committee. Requisitions for office equipment have been prepared and sent to Purchasing to procure those items of emergency status listed in this appropriation.

An additional Request for Appropriation No. 53-S-20 was submitted to the A & B Committee and was approved for the amount of $50,000. Requisitions are being prepared to cover additions and replacements against this appropriation.

Office Machine Repair

A utilization survey of electric typewriters was started on March 17. At this time, 21 electric typewriters have been picked up from three different departments in the 700 Area.

	March	February
Office Machines Repaired in Shop	205	199
Office Machine Service Calls	484	534
Machines Picked up by Survey	38	22
Total Machines Serviced	727	755

Central Printing

Central Printing's production held consistent with previous months with some phases of operation producing more than last month.

Work Completed	March	February
Orders Received	376	399
Orders Completed	343	381
Copies Printed	1,239,979	1,087,817
Back Log	69	52
Negatives Masked	819	630
Negatives Processed	930	717
Litho Plates Processed	829	611
Photo-Copy Prepared	281	212

Stenographic Services

Total hours worked in March reflect a considerable reduction compared to recent months. This is due to the fact that the period covered totals only twenty working days and also to a deliberate reduction of employees in an effort to reduce non-productive hours to a minimum. It is planned to continue working with this reduced number of personnel until a more consistent demand for service is required. This may possibly reduce the flexibility of service, however, a determined effort will be made to keep this on as high a level as possible consistent with reasonable costs.

Breakdown of Hours	March	February
Dictation and Transcription	2.5	13
Machine Transcription	9.5	33
Letters	26.5	4
Rough Drafts	71.	115.5
Duplimats, Xerography	254.5	286.5
Miscellaneous	220.	387.
Training Time	162.5	328.
Holiday Time	64.	0.
Meeting Time	0	4.5
Unassigned Time	8.	40.
Absenteeism	19.5	43.5
Total	838.	1,255.
Employees loaned to other Departments	995.	1,501.5
Total Hours Available	1,833.	2,756.5

Area Mail and Duplicating Services

Due to increased construction in the 200 Areas, and continuing construction in 100-K, mail loads have been heavy in these areas during the past two months. It has been necessary to add mail stops in several locations in order to provide uniform service. This has been accomplished without additional personnel or equipment.

In order to handle increasing requests for duplicating in the 100 areas, an additional Model 80 offset duplicator was installed in 1704-H Building this month. It is believed that the installation will also accelerate service on priority orders during monthly report period.

Mail Statistics	March	February
Total Internal Mail	247,649	258,798
Duplicating Statistics		
Orders Received	2,496	2,827
Orders Completed	2,533	2,840
Orders on Hand	87	49
Offset Plates	13,696	15,906
Offset Copies	686,457	774,562
Stencils	102	291
Stencil Copies	3,585	7,545
Ditto Masters	535	835
Ditto Copies	15,037	18,667
Zerox Plates	1,055	1,408

Records Control

Quantity of records received, processed and stored:

Employee and Public Relations Department	11	Standard	Storage	Cartons
Engineering Department	67	"	"	"
Financial Department	80	"	"	"
Manufacturing Department	35	"	"	"
Medical Department	279	"	"	"
Radiological Sciences Department	10	"	"	"
Utilities & General Services Department	96	"	"	"
Total	578	Standard	Storage	Cartons

Persons provided records service: 1,020

Records Cartons issued: 670

Percentage of the Records Service Center Vault occupied by records is 100% plus excluding Civilian Defense portion.

Twenty-two requests for file cabinets were received, sixteen requests were filled. Twenty-five requests for file cabinets are pending. Three fireproof combination locked cabinets were picked up with no exchange resulting in a savings of $600. Four orders for file cabinets were cancelled through standardization and more efficient use of cabinets in use by the requester.

Uniform filing was established in five offices during the month, a total of 417 offices have installed the filing system to date.

Remington Rand, Inc. have developed and returned as completed 672 reels or 2,246 images to date.

Three Evaluations of Records for disposal were approved by the Records Committee. Three Evaluations of Records for disposal were sent to the Records Committee for approval. Atomic Energy Commission and Congressional approval were given to 54 Requests for Authorization for Records Disposal. These authorizations were received and disposition of records scheduled.

Work is continuing in preparing Atkinson & Jones Company records for transfer to General Electric. This work will be completed for transfer of the records approximately May 30, 1953.

Procedures Analysis

	February	March
Printing Orders Received	392	343
Printing Orders Rejected	12	10
New Forms Assigned	91	46
Forms Designed	90	68
Suggestions Processed	3	0

The 200-W Laundry Study is now well under way. Several improvements have been developed and accepted by Laundry Supervision. These developments are directed towards improving work flow and quality control in the various monitoring operations. Contacts have been established with the various operating sections that use laundry services, and meetings have been scheduled for the discussion of customer requirements. It appears, at this time, that the originally estimated 44 man weeks required to complete this survey can be reduced.

The Classified Files Survey has been discussed with the Manager, Engineering Administration Sub-Section. Engineering Department agreement has been reached on recommendations that have been made to this point. The original proposal to establish a file in the 200-West area has been recalled. This move will result in an estimated $100,000 savings. Other changes that have been agreed upon and which will become effective in the near future are estimated to be approximately $78,000.

Organization and Policy Guide No. 10.3 covering Forms Control has been revised and approved for issuance. Issuance will be completed as soon as the necessary revised forms are available for distribution.

Forms Control was described to thirty supervisors. This discussion was in connection with a Management Aid Program, Special Supervisory Considerations. Reactions to this discussion were favorable, and it has been requested that we present the same subject during the regularly scheduled 40-Hour Program.

Savings Realized For March	One Time	Annual
Forms Control	$ 561	---
Procedures Analysis	---	---
Total Annual Savings for March		$ 561
Accumulated Savings for 1953		$7,461

ADMINISTRATION AREA MAINTENANCE UNIT

Status of Work Progress

IR-125 Ventilation, 700 Area Restroom Facilities: Work Completed.

IR-152 760 Building Drafting Room Improvements: Returned unapproved by Atomic Energy Commission. Work on lighting, outlets and air conditioner louvers being done by Plant Forces.

IR-149 Alterations 761 and 762 Buildings: Returned unapproved by Atomic Energy Commission. Project cancelled.

IR-150 Electrical and Telephone Outlets - Central Stores Warehouse: Work completed by Minor Construction. Some partitions will be installed if funds permit.

CA-505 Floor Covering - Permanent 700 Area Buildings: Project returned from Atomic Energy Commission for rescoping. Investigating possibility of covering 760 Building corridors.

CA-504 Lighting Improvements - 700 Area Buildings: All prints except 761 and 762 have been returned to Engineering for final design.

IR-154 Alterations - 729 Building: Atomic Energy Commission holding request pending clarification of the budget funds.

- New Transportation Facilities: Continuing to supply Atomic Energy Commission with information upon request.

B-1339 Alterations - 713 Building: Plans under way to alter this building for use by Statistical and Computing and IBM operations. (FY'54)

- Alterations - 713 Building (West End): All Stores functions are being discontinued in this building; cancelling plans for this alteration.

W/O C-6337 Steam Plant Study - 700 Area (AEC): Engineering Report #6019, dated February 26, 1953, was received. This study is to be held for future consideration.

B-1336 Alterations - 744 Building: The Community Real Estate and Services Department have rejected the use of this building in favor of the 722 Hutment area. Present plans are to substitute this building for Building 729 for use as a telephone and radio repair shop.

General Maintenance

Additional steam coils were added in the drying oven in 722-C to obtain increased temperature needed in the typewriter cleaning process.

The targets on post indicator valves for fire sprinkler systems at Central Stores were adjusted to show correct reading of valve position.

The steam radiators in the north side of 713 Building were divided into smaller units and reinstalled for convenience of future office space. Corroded and plugged condensate lines were replaced and new dry wells installed.

Steam-generated hot water tank which formerly provided hot water for the abandoned 700 Area shower room in 707 Building has been disconnected and excessed. A household type electric hot water tank has been installed to supply present needs. Lean-to, housing the steam hot water tank, and the dock which served the mail room, have been removed and building repaired.

The following valves were tested and repaired during the month: 37 safety valves, 8 "D" pilot valves and 9 "E" Spence valves.

Locksmith work has been heavy consisting of setting up the master key system in 100-K area, changing several mastered systems already in use in other areas, emergency calls and routine repairs.

Expanded metal barrier doors were made and installed to lock shelving containing safety shoes at Central Stores. Several metal racks were made for storage of other materials.

Remainder of the fluorescent fixtures were lowered and six fixtures added in the 760 Drafting room.

Electric Hi-Lift trucks at Central Stores were completely lubricated and batteries were removed and serviced.

Service lines were disconnected from 713-C Hutment which was moved to the Atomic Energy Commission airport for use as office space.

A block wall wind break and shelter was built at the south door of 702 Building.

Approximately 80 feet of Hauserman partitioning was erected in connection with rearrangement of office space; 53 feet with glazed panels.

Linoleum in men's rest room at W-10 was replaced with asphalt tile.

Foundation ventilation louvers on east side of 703 Building were repaired to bring bottom of louver above ground level, to alleviate a drainage problem.

Several crosswalks are being repainted throughout the Village and preparations made for restriping area roads, changing the color system from yellow center line to white, in conformance with change on state highways.

Steam Operation

Numbers 1, 2 and 4 Boilers were in service at the beginning of the month. The decreasing heating load allowed No. 4 Boiler to be taken off the line on March 12. This boiler had been in continuous operation since July 28, 1952. Numbers 1 and 2 Boilers remained in service for the balance of the month.

The quantity of steam generated at the 784 Heating Plant was 4.1% less than for the same month of the previous year.

Soft water usage at Kadlec Hospital increased to an average of approximately 46,300 gallons per day.

Withdrawals of bulk sulphuric acid from storage tank at the 784-A Water Softener Plant were heavier than usual, with 100-F Area taking two loads and 100-D Area four loads. (The quantity of each load is approximately 5,500 pounds.)

Operations at the 1131 Heating Plant were normal throughout the month, with one boiler carrying the load.

Operations at the Central Stores Heating Plant were normal throughout the month, with one boiler carrying the load.

Operations at the Central Stores Heating Plant were normal throughout the month. Two loads of fuel oil of approximately 5,000 gallons each were received, one on March 3 and the other on March 20.

Coal Consumed: 1,499.25 net tons.

Steam Generated	22,608.6	M. Lbs.
Steam Leaving Plant	19,217.3	M. Lbs.
Steam Delivered	17,022.5	M. Lbs.
Total Water Softened	4,144,200	Gallons
Total Soft Water Sent to Kadlec Hospital	1,434,700	Gallons
Total Soft Water sent to 784 Heating Plant	2,709,500	Gallons

Soft water served to Kadlec Hospital: 744 hours

SECURITY AND PATROL UNIT

Document Report

Number of classified documents unaccounted for as of March 1: 369
(155 of the above 369 documents are chargeable to E. I. du Pont de Nemours & Co.)

Number of classified documents reported as unaccounted for during March: 9

Number of classified documents recovered during the month of March: 2

Number of classified documents remainint unaccounted for as of April 1: 376
(155 of the above 376 documents are chargeable to E. I. du Pont de Nemours & Co.)

The Non-Technical Document Review Board held three meetings during the month and reviewed a total of 127 classified documents. Of this number -

32 were downgraded to "Restricted
2 were downgraded to "Official Use Only"
49 were declassified
36 had classification retained
6 were not within the scope of the Board, and
2 were referred to the Coordinating Organization Director.

Security Education

Five articles on Security appeared in the Works NEWS during the month.

There were 319 Security meetings held and attended by 4,573 employees of the General Electric Company. A representative of the Security Unit showed one of the security films at some of these meetings as shown below:

"Signal 99" was shown at nineteen security meetings, each with an average attendance of twenty-three employees.

"The Defense Rests" was shown at seven meetings, each with an average attendance of twenty-five employees, or a total attendance of 175 employees.

"Only the River" was shown at four meetings, each with an average attendance of twenty-one employees.

"The Man on the Left" was shown at four security meetings, each with an average attendance of twenty-seven employees.

"Fitting 'U' Into Security" was shown at four meetings, each with an average attendance of twenty-two people.

GE Security Bulletin No. 73 entitled "Why Do as the Romans Did?" was distributed on March 30.

Five-hundred large posters and 250 "bus" size posters, each bearing the slogan "Secure Your World", were posted in the plant areas and busses.

A revision of Organization and Policy Guide 15.20, entitled "Rough Draft Classified Documents", was issued March 13, providing for local file coverage on all classified rough draft documents mailed off site.

On March 6, Organization and Policy Guide 15.33, entitled "Authority for Classifying Documents", which set forth the responsibility and authority for classifying documents as "restricted", "confidential" and "secret", was issued. The effective date of the instructions was established as April 1, 1953.

A memorandum was issued to all departments by Security on March 13, 1953, advising them of the proposed plans to consolidate the 234 and 235 exclusion areas. Each department was requested to make a complete review of its future needs for personnel requiring clearance into the proposed combined area. This program is designed to facilitate the 234-5 work and also as an economy measure.

Forty-three General Electric employees received a "Q" security orientation talk from either a representative of Security or an Area Patrol Captain during the month.

One emergency clearance was requested from the Atomic Energy Commission during the month.

On March 2, preliminary steps were taken to clear personnel of the Industrial Models, Ardentown, Pennsylvania, as our Engineering Department is negotiating a lump sum contract with this firm for modeling our 100-K and Purex facilities.

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On March 12, a forecast of General Electric security clearance requirements in sensitive position categories for the fiscal year of 1954 was submitted to the Atomic Energy Commission.

A "test white" (Air Raid Test Warning) alert was held in the 300 Area on March 1, as well as the 100 and 200 Areas.

Statistical Report of Security Patrol Activities

	100-B	100-D	100-F	100-H	200-E	200-W	300
Pat Searches	93	99	93	96	42	96	3
Escorts	20	28	17	42	32	39	51
Ambulance Runs	5	6	1	0	0	3	0
Passes issued:							
One day temporary	57	27	8	0	3	50	50
Travel	11	0	0	0	0	0	87
Red Tag	180	298	26	41	95	641	206
Visitor	6	4	0	1	0	0	13
Post Contacts	581	552	597	380	369	1,349	759

Other Security Patrol Activities computed by hours:							300 & 700
Security File Check	186	179.6	387.7	391	122.6	293	2,880
Security Building Check	217				138		128

Other Security Patrol Activities:

Buildings and doors opened:	311
Railroad gates opened:	276
Master System keys issued:	36
Operation gas pumps:	127

Arrest Report

Violation	Number of Violations	Cont. Cases from Feb.	Cases Cleared	Pending	Fined
Speeding:	3	1	3	1	3
Failure to observe Stop Sign & no Driver's License in possession:	1	0	1	0	1
	4	1	4	1	4

Citation Tickets Issued: 4

Patrol Training Activities

A total of 269 Security Patrolmen attended Firearms Training during the month, and 254 Security Patrolmen received classroom instruction during the same period.

Training Courses received during the month were as follows:

Safety Class	1/2 hour
Operations Class	1 hour
Security Class	1/2 hour
Employee Relations Class	1/4 hour

Three hundred and thirty three .38 caliber S & W and Colt revolvers were declared excess and turned in to Excess and Salvage. Most of this equipment was inoperative because of worn parts, etc. In addition to the revolvers, a large quantity of targets, M-8 armored car tools, machine gun parts and miscellaneous equipment were also declared available and disposed of as excess salvage.

Security Patrol Post Changes

There were two new posts established March 16 in 200-W Area: (1) Area and fence foot patrol, 231 Area and (2) fence foot patrol, 234-5 Area.

The rover post, 105-C, was discontinued March 6, 1953, in 100-B Area and combined with 105-B, C and 105-B rover post into one post assignment.

Three posts were discontinued in the 200-E Area on March 16: 221-B Area Vehicle Gate post and foot patrol, Building roving foot patrol and straight day badge house clerk.

Five posts were discontinued in 200-W Area on March 16: Tower No. 14, 231 Building; Tower No. 10, 231 Building; Tower No. 7, 234-5 Building; Tower No. 15, 234-5 Building and Building roving foot patrol.

Force Reduction

As mutually agreed between our office and the Atomic Energy Commission Security Office, the following reductions in manpower were made during the month of March:

Number of patrolmen laid off	8
Number of patrolmen transferred to other units	19
Voluntary terminations of patrolmen	2
Total reduction during March:	29

Security Field Inspection Activities

Contacts made to locate unaccounted for documents:	15
Searches conducted to locate unaccounted for documents:	4
File combinations overdue and custodians advised to change them:	12
File combinations changed:	10

General

On March 31, the first carload of graphite was unloaded for storage purposes in Bay 1 and 2 of the unfinished 2101 Building, 200-E Area. Spot check coverage of these areas is being maintained by Security Patrol, 200-E Area.

Experiments have been conducted for a sixty day period in the 300-L Badge House to ascertain if it would be feasible to place photographs inside the badge frame and acetate covers of "B", "C" and "visitor" type badges. It has proven satisfactory, and the procedure will be followed in all areas within the near future.

A study report was completed during March for consolidation of the two badge houses in the 300 Area, wherein it was recommended that entry into the 300 "limited" area would be confined to a single entry point, namely the 3701'L Badge House. This would result in an estimated annual savings of approximately $32,000. The enlargement of the 3701'L Badge House and Parking Lot would be involved. The study report further recommended that the use of the two badge houses should be continued as at present until the completion of the new 300 Area Change House, since a change prior to this time would involve considerable expense due to the increased walking distance required between the 300-L Badge House and the present Change House.

The rephotographing of personnel since the beginning of this project (confined thus far to the 300, 700 and 200-W Areas) has taken care of 933 employees; 7,277 photographs were ordered and distributed for replacement as shown below:

New photo identification passes	933
"A" badge photographs	1,106
"B" and "C" and exclusion area identification photographs	5,238
	7,277

This results in an average of approximately eight pictures per employee necessary for security identification purposes.

The 1952 annual inventory of Research and Development reports was completed by Classified Files and submitted to the Security Office of the Hanford Operations Office and to the Technical Information Section, Oak Ridge, Tennessee, on March 20, 1953. Of the 28,452 copies of on-site reports held by the General Electric Company, forty-six have been declared unaccounted for. Thirty-eight of these reports have previously been reported in annual inventories. This inventory was conducted in accordance with instructions in General Manager's Bulletin No. 176.

On March 26, the Schenectady Operations Office of the Atomic Energy Commission was notified of the Commission's action in the establishment of an Accountability Station in the Schenectady Office. This Accountability Station will function as a branch of the Hanford General Electric files.

1215825

DECLASSIFIED

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass.	Areas
C. M. Craighead Battelle Memorial Inst. Cincinnati, Ohio	Discuss project on solution of aluminum in aluminum silicon alloy	W. L. Schalliol	3-30-53	3-30-53	X		300 303
R. L. Cummerow Knolls Atomic Power Lab. Schenectady, New York	Discuss graphite experiment	E. A. Eschbach L. P. Bupp W. L. Schalliol	3-10-53	3-12-53	X 3-53		100-B 105-C 100-H 105 100-D 189-D 300-L XXX; 700
I. H. Dearnley Knolls Atomic Power Lab. Schenectady,New York	Knowledge of plant processes	H. L. Henry	3-12-53	3-12-53	X		100-D 105-D, 189-D
T. B. Drew Columbia University New York, New York	Heat transfer operation liaison between HW and Savannah River Ordnance	W. K. Woods	3-26-53	3-28-53	X		100-B 105-B, 108-B 105-C 100-D 105-D, 189-D 200-W Redox 300 XXX
J. R. Farmakes Argonne National Laboratory Chicago, Illinois	Discuss viewing equipment and information on plutonium	J. F. Gifford	3-23-53	3-27-53	X		100-B 105-B 100-D 105-D 200-W Redox 300-L XXX
	Discuss information on plutonium	O. F. Hill	3-25-53	3-25-53	X		200-W 234, 235
R. C. Feber, Jr. Knolls Atomic Power Lab. Schenectady, New York	Consultation on Purex problems	F. W. Woodfield	3-11-53	3-13-53	X		200-W Redox 300 XXX
S. C. Furman Knolls Atomic Power Lab. Schenectady, New York	Consultation on RW and Purex problems	R. B. Richards F. W. Woodfield	3-3-53	3-5-53	X		100-D 105-D & DR 200-E 201-C 200-W 221-U, Redox 300 XXX
C. R. Goetjen Air Reduction Pacific Company Seattle, Washington	Welding consultation	J. W. Lingafelter	3-12-53	3-13-53	X		200-W 2704-W,272-W 300 3732, 303 300

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HANFORD WORKS
General Electric Company
Richland, Washington

REPORT OF VISITORS FOR PERIOD ENDING MARCH 31, 1953

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass. Areas
ENGINEERING DEPARTMENT - TECHNICAL SECTION						
I. Visitors to this Works						
				3-20-		
E. C. Anderson Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program	H. F. Zuhr	2-20-53 4-17-53	4-17-53 5-1-53	X	100-B 105-B, 105-C 100-H XXX 300 XXX; 700
E. E. Baldwin Knolls Atomic Power Laboratory Schenectady, New York	Consultation on boron carbide engineering irradiation	H. F. Zuhr J. A. Berberet	3-24-53	3-27-53	X	100-B 105-C 100-D 105-D,189-D 100-H XXX 300 XXX; 700
J. H. Barnwell General Engineering Lab. Schenectady, New York	Tests on magnetic ball conveyor	W. K. Alexander	3-31-53	4-11-53	X	100-B 105-C 100-D 189-D 700
E. G. Bohlman Oak Ridge National Lab. Oak Ridge, Tennessee	Metallurgy and corrosion discussion	E. C. Pitzer V. R. Cooper	3-11-53	3-11-53	X	201-C 200-E
J. E. Bradley Mounds Laboratory Miamisburg, Ohio	Survey of problems connected with remote controlled operations of highly contaminated areas	J. F. Gifford	3-2-53	3-3-53	X	100-B 105-B 100-D XXX 200-W 231, Redox 300-L XXX
G. R. Cavanaugh U. S. Atomic Energy Commission Washington, D. C.	Discuss research and development activities	O. F. Hill K. M. Harmon M. K. Harmon	3-23-53 4-7-53	4-3-53 5-1-53	X	100-H 105 300 303
C. L. Cowan, Jr. Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program	H. F. Zuhr	2-25-53	4-17-53	X	100-B 105-B, 105-C 100-H XXX 300 XXX; 700

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DECLASSIFIED

[redacted]

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass.	Areas
F. Reines Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program	H.F. Zuhr	2-25-53 4-17-53	4-17-53 5-1-53	X	100-B 100-H 300	105-B, 105-C XXX XXX
R. L. Schuch Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program	H. F. Zuhr	2-15-53 4-17-53	4-18-53 5-1-53	X	100-B 100-H 300	105-B, 105-C XXX XXX
S. Storchheim Sylvania Electric Products, Inc. Bayside, New York	Inspect slugs for canning	E. A. Eschbach	3-9-53	3-10-53	X	100-B 300	108-B, 105-C 303
M. P. Warren Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program	H. F. Zuhr	2-25-53 4-7-53	4-3-53 5-1-53	X	100-B 100-H 300	105-B, 105-C XXX XXX
T. White Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program	H. F. Zuhr	3-26-53 4-13-53	4-10-53 5-1-53	X	100-B 100-H 300	105-B, 105-C XXX XXX
J. R. Wiesler Mounds Laboratory Miamisburg, Ohio	Survey of problems connected with remote controlled operations of highly contaminated areas	J. F. Gifford	3-3-53	3-3-53	X	100-B 100-D 200-W 300-L	105-B XXX 231, Redox XXX
II. Visits to other Installations							
F. W. Albaugh to: Radiation Laboratory University of California Berkeley, California	Discuss radiochemical research	G. T. Seaborg	3-24-53	3-26-53	X		
J. C. Ballinger to: Oak Ridge National Lab. Oak Ridge, Tennessee	Attend radiation damage symposium	D. S. Billington	3-23-53	3-25-53	X		
L. L. Burger to: Cal. Research & Development Lab. Livermore, California	Solvent extraction discussions	W. H. McVey	3-20-53	3-20-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass.	Areas
F. B. Harrison Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program	H. F. Zuhr	2-25-53 4-17-53	4-17-53 5-1-53	X	100-B 100-H 300	105-B, 105-C XXX XXX
F. N. Hayes Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program and discuss biology program	H. F. Zuhr H. A. Kornberg	2-15-53 4-17-53	4-17-53 5-1-53	X	100-B 100-H 100-F 300	105-B, 105-C XXX 108-F XXX; 700
L. R. Hayward Air Reduction Pacific Company Seattle, Washington	Welding consultation	J. W. Lingafelter	3-12-53	3-13-53	X	300 200-W	303, 3732 2704-W, 272-W 277-W
R. I. Jaffee Battelle Memorial Institute Cincinnati, Ohio	Discuss project on solution of aluminum in aluminum silicon alloy	W. L. Schalliol	3-30-53	3-30-53	X	300	303
D. F. Klimas General Engineering Lab. Schenectady, New York	Assembly of magnetic ball conveyor	W.K. Alexander G. H. Strong	3-19-53	4-3-53	X	100-D 100-B 700	189-D 105-C
D. McLachlan, Jr. University of Utah Salt Lake City, Utah	Consultation on contract Agreement No. 103	F. W. Albaugh	3-16-53	3-21-53	X	100-B 100-D 100-F 200-W 300-L	105-B, 105-C, 108-B 105-D, 189-D 105, 108 221-T, 231, 234, Redox, 221-U 303
E. C. Miller Oak Ridge National Lab. Oak Ridge, Tennessee	Metallurgy and corrosion discussion	E. C. Pitzer V. R. Cooper	3-11-53	3-11-53	X	201-C	200-E
P. R. Powell Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program	H. F. Zuhr	2-16-53	3-24-53	X	100-B 100-H 300	105-B, 105-C XXX XXX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
L. L. Burger to: North American Aviation Downey, California	Conference on alternate separation methods and procedures	C. Starr	3-20-53	3-20-53	X		
L. L. Burger to: Cal. Research & Development Livermore, California	Solvent extraction discussions	W. H. McVey	3-23-53	3-24-53	X		
D. H. Curtiss to: Oak Ridge National Lab. Oak Ridge, Tennessee	Attend radiation damage symposium	D. S. Billington	3-23-53	3-25-53	X		
R. S. Dalrymple to: Argonne National Lab. Chicago, Illinois	Attend conference on corrosion problems	J. E. Draley	3-18-53	3-19-53	X		
R. S. Dalrymple to: Knolls Atomic Power Lab. Schenectady, New York	Attend conference on corrosion problems	C. E. Lacy	3-20-53	3-27-53	X		
W. F. Ekern to: Phillips Petroleum Co. Arco, Idaho	Inspect facilities and discuss Material Testing Reactor Program	W. H. Pennington	3-27-53	3-30-53	X		
E. A. Eschbach to: Sylvania Electric Products, Inc. Bayside, New York	Fuel element development consultation and radiation damage conference	H. L. Hausner	3-19-53	3-20-53	X		
E. A. Eschbach to: Knolls Atomic Power Lab. Schenectady, New York	Fuel element development consultation and radiation damage conference	C. E. Lacy	3-20-53	3-20-53	X		
E. A. Eschbach to: Oak Ridge National Lab. Oak Ridge, Tennessee	Fuel element development consultation and radiation damage conference	J. M. Warde	3-23-53	3-24-53	X		
E. A. Eschbach to: Battelle Memorial Inst. Cincinnati, Ohio	Fuel element development consultation and radiation damage conference	H. R. Nelson	3-25-53	3-25-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
E. A. Eschbach to: Ames Laboratory Iowa State College Ames, Iowa	Fuel element development consultation and radiation damage conference	F. A. Spedding H. A. Wilhelm	3-26-53	3-27-53	X		
O. H. Greager to: Cal. Research & Development Livermore, California	Consultation on radiation laboratory program	H. A. Fidler	3-19-53	3-20-53	X		
O. H. Greager to: University of California Radiation Laboratory Berkeley, California	Consultation on radiation laboratory program	H. A. Fidler	3-19-53	3-20-53	X		
W. T. Kattner to: Simonds Saw & Steel Co. Lockport, New York	Observe metal fabrication	A. D. Potts C. H. Emery	6-18-52	6-30-53	X		
W. T. Kattner to: Feed Materials Production Center Fernald, Ohio	Consultation on metallurgy of uranium	J. Cibojski	8-1-52	6-30-53	X		
W. T. Kattner to: Argonne National Lab. Chicago, Illinois	Metallurgical consultation	F. G. Foote	9-1-52	6-30-53	X		
W. T. Kattner to: Mallinckrodt Chemical Wks. St. Louis, Missouri	Observe and discuss uranium reduction and casting	W. H. Keller	9-25-52	3-31-53	X		
W. T. Kattner to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Metallurgical consultation	J. S. Parker	10-7-52	3-31-53	X		
W. T. Kattner to: E. I. du Pont de Nemours & Co. Savannah River Plant Augusta, Georgia	Inspection of facilities	P. J. Hagelston P. H. Permar	2-9-53	2-14-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
W. T. Kattner to: U. S. Atomic Energy Comm. New York, New York	Discuss fabrication of metal	G. E. Dunlap	3-30-53	3-31-53	X		
R. L. Knecht to: National Lead Company Fernald, Ohio	Observe processing of uranium	G. W. Wunder	2-16-53	12-31-53	X		
D. D. Lanning to: Oak Ridge National Lab. Oak Ridge, Tennessee	Discuss critical mass data	D. Callahan	3-24-53	3-24-53	X		
M. B. Leboeuf to: Knolls Atomic Power Lab. Schenectady, New York	Discuss instrumental analysis	J. F. Flagg	3-5-53	3-5-53	X		
W. R. Lewis to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Conference on Reactor Control mechanisms	M. C. Leverett	3-19-53	3-21-53	X		
W. R. Lewis to: Oak Ridge National Lab. Oak Ridge, Tennessee	Radiation damage conference	D. S. Billington	3-23-53	3-24-53	X		
H. L. Libby to: U. S. Atomic Energy Comm. New York, New York	Consultation on non destructive testing	R. Hochschild	3-27-53	3-27-53	X		
G. E. McCullough to: U. S. Atomic Energy Comm. New York, New York	Discussion on fabrication and handling of metals	H. B. Fry	3-30-53	3-31-53	X		
G. E. McCullough to: General Engineering Lab. Schenectady, New York	Discussion on fabrication and handling of metals	C. W. George	4-1-53	4-3-53	X		
G. E. McCullough to: Knolls Atomic Power Lab. Schenectady, New York	Discussion on fabrication and handling of metals	K. H. Kingdon	4-1-53	4-3-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
D. F. O'Keefe to: American Cyanamid Co. Arco, Idaho	Discuss "J" slugs	D. G. Reid	3-13-53	3-13-53	X		
D. F. O'Keefe to: Oak Ridge National Lab. Oak Ridge, Tennessee	Attend radiation damage conference	D. S. Billington	3-23-53	3-24-53	X		
D. F. O'Keefe to: Argonne National Lab. Chicago, Illinois	Inspection of laboratory facilities	S. H. Paine	3-25-53	3-26-53	X		
J. W. Kalbfus to: National Lead Company Fernald, Ohio	Observe processing of uranium	G. W. Wunder	2-16-53	12-31-53	X		
C. G. Stevenson to: Oak Ridge National Lab. Oak Ridge, Tennessee	Discuss problems in document indexing, abstracting, etc. in panel meeting	A. G. Abdian J. C. Morris	3-19-53	3-20-53	X		
C. G. Stevenson to: Nevada Proving Ground Las Vegas, Nevada	Attend AEC Tech. Information meeting panel	R. C. Smith	3-22-53	3-27-53	X		
J. F. Townsend to: Oak Ridge National Lab. Oak Ridge, Tennessee	Attend radiation damage conference	D. S. Billington	3-23-53	3-25-53	X		
T. L. Thurman to: Oak Ridge National Lab. Oak Ridge, Tennessee	Attend radiation damage conference	D. S. Billington	3-23-53	3-24-53	X		
A. L. Bailey to: Phillips Petroleum Co. Idaho Falls, Idaho	Technical discussion on exposures in Material Testing Reactor	W. B. Lewis	11-10-52	5-31-53	X		
E. C. Wood to: Phillips Petroleum Co. Idaho Falls, Idaho	Inspect facilities and discuss proposed experiment	W. H. Pennington	3-27-53	3-30-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
P. D. Wright to: National Lead Company Fernald, Ohio	Observe processing of uranium	G..W. Wunder	2-16-53	12-31-53	X		
H. F. Zuhr to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on special request Program Hanford does for KAPL	C. Mannal	3-2-53	3-6-53	X		
R. W. Benoliel to: National Lead Company Fernald, Ohio	Discuss fabrication and handling of metals	G. W. Wunder	3-26-53	3-27-53	X		
L. J. Lucas to: Etna Machine Company Los Angeles, California	Discussion with swagging machine manufacturer	- -	3-11-53	3-23-53		X	
M. B. Leboeuf to: Pittsburgh, Pennsylvania	Attend analytical conference	- -	3-2-53	3-4-53		X	
M. B. Leboeuf to: Mass. Inst. Technology Cambridge, Massachusetts	Discuss analytical analysis	A.B. Van Rennes	3-6-53	3-6-53		X	
R. J. Brouns to: Pittsburgh, Pennsylvania	Attend analytical conference	- -	3-2-53	3-4-53		X	
R. W. Wirta to: Metals & Controls Corp. Newark, New Jersey	Development of mechanical equipment	P. Chase	2-23-53	3-5-53		X	
R. W. Wirta to: Attleboro Baker & Co. Newark, New Jersey	Development of mechanical equipment	L. Burman	2-23-53	3-5-53		X	
R. W. Wirta to: Micrometallic Co. Glen Cove, New York	Development of mechanical equipment	Mr. Krakauer	2-23-53	3-5-53		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
ENGINEERING DEPARTMENT - DESIGN SECTION							
I. Visitors to this Works							
J. H. Barnwell General Engineering Lab. Schenectady, New York	Discuss electroveyor	G. H. Strong	3-30-53	4-11-53	X		100-B 105-C 100-D 189-D 700
E. G. Bohlmann Oak Ridge National Lab. Oak Ridge, Tennessee	Metallurgy and corrosion discussions	J. M. Fox, Jr.	3-9-53	3-11-53	X		100-D 105-D 200-E 221-B, 201-C 200-W 221-U, Redox 300 303
J. R. Farmakes Argonne National Lab. Chicago, Illinois	Discussion and inspection regarding plutonium and high density concrete	H. S. Davis	3-24-53	3-24-53		X	762 Bldg.
R. B. Clendinning Bristol Company Waterbury, Connecticut	Repair of recorders provided for 105-C on Project CG-431-B	E. S. Day, Jr.	2-25-53	3-13-53	X		100-B 105-C
D. F. Klimas General Engineering Lab. Schenectady, New York	Discuss assembly of magnetic ball conveyor	G. H. Strong	3-19-53	3-25-53	X		100-D 189-D 700
E. C. Miller Oak Ridge National Lab. Oak Ridge, Tennessee	Metallurgy and corrosion discussions	J. M. Fox, Jr.	3-9-53	3-11-53	X		100-D 105-D 200-E 221-B, 201-C 200-W 221-U, Redox 300 303
C. K. Shanks Pacific Scientific Company Portland, Oregon	Examine space and facilities available for installation of gas analysis equipment in 105-C Bldg.	E. S. Day, Jr. R. C. Theil K. T. Perkins	3-12-53	3-12-53	X		100-B 105-B, 105-C
R. L. Tower Tower Equipment Company Seattle, Washington	Inspect faulty alarm system	E. S. Day, Jr.	3-5-53	3-5-53	X		200-W 221-U 300 XXX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
II. Visits to other Installations							
H. J.Bellarts to: Washington State College Pullman, Washington	Consultation on down-comer	J. Roberson	3-16-53	3-16-53		X	
R. K. Bollinger to: Argonne National Lab. Chicago, Illinois	Attend radiation instrument committee meeting	A. M. Brues	3-4-53	3-5-53	X		
H. S. Davis to: Puget Sound Naval Shipyard Bremerton, Washington	Technical discussion on crate fabrication	S. L. Allison	3-9-53	3-9-53	X		
H. S. Davis to: Boundry, Washington	Verify limonite sources	J. S. Anderson	3-10-53	3-10-53		X	
H. S. Davis to: Montello, Nevada	Verify limonite sources	F. J. Rosenberg	3-11-53	3-11-53		X	
E. S. Day, Jr. to: Pacific Scientific Co. Portland, Oregon	Inspect 105-C gas analysis equipment	C. K. Shanks	2-26-53	2-28-53		X	
B. R. Elder to: Aluminum Co. of America Lafayette, Indiana	Aluminum fabrication discussion	Chief Engineer	3-9-53	3-12-53	X		
B. R. Elder to: Aluminum Co. of America Pittsburgh, Pennsylvania	Aluminum fabrication discussion	F. Marshall	3-9-53	3-12-53	X		
J. M. Fox, Jr. to: Los Angeles, California	Review zirconium and titanium technology	- -	3-23-53	3-27-53		X	
J. M. Frame to: Knolls Atomic Power Lab. Schenectady, New York	Personnel Interview	L. L. German	3-3-53	3-4-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
J. M. Frame to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Personnel interview	J. S. Parker	3-6-53	3-7-53	X		
L. O. Hasselblad to: Aluminum Co. of America Pittsburgh, Pennsylvania	Consultation on improving delivery dates of critical equipment items	F. Marshall	3-10-53	3-12-53	X		
L. O. Hasselblad to: Ajax Engineering Co. Trenton, New Jersey	Consultation on improving delivery dates of critical equipment items	H. Gauker	3-13-53	3-13-53	X		
E. Hollister to: Puget Sound Naval Shipyard Bremerton, Washington	Inspect canning machine fabrication	S. L. Allison	3-3-53 3-20-53	3-3-53 3-20-53	X X		
E. Hollister to: Ajax Engineering Co. Trenton, New Jersey	Discuss and approve induction furnace drawings	H. Gauker	3-12-53	3-12-53		X	
G. L. Locke to: Bingham Pump Company Portland, Oregon	Select manufacturer for development of a new waste metal recovery pump	Engineering staff	3-23-53	3-27-53		X	
G. L. Locke to: Peerless Pump Company Los Angeles, California	Select manufacturer for development of a new wste metal recovery pump	Engineering staff	3-23-53	3-27-53		X	
G. L. Locke to: Byron-Jackson Pump Co. Los Angeles, California	Select manufacturer for development of a new waste metal recovery pump	Engineering staff	3-23-53	3-27-53		X	
G. L. Locke to: Stanford University Palo Alto, California	Obtain information for locking devices for nuts and bolts	W. M. Kays	3-23-53	3-27-53		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
W. J. Love to: Washington State College Pullman, Washington	Evaluate hydro-dynamics of revised downcomer and approach section design	J. Roberson	3-9-53	3-9-53		X	
A. J. McCrocklin to: Puget Sound Naval Shipyard Bremerton, Washington	Review design of canning machine	S. L. Allison	3-1-53	3-2-53		X	
A. J. McCrocklin to: General Electric Company Schenectady, New York	Assist with A-C network analyzer study of 100-K electrical system	W. W. Churchill	3-8-53	3-20-53	X		
A. J. McCrocklin to: Ajax Engineering Co. Trenton, New Jersey	Review furnace drawings	H. Gauker	3-17-53	3-17-53		X	
E. P. Peabody to: General Electric Company Schenectady, New York	Assist with A-C network analyzer study of 100-K electrical system	W. W. Churchill	3-8-53	3-15-53	X		
W. L. Pearl to: Permutit Company Seattle, Washington	Contact water treatment expert	Mr. Woolford	3-9-53	3-9-53		X	
W. L. Pearl to: Wallace & Tiernan Co. Seattle, Washington	Contact water treatment expert	R. T. Smith	3-9-53	3-9-53		X	
W.L. Pearl to: Proportioneers, Inc. Seattle, Washington	Contact water treatment expert	C. Yost	3-20-53	3-20-53		X	
W. L. Pearl to: University of California Berkeley, California	Contact Water treatment expert	W. F. Langelier	3-10-53	3-10-53		X	
W. L. Pearl to: Oliver United Filters Oakland, California	Contact water treatment expert	E. D. Flynn	3-10-53	3-10-53		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
W. L. Pearl to: Shell Chemical Corp. San Francisco, California	Contact water treatment expert	W. H. Pitkin	3-11-53	3-11-53		X	
W. L. Pearl to: Harding Co. San Francisco, California	Contact water treatment expert	E. W. Luther	3-11-53	3-11-53		X	
W. L. Pearl to: Flox Company Alameda, California	Contact water treatment expert	R. Baldwin	3-12-53	3-12-53		X	
C. A. Pursel to: Washington State College Pullman, Washington	Evaluate hydro-dynamics of revised downcomer and approach section design	J. Roberson	3-9-53	3-9-53		X	
G. M. Roy to: Consolidate Cultee Aircraft Forth Worth, Texas	Attend review and discussion on reactor safety with Reactor Safeguard Committee	C. R. Russell	3-4-53	3-4-53	X		
J. H. Snyder to: General Electric Co. Schenectady, New York	Conference on 190 process pump drive assembly	W. W. Churchill	3-9-53	3-11-53	X		
ENGINEERING DEPARTMENT - PROJECT SECTION							
I. Visitors to this Works							
F. P. Robinson, Jr. General Electric Company Pasco, Washington	Inspect apparatus furnished by GE	O. W. Priebe J .H. Greer	3-2-53	3-2-53		X	300 XXX
	Check GE motor	D. J. Quigley	3-10-53	3-13-53		X	100-B 183-C
	Test electrical equipment	G. B. McDonald	3-20-53	3-20-53		X	100-B 183-C
	Check electrical equipment	J. R. Kelly	3-27-53	3-27-53		X	100-B 183-C
A. Fisher Bouillon & Griffith Seattle, Washington	A-E services on the 313 Building addition	P. J. O'Neil	3-18-53	3-23-53	X		300 303,313

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
II. Visits to other Installations							
G. L. Bowman to: Szulack Company & Bucyker Seattle, Washington	Liaison on Kaiser Eng. orders regarding Machine Shop, 101 Hanford	Manager	3-11-53	3-13-53		X	
G. L. Bowman to: Precision Machine Company Tacoma, Washington	Liaison on Kaiser Eng. orders regarding Machine Shop, 101 Hanford	Manager	3-11-53	3-13-53		X	
G. L. Bowman to: Kincaid Machine Company Portland, Oregon	Liaison on Kaiser Eng. orders regarding Machine Shop, 101 Hanford	Manager	3-11-53	3-13-53		X	
J. C. Hamilton to: Puget Sound Naval Shipyard Bremerton, Washington	Discuss construction of 105 crates	S. L. Allison	3-9-53	3-10-53	X		
G. H. Hill to: General Electric Co. Aircraft Nuclear Propulsion Project Lockland, Ohio	Attend Drafting Supervisors conference	J. S. Parker A. H. Rau F. C. Linn	3-3-53	3-6-53		X	
D. A. Hoover to: Manning, Maxwell & Moore Muskegon, Michigan	Vendor consultation	C. B. Fles	3-11-53	3-13-53		X	
D. A. Hoover to: General Electric Company Schenectady, New York	Consultation on design	J. J. Mattson J. G. Gordon	3-27-53	4-2-53		X	
C. F. Quackenbush to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Conference on design 190-K Bldg. drive assemblies	W. W. Churchill	3-9-53	3-11-53	X		
R. C. Walker to: Szulack Company & Bucyken Seattle, Washington	Liaison on Kaiser Eng. orders regarding Machine Shop, 101 Hanford	Manager	3-11-53	3-13-53		X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
R. C. Walker to: Precision Machine Company Tacoma, Washington	Liaison on Kaiser Eng. orders regarding Machine Shop, 101 Hanford	Manager	3-11-53	3-13-53		X	
R. C. Walker to: Kinzald Machine Company Portland, Oregon	Liaison on Kaiser Eng. orders regarding Machine Shop, 101 Hanford	Manager	3-11-53	3-13-53		X	
MANAGEMENT							
I. Visitors to this Works							
L. R. Drake Dow Chemical Company Denver, Colorado	Accountability procedures	V. D. Donihee C. J. Shortess E. N. Wooley	3-10-53	3-12-53	X	300 XXX 200-W 234, 235 700	
A. Kerwood Dow Chemical Company Denver, Colorado	Accountability procedures	V. D. Donihee C. J. Shortess E. N. Wooley	3-10-53	3-12-53	X	300 XXX 200-W 234, 235 700	
D. A. Brown Aircraft Nuclear Propulsion Project Lockland, Ohio	S.F. Accountability procedures discussion	V. D. Donihee E. N. Wooley	3-17-53	3-18-53	X	300 303, 313	
II. Visits to other Installations							
L. B. Bradley to: San Francisco, California	Discuss pending litigation	U. S. Attorney	3-31-53	4-3-53		X	
V. D. Donihee to: Denver, Colorado	Discuss SF Accountability matters and procedures	D. F. Musser	3-30-53	4-1-53	X		
W. E. Johnson to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Engineering review	J. W. Belanger	3-31-53	3-31-53	X		
E. A. Smith to: Knolls Atomic Power Lab. Schenectady, New York	Contacts relative to administrative practices on Nucleonics Projects	J. A. Haaga H. E. Scott H. E. Grantz	3-16-53	3-20-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass.	Areas
MANUFACTURING DEPARTMENT							
I. Visitors to this Works							
J. T. Brock E. I. du Pont de Nemours & Co. Wilmington, Delaware	Six weeks training program, observe and discuss 100 Area Operations	J. H..Warren	3-3-53	4-9-53	X		100-B 105-B, 105-C 100-D 105 100-F 105 100-H 105
J. E. Eggert E. I. du Pont de Nemours & Co. Wilmington, Delaware	Six weeks training program, observe and discuss 100 Area Operations	J. H. Warren	3-3-53	4-9-53	X		100-B 105-B, 105-C 100-D 105 100-F 105 100-H 105
J. F. Elliott E. I. du Pont de Nemours & Co. Wilmington, Delaware	Six weeks training program, observe and discuss 100 Area Operations	J. H. Warren	3-3-53	4-9-53	X		100-B 105-B, 105-C 100-D 105 100-F 105 100-H 105
W. J. Hamilton Star Machinery Seattle, Washington	Perform engineering work in 272-W Bldg.	V. D. Rouse	3-3-53	3-5-53		X	200-W XXX
J. F. Holton Knolls Atomic Power Lab. Schenectady, New York	Training purposes for KAPL supervisors	J. C. McLaughlin	3-4-53	3-14-53	X		100-D XXX 200-W 221-T, 231, Redox, 221-U 300-303
R. W. Keiser E. I. du Pont de Nemours & Co. Wilmington, Delaware	Six weeks training program, observe and discuss 100 Area Operations	J. H. Warren	3-3-53	4-9-53	X		100-B 105-B, 105-C 100-D 105 100-F 105 100-H 105
S. H. Kiser E. I. du Pont de Nemours & Co. Wilmington, Delaware	Six weeks training program, observe and discuss 100 Area Operations	J. H. Warren	3-3-53	4-9-53	X		100-B 105-B, 105-C 100-D 105
M. R. Myers International Business Machines Richland, Washington	Install new IBM machine	E. T. O'Sullivan	3-20-53	3-20-53		X	100-H 105

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Unclass. Areas
R. J. Richards E. I. du Pont de Nemours & Co. Wilmington, Delaware	Six weeks training program, observe and discuss 100 Area Operations	J. H. Warren	3-3-53	4-9-53	X	100-B 105-B, 105-C 100-D 105 100-F 105 100-H 105
J. R. Whitman International Business Machines Richland, Washington	Repair IBM equipment	J. H. Warren E. T. O'Sullivan	3-20-53	3-23-53		X 100-H 105
II. Visits to other Installations						
H. A. Carlberg to: Knolls Atomic Power Lab. Schenectady, New York	Review progress of reactor development at West Milton and personnel interchange	B. R. Prentice D. Brereton	3-11-53	3-13-53	X	
S. M. Gill to: National Lead Company Fernald, Ohio	Discuss metal preparation manufacturing problems	R.E.L. Stanford	3-24-53	3-27-53	X	
S. M. Gill to: U. S. Atomic Energy Comm. New York, New York	Metal quality program development meeting	H. F. Fry	3-30-53	3-30-53	X	
H. G. Henry to: E.I. du Pont de Nemours & Co. Savannah River Plant Augusta, Georgia	P-10 program liaison	K. W. Millett	3-2-53	3-6-53	X	
P. E. Lowe to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Discuss engineering problems and housing	E. H. Gamble	3-12-53	3-14-53	X	
J. E. Maider, Jr. to: Rocky Flats Laboratory Denver, Colorado	Consultation pertaining to HW production matters	F. H. Langell I. B. Venable	3-26-53	3-27-53	X	
J. E. Maider, Jr. to: Las Vegas, Nevada	Hanford official observer at bomb explosion	W. A. Cunningham	3-23-53	3-25-53	X	

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
L. H. Wallace to: Knolls Atomic Power Lab. Schenectady, New York	Develop training program desired for KAPL trainees at Hanford	J. A. Haaga M. H. Davis	3-16-53	3-18-53	X		
R. C. Aungst to: Pacific Metal Company Seattle, Washington	Attend aluminum welding clinic	- -	3-4-53	3-5-53		X	
R. C. Aungst to: Aluminum Co. of America Seattle, Washington	Attend aluminum welding clinic	- -	3-4-53	3-5-53		X	
F. A. R. Stainken to: University of California Berkeley, California	Recruit technical personnel	- -	3-9-53	3-12-53		X	
EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT							
I. Visitors to this Works							
I. H. Dearnley Knolls Atomic Power Lab. Schenectady, New York	Obtain knowledge of processes in respect to recruiting personnel	R. E. Curtis T. G. Marshal	3-12-53	3-12-53	X	100-D 189-D 300 303	
C. C. French Washington State College Pullman, Washington	Review and inspect facilities	D. W. McLenegan	3-4-53	3-4-53		X 300	3706, 3703 329 200-W Redox
S. E. Hazlet Washington State College Pullman, Washington	Review and inspect facilities	D. W. McLenegan	3-4-53	3-4-53		X 300	3706, 3703 329 200-W Redox
H. W. Steffens University of Idaho Moscow, Idaho	Confer on thesis	C. M. Barnes, AEC	3-5-53	3-5-53		X 100-F	141-M
S. T. Stephenson Washington State College Pullman, Washington	Review and inspect facilities	D. W. McLenegan	3-4-53	3-4-53		X 300	3706, 3703 329

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
II. Visits to other Installations							
G. L. Brown, Jr. to: Nevada Proving Ground Las Vegas, Nevada	Tours held in conjunction with Third Industrial Information Committee Meetings	N. H. Jacobson	3-23-53	3-27-53	X		
R. C. Grant to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Conduct salary survey	J. Young J. K. Herzog	3-2-53	3-2-53	X		
R. C. Grant to: Sandia Base Santa Fe, New Mexico	Conduct salary survey	F. P. Fay L. E. Fuller	3-3-53	3-3-53	X		
R. C. Grant to: Argonne National Lab. Chicago, Illinois	Conduct national salary survey	A. F. Miller A. F. Miller	3-17-53 3-19-53	3-17-53 3-19-53		X X	
R. C. Grant to: Carbide and Carbon Co. Oak Ridge, Tennessee	Conduct national salary survey	T. E. Lane	3-23-53	3-23-53		X	
H. L. Greenberg to: Knolls Atomic Power Lab. Schenectady, New York	Interview	R. F. Stearns	3-16-53	3-17-53	X		
D. W. McLenegan to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Engineering and personnel liaison	M. C. Leverett J. S. Parker R. C. Mark D. R. Shoults	3-18-53	3-18-53	X		
J. J. Tagen to: U. S. Atomic Energy Comm. Arco, Idaho	Wage conferences	L. V. Dunham	3-25-53	3-26-53		X	
RADIOLOGICAL SCIENCES DEPARTMENT							
I. Visitors to this Works							

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
G. R. Cavanaugh U. S. Atomic Energy Commission Washington, D. C.	Discuss noble gas effluent in Separations areas	H. M. Parker	3-23-53	4-3-53	X		
C. C. French Washington State College Pullman, Washington	Discuss arrangements for thesis work	H. M. Parker	3-4-53	3-4-53		X	
A. E. Gorman U. S. Atomic Energy Commission Washington, D. C.	Discuss reactor problems	D. W. Pearce	3-23-53	3-23-53	X		
A. Harberdsen U. S. Atomic Energy Commission Arco, Idaho	Discuss health physics problems	D. W. Pearce	3-10-53	3-11-53	X		
F. N. Hayes Los Alamos Scientific Lab. Los Alamos, New Mexico	Biology information	H. A. Kornberg	3-3-53	3-3-53		X	
D. Miller U. S. Atomic Energy Commission Washington, D. C.	Discuss noble gas effluent in Separations areas	H. M. Parker	3-23-53	4-3-53	X		
C. Sill U. S. Atomic Energy Commission Arco, Idaho	Discuss health physics problems	D. W. Pearce	3-10-53	3-11-53	X		
S. T. Stephenson Washington State College Pullman, Washington	Discuss arrangements for thesis work	H. M. Parker	3-4-53	3-4-53		X	
II. Visits to other Installations							
G. E. Driver to: Argonne National Laboratory Chicago, Illinois	Attend radiation instrument committee meeting	A. M. Brues	3-2-53	3-6-53	X		
J. J. Fuquay to: Las Vegas, Nevada	Participate in Test Program 27	K. H. Larson	3-13-53	5-10-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
J. W. Healy to: Columbia University New York, New York	Tri-partite conference on permissible doses	G. Failla	3-29-53	4-1-53	X		
J. W. Healy to: U. S. Atomic Energy Comm. New York, New York	Tri-partite conference on permissible doses	J. C. Bugher	3-29-53	4-1-53	X		
J. W. Healy to: Consolidate Vultee Aircraft Corp. Fort Worth, Texas	Discuss hazards of reactor operation	C. R.Russell	3-4-53	3-4-53	X		
J. F. Honstead to: Las Vegas, Nevada	Participation in Test Program 27	K. H. Larson	3-13-53	5-10-53	X		
M. L. Mickelson to: Oak Ridge National Lab. Oak Ridge, Tennessee	Radiological committee meeting	M. T. Clark	3-13-53	3-13-53	X		
H. M. Parker to: U. S. Atomic Energy Comm. University of California Los Angeles, California	Attend Bio-medical directors' meeting	J. C. Bugher	3-19-53	3-20-53	X		
H. G. Ruppert to: Las Vegas, Nevada	Participate in Test Program 27	K. H. Larson	3-13-53	5-10-53	X		

UTILITIES AND GENERAL SERVICES DEPARTMENT - PURCHASING AND STORES SECTION

I. Visitors to this Works

F. Colbert United Truck Lines Kennewick, Washington	Deliver material on order HW 21719	H. L. Morgan	3-3-53	3-3-53		X 300 303-J
	Deliver material on order HW 28288	H. L. Morgan	3-6-53	3-6-53		X 100-C 183-C
	Deliver material on order HW 28288	H. L. Morgan	3-9-53	3-9-53		X 100-D 185-D 100-F 185-F
	Deliver material on order HW 28288	H. L. Morgan	3-16-53	3-16-53		X 300 XXX
	Deliver material on order HW 28288	H. L. Morgan	3-26-53	3-26-53		X 300 XXX

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass. Areas
E. A. Janes Consolidated Freightways Kennewick, Washington	Deliver material on order 29388	H. L. Morgan	3-6-53	3-6-53		X 200-W 221-U
W. Fruehling United Truck Lines Kennewick, Washington	Deliver material on order HW 28253	H. L. Morgan	3-10-53	3-10-53		X 100-F 183-F
R. Bagby West Coast Fast Freight Kennewick, Washington	Deliver material on order OGT-10503	H. L. Morgan	3-17-53	3-17-53		X 100-C 105-C
	Deliver material on HWC-15764	H. L. Morgan	3-24-53	3-24-53		X 101-Hanford
	Deliver material on order HW 31136	H. L. Morgan	3-31-53	3-31-53		X 200-W 275
D. Carter West Coast Fast Freight Kennewick, Washington	Deliver material on order OGT 10503	H. L. Morgan	3-23-53	3-23-53		X 100-C 105-C
W. McEachern Inland Motor Freight Kennewick, Washington	Deliver material on order BO-65163	H. L. Morgan	3-26-53	3-26-53		X 300 303-J
	Deliver material on order	H. L. Morgan	3-27-53	3-27-53		X 300 303-J
B. D. Stanley Liquid Carbonic Corporation Seattle, Washington	Deliver liquid carbon dioxide on order HW 28298	J. L. Goodrich	3-2-53 3-6-53 3-16-53 3-30-53	3-2-53 3-6-53 3-16-53 3-30-53		X 100-B 105-B X 100-H 105-H X 100-B 105-B X 100-B 105-B
J. L. Verschueren Liquid Carbonic Corporation Seattle, Washington	Deliver carbon dioxide (liquid)on order HW 28298	J. L. Goodrich	3-11-53 3-13-53 3-27-53	3-11-53 3-13-53 3-27-53		X 100-F 105 X 100-D 105-D X 100-D 105-D
T. L. Hull Ajax Engineering Company Trenton, New Jersey	Supervise installation of furnace purchased on order HW 24780	G. J. Hayward	3-18-53	4-1-53	X	300 303
T. B. Scarfone Farrel-Birmingham Co. Ansonia, Connecticut	Inspect decontamination cells	C.. W. Rushmore	3-27-53	4-3-53		X 300 Construction

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
II. Visits to other Installations							
J. W. O'Rourke to: Regional Office Denver, Colorado	Administration conference	A. Willard	3-5-53	3-5-53		X	
J. F. Spease to: Knolls Atomic Power Lab. Schenectady, New York	Procurement of materials	K. R. Van Tassel W. W. Kuyper H. E. Scott	3-1-53	3-6-53	X		
G. H. Wright to: Byron Jackson Los Angeles, California	Placement of pump order	C. Blom	2-27-53	2-27-53		X	
G. H. Wright to: Johnston Pump Co. Pasadena, California	Placement of pump order	P. Brown	3-2-53	3-2-53		X	
UTILITIES AND GENERAL SERVICES DEPARTMENT - STATISTICAL AND COMPUTING SERVICES SECTION							
I. Visitors to this Works							
D.F. Crumb International Business Machines Richland, Washington	Repair IBM equipment	P. M. Thompson	3-1-53	3-31-53		X	700 722-A
J. Amon International Business Machines Richland, Washington	Repair IBM equipment	P. M. Thompson	3-1-53	3-31-53		X	700 722 -A
J. E. Elliott International Business Machines Richland, Washington	Repair IBM equipment	P. M. Thompson	3-1-53	3-31-53		X	700 722-A
M. McCormick International Business Machines Richland, Washington	Repair IBM equipment	P. M. Thompson	3-1-53	3-31-53		X	700 722-A
M. R. Meyers International Business Machines Richland, Washington	Repair IBM equipment	P. M. Thompson	3-1-53	3-31-53		X	700 722-A

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
N. R. Norby International Business Machines Richland, Washington	Repair IBM equipment	P..M. Thompson	3-1-53	3-31-53		X	700 722-A
J. R. Whitman International Business Machines Richland, Washington	Repair IBM equipment	P. M. Thompson	3-1-53	3-31-53		X	700 722-A
E..C. Yowell National Bureau of Standards Los Angeles, California	Discuss computing problems	P. M. Thompson	3-3-53	3-3-53		X	700 722-A
EMPLOYEE AND PUBLIC RELATIONS (cont'd)							
E. H. Dearnley General Electric Company Schenectady, New York	Evaluate exempt positions as an aid to a uniform policy of procurement of technical personnel	W. P. McCue	3-9-53	3-14-53	X	100-B XXX 100-D XXX 100-F XXX 100-H XXX 300 XXX	
L. L. Ferguson General Electric Company Schenectady, New York	Evaluate exempt positions as an aid to a uniform policy of procurement of technical personnel	W. P. McCue	3-9-53	3-11-53	X	300 XXX	

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PURCHASING AND STORES SECTION
UTILITIES AND GENERAL SERVICES DEPARTMENT
SUMMARY - MARCH 1953

Advance issues of Defense Materials System Regulations 1 and 2 have been received. This is the material control plan which will, subject to Congressional action, replace the present Controlled Materials Plan. These regulations have just been received and have not been fully digested. However, they appear to be very closely related to the current CMP, with regard to Department of Defense, Atomic Energy Commission and Prime Contractor functions.

Eleven orders placed on General Electric Company purchase order forms have been assigned to Blaw-Knox Company. Three additional orders are in the process of being assigned.

An order was negotiated with Byron-Jackson Pump Company for the manufacture of six slurry pumps to replace the Nagle pumps in the TBP Plant. Delivery of the pumps from Byron-Jackson will be made during April, 1953. The cost of these six pumps will be in the neighborhood of $84,000.

A greater work load is developing with respect to procurement for plant expansion projects than was anticipated. The influx of new requisitions during the last ten days has more than doubled the work load and it is now approaching the saturation point. Realistic information as to the amount of purchasing to be handled by General Electric Company in connection with the expansion program is vitally needed for planning purposes.

Recent estimates obtained from General Electric Engineering and the Atomic Energy Commission indicate that the Construction Procurement Unit will be responsible for the purchase of approximately six million dollars worth of supplies and equipment for the various new expansion projects.

Inventory levels of aluminum items for the 300 Area canning line show continued improvement.

Negotiations concerning the modifications of the contracts on Nitric Acid and Aluminum Nitrate are progressing satisfactorily. We have received from each supplier final figures on maximum production capacity and indications of their willingness to modify our present contracts to provide for our increased requirements. Final negotiations should be concluded within the next sixty days.

The intrastate motor carriers were granted approximately a 6% rate increase on March 10 by the Washington Public Service Commission.

A Tri-City Parcel Delivery service, with headquarters in Pasco, Washington, was established during the month. Daily delivery service is offered within the Tri-City area on packages weighing up to 100 pounds.

An air freight route was worked out which is comparable to Air Express transit time on shipments of Aluminum Alloy from the Savannah River Plant to Hanford Works. The savings in freight charges will amount to $490.00 on every 1,000 pound shipment.

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PURCHASING AND STORES SECTION
SUMMARY

The move to Central Stores Warehouse is now complete, with the move of the last material on March 27. During the month 13 rail carloads and 40 truckloads of material were moved.

Physical inventory of the Standby Account was accomplished during the month. General Supplies inventory is scheduled for April 29 and pre-inventory work is in progress.

The efforts of all departments to turn in to Stores all their recorded and unrecorded inventories now, near the end of the fiscal year, is resulting in (1) increased volume of paper work (2) increased volume of materials to be handled (3) high inventory valuation as the responsibility of the Stores Unit without a corresponding usage record, thereby resulting in a lower inventory turnover rate.

The demineralization equipment, complete, in Building 186 D was declared excess to AEC during the month.

Materials and equipment disbursed from Stores Unit Inventories, General Supplies (Account 10.2), Standby (Account 10.1) and Spare Equipment Held In Storage (Account 29) were valued at $190,828.80, $57,086.68, and $107,241.30 respectively for a total of $355,156.78.

Organization and Personnel

	2-28-53	3-31-53	Change
Employees on Roll	311	303	-8

PURCHASING AND STORES SECTION
GENERAL

Advance issues of Defense Materials System Regulations 1 and 2 have been received. This is the material control plan which will, subject to Congressional action, replace the present Controlled Materials Plan. These regulations have just been received and have not been fully digested. However, they appear to be very closely related to the current CMP, with regard to Department of Defense, Atomic Energy Commission and Prime Contractor functions.

A representative from this office will attend conference meetings scheduled for early April in Denver, Colorado, to provide for complete information pertinent to the administration and functions of Defense Materials Plan.

A visit to the Regional Office of the Small Defense Plants Administration, Seattle, Washington and discussions of mutual problems and procedures by a representative of Priorities, resulted in a good knowledge of the detail operation of the Small Business Program Branch Office. The Small Defense Plants Representatives were well pleased with the method of participation established by the General Electric Company, Hanford Works, in the program.

Representatives were brought in from two vendor's to supervise inspection and installation of equipment in the areas.

The following table shows the dollar value of business, by cost category, and the number of procurement actions placed with different types of vendors. Dollar amounts are based on the net value of purchase orders and alterations as transmitted to A.E.C.

March 1953	Vendor Type			
Cost Category	Government Agency	Small Business	Big Business	Educational and Other
$0 - $ 9.99	$ 9.85	$ 947.88	$ 435.05	$ 19.14
$10 - $ 499.99	880.98	151,749.62	93,421.01	147.14
$500 - $ 9,999.99	1,128.75	155,146.37	166,484.36	
$10,000 - Up		353,633.92	2,142,320.30	
TOTAL	$ 2,019.58	$661,477.79	$2,402,660.72	$ 166.28
Number of Actions	17	1452	848	9

Requisitions on hand 3-1-53	G	D	Total
Operations Procurement	822	2	824
Construction Procurement	00	64	64
A.E.C. Procurement	97	17	114
Total	919	83	1002
Requisitions Assigned during March			
Operations Procurement	2144	00	2144
Construction Procurement	00	222	222
A.E.C. Procurement	207	28	235
Total	2351	250	2601

PURCHASING AND STORES SECTION
GENERAL

	G	D	Total
Requisitions Placed during March			
Operations Procurement	2155	2	2157
Construction Procurement	00	175	175
A.E.C. Procurement	219	27	246
Total	2374	202	2578
Requisitions on hand 3-31-53			
Operations Procurement	811	00	811
Construction Procurement	00	111	111
A.E.C. Procurement	85	18	103
Total	896	129	1025

Purchase Orders Placed	HW	HWC
Operations Procurement	1881	
Essential Material	49	
Construction Procurement		227
Total	1930	227

Value of Purchase Orders Placed		
Operations Procurement	$440,824.37	$
Essential Material	935,580.18	
Construction Procurement		1,659,749.89
Total	$1,376,404.55	$1,659,749.89

Alterations Issued	Increase	Decrease	No Change	Total
HW Operations	58	44	6	108
Essential Material	16	7	-0-	23
HWC Construction	21	13	4	38
Total	95	64	10	169

Value of Alterations Issued	Increase	Decrease	Total
HW Operations	$3,529.29	$8,690.09	$12,219.38
Essential Material	78,682.27	51,024.42	129,706.69
HWC Construction	10,950.83	3,277.95	14,228.78
Total	$93,162.39	$62,992.46	$156,154.85

Government Transfers	OR	ORC
	0	0

Return Orders - 120

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PURCHASING AND STORES SECTION
GENERAL

Vendor Contacts	154
Claims Processed	00
Damage Reports Processed	9
Over & Short Reports Processed	2
Accounts Payable Requests Handled	336
Difference Slips Processed	48
Clearance Slips and Purchase Order Change Approvals	182
Material Exception	153
Return Orders Issued	120

Organization and Personnel

	2-28-53	3-31-53	Change
Employees on Roll	38	35	-3

1215855

PURCHASING AND STORES SECTION
CONSTRUCTION PROCUREMENT UNIT
MARCH 1953

Statistical and General

Eleven orders placed on General Electric Company purchase order forms have been assigned to Blaw-Knox Company. Three additional orders are in the process of being assigned. Of the orders placed by General Electric Company for assignment to Blaw-Knox Company, either partial or complete shipments were received on seven orders prior to the date Blaw-Knox was set up to accept the assignment. These seven orders are being held by General Electric Company and the material will be transferred to Blaw-Knox on an internal transfer.

An order was negotiated with Byron-Jackson Pump Company for the manufacture of six slurry pumps to replace the Nagle pumps in the TBP Plant. Delivery of the pumps from Byron-Jackson will be made during April, 1953. The cost of these six pumps will be in the neighborhood of $84,000.

Due to incomplete information received by Purchasing, a greater work load is developing with respect to procurement for plant expansion projects than was anticipated. The influx of new requisitions during the last ten days has more than doubled the work load and it is now approaching the saturation point. Realistic information as to the amount of purchasing to be handled by General Electric Company in connection with the expansion program is vitally needed for planning purposes.

Emergency requisitions and alterations have increased and are responsible for much of the current work load. The attention required to handle these is hindering normal activities.

The number of new requisitions received and assigned during March showed a 40% increase over the previous month. This increase in activity resulted from the release of new minor construction projects.

Recent estimates obtained from General Electric Engineering and the Atomic Energy Commission indicate that the Construction Procurement Unit will be responsible for the purchase of approximately six million dollars worth of supplies and equipment for the various new expansion projects. A break down of the number of requisitions and type of material is being prepared by Engineering for budget planning purposes.

Organization and Personnel

	2-28-53	3-31-53	Change
Employees on Roll	17	14	-3

PURCHASING AND STORES SECTION
OPERATIONS PROCUREMENT UNIT
MARCH - - 1953

Statistical and General

Inventory levels of aluminum items for the 300 Area canning line show continued improvement.

Negotiations concerning the modifications of the contracts on Nitric Acid and Aluminum Nitrate are progressing satisfactorily. We have received from each supplier final figures on maximum production capacity and indications of their willingness to modify our present contracts to provide for our increased requirements. Final negotiations should be concluded within the next sixty days. Certain factors have made it necessary that the final forecasts be reviewed by Manufacturing to determine the effect and timing of the possible reclamation and recycling of Aluminum Nitrate in the Redox plant process. These figures are promised April 9 by Manufacturing and should clarify the picture sufficiently to allow us to proceed with the presentation of revised Records of Purchase for Commission approval.

Essential Materials contracts in process are as follows:

1. Aluminum Sulphate -- Contract approved by General Electric and the vendor--at A.E.C. for final approval.

2. Ferric Sulphate -- Contract approved by General Electric and the vendor--at A.E.C. for final approval.

3. Sodium Silicate -- Negotiations still proceeding with the vendor to arrive at a satisfactory contract.

4. Ferrous Ammonium Sulphate -- approved by A.E.C. and in force. Increased requirements forecast by Manufacturing--contract being modified for increased quantity.

5. Sodium Dichromate -- Approved by the Commission and in force.

6. Sulphuric Acid -- Successful bidder, Stauffer Chemical Company--negotiations proceeding toward a contract.

Organization and Personnel

	2-28-53	3-31-53	Change
Employees on roll	33	33	-0-

1215857

PURCHASING AND STORES SECTION
STORES UNIT
MARCH, 1953

Statistical and General

The move to Central Stores Warehouse is now complete, with the move of the last material on March 27. During the month 13 rail carloads and 40 truckloads of material were moved. Receiving Sub-unit is functioning in Central Stores Warehouse and the expected savings in materials handling is being shown.

One of the major physical inventories, Standby Materials, was accomplished during the month. Actual count of items consumed only 2½ days, made possible by recruiting from several units and sub-units. General Supplies inventory is scheduled for April 29, and pre-inventory work for this is in progress, as is the preliminary work for Surplus Materials inventory on June 4.

The efforts of all departments to turn in to Stores all their recorded and unrecorded inventories now, near the end of the fiscal year, is resulting in (1) increased volume of paper work (2) increased volume of materials to be handled (3) high inventory valuation as the responsibility of the Stores Unit without a corresponding usage record, thereby resulting in a lower inventory turnover rate.

The combination of physical inventories, move to Central Stores Warehouse, and receipts of the stocks mentioned above hindered service to customers during the month. This matter is getting our complete attention and our aim is to improve our position. Some of the steps underway or planned are:

1. Streamlining of procedure for stocking area stores.

2. Discontinuance of store in 713 Building in favor of daily deliveries to customers in 700-1100-3000 areas by Stores truck direct from Central Stores Warehouse.

3. Improving methods for filling store orders promptly in new warehouse set-up.

4. Combining three small storerooms in 300 area into one large storeroom for all laboratory supplies. Occupancy of new quarters is 8 months away but this will result eventually in better service to laboratory people in that area, who are obviously among our important customers.

The demineralization equipment, complete, in Building 186 D was declared excess to AEC during the month.

We screened 3707 requisitions through General Materials and Surplus Materials stocks, and as a result furnished 533 items to Operations, Minor Construction and Kaiser Engineers.

PURCHASING AND STORES SECTION
STORES UNIT
MARCH, 1953

Materials and equipment disbursed from Stores Unit inventories were:

General Supplies (Account 10.2)	$ 190,828.80
Standby Materials (Account 10.1)	57,086.68
Spare Equipment Held in Storage (Account 29)	107,241.30
Total	$ 355,156.78

In Surplus Materials, review of some of the important items shows the following:

Disbursements by Store Order, for all purposes	$ 53,446.29
Amount included in above which was furnished for new construction	22,162.63
Offsite shipments billed	293,775.28
Inventory balance, March 31, 1953	3,659,108.05
Value of excess lists at AEC awaiting disposition instructions	3,261,128.64
Receipts of excess material	9,782.54

Organization and Personnel

	2-28-53	3-31-53	Change
Employees on Roll	212	210	-2

1215859

PURCHASING & STORES SECTION

TRAFFIC UNIT

March, 1953

STATISTICAL AND GENERAL:

The question of shipper or carrier liability on the McHale Manufacturing Company order HWC-16300 was resolved this month. The fume hoods damage claim against the Union Pacific Railroad for $1,069.51 was paid by the Union Pacific on March 17.

The intrastate motor carriers were granted approximately a 6% rate increase on March 10 by the Washington Public Service Commission.

A Tri-City Parcel Delivery service, with headquarters in Pasco, Washington, was established during the month. Daily delivery service is offered within the Tri-City area on packages weighing up to 100 pounds.

An air freight route was worked out which is comparable to Air Express transit time on shipments of Aluminum Alloy from the Savannah River Plant to Hanford Works. The savings in freight charges will amount to $490.00 on every 1,000 pound shipment.

Successful negotiations were completed with the rail carriers in reducing the freight rate on Aluminum Ingots from Vancouver, Washington and Troutdale, Oregon, to the Project resulting in a savings in freight charges of approximately $42.00 on each 30,000 lb. shipment for the Aluminum Company of America.

As a result of rate reductions obtained from the carriers, there was a total savings in freight charges for the month of March amounting to $1,203.77. This makes a total savings from September 1, 1946, to date of $1,739,385.69.

Savings Report

1. Rate reductions obtained from carriers:

Commodity	Origin	Savings for March, 1953	Savings from 9-1-46 thru February, 1953	Savings from 9-1-46 to date
Extrusions, Aluminum	Phoenix, Ariz.	$ 8.50		
Silicate of Soda	Tacoma, Wash.	985.37		
Sodium Sulphate	Stege, Calif.	191.90		
Section 22 Carloading	Various	18.00		
		$ 1,203.77	$ 1,738,181.92	$ 1,739,385.69
2. Freight Bill Audit		1,617.39	106,817.91	108,435.30
3. Loss & Damage & Overcharge Claims		1,958.39	123,301.75	125,260.14

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PURCHASING & STORES SECTION
TRAFFIC UNIT
March, 1953

Savings Report (continued)

4. Ticket Refund Claims	$ 393.37	$ 29,969.75	$ 30,363.12
5. Household Goods Claims	208.68	16,957.23	17,165.91
	$ 5,381.60	$ 2,015,228.56	$ 2,020,610.16

Work Volume Report

Reservations Made	Rail	107
	Air	267
	Hotel	214
Expense Accounts checked		156
Household Goods & Automobiles	Movements Arranged Inbound	3
	Movements Arranged Outbound	4
	Shipments Traced	1
	Insurance Riders Issued	4
	Insurance Bills Approved	2
	Requests for Claim Billing	1
	Claims Filed	4
	Claims Collected - Number	2
	Claims Collected - Amount	$208.68
Ticket Refund Claims	Filed	9
	Collected - Number	14
	Collected - Amount	$393.37
Freight Claims	Filed	11
	Collected - Number	15
	Collected - Amount	$1,958.39
	Over and Shorts Processed	6
	Damage Reports Processed	14
Freight Bill Audit Savings		$1,617.39
Freight Shipments Traced		111
Quotations	Freight Rates	243
	Routes	262
Bills Approved	Air Freight	7
	Air Express	22
	Carloading	51
	Express	180
	Rail	727
	Truck	400
Carload Shipments	Inbound	815
	Outbound	1

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PURCHASING & STORES SECTION
TRAFFIC UNIT
MARCH, 1953

Report of Carloads Received

Commodity	CMSTP&P	NP	UP	TOTAL
Aluminum Ingots			1	1
Aluminum Sulphate		7	6	13
Caustic Soda	18	15	17	50
Cement	2			2
Chlorine	1	1	1	3
Clay	1			1
Coal	122		563	685
Ferrous Ammonium Sulphate		2	1	3
Fibreboard Boxes	2			2
Furnace Liners	1	1	6	8
Lime	1	1	2	4
Machinery	1			1
Methyl Isobutyl Ketone	1			1
Nitric Acid		13	8	21
Salt	1			1
Silicate of Soda	3	2	3	8
Soda Ash	1			1
Sodium Sulphate	1			1
Steel Containers		1	2	3
Sulphuric Acid	1	1		2
Merchandise	2	1	1	4
Total	159	45	611	815

Organization & Personnel

	2-28-53	3-31-53	Change
Employees on Roll	11	11	0

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55-403

U. S. ATOMIC ENERGY COMMISSION
HANFORD OPERATIONS OFFICE
RICHLAND, WASHINGTON

DATE: June 14, 1955

TO: [illegible]

Subject: NOTICE OF CHANGE IN CLASSIFICATION

Notice has been received from the General Electric Company Non-Technical Document Review Board, Hanford Atomic Products Operations, Richland, Washington covering the following change in classification action effective March 12, 1955.

Hanford Document No. 50024 G. E. Document No. HW-27624-I

Doc. Date 4-22-53 Original Classification "estricted

Title or Subject: Transportation Section Monthly Report -March 1953

Author(s) or Originator M. F. Rice

Pgs No-1 thru No-7 (X) Downgraded to Official Use Only

( ) Classification Cancelled

According to our records you have copy(ies) 10 of 13 Series A

INSTRUCTIONS

Block out all present classification markings, which may be inconsistent with the changed classification indicated above, and re-mark in accordance with existing AEC Security Regulations.

REMARKS: This applies only to the "Transportation Monthly Section" portion of doc. No. HW-27624 and does not effect the classification of any other parts of the report.

This document was transmitted to you 4-24-53
from Hanford on
Registry No.

LEE E. SPEER, Chief
Classified Document Control

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Classification Cancelled or Changed to [redacted]

By authority of THE GENERAL ELECTRIC COMPANY NON-TECHNICAL DOCUMENT REVIEW BOARD, [redacted] JAYNES [redacted]

Date [redacted]

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TRANSPORTATION SECTION
MONTHLY REPORT
March 1953

GENERAL

Transportation Section personnel forces decreased from 524 to 522 employees during the month by 5 transfers out, 3 terminations, 3 deactivations - personal illness, 7 transfers in and 2 reactivations - personal illness.

The Manager began a series of sixteen informational meetings with all employees to better acquaint them with the activities and objectives of the Transportation Section. This is expected to enhance matters in the fields of communications and human relations as favorable reaction has been experienced in the twelve meetings held to date.

A Heavy Duty Mechanic Journeyman experienced a major injury on March 26 at the Heavy Equipment Garage in the 1100 Area. The injured sustained severe lacerations and lost about one-half of the distal phalanx of his right index finger. The injury occurred while the injured and another mechanic were assembling a motor following an overhaul. The Transportation Section had operated 595 days since the previous major injury of August 8, 1951. This represented the longest injury free period that has been attained by the Transportation Section.

Satisfactory progress continued on the New Consolidated Transportation Facilities as the Architect Engineer has virtually completed Title I (preliminary plans) of his contract. Title II is partially complete ahead of schedule due to having proceeded as the various phases of Title I were accepted. Final plans are expected to be completed on schedule by May 31, 1953.

RAILROAD ACTIVITIES

Commercial cars handled during March decreased 18.8% over February as receipts of coal and essential materials were considerably lower. The following recapitulation indicates the distribution of commercial cars handled:

Carload Movements -	Loads In	Empties In	Loads Out	Empties Out
General Electric Company	726	10	13	754
Bumstead & Wolford	-	-	-	1
Emery & Bohm	1	1	1	1
Fox Smith Co.	-	-	-	2
Henley Construction Co.	1	-	-	1
L. H. Hoffman	3	-	-	3
Hopper Co.	2	-	-	3
Kaiser Engineers	135	1	1	140
Larsen & Co.	1	-	-	1
Steel Construction Co.	9	-	-	7
Strasser Drilling Co.	1	-	-	1
U. S. Army	12	3	3	15
	891	15	18	929

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Transportation Section

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Process service was rendered on an increased basis during March requiring some Saturday movements and overtime on the No. 3 Shift as actual cars handled increased 28% over February.

Car movements including process service totaled 2,314 in March compared to 2,691 in February and 2,730 in January.

Inspected and repacked the traction motor journals and bearings on locomotive 39-3719.

Replaced defective wheels on well car 10B-3642.

Installed new batteries on locomotive 39-3729.

Completed annual inspections on 10A-3619, 10H-3701 and 10H-3702.

Performed inspection and maintenance services including the replacement of brake shoes on the U.S. Army car operated off-plant by the Atomic Energy Commission.

Railroad track maintenance and rehabilitation work continued on a routine basis. Lining, surfacing and dressing of trackage required 3,417 man-hours. Installation of ties, rail and other track materials required 1,579 man-hours. Distribution and handling of track materials required 632 man-hours. Weed control required 638 man-hours. Special work orders for the Atomic Energy Commission required 233 man-hours.

AUTOMOTIVE ACTIVITIES

The Plant Bus System transported 12% fewer passengers in March than in February. This reduction was largely due to a lesser number of days in the reporting period (February 26 through March 25). The following statistics indicate the magnitude of service rendered:

Passenger volume	136,839
Revenue - bus fares	$ 6,841.95
Earnings - transit advertising (February)	$ 242.38
Bus trips	5,692
Bus miles - passenger carrying	172,936
Passenger miles	4,405,758

The following is a comparative breakdown of average daily round trips to the Plant Areas:

Passenger buses - 100-B	11
Passenger buses - 100-D	12
Passenger buses - 100-F	11
Passenger buses - 100-H	8

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Transportation Section

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Passenger buses - Hanford	1
Passenger buses - 200-West	31
Passenger buses - 200-East	5
Passenger buses - 300 Area	6
Passenger buses - Riverland	2
Passenger buses - White Bluffs	1
Passenger buses - North Richland	4
700-300 Area Shuttle	16
Inter-Area Passenger Shuttle & Express	2

Effective March 4, the 100-D Patrol bus began serving the 101 Building and Hanford instead of the 100-H Patrol bus. This change more closely coordinates the arrival and departure times of the Area Patrol buses.

Effective March 4, the transfer point for Intra-Area Shuttles in the 200-East Area was changed to a less congested location in the interest of safety.

Effective March 20, pre-shift safety meetings for Area personnel requiring early bus service each Thursday were changed to Friday since a greater number of drivers are on duty at this time.

Effective March 30, initial bus service was established for the 100-K Area on the Patrol schedule to accommodate firemen around the clock seven days a week. The regular Plant schedule will be initiated as it becomes needed at a later date.

Effective April 6, the present six minute tardiness rule for bus driver personnel will be relaxed on a trial basis to allow a maximum of twenty-four minutes tardiness without the loss of the full shift. This revision is being made with the objective of alleviating hardship and improving human relations without impairing operational efficiency.

The Richland Bus System transported 15% fewer passengers in March than in February. This reduction was largely due to a lesser number of days in the reporting period (February 26 through March 25). The following statistics indicate the volume of service rendered:

Total passengers including transfers	13,070
Revenue - bus fares	$ 849.79
Earnings - transit advertising (February)	$ 11.95
Bus trips	1,104
Bus miles - passenger carrying	5,851
Passenger miles	30,360

At the direction of the Atomic Energy Commission, steps have been initiated to prepare Invitations To Bid on the Richland Bus System. The Commission requested that the specifications be drawn to include shuttle bus service in Richland as an alternate bid item with an effective contract date of July 1, 1953.

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Transportation Section

Off Plant chauffeured automobile trips (Company business and/or official visitors) totaled 147 which were rendered to the following locations as indicated.

Benton City, Washington	2
Grandview, Washington	2
Hinkle, Oregon	17
Kennewick, Washington	16
Pasco, Washington	76
Pendleton, Oregon	22
Prosser, Washington	3
Sunnyside, Washington	2
Toppenish, Washington	1
Yakima, Washington	6

The following tabulation indicates the volume of Drivers Test Service rendered:

Applicants:	Male	32	Number tests given	40
	Female	8	Number rejected	0
Permits Issued:	Limited to driving with glasses			8
	Unlimited			32
Permits reissued:	Routine	26		

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	47,810	21,230	24,700	2,450	185
Received during month	100,150	25,265	24,600	5,337	0
Dispensed during month	104,015	20,895	31,900	4,575	91
Stock at end of month	43,945	25,600	17,400	3,212	94

The following tabulation indicates the volume of inspection and maintenance service rendered to Hanford Works automotive and heavy equipment by Equipment Maintenance personnel:

Motor overhauls	33
Class A Inspections and Repairs	107
Class B Inspections and Lubrications	987
Other routine maintenance repairs and service calls	2060
Accident repairs and paint jobs	24
Tire repairs	545
Wash jobs	457

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Transportation Section

The following tabulation indicates the Plantwide usage of automotive equipment:

Code	Type	No. of Units	Total Mileage
1A	Sedans	336	665,655
1B	Buses	100	258,222
1C	Pickup Trucks	461	323,363
1D	Panel,Carryall,Sta.Wagon	135	183,945
1E	Armored Cars	2	172
1G	Jeeps	2	1,262
68 Series	Trucks	211	100,827
		1,247	1,533,446

Conversion of the former tire storage room to a men's toilet and wash room in the 716 Building has been completed and accepted. The conversion of the former men's rest room to a ladies rest room is approximately 60% complete.

The installation of new lubrication facilities inside the 1716-D and 1716-F Buildings is approximately 50% complete. Concrete work for the floors and walls of the new pits has been completed and backfilling is in progress to permit restoration of the garage floors.

Completed the replacement of all front wheels on the 62 General Motors coaches utilized by the Plant Bus System. The manufacturer furnished the replacement wheels on a one-half price exchange basis following the development of several cracked rims which were apparently caused by metal or factory defects.

All fuel service trucks have been equipped with twenty pound Ansol dry powder fire extinguishers.

Completed major repairs on one crane, one tractor, two motor graders, one tractor truck and one scoopmobile.

Preparatory work for the coming physical inventory of repair parts was in progress throughout the month.

Improved methods and procedures for handling fuels and lubricants have been placed into effect. Some material savings are anticipated plus improved inventory control and cost records.

Following a study and the development of cost estimates, it was decided to continue using the existing antifreeze solution in the cooling systems of HO equipment for a second year. This will necessitate an antifreeze mixture additive as a preservative measure throughout the coming summer months. This additive will cost a maximum of $18,700 (from April 1953 to April 1954) where if the additive was discontinued this spring as in the past thus necessitating a refill this fall the cost for the coming year would be $33,600 or a cost reduction savings of at least $14,900.

Eleven additional sedans are being procured for the 700 Area Motor Pool to meet the increasing utilization of pool vehicles. Other activity included the establishment of a sub-pool at the New Central Stores Warehouse on March 6 and the assumption of operational responsibility for the 101 Building Motor Pool, North Richland, from the Atomic Energy Commission on March 25.

Funds have been approved for the procurement of 22 new suburban type motor coaches. These buses will replace 28 construction type buses which will be transferred.

Crane 17-3016 was transferred to the Blaw-Knox Company and crane 17-4512 formerly on loan to Operations from the Atomic Energy Commission is now permanently assigned.

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	7,595	0	0
Received during month	0	0	0	0
Dispensed during month	0	0	0	0
Stock at end of month	0	7,595	0	0

The following tabulation indicates the volume of road aggregate material handled by Transportation Services personnel:

	3/4" to 0 Pre-mix Tons	½ to 0 Pre-mix Tons	5/8" Chips Cu.Yd.	1/4" Chips Cu.Yd.
Stock at start of month	144	101	0	6,267
Made during month	0	0	65	33
Used during month	133	27	0	50
Stock at end of month	11	74	65	6,250

Maintenance of primary roads required 797 man-hours; Administration Area roads, sidewalks, parking lots and general cleanup 611 man-hours.

Handling of materials and equipment for the Stores Unit at White Bluffs, Hanford, 700, 1100 and 3000 Areas included 4 carloads and 239 truckloads and required 4,698 man-hours.

Transportation Section

The daily trucking service between Richland and the manufacturing areas handled 294 cases of acid, 1,681 cylinders of compressed gas and 702 tons of operational supplies requiring 1,628 man-hours.

The handling of office furniture, equipment, and records involved 475 individual moving jobs requiring 1,295 man-hours.

The mosquito control program was begun on March 16 and required 80 man-hours.

The removal of silt from the No. 1 and No. 2 basins in the 300 Area was completed on March 25. This work was necessary to increase drainage and required 706 man-hours.

The crushing plant was moved to Richland to begin aggregate production for the seal treatment of approximately ten miles of city streets. Manufactured 1,862 cubic yards of 3/4", 5/8" and 1/4" crushed rock requiring 320 man-hours.

Completed the cleaning of the drainage canal from the Richland Sewage Disposal Plant to the Yakima River. This and other miscellaneous sewer and water line repairs for the Community required 97 man-hours during March.

Completed excavation and backfilling for the repair of approximately 500 lineal feet of ash line in the 300 Area. This work projected along 300 lineal feet of finished roadway which was restored to original grade and required a total of 99 man-hours.

Arrangements were made to re-stripe 160 miles of Plant roads before July 1, 1953. The remaining 69 miles will probably be completed in October following the seal coating program. This action is necessary for conformance with the National Standards adopted by the Public Roads Administration.

Miscellaneous labor and equipment services for the 300 Area required 425 man-hours.

Movement of equipment and material, and other miscellaneous labor services for the 100 and 200 Areas required 896 man-hours.

Movement of material for the Engineering Department from Hanford to the 3000 Area required 301 man-hours.

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April 6, 1953

ELECTRICAL DISTRIBUTION & TELEPHONE SECTION

MONTHLY REPORT

March 1953

GENERAL

The Section work backlog, as of March 31 totaled 4043 man-days distributed as follows:

	Days per Craftsman	Total Man-Days	Net Change Man-Days
Line Maintenance	35	1197	48 Decrease
Substation Maintenance	23	422	53 Decrease
Telephone Unit	58	2424	62 Decrease

Section total work force at the end of March was one hundred and eighty-nine (189), an increase of three from the previous month.

Electrical power peak demands for March were:

	Date	Time	March KW Demand	February Comparative Demand (KW)
Process Load	3-25-53	(8:30 am - 9:00 am)	99,200	102,700
Richland Load	3-16-53	(7:00 pm - 7:30 pm)	19,840	21,120

The February process demand peak was not equalled during March owing to extended "downtime" of several major plants. Richland Village demand and consumption are following a normal seasonal decline. However, the expected margin in revenue will be as estimated, or possibly slightly greater.

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ELECTRICAL DISTRIBUTION UNIT

Maintenance and Operation

Major maintenance items were completed on transmission and distribution equipment during the 100-DR Area extended "downtime". A general inspection was made of all equipment under the jurisdiction of the Electrical Distribution Unit, including meggering of all 13.8-KV cables. All 230-KV disconnecting switches were checked and an overhaul completed of 230-KV circuit breaker No. A-342.

A construction forces crane contacted the 13.8-KV temporary line to the 2101 Area and interrupted service from 1:30 pm to 2:30 pm, March 16, 1953. Line fuses were blown but the low voltage condition created on the 200-E Area distribution system interrupted 200 "B" Plant, Hot Semi-Works and Area Water Plant operations.

A one minute power outage to a portion of 200-E Area was caused by an arc at a set of 13.8-KV disconnects on March 24, 1953. A circuit breaker at Substation No. 251 operated when a phase to phase arc developed at disconnects opened to isolate a second set of disconnects for scheduled repairs. An investigation is being conducted to determine if unexpected line loading was caused by unscheduled operating of area equipment.

System Expansion and Planning

The 7200 volt Ringold line is now sectionalized so that REA supplies service on the east side of the Columbia River except for Hanford ferry landing lights. Provision for supplying landing lighting from another source would permit removing this line from service, including the river crossing.

A procedure has been agreed upon for tying in the 100-K Area extension of the Hanford 230-KV transmission loop. Operating forces will perform the minimum amount of work necessary for completion of the final step of tying to the operating system.

Methods were discussed with BPA and the AEC for increasing reliability of electrical service to Hanford Works. Agreement was reached to develop a three section bus at the Midway Substation. BPA plans to tie McNary Dam generation to Walla Walla and to the Franklin Station at Pasco. This expanded network would support the Hanford 230-KV system if Ice Harbor Dam is constructed, otherwise it would only provide back-up for 115-KV service.

Directional comparison relaying will be specified for the 100-K Area portion of the 230-KV loop. A final decision was made after a thorough investigation was made of results obtained with phase comparison relay protection.

A study was completed of a cycle method of meter reading and billing of electrical energy consumers. A recommendation was made to establish this method in Richland, with an estimated $12,000.00 annual saving and a corresponding release of IBM machines for other use.

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TELEPHONE UNIT

Maintenance and Operation

A summary of telephone subscriber service is as follows:

	Subscriber Stations In Service		Lines Available For Service	Sides Available For Service	Exchange Lines In Service
	Residential and Misc.	Official			
Richland	5,796	997	59	271	3,905
N.Richland	300	299	95	56	505
Process Areas		1,468	522	--	1,410
Total	6,096	2,764	676	327	5,820

Richland Exchange four-party service:

	March 31, 1953	February 28, 1953
Number of lines, complete fill	124	117
Partial fill with three subscribers	63	59
Subscribers	758	729

Richland-North Richland trunk lines were reduced from sixty (60) to thirty-nine (39).

Rerouting of Richland Exchange intra-office cables was started to provide space for mounting main distribution frame protectors for termination of Fifth and Sixth Housing Additions distribution cables.

One of two trunk cables to 100-K Area construction switchboard failed from a moisture fault March 24, 1953. Service was restored by transfer of eighteen (18) circuits to the alternate cable. Repairs were completed March 26, 1953.

System Expansion and Planning

A preliminary study was completed of problems pertaining to the transfer of the Richland Telephone Exchange to private interests.

Project Engineering was provided a cost estimate for increasing the line and trunk capacity of the 300 Area exchange to provide service for Program "X" expansion.

The 100-KBC dial exchange layout drawings were reviewed and several changes were suggested.

ELECTRICAL DISTRIBUTION
AND TELEPHONE SECTION

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POWER STATISTICS
ELECTRICAL DISTRIBUTION AND TELEPHONE SECTION
FOR MONTH ENDING March 31, 1953 744 hours

	ENERGY-MW HRS.		MAXIMUM DEMAND-KW		LOAD FACTOR-%	
	Last Month	This Month	Last Month	This Month	Last Month	This Month
230 KV System						
A-2 Out (100-B)	22835	28175	38500	42300	88.3	89.5
A-4 Out (100-D)	6510	7900	22800	22400	42.5	47.4
A-5 Out (100-H)	11556	12276	21900	22650	78.5	72.9
A-6 Out (100-F)	7430	8615	13100	15200	84.4	76.2
A-8 Out (200 Area)	4680	5256	8640	8640	80.6	81.8
TOTAL OUT	53011	62222	104940**	111190**	75.2	75.2
MIDWAY IN	53829	62560	94000 *	92400 *	85.2	91.0
Transm. Loss	818	---				
Per cent Loss	1.5	---				
115 KV System						
B1-S5	108	122	518	518	31.0	31.6
B1-S4 Out (N.Rich.)	1920	2246	4032	3802	70.9	79.4
Richland	9454	9912	21120 *	19800 *	66.6	67.3
BB3-S4 Out(300 Area)	1176	1352	2720	2720	64.3	66.8
TOTAL OUT	12658	13632	28390**	26840**	66.3	68.3
Benton In	14800	13560	32800 *	31200 *	67.1	54.9
). Richland In	0	100	0 *	9200 *	0	14.6
OTAL IN	12940	13660	32800**	42400**	58.7	43.3
Transm. Loss	282	----				
Per cent Loss	2.2	----				
66 KV System						
B9-S11 Out (100-K)	306	378	750	937	60.7	54.2
B7-S10 Out(W.Bluffs)	402	423	1260	1057	47.5	53.8
Hanford Out	204	230	400**	400**	76.0	77.3
TOTAL OUT	912	1031	2410**	2394**	56.3	57.9
HANFORD IN	896	1021	2300 *	2300 *	58.0	59.7
Transm. Loss	16	--				
Per cent Loss	1.8	--				
Project Total						
230 KV Out	53011	62222	104940**	111190**	75.2	75.2
115 KV Out	12658	13632	28390**	26840**	66.3	68.0
66 KV Out	912	1031	2410**	2394**	56.3	57.9
TOTAL OUT	66581	76885	135740**	140424**	73.0	73.5
230 KV In	53829	62560	94000 *	92400 *	85.2	91.0
115 KV In	12940	13660	32800**	42400**	58.7	43.3
66 KV In	896	1021	2300**	2300**	58.0	59.7
TOTAL IN	67665	77241				
Transm. Loss	1084	--				
Per cent Loss	1.6	--				

* Denotes Coincidental Demand
**Denotes Non-Coincidental Demand

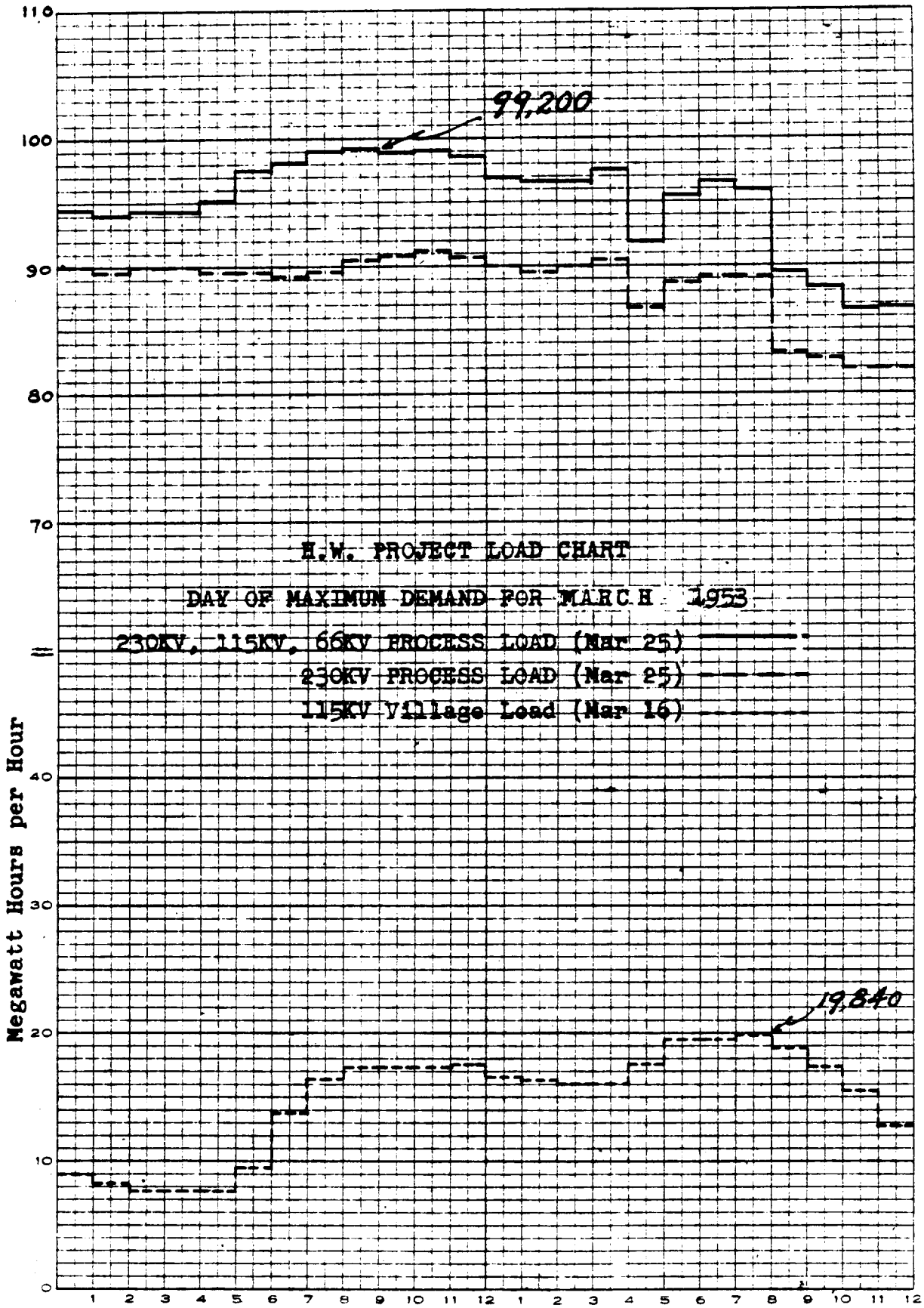
Average Power Factor-230KV System 91.3
Average Power Factor-115KV System 92.1
Average Power Factor-66KV System 90.3

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PLANT AUXILIARY OPERATIONS DEPARTMENT
STATISTICAL AND COMPUTING SECTION

MONTHLY REPORT - MARCH, 1953

Personnel Statistics

Following is the month end summary of personnel:

Statistical and Computing Section

	As of 2-28-53			As of 3-31-53			Net Change		
Unit	Ex	Non-Ex	Total	Ex	Non-Ex	Total	Ex	Non-Ex	Total
General	1	1	2	1	1	2	0	0	0
Statistics	8	4	12	8	4	12	0	0	0
Computing	24	44	68	24	44	68	0	0	0
Graphics	1	6	7	1	6	7	0	0	0
TOTAL	34	55	89	34	55	89	0	0	0

Statistics Unit

	As of 2-28-53			As of 3-31-53			Net Change		
	Ex	Non-Ex	Total	Ex	Non Ex	Total	Ex	Non-Ex	Total
Staff	1	1	2	1	1	2	0	0	0
Administrative Statistics	2	0	2	2	0	2	0	0	0
Precision & Quality Control	2	3	5	2	3	5	0	0	0
Technical Statistics	3	0	3	3	0	3	0	0	0
TOTAL	8	4	12	8	4	12	0	0	0

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Computing Unit

	As of 2-28-53			As of 3-31-53			Net Change		
	Ex	Non-Ex	Total	Ex	Non-Ex	Total	Ex	Non-Ex	Total
Staff	2	2	4	2	2	4	0	0	0
Analysis and Programming	15	5	20	15	5	20	0	0	0
Operation	7	36	43	7	36	43	0	0	0
Rot. Training	0	1	1	0	1	1	0	0	0
TOTAL	24	44	68	24	44	68	0	0	0

Graphics Unit

	As of 2-28-53			As of 3-31-53			Net Change		
	Ex	Non-Ex	Total	Ex	Non-Ex	Total	Ex	Non-Ex	Total
Staff	1	1	2	1	1	2	0	0	0
Illustrators	0	5	5	0	5	5	0	0	0
TOTAL	1	6	7	1	6	7	0	0	0

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FOR THE MANUFACTURING DEPARTMENT

A sampling procedure was outlined and furnished to the Metal Preparation Section for the reactivity testing of P-10 slugs in the 305 Test Pile. (Document HW-27530, "305 Tests - P-10 Slugs", D. O. Richards to H. A. Fowler.) Greatly enlarged charts showing acceptance and rejection regions for the immediate determination of lots of acceptable quality were furnished to the Test Pile operators for their convenience. A double sampling procedure was recommended. The procedure requires the sampling of a small number of slugs from each lot for Test Pile evaluation. On the basis of the test results from this first sample the lot is determined to be: a) acceptable, b) not acceptable, or c) of indeterminate quality. In the latter case another sample is taken, and the results combined with those of the first sample to obtain a final evaluation of the lot quality.

The first report on data obtained from the Mallinckrodt lot system was presented. (Document HW-27370, "Mallinckrodt Lot System - First Report", R. F. Cell to W. T. Kattner.) The report pointed out that the data to date represent heterogeneous lots of material, but that the data to be available in the immediate future will present a background from which logical conclusions may be drawn. A second report will be issued in the near future.

At the time of the revision of the 300 Area Statistical Quality Report (see Document HW-27288, "Monthly Report, Statistical and Computing Services Section-February, 1953"), the precision of the 305 Test Pile was omitted. It was felt that it would be better to issue such a report quarterly in order that more observations be available on which to study the precision. The first of these reports has been completed. (Document HW-27587, "Variation of Test Pile Results-First Quarter 1953", D. O. Richards to W. W. Windsheimer.)

In November, 1952, the wet analysis method of determination of iron and silicon concentrations in uranium metal was replaced by the spectrochemical method. At that time the Process Unit, Metal Preparation Section, requested that the Statistics Unit investigate the accuracy and precision of both methods. This study has been brought to a conclusion insofar as iron analyses are concerned. (Document HW-27436, "Comparison of Spectrochemical and Wet Analyses for Iron", D. O. Richards to E. W. O'Rorke.) Sufficient data have not yet been received to complete the study of the silicon analyses.

A statistical report was issued on Metal Preparation Section results from machining, canning, autoclave, test pile, melt plant, and oxides. (Document HW-27391,"Statistical Quality Report - 300 Area - February, 1953", R. F. Cell to W. W. Windsheimer.)

A statistical evaluation of the relationship between the power of adjacent tubes in the 105-C pile is in process. The purpose of the study is to provide assistance to the Manufacturing Department in seeking the highest safe operating level for the pile.

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Tube factors, their squares and cubes and other data were calculated for F reactor. The information thus obtained aids production area personnel in determining reactivity changes with metal discharges, in making poison column evaluations, in making control rod calibrations, in obtaining water flow and power information, in getting an insight into other problems which may or may not have been previously evident, in observing transient changes and in making various predictions concerning pile behavior.

Recommendations of a statistical nature were made to the Manufacturing Department concerning the sampling and analyzing of panellit gauges for accuracy. (Memorandum from R. F. Cell to J. E. Robb.)

Work has been continued to establish counting times and warning levels for hand and shoe counters on a statistical basis. Because of doubt concerning the data originally collected, a second set was obtained with special care being given to the recording of individual count measurements (rather than averages) and the strength of sources employed. For alpha counters, geometry and background is being studied; Polya-Eggenberger distributions are being fitted to the observed data, and cumulative probabilities will be obtained to aid in setting warning levels.

Fitting curves by the method of least squares to unit cost versus output data for various production facilities throughout the plant has been completed for the Manufacturing Department Staff. Statistical investigation has revealed that the relationship is best represented by a hyperbolic equation. In addition to fitting the curves, the associated errors have been calculated. (Letter from L. W. Smith to G. R. Moore, "Unit Cost Curves".) Additional work in the analysis of Manufacturing costs has been authorized. The statistical analysis will deal not only with total costs, but with the major components of them. A scoping report is now being prepared.

An analysis of Separation Section maintenance liquidation by facility was completed. The relationships found were so highly variable in most cases that a close standard for control purposes could not be obtained. (Letter from L. W. Smith to C. P. Cabell, "Maintenance Standards".) Further investigation into the problem of setting maintenance standards on the basis of historical data is now underway. Total liquidations to the Section are presently being considered.

In response to a request from the Separation Section, the expected employee separations rate and the limits of expected variation were calculated for the Section. Data on the monthly separations rates for the Section during 1952 were used for the calculations. Results showed that the rate was extremely stable from month to month and that the Section's rate was considerably lower than the plantwide rate.

Routine graphics work for the Manufacturing Department included preparation of charts on overtime, forecasts, budgets, and production records, and plotting of February figures to both "C" and "D" series of the "Manufacturing Department Control Charts." Additional graphics work for the department included the preparation of illustrations and related material for the 1952 Annual Yearbook.

FOR THE ENGINEERING DEPARTMENT

Work has begun on the design of a daily computing program to assist in the detection of swelled or near ruptured P-10 slugs in DR reactor. Panellit gauge readings on P-10 tubes will be recorded daily on mark sense IBM cards. The mark sense cards will be processed during the night shifts in order to make the calculations available the next day. These calculations will determine the pressure gains both with respect to the pressure recorded on the previous day and on some previous reference day. Frequency distributions of pressure gains will be made. Tubes showing high panellit pressure or pressure gains will be listed. From these lists the tubes with probable near ruptured slugs can be determined and monitored hourly.

Additional calculations relating to new pile design were made. Maximum allowable powers in tubes of hollow slugs were recalculated, using the temperature of the uranium as the limiting condition. The calculation of the stress and temperatures in a split hollow slug has been completed for 999 cases, which encompass such variables as cooling tube material, radii of slug and tube, and specific power. The expected activity of a zirconium slug jacket was recalculated, using six higher values of flux.

Calculations were made which determined the temperature on the surface of a partially insulated slug. Four cases were considered. The mathematical work involved infinite series and simultaneous equations.

An extensive study is being made in an attempt to relate the degree of preferred orientation in fabricated uranium slugs to the number of cleavage failures induced by subjecting sampled slugs to various special treatments and subsequent extensive autoclaving.

A further study is being made on the orientation values obtained for various planes from samples of uranium metal. These "rho" values, when compared to a randomly oriented standard, show to what degree the metal is randomly oriented and also show in what direction it is aligned if it is not random. The problem is to determine the statistical distribution which most satisfactorily explains the behavior of the rho values, and then to find how or to what extent various production variables affect them.

Multiple and Partial correlations are being determined between the physical and chemical properites, orientation rho values, and rolling variations for red tag lots. The first report will be issued in April, and will contain recommendations which should eliminate some of the work now being done in obtaining and analyzing data which are not sufficiently related to be of interest or importance.

A study has been completed of the average dih of metal processed through the 305 Test Pile by months for the past fourteen months. It is planned that acceptance specifications may be set up for the acceptance of slugs by the 100 Areas to guard against the acceptance of too many "Z" slugs in any given interval of time.

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Rough drafts of suggested data collection sheets for Fernald data concerning slug preparation were transmitted to the Pile Fuels Sub-Section. (Memorandum from R. F. Cell to W. T. Kattner.)

A final report was issued on the results of a statistical study of the relationship between the canned reactivity values of slugs manufactured from Mallinckrodt virgin uranium and Hanford recast uranium. (Document HW-27342, "Comparison of Canned Reactivity Values - Mallinckrodt Chemical Works Versus Hanford Works - 1952", R. F. Cell to W. T. Kattner.)

For use as a standard to compare with a 300 Area production test, the average rejection rate was calculated for the following types of rejects: pickling, non-seats, marred surfaces, frost test, aluminum-silica, bad weld, poor bond, thin caps, off-cycle, and miscellaneous. This was done for the period June, 1952 through December, 1952.

An in-pile experiment was designed to gain information concerning the properties of process tubes and slug jackets fabricated from zirconium. Properties indicative of corrosion, warp, change in shape, etc., will be measured and comparisons will be made with like properties of the presently used tubes and slug jackets. (Report given verbally to Allan Taylor by F. H. Tingey, March 10, 1953.)

An in-pile experiment to evaluate the properties of 63-S aluminum process tubes and jacketed slugs was designed and agreed upon by the responsible parties. (Document HW-27204, "Production Test 313-105-14-M, In-Pile Evaluation of 63-S Aluminum Process Tubes and Jacketed Slugs", from A. T. Taylor to Files.)

Consulting services were provided to the Project Section of the Engineering Department on the statistical aspects of a proposed experiment to estimate the failure rate of continuous temperature monitoring devices designed for use on the 105-K reactors. Statistical advice was given concerning the necessary sample size and proper design of an in-pile test at 105-H. In addition, the Statistics Unit has been asked to assist in the design and analysis of laboratory experiments in which an attempt will be made to simulate pile conditions on an accelerated schedule and extrapolate the results to pile operation (letter, "Temperature Monitor Testing", M. E. Forsman to R. T. Jaske, March 25, 1953).

A comprehensive analysis was made of water quality data for the past year from all reactors. Comparisons were made among all piles having the same water treatment with regard to SO_4, Cl^-, Mg, Ca, $CaCO_3$, Al, Fe concentration in ppm, and pH. Further comparisons were made between relative frequencies of occurrence at higher concentrations of SO_4 and Cl^-. Means and precisions were computed for each pile-impurity combination, and statistical inferences were drawn from these values. This study is a part of the overall aluminum corrosion problem, the objective being to associate present pile corrosion conditions with impurity concentration levels for various components, with special emphasis on chloride ion concentration. (Document HW-27351, "Statistical Analysis of Water Quality Data", from F. H. Tingey to W. R. DeHollander, March 10, 1953.)

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The determination of the precision and accuracy to be associated with an approximate method of computing tube power was made. Since the approximate method is considerably more rapid computationally than the correct method, a great amount of time might conceivably be saved in the event that the approximate procedure yields sufficiently accurate results.

Further data has been received and is being analyzed on the experiment being conducted to assess the effects of aluminum type, water temperature, flow rate, water treatment, and exposure on such things as weight loss, film build-up, and pitting, which are indicative of corrosion.

Experience data were analyzed to ascertain the difference in results, if any, from three different methods of determining the concentration in ppb of a substance in each of four samples of a solution. A further experiment is being designed to more adequately resolve the question of systematic differences as well as determine the sources and magnitudes of the variation involved.

Considerable progress has been made on the Boltzmann equation, following a new line of attack. The procedure involves the derivation of a sequence of differential equations of orders 2, 4, 6, 8, etc., each more accurate than those preceding. The equation of order 2 is the ordinary diffusion equation, which is the usual tool for solving neutron pile problems.

Progress is continuing on the problem, "Size of Cube vs. Buckling." Numerous mathematical improvements have provided a more concise and clearer conception of the problem. The equations are now in form that make numerical evaluation of specific problems practical.

Further calculations were made on the problem of the missing slug in an infinite pile in an effort to determine the effect of the slug absence on gamma radiation. Computations of 14 Bessel integrals were involved.

Certain log-functions were tabulated for Advanced Pile Studies. They are to be used in U^{235} cost studies.

Routine calculating for the Engineering Department consisted of the Group 9 Metal Studies, Tube Factor calculations for H and C Reactors, Curve Fitting on P-12 Data, and Special Request Exposure calculations for DR, B, D, F, and H Reactors.

Graphic work consisted of layout, photo retouching, paste-up, preparation of schematic drawings and charts, and other related work in completion of forty-four master plates for a technical report, (document HW-27389, "Non-Destructive Testing of Hot Pressure Canned Slugs"). Eleven master plates were prepared for publication of a report titled "Airborne Contamination Alarm and Receiver". This work required layout, photoretouching, and preparation of charts. Ten master plates were prepared for publication of a pictorial report of classified files procedure. This work required layout, paste-up, photo retouching, and preparation of titles and descriptive information.

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Work was started in preparation of twelve charts for presenting studies of "long term pile reactivity changes".

FOR THE PLANT AUXILIARY OPERATIONS DEPARTMENT

At the request of the Electrical Unit, a brief survey was made as to the effects on the electric billing operation of a proposed change reducing meter reading to once every other month. On the basis of this survey, it was recommended that the proposed change not be made at this time. The cost of necessary estimating and adjusting to replace readings and the related procedure and wiring revision would offset any possible savings that could accrue in the next two to three years.

An editing step has been introduced into the billing procedure using the new statistical sorter. It checks the final calculating deck for each customer to determine that all cards that should be present are there and in the correct order.

IBM tabulation of the accident cost data is seventy percent complete and analysis of these data has begun. Among the aspects of this problem being studied are: the distribution of injuries among the plantwide labor forces, the costs of injuries, the time of day when injuries occur, and delays in reporting injuries. It is hoped that these analyses can be completed during April.

Data on some aspects of classified file operations is being collected by the Procedures Analysis Sub-Unit in accordance with a statistical sampling plan designed for them earlier. This data should be ready for IBM machine tabulation and statistical analysis during April.

Data obtained from the key punching control recommended by the Statistics Unit during December and put into effect by the Computing Unit during January are presently being analyzed.

New graphics work for the department included preparation of a number of control charts for the Statistical and Computing Section.

FOR THE RADIOLOGICAL SCIENCES DEPARTMENT

Assistance was rendered and an experimental design determined for ascertaining the accuracy with which the badges and pencils are being read in the various operating areas. The data from this study will be analyzed as it is received.

The study of the effect of feeding radioactive iodine to sheep continues. Mean levels and precision of mean levels have been established by dosage group and by month for P.B.I., W.B.C., Hbg, and Creatinine as reflected by the hematology data. (Report given to P. Hackett by Virginia Leader, March 18, 1953.)

Consultation was given and further statistical problems resolved incidental to the experiment now in progress relative to the Pu deposition in various body tissues of rats for several dosage levels greatly exceeding the M.P.C. dose.

An experiment is being designed to yield information relative to the amount of radioactivity in the milk of Suffolk ewes for various age groups, dosage groups, and lactation ages. The results of this experiment will be analyzed when completed.

Data is being analyzed to determine the effect of feeding iodized salt concurrently with the radioactive iodine on the deposition of the radioactive iodine in the thyroid of sheep.

Two seminars were prepared and delivered to the Radiological Sciences Department. The statistical approach to scientific experimentation was outlined in some detail with special emphasis being placed upon experimental design. Copies of the outline of this talk were presented to those in attendance for future reference.

Routine computations for the Radiological Sciences Department this month included the monthly meteorological studies, weather station wind study for January, sheep thyroid and radioanalysis calculations, aquatic biology calculations.

In addition to the routine radioanalysis calculations, a summary report on all 1952 data was completed. This report included average activity found in the sheep by 30 day intervals and by sheep group.

FOR THE MEDICAL DEPARTMENT

Separate analyses were performed on the absenteeism rates of men and women at Hanford Works. Data on their absenteeism rates during the past seven years were used to prepare separate seasonal control charts. These charts show the expected rate for each month and the limits of the expected variation. (Letter from Joan Cannon to Dr. R. R. Sachs, "Analysis of Male and Female Absenteeism Seasonal Patterns".)

A control chart to be used in comparing the Medical Department absenteeism rate with that of the plant has been constructed. This chart takes into account the differences in the size of the groups and the proportion of men and women. (Letter from Joan Cannon to Dr. W. D. Norwood, "Medical Department Absenteeism Chart".) Similar charts are being prepared for other departments and sections on a request basis.

Two charts, one each for men and women, were prepared at the request of the Medical Department to indicate graphically the percentage of employees causing a given percentage of the absences. Data pertaining to employees with more than one year of service were used. (Letter from Joan Cannon to

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Dr. W. D. Norwood, "Percentage of Employees Causing a Given Percentage of the Absences".)

FOR THE EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

Data on the plantwide employee separations study are being processed. The tabulation, which is being made both by single variables and pairs, will enable comparisons to be made between the separations group and the working force on the plant. The deactivates and preventable separations will be analyzed separately.

Assistance was given to the Employee Relations Section in the design of two surveys, one being to determine what employees who have attended Mr. Johnson's "Informal Luncheon" think about the luncheon, and the other to determine what employees think about one of the "Poster Series". The posters in question are the big (two feet by three feet) framed, colored posters that are changed weekly inside the badge houses, or in other buildings throughout the plant. Questionnaires are presently being sent out. Upon their return, the necessary statistical analyses will be performed.

Work has continued on the determination of a method and the collection of data which would be useful in relating employee separations data to the Hanford Works attitude survey data.

Questionnaires sent out to rotational trainees to determine the effectiveness of the Rotational Trainee Program are being analyzed. A complete tabulation has been made for each response on each question broken down by departments, sections, units, and sub-units. To date, the departmental breakdowns have been analyzed, and certain significiant differences between the response patterns have been determined. The analysis is continuing.

Mailing labels were prepared for all female non-exempt employees. A list of employees by job classification was prepared with the weighted average of salary paid each classification given.

Routine reports were prepared for the Salary Administration Section.

FOR THE FINANCIAL DEPARTMENT

The form of reports on miscellaneous payroll deductions was changed and the necessary procedural changes made.

A new procedure was developed for recording payroll deductions for savings and stock bonus bond purchases. The new system will provide IBM reports of accumulative deduction credits, and the number of bonds by denomination to be purchased for each employee.

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The first "Quarterly Report of Wages Taxable under the Federal Insurance Contributions Act" for 1953 was prepared. This report was prepared one week after the last inclusive week of the quarter.

The Quarterly Weighted Average Wage Report was prepared.

A new procedure was developed and installed for recording payroll data from payroll vouchers prepared for manual pay checks issued each week. The new system provides for full recording of payroll data, including a payroll register. Considerable time in the Payroll and Computing Units will be saved by the new procedure.

An alphabetical listing was prepared of all employees, weekly and exempt.

Routine computational work included preparation of weekly wage calculations, weekly payroll statistics, exempt salary distribution, work order cost, motorized equipment cost, and weekly payroll distribution.

FOR ADMINISTRATIVE PRACTICES

The derivation of TBP inventory precisions from the precisions of measurement of the content of individual tanks has continued to receive extensive attention. A precision study of tank 15-1 in Building 221-U has been completed and reported. (Document HW-27381, "Precisions of Tank 15-1", N. D. Peterson to C. B. McKee.) In this study, consideration of calibration errors, including an analytic calibration by least-squares fitting, was included. With the method thus established, a similar study was completed on tank 15--6, but has not yet been reported. Attention is currently being given to tanks WR-002 and WR-004. These four tanks contribute the great preponderance of material to the inventory.

Study of the problem entitled "Gross Weight of Shapes" will be resumed at an early date. Data for the analysis of scale precisions has recently been received.

A statistical study has been started to attempt to correlate known methods of non-destructive accountability methods for U^{235} content in "J" slugs. This is in conjunction with work being done by other departments in support of the Atomic Energy Commission directive that receiver and shipper should make independent measurements of fissionable materials shipped and received.

Graphics work performed in March included preparation of ten organization charts to be used in the new issue of the Organization Directory. A chart was also prepared for the Elfun Society Program titled "Self-Sustaining Program for a Complete Hospital Facility".

FOR THE ATOMIC ENERGY COMMISSION

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Graphics work for the commission included the following assignments:

1. Plotting, inking, and coloring of four maps, showing estimated flood elevations based on possible break in proposed Priest Rapids Dam.
2. Prepared a series of seven production, budget, and cost charts for the managers use in Washington, D. C.
3. Completed a chart master plate and overlay to be used for current records showing ratio of non-manual labor to total force.
4. Completed three charts with projected curves through FY 1954 on estimates of all components of architect - engineer and construction manpower for expansion program.
5. Layout and rendering of an illustration showing a proposed safety device to be incorporated in a slug spacer. This illustration was prepared for publication by AEC.
6. Made additions and revisions to existing 300 Area site maps.
7. Prepared two large schedule control charts for 105-C Building Program records.

NEW STATISTICAL AND COMPUTING DEVELOPMENTS

During the month 41 IBM operating procedures were completed and installed.

A 101 Electronic Statistical machine was received. This machine will perform certain types of work faster and cheaper than the other IBM machines, and in many instances will perform operations heretofore impossible. It is a high speed electronic machine capable of preparing one statistical analysis and simultaneously sorting the cards for another. It is equipped with two accumulating counters and fifteen unit counters thus enabling the preparation of reports with as many as seventeem frequency distributions. The results print on standard paper up to 11" wide. Additional features of the machine provide for automatic identification of lines of a report, automatic report printing, complete editing and proof reading of reports, multiple use of one panel to prepare numerous similar but not identical reports, automatic punching of results for future analysis, and editing and proving the contents of a file.

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Department Serviced	Percent of Services Rendered			
	Units			Statistical & Computing Section
	Statistics	Computing	Graphics	
Manufacturing	31	5	19	9
Engineering	29	19	33	22
Plant Auxiliary Operations	5	6	7	6
Community Operations & Real Estate	0	0	0	0
Radiological Sciences	8	6	3	6
Medical	4	0	2	1
Employee and Public Relations	7	2	1	2
Financial	0	61	4	48
Administrative Practices	6	0	6	1
Atomic Energy Commission	10	1	25	5
TOTAL	100	100	100	100

EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

SUMMARY -- MARCH, 1953

The number of applicants interviewed in March was 1,199 as compared with 1,123 for February. Of these applicants, 314 were individuals who applied for employment with General Electric for the first time. In addition, 101 new applicants applied by mail. Open, nonexempt, nontechnical requisitions decreased from 158 at the beginning of the month to 149 at month end. Eighty-six employees were added to the roll and 124 removed during the month. Turnover increased from 1.03% in February to 1.42% in March. During March, 60 new requests for transfer to other type work were received by Employment and 36 transfers were effected. Attendance recognition awards were distributed to 65 employees who qualified for one-year awards during February; 77 employees qualified for two-year awards, and 41 employees qualified for three-year awards.

Two employees died during the month and four employees retired. Two hundred and sixty-eight visits were made to employees confined to Kadlec Hospital and seventy-seven checks were delivered to employees confined at the Hospital or at home. At month end, participation in the Pension Plan was 95%, in the Insurance Plan 98.8%, and the Employee Savings and Stock Bonus Plan 43.6%. At month end there were 842 registered under Selective Service and 770 military reservists were on the roll. Since August 1, 1950, 273 employees have terminated to enter military service, of which 56 have returned, 4 have not claimed reemployment rights, leaving 213 still in military leave status.

Orientation of new employees was presented daily throughout the report month. A total of 66 new employees attended this program. Of this number, 100% have signed up to participate in the Pension Plan, 96.9% in the Insurance Plan, and 81.8% in the Good Neighbor Fund.

Forty-six adopted suggestions were approved by the Suggestion Committee for awards during the month totaling $730.

The manpower inventory report required by the Atomic Energy Commission quarterly has been modified so that less detailed information is necessary and the report will be made semi-annually during April and October.

Copies of the Attitude Survey report were received during March and distributed to department heads.

As of the end of March a total of 556 new members in the Good Neighbor Fund have resulted from the current membership drive.

All three sections in the Manufacturing Department are now utilizing the GE Selection Program for Supervisors.

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PRIVACY ACT MATERIAL REMOVED

Employee and Public Relations
Summary

Training and Development programs and activities for March, 1953, were as follows: Management Orientation, scheduled for Monday, March 2, 1953, was cancelled due to insufficient enrollment. Special Supervisory Considerations was presented for the first time this year on Wednesday, March 25, with 25 supervisors in attendance. Basic Economics was presented Wednesday and Thursday, March 3 and 4, to 20 new Hanford Works supervisors. Policy Panel Seminar was presented during the week of March 23 through 27 with 10 new supervisors in attendance. Principles and Methods of Supervision was offered to two groups of supervisors from March 9 through 20, with 40 supervisors participating. Conference Leading was again presented on Tuesday, March 17, 1953 with 14 supervisors in attendance. Management Conferences on Human Relations, introduced last momth, continued to be held for new groups and additional sessions with former groups. A total of 86 supervisors comprise five groups, which constitute a desirable number of 15 to 20 persons each group. Professional Management Development meetings were presented on Tuesday evening, March 10, with a discussion and explanation of the GE-AEC Contract, attended by 27 supervisors; and on Tuesday evening, March 24, with a brief resume on Basic Economics, attended by 11 supervisors. Management Panel Forum was presented on Thursday evening, March 5, when the Exempt Rating Plan was discussed, attended by 52 supervisors. The Non-Exempt Rating Plan was the subject for discussion on the evening of Thursday, March 19, with 22 supervisors present. Supervisors' Handbook revisions of twenty-four pages were distributed during March. Customer Relations program, at the request of Radiation-Monitoring Unit was presented to 13 non-exempt personnel on March 2, 3, 4 and 5. Office Personnel Relations program was requested for 12 non-exempt employees of the Pile Technology Unit on March 24, 1953.

Promotion of the Nucleonics Employees Good Neighbor Fund membership drive included preparation and distribution of a letter to management from the Fund's chairman of the Board, and news stories in the Works NEWS issues of March 6, 13 and 20, plus a full-page message in the March 6 issue. By the end of the month, more than 500 people--all of whom had previously rejected the Fund--had signed up during the membership drive.

Semi-final copy for "Your Salary Plans," a description of the two exempt salary plans at Hanford Works, was reviewed by members of the Salary Committee and the General Manager.

Recruitment advertising was placed for Nurse Anesthetists in the "Journal of the American Association of Nurse Anesthetists," and "Hospitals"; and for Physical Therapists in the "Journal of the American Medical Association," the "Physiotherapy Review," "Hospitals," and the "American Journal of Nursing." Because 40 inquiries were received by Employment as a result of an advertisement placed in "The Library Journal" in February, further advertising in the magazine for the position of Catalog Librarian was cancelled.

The death of Vice President was given Works NEWS coverage through an editorial, a news story concerning memorial services held simultaneously in Richland and Schenectady, and a news story relating his service with the Company.

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PRIVACY ACT MATERIAL REMOVED

Employee and Public Relations
Summary

Supervisors Association membership drive publicity in the Works NEWS was completed during the month. News stories and photos in several issues highlighted benefits provided by the Association to members.

The change over to the Tri-City Herald as the Works NEWS printer was made smoothly. The first issue produced by the new printer came out on schedule, and printing quality was good. Inasmuch as the new printer operates non-union shop, a careful check was maintained to determine whether or not bargaining unit employees on the plant were refusing to accept the paper; acceptance of papers in the areas was normal. A contract for Works NEWS engraving was awarded to the Spokane Engraver Company which provided good quality engravings on schedule for its first Works NEWS issue.

A procedure was established whereby the Termination Unit in Employment will notify the Works NEWS of all people being transferred to other GE plants. Each transfer will be publicized in the Works NEWS, and should help to reduce the feeling on the part of some employees, as revealed in the recent attitude survey, that there is no place to which they can advance.

The 10-year anniversary luncheon for employees who were employed on the project during March, 1943, or who were residents of Richland at that time, was given assistance by Employee Communications. Seventeen 10-year employees attended the luncheon, which was publicized in the March 27 Works NEWS issue.

Two letters to management from the Employee and Public Relations Manager concerning new salary increases for all non-bargaining employees were written, produced and distributed. Two other letters to management--one concerning change in vacation pay policy and the other announcing cancellation of Mr. Cordiner's talks in the areas--were written for the Employee Relations Manager's signature and distributed.

A procedure for transmitting emergency messages to Hanford Works management by telephone through departmental channels was formulized through a letter and description of the procedure sent to all department managers by the Manager, Employee Relations.

"1952 at Hanford Works," the Nucleonics Division annual report to the Atomic Energy Commission, received final approval, and was sent to Central Printing for production. Target date for issuance is not later than April 15. At the end of March, production of the report was approximately 65 per cent completed.

Final art work for "1952 at Hanford Works" was completed during March by the Employee Communications illustrator, who maintained close liaison with Central Printing in the preparing of page layouts prior to plate making. Art work provided for the Hanford Works NEWS included: illustration and layout of a full-page message on "Job Importance," development of a Hanford Works NEWS photo-page layout, two editorial cartoons, and photo retouching.

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Employee and Public Relations
Summary

A total of 43 releases were distributed during the month. Of these, 22 were sent to the "local" list and radio stations. Three were sent to media throughout the Northwest, seven to hometown papers, three to trade journals and one to a company publication, and seven received special distribution.

INDUSTRIAL SPORTS JOURNAL and a free lance writer for trade magazines were sent long articles about General Electric's Parks and Recreation program.

General Electric's teen-age magazine, ADVENTURES AHEAD, was sent a feature story with photos about a G.E. employee who was once a professional clown. This article is scheduled to appear in late summer.

Approval has been obtained from the General Manager for a series of interviews to be conducted by a Columbia Basin NEWS reporter. The reporter plans to do a series of articles concerning community services presently available through the Company that will no longer be provided by the Company in the event of incorporation.

At the request of an Elfun Forum group, a report was prepared concerning what can be done to increase the amount of publicity given achievements by General Electric at Hanford Works.

Progress made in the campaign to inform private industry about technological and management development at Hanford Works was discussed in a report prepared by Public Relations. This report was presented at a meeting of the committee last week at Las Vegas, Nevada.

A representative of Public Relations attended a general Company publicity meeting in New York City on March 26. The trip included a stop-over at Appliance Park at Louisville, Kentucky, where the work of the local news bureau was reviewed.

One day was spent at Schenectady where considerable information was obtained about better methods of placing signed articles, Hanford Works subjects that might be suitable for placement in popular magazines with national distribution, 75th Anniversary exhibits that might be available for use at Hanford, and methods whereby motion picture footage of activities at Hanford Works can be made available to television networks that have broad national coverage.

At the publicity meeting in New York all public relations and publicity activities in the Company were reviewed and objectives and future plans were discussed.

The March issue of the Community Newsletter was written and distributed to community leaders in Richland, Pasco and Kennewick.

On March 31, the 44th consecutive broadcast of the Hanford Works SCIENCE FORUM was broadcast at 9:00 p.m. over radio station KWIE. Plans are going ahead to include Columbia High School science class members on the SCIENCE FORUM in future programs. These students will pose their own questions to the panel of "experts" who regularly appear on the program.

1215892

Employee and Public Relations
Summary

Two of the motion pictures produced by this Section for the Manufacturing Department, "Radiation Hazards Control" and "Operation...Sample" were loaned to the Aircraft Nuclear Propulsion Project, Evendale, Ohio, at their request, for a two-week showing.

The slidefilm production "It's Just Knowing How" was completed and delivered to Plant Security and Services Section. They are holding special previews with management prior to the extended training sessions with plant personnel in which this slidefilm has a feature role.

A presentation concerning Hanford Works, including a brief history of the Plant and some of the plans for expansion, was given by J. S. McMahon at a joint meeting of the Exchange and Lions Clubs in Spokane, Washington on March 5, 1953. Mr. McMahon illustrated his talk with slides originally produced for slidefilms produced by this Section.

In cooperation with the local officers of the American Chemical Society, this Section is giving special attention to processing papers from Hanford Works authors for the forthcoming regional A.C.S. meeting in June. A special procedure has been worked out between Dr. Harry Kornberg and this Section whereby appropriate publicity through the Hanford Works NEWS and News Bureau will be followed.

A total of 158 photography assignments were filled during the month, producing a total of 19,533 prints, of which 17,276 were "A" and "B" badge prints. Area and news work consisted of 2,257 prints.

Records of Ph.D. candidates were reviewed and some of the best qualified will be invited to visit Richland with the expectation of hiring about 20 during 1953. Recruiting of BS and MS candidates continues to be difficult in view of better men entering military service. Acceptance of offers will not be complete until May and it appears that 50 people will be recruited which fills the Hanford quota.

Rotational trainees are continuing to accept permanent assignments and there are still only 86 people on the program. Of the 140 students who registered for the second semester in the School of Nuclear Engineering, 126 have paid full tuition and are keeping up their studies. Four talks were given during March at colleges by members of the Technical Personnel Section.

During the month arrangements were made for the transfer of 5 engineers and requests for transfer of younger technical personnel continues at a high rate. It appears that approximately 150 technical people will be lost during the calendar year of 1953.

1215693

Employee and Public Relations
Summary

The three major areas requiring the efforts of the Salary Administration Department during March, 1953, were: establishment of grades for positions changed through reorganization; preliminary analysis of organizational structure; and completion of the Executive, Administrative and Operating salary review. New or modified position descriptions have been received in the section from most departments and a program has been laid for the extended period of investigating and evaluating these positions and establishing them within the salary plan. The evaluation of positions and the analysis of organization becomes closely interrelated. Even though the organization analysis function is still in formative stages, numerous requests for information, advice and assistance have been received.

During March, the first half of the contacts have been made with participating companies preliminary to securing data for the National Salary Survey. Contacts have been completed in the Southwest and Midwest sections of the country. Continued interest and excellent reception characterizes the tenor of these contacts.

The orientation brochure "Your Salary Plans" is in semi-final form and is ready for review by department managers prior to publication.

The merit salary review for Executive, Administrative and Operating exempt employees was completed during March.

By letter of March 12, 1953, the HAMTC served notice of a desire to modify and revise our Collective Bargaining Agreement. The Company likewise reopened by letter of the following day. Informal meetings were held on March 23 and 27 at which time an exchange of tentative proposals was accomplished. Hanford employees not in the bargaining unit have been granted a wage increase effective March 16. A formal offer was made to the HAMTC by letter of March 25. The Company has indicated a willingness to proceed to arbitration with the fifteen Instrument grievances and have named the Company representative on the Arbitration Committee. Judge Harold A. Seering of Seattle has been selected as the impartial member of the Committee. Effective March 5, an understanding was reached with the Hanford Guards Union relative to seniority groups No. 50, Area Patrolmen, and 50-A, Community Police, whereby in times of layoff employees may claim jobs in either seniority group on the basis of their seniority, ability and qualifications. The Council has concurred in an arrangement whereby an individual may be hired or transferred at the 21-month step rate of the Substation Trainee progression schedule. Considerable progress has been made toward resolving the issue of the assignment of work in connection with the operation of heavy duty fork-lift trucks. In spite of information from several sources that the unions would take some form of protest action, the first issue of the Works NEWS printed by the Tri-City Herald, a nonunion shop, was distributed on March 27 without incident.

Resignations of individual members of the Davis Panel which had been submitted in deference to the new President were accepted on March 2. On March 24, President Eisenhower directed that an Atomic Energy Labor-Management Relations Panel be established within the framework of the Federal Mediation and Conciliation Service.

Employee and Public Relations
Summary

A special panel named by David L. Cole, Director, FMCS, consisting of Aaron Horvitz, Chairman; Edwin Witte; and Godfrey Schmidt, heard the dispute between Machinists and Millwrights on March 28. A one-day work stoppage of 17 Plumbers in Minor Construction, White Bluffs Shop, occurred on March 19 in protest over the assignment of work in connection with the loading of excess material. Discussions regarding a new CPFF Service Contractor (Minor Construction) appear to have centered around Kaiser Engineers. The necessity of having a manpower pool of "Q" cleared craftsmen to augment the fluctuating Minor Construction forces is the controlling factor in the considerations. The work stoppage involving some 300 Carpenters on Kaiser's payroll occurred on March 26. Work was resumed on March 27. The negotiation of initial contracts with both the Technical Engineers and Office Workers are being carried on by Kaiser, with both unions having strike authority in the event of a deadlock.

Plant visitations were made in regard to compiling rate information for the 1953 Northwest Area Rate Survey. With the end of wage controls, plans were made to grant merit increases to Business and Technical Graduates to the job rate. As a result of the agreement with the HAMTC, providing that job openings in the plant will be filled by transfer of employees from the Community Operations and Real Estate Department where possible, the hiring of Miscellaneous Operators at one step below the job rate was discontinued. In connection with the continuation of our work on craft assignments, a review was started to determine what crafts actually are being assigned to certain jobs.

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EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

MARCH, 1953

ORGANIZATION AND PERSONNEL

General

Effective March 6, 1953, Blanche F. Aikens, Secretary A, went on leave of absence.

Effective March 9, 1953, Ruth Van De Mark, Secretary A, was reassigned to the Manager, Employee and Public Relations Department from the Salary Administration Section.

Employee Relations

Effective March 2, 1953, Ellen Caldwell, General Clerk C, transferred to the Manufacturing Department from the Insurance Unit.

Effective March 2, 1953, Mildred J. Bennett, Stenographer, was upgraded to Secretary C and transferred to Wage Rates, Union Relations, from Employment.

Effective March 23, 1953, Sheila Kernan, Stenographer, was upgraded to Secretary C and transferred to Union Relations from Employment.

Effective March 27, 1953, Wanda T. Spencer, Steno-Typist, Suggestion System, terminated voluntarily.

Effective March 27, 1953, Ruby Cherry, General Clerk C, was assigned to the Suggestion System.

Public Relations

There were no organizational changes during March.

Technical Personnel

Trainees - Beginning of Month 93 - End of Month 85

Net Change:	Placements in departments	9
	Resignations	0
	New Hires	1

Salary Administration

Effective March 1, 1953, J. L. Boyd transferred to the Design Section of the Engineering Department.

Effective March 1, 1953, T. G. LaFollette became Head, Organization Analysis in the Salary Administration Section.

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Employee and Public Relations
Organization and Personnel

Effective March 9, 1953, Ruth Van De Mark became Secretary to G. G. Lail, Manager, Employee and Public Relations.

Effective March 30, 1953, Christene B. Ford transferred to Salary Administration as Secretary.

Union Relations

Effective March 1, 1953, Arthur J. Scott, Staff Assistant, was added to Wage Rates Unit.

Effective March 2, 1953, M. Jeanine Bennett, Secretary C, transferred to Union Relations from Employee Relations.

Effective March 23, 1953, Sheila Kernan, Secretary C, transferred to Union Relations from Employee Relations.

Effective March 23, 1953, Rita C. Schulhauser, Secretary C, transferred from Union Relations to Manufacturing Department.

Effective March 26, 1953, Ramona G. Henderson, General Clerk B, was removed from rolls due to illness.

Number of Employees on Roll	March, 1953
Beginning of Month	228
End of Month	218
Net Change	-10

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Employee and Public Relations

Employee Relations

ACTIVITIES

General

Since February, 1951 a rather comprehensive manpower inventory has been maintained at the request of the Atomic Energy Commission and a report of this inventory made to the Commission quarterly. During March requirements of the inventory were modified and simplified substantially with less detailed information necessary. Henceforth, a manpower inventory report will be made semi-annually during April and October rather than on a quarterly basis.

Copies of the Attitude Survey report were received during March and distributed to department heads.

Personnel Practices

Employment	February, 1953	March, 1953
Applicants interviewed	1,123	1,199

314 of the applicants interviewed during March were individuals who applied for employment with the Company for the first time. In addition, 101 applications were received through the mail.

Open Requisitions	February, 1953	March, 1953
Exempt	0	0
Nonexempt	158	149

Of the 158 open, nonexempt, nontechnical requisitions at the beginning of the month, 76 were covered by interim commitments. Of the 149 open, nonexempt, nontechnical requisitions at month end, 78 were covered by interim commitments. During March, 91 new requisitions were received requesting the employment of 107 nonexempt, nontechnical employees.

	February, 1953	March, 1953
Employees added to the rolls	82	86
Employees removed from the rolls	98	124
NET GAIN OR LOSS	-16	-38

Of the 124 employees removed from the rolls, 13 were removed due to lack of work, 10 of which were in Bargaining Units.

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Employee and Public Relations

Employee Relations

Separation:

	February, 1953		March, 1953	
	Male	Female	Male	Female
Including employees who were laid off for lack of work	.58%	2.89%	.88%	3.39%
Excluding employees who were laid off for lack of work	.58%	2.89%	.72%	3.27%

Over-all Separation:

	February, 1953	March, 1953
Including employees who were laid off for lack of work	1.03%	1.42%
Excluding employees who were laid off for lack of work	1.03%	1.26%

During March, 14 employees left voluntarily to accept other employment, 4 left to enter military service, and 8 left to enter business for self.

Transfer Data

Accumulative total of requests for transfer received since 1-1-53	165
Number of requests for transfer received during March	60
Number interviewed in March, including promotional transfers	65
Transfers effected in March, including promotional transfers	36
Transfers effected since 1-1-53, including promotional transfers	100
Transfers effected in March for employees being laid off	13
Number of stenographers transferred out of steno pool in March	3
Transfer requests active at month end	281

ADDITIONS TO THE ROLLS

	Exempt	Nonexempt	Community Firemen	Total
New Hires	5	55	--	60
Re-engaged	--	--	--	--
Reactivations	1	23	--	24
Transfers	2	--	--	2
TOTAL ADDITIONS	8	78	--	86

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Employee and Public Relations

Employee Relations

TERMINATIONS FROM THE ROLLS

	Exempt	Nonexempt	Community Firemen	Total
Actual Terminations	8	65	--	73
Removals from rolls (deactivations)	3	43	--	46
Transfers	5	--	--	5
TOTAL TERMINATIONS	16	108	--	124

GENERAL

	2-1953	3-1953
Photographs taken	303	171
Fingerprint impressions	183	168

PERSONNEL SECURITY QUESTIONNAIRES PROCESSED

	2-1953	3-1953
General Electric Cases	54	80
Facility Cases	26	28
TOTAL	80	108

INVESTIGATION STATISTICS

	2-1953	3-1953
Cases received during the month	136	158
Cases closed	128	137
Cases found satisfactory for employment	76	157
Cases found unsatisfactory for employment	8	2
Cases closed before investigation completed	12	4
Special investigations conducted	0	3

PERFECT ATTENDANCE RECOGNITION AWARDS

Total one-year awards to date since January 1, 1950	4789
One-year awards made in March for those qualifying in February	65
Total two-year awards to date since January 1, 1950	1361
Two-year awards made in March for those qualifying in February	77
Total three-year awards to date	295
Three-year awards made in March for those qualifying in February	41

During March, 44 people, including 28 out due to lack of work, whose continuity of service was broken while in an inactive status were so informed by letter.

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Employee and Public Relations

The second of the Annual Style Shows for GenTrics was held on March 16 with approximately 200 members and guests in attendance.

During the month the GE Selection Program for Supervisors was outlined with a representative of the Metal Preparation Section and good progress has been made toward selections to fill positions which will lead to supervisory jobs. The program was also discussed with representatives of the Reactor Section. Plans have been made to start evaluating candidates for future openings in Reactor Maintenance and Power.

The people in the Separations Section are now utilizing the GE Selection Program for Supervisors. So far its utilization has been directed toward making selections for chief operator positions with the thought in mind that the chief operators constitute a potential reservoir for supervisory positions.

All sections of the Manufacturing Department now use the Selection Program for Supervisor. One candidate was tested with a battery of four tests in connection with the program as a sort of pilot study for Metal Preparation.

Ratings were sent out and returned for validation studies for both Instrument Trainees and Metalworkers. Only a few ratings are needed to complete the data necessary for validation of tests used for Instrument Trainees.

Twenty-three female and two male clerical candidates were tested using the Minnesota Clerical Test.

Twenty-five patrolmen were given lay-off notices which were effective March 20 and 23. Two transferred to Community Real Estate and Services to fill openings as policemen; 13 accepted transfers to other jobs, 10 were removed from the roll, 8 of which rejected transfer offers.

It has been necessary to place advertisements in several medical journals in an endeavor to recruit a nurse anesthetist and a registered physical therapist for Kadlec Hospital, both of which are in short supply.

The demand for personnel through the Selective Service has been at a rate of about 53,000 per month for the first half of 1953. It is estimated that the figure will be reduced to from 30 to 35,000 for the last half of 1953.

At the request of the HAMTC and with the concurrence of Union Relations, seniority rosters are now published quarterly rather than semi-annually.

An investigation led to the conclusion that henceforth only one copy of fingerprint impressions will be required for the purpose of processing requests for security clearances. Interested personnel have been informed accordingly.

Employee Benefits

The following visits were made with employees during the month:

Employee contacts made at Kadlec Hospital	268
Salary checks delivered to employees at Kadlec Hospital	77
Salary checks delivered to employees at home	16

At month end participation in Benefit Plans was as follows:

	February	March
Pension Plan	94.9%	95%
Insurance Plan	98.7%	98.8%
Employee Savings and Stock Bonus Plan	43.7%	43.6%

PRIVACY ACT MATERIAL REMOVED

Employee and Public Relations

Employee Relations

Two employees died during March, namely:

Manufacturing
Manufacturing

Twenty-seven letters were written to deceased employees' families during March, concerning payment of monies due them from the Company, and also to answer their questions.

Since September 1, 1946, 113 life insurance claims have been paid totaling $682,500.

Four employees retired during March, namely:

Alden L. Jump, W-9216-UB, Normal Retirement
Charles A. Giles, W-9926-SJ, Normal Retirement
Esther T. Smeltz, W-3288-B, Normal Retirement
Leo L. Davis, M-566-450, Optional Retirement

During March, 41 letters were written to retired employees providing them with information of general interest. To date 246 employees have retired at Hanford Works, of which 126 are continuing their residence in the vicinity.

Orientation of new employees was presented daily throughout the report month. A total of 66 new employees attended this program. Of this number, 100% have signed up to participate in the Pension Plan, 96.9% in the Insurance Plan, and 81.8% in the Good Neighbor Fund.

As of the end of March a total of 556 new members in the Good Neighbor Fund have resulted from the current membership drive. There are still a substantial number of membership cards outstanding.

Military Reserve and Selective Service

Statistics with respect to employees who are members of the military reserve are as follows:

Number of reservists on the rolls		770
Number of reservists classified in Category A	128	
Number of reservists classified in Category B	55	
Number of reservists classified in Category C	76	
Number of reservists classified in Category D	511	
Number who returned to active duty to date		215
Number who returned to active duty in March		2
Number of reservists for which delays have been requested		47
Number of reservists classified in Category B	4	
Number of reservists classified in Category C	3	
Number of reservists classified in Category D	40	

PRIVACY ACT MATERIAL REMOVED

Employee and Public Relations

Employee Relations

Delays requested (including renewals)		114
Delays granted		106
Delays pending		0
Delays denied		5
Delay requests recalled		3

The statistics with respect to employees registered under Selective Service are as follows:

Employees registered		842
Employees registered who are veterans		301
Employees registered who are non-veterans		541
Deferments requested to date (including renewals)		920
Deferments granted		708
Number of employees for which deferments have been requested		275
Number of employees classified in Category B	6	
Number of employees classified in Category C	8	
Number of employees classified in Category D	261	
Deferments denied and appealed at state levels		15
Deferments denied and appealed at local levels		0
Deferments denied and pending at national level		0
Deferments denied by local board and not appealed		2
Deferments denied by state board and not appealed		15
Deferments denied at national level (by Gen. Hershey's office)		1
Deferments denied at national level (by President)		3
Deferments requested, employees later reclassified		78
Deferments requested, later withdrawn		68
Deferments pending		30

Military terminations since 8-1-1950 are as follows:

Reservists recalled		123
Selective Service		146
Female employees enlisted		4
TOTAL		273

Employees returned from military service:

Reservists		43
Selective Service		13
TOTAL		56

Known number not claiming reemployment rights 4

Number of employees still in military leave status 213

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PRIVACY ACT MATERIAL REMOVED

Employee and Public Relations

Employee Relations

Suggestion System, Workmen's Compensation and Liability Insurance

Suggestion System	February	March	Total Since 7-15-47
Suggestions Received	227	261	11229
Acknowledgments to Suggesters	286	234	
Suggestions Pending Acknowledgment	19	46	
Suggestions Referred to Depts. for Investigation	286	234	
Suggestions Pending Referral to Departments	19	46	
Investigations Completed & Suggestions Closed	281	185	
Suggestions Adopted - No Award	5	0	
Adopted Suggestions Approved by Committee for Award	68	46	
Total Net Cash Savings	$4,425.42	$6,399.32	
Total Cash Awards	$ 735.00	$ 730.00	

As of month end there were 839 suggestions out for investigations.

The highest award of $200 was made to an employee in the Metal Preparation Section for his suggestion regarding the welding of dry canned "c" material. This suggestion resulted in considerable savings in labor and material.

An employee in the Technical Section received the second highest award in the amount of $140 for his suggestion regarding methods for final shape machining of material in the 234-5 Building. Savings were in manhours.

Effective the first of March the Suggestion System personnel returned to Building 705 from the Hanford High School.

Workmen's Compensation

Two cases under litigation were closed during the month of March.

During the month there were seven hearings concerning construction employees involving disputes concerning claims and/or awards. No conclusions had been reached by month end as a result of these hearings. In addition a construction employee injured in 1949 has filed notice of appeal to the Superior Court of Benton County concerning a disability award by the Department which was appealed to the Board of Industrial Insurance Appeals which body sustained the Department award.

Liability Insurance

The above action arose out of damages to property and personal injuries when a bus operated by a employee smashed into the residence. The bus driver was found to have died of a heart attack while driving the bus. The cause

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PRIVACY ACT MATERIAL REMOVED

PRIVACY ACT MATERIAL REMOVED

Employee and Public Relations

Employee Relations

of action was originally based on trespass, however, the complaint was subsequently amended to charge the Company with negligence in permitting the driver to operate the bus. The case was tried on the 4th, 5th, and 6th of March, 1953. The jury awarded a verdict of $4,904 for , $1,000 for their daughter and $9,000 for their daughter because of a speech impediment making a total verdict of $14,904. A motion for a new trial or judgment notwithstanding the verdict was served and filed by our attorneys.

Life Insurance

Code information which is known only to Home Office Life Underwriters Association has been furnished 58 insurance companies and investigation agencies during the month of March, 1953. 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

	February, 1953	
Claims reported to Department of Labor and Industries	Long Forms	Short Forms
	67	444

	March, 1953	
	Long Forms	Short Forms
	50	467
Total Since September, 1946	14,948	

	February, 1953	March, 1953
Claims reported to Travelers Insurance Company	8	* 10

* Of the claims reported to Travelers Insurance Company during the month all but two claims were for property damage. Two claims reported were for bodily injury.

Training Program - Collateral Contractors

Six trainees from du Pont reported here for a six weeks training period in the Reactor Section.

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PRIVACY ACT MATERIAL REMOVED

Employee and Public Relations
Employee Relations

TRAINING AND DEVELOPMENT

Training and Development Programs and activities for March 1953 were as follows:

MANAGEMENT AIDS:

MANAGEMENT ORIENTATION, scheduled for Monday, March 2, 1953, was cancelled due to insufficient enrollment. Letters were sent to supervision concerned, urging them to re-schedule their new exempt personnel for the next presentation on April 6, 1953.

SPECIAL SUPERVISORY CONSIDERATIONS is a quarterly-scheduled program which was presented for the first time this year on Wednesday, March 25, with 25 supervisors in attendance. This revised 8-hour program highlights several often over-looked factors which are a part of everyday practices requiring constant vigilance and attention. Highlights of S.F. accountability, time card procedure, forms control, the G.E. 9-point job program, the non-exempt rating plan, cooperation, cost control, disciplinary action and grievance procedure are included in this program. Responsible management were guest speakers on the subjects of S.F. accountability, time card procedure and forms control.

BASIC ECONOMICS was presented Wednesday and Thursday, March 3 and 4, to 20 new Hanford Works supervisors. This two-day program is designed as an introduction to economics in industry and to make new exempt employees cognizant of the free enterprise system and what it means to them. HOBSO I is a feature of this program, along with several pertinent sound-films, including "In Our Hands".

POLICY PANEL SEMINAR was presented during the week of March 23 through 27 with 10 new supervisors in attendance. This seminar reviews the philosophy and purpose of all O&PG's distributed to Hanford Works supervisors and provides a clearer understanding and more uniform administration of these policies, practices and procedures.

MANAGEMENT SKILLS:

PRINCIPLES AND METHODS OF SUPERVISION was offered to two groups of supervisors from March 9 through 20 with 40 supervisors participating. Group #44 was located at Richland, Dorm W-10, while Group #45 was held concurrently at Hanford High School. The entire course is given in 40 hours, over a period of 10 consecutive half-days. These groups will be combined with April groups for attending a completion dinner meeting in April.

Employee and Public Relations
Employee Relations

CONFERENCE LEADING was again presented on Tuesday, March 17, 1953, with 14 Hanford Works supervisors in attendance at this skill program, enabling supervisors to get actual experience in leading conferences and to direct group thinking in a logical, organized fashion. Actual role-playing lends practicality and reality to this program.

MANAGEMENT DEVELOPMENT:

MANAGEMENT CONFERENCES ON HUMAN RELATIONS — This program, introduced last month, continued to be held for new groups and additional sessions with former groups. Group #1 met in Richland for the second session on Tuesday, March 24; Group #2 met at Hanford High School for the second session on Wednesday, March 25; Group #3 met in Richland for the first session on Thursday, March 5; and Group #5 met in Richland for the first time on Wednesday, March 11; Group #7 met in Richland for the first time on Wednesday, March 18. A total of 86 supervisors comprise these five groups, which constitutes a desirable size group of 15 to 20 persons to each group. Groups #4, #6 and #8, scheduled to begin on March 4, 12 and 19, respectively, and to be held in Hanford High School, were cancelled due to insufficient enrollment. This was unforeseen and unavoidable due to work load at this particular time. These sessions endeavor to provide supervision with a workable background of human relations experiences, thereby resulting in a better understanding of people. This in turn permits full skill, care and effort of employees and their willing, intelligent cooperation.

PROFESSIONAL MANAGEMENT DEVELOPMENT meetings, introduced at Hanford Works for the first time this year, were continued during the report period. These meetings, held in the evening, are voluntarily attended and are made available so that supervisors who have not had the opportunity to attend during regular presentation times may also have the benefit of this valuable information, or they may be attended as "refreshers" when supervisors have attended the full session in the past. On Tuesday evening, March 10, a discussion and explanation of the G.E.-A.E.C. contract was attended by 27 of our supervisors. Mr. G. C. Butler, Counsel for the Nucleonics Division, was the guest speaker.

BASIC ECONOMICS was presented in brief form on Tuesday evening, March 24, with 11 supervisors in attendance.

MANAGEMENT PANEL FORUM — These forums are a series of meetings which are entirely spontaneous, and which are motivatedby questions from the group. This enables those attending to get the answers to their individual problems or questions. Responsible members of management are invited as guest panelists and the meetings are held in the evening with attendance strictly voluntary. On Thursday evening, March 5,

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the Exempt Rating Plan was discussed. Mr. H. E. Callahan, Manager of Employee Relations, and Mr. R. S. Bell, Manager of Separations Section, were panel guests. There were 52 supervisors attending this program. The Non-Exempt Rating Plan was the subject for discussion on the evening of Thursday, March 19, and Mr. W. P. Allen, Supervisor of Employee Benefits, and Mr. F. A. R. Stainken, Superintendent of Plant Engineering, were guest panelists. There were 22 supervisors present at this meeting. These meetings are coordinated and moderated by members of Training and Development.

OTHER TRAINING ACTIVITIES:

SUPERVISORS' HANDBOOK - Following is a summary of handbook distribution to date:

Number issued prior to March -	1339
Number issued during March -	5
Number returned during March -	2
Number issued end of March -	1342
Number on hand end of March -	158
Total number of handbooks -	1500

Of the 158 handbooks on hand, 34 are not usable as they lack too many pages, while 80 are ready for reissuance and 44 remain to be checked for completeness. Twenty-four revised pages to the handbook were distributed to handbook holders during March to keep handbooks current.

SAGE - The Hanford Works Supervisor And General Electric bulletin was distributed to O&PG distribution lists 1, 2 and 3 on March 18 and March 31. This information media contains training highlights, meeting data, and human relations items of general interest. It is written, edited and distributed by Training and Development.

CUSTOMER RELATIONS program, at the request of Radiation-Monitoring Unit, was presented to 13 non-exempt personnel on March 2, 3, 4 and 5. This is a "request" program and is designed to assist employees in their contacts with others and to stress the importance of the other person's viewpoint when "selling" oneself, a plan or new method. Another group of 15 non-exempt employees is participating in this program and attended March 30 and 31. This group will continue into April.

OFFICE PERSONNEL RELATIONSHIPS program was requested for 12 non-exempt employees of the Pile Technology Unit (Engrg. Dept.) on March 24, 1953. This 2-hour program aims to assist office personnel to better understand and apply human considerations in their daily relationships -- affecting productivity, morale and cooperation.

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TELEPHONE COURTESY, a film borrowed from Pacific Telephone and Telegraph Company and shown in the Office Personnel Relationships program, was also previewed by a group of 33 switchboard operators in Richland on Friday, March 27.

REQUESTS FOR MATERIAL -- Requests for transcripts of training program attendance for four Units and a quantity of Training Objectives for 1953 were filled during the report period.

ANNOUNCEMENT LETTERS for all training programs are distributed to Lists 1 and 2 ten days prior to meeting date of each program. This is necessary and profitable since many groups schedule their people to attend meetings over a year's period and individual dates might otherwise be overlooked.

SURVEY QUESTIONNAIRES are a positive means of ascertaining employee attitudes and acceptance of training programs, and substantiate program content. Since this is recognized, full use of this valuable communication media is a part of all training programs.

TRAINING PROGRAM MANUALS or scripts are being prepared for each current program. These will be library copies and will be available to any Training Staff member when or if the need arises.

Employee and Public Relations
Employee Relations
EMPLOYEE COMMUNICATIONS

The safety topic for April, "Review and Renew," and the April health bulletin, "But Doc I'm Sick!" were written and produced by Special Programs.

The fifth in a series of 9-Point Job Program messages, on "Job Importance," was developed and published in the Works NEWS issue of March 20.

Promotion of the Nucleonics Employees Good Neighbor Fund membership drive included preparation and distribution of a letter to management from the Fund's chairman of the Board, and news stories in the Works NEWS issues of March 6, 13 and 20, plus a full-page message in the March 6 issue. By the end of the month, more than 500 people—all of whom had previously rejected the Fund—had signed up during the membership drive.

Semi-final copy for "Your Salary Plans," a description of the two exempt salary plans at Hanford Works, was reviewed by members of the Salary Committee and the General Manager.

Final poster in the series publicizing the new radiation signs and symbol was developed for Radiological Sciences and sent to Printing for production. The new poster will be of a semi-permanent type, placed in strategic locations throughout the plant.

The March issue of the GE-REVIEW was distributed to approximately 1700 Hanford Works technical people.

An outline was submitted to the Superintendent, Radiation Monitoring Sub-Section, Separations, for a proposed booklet on radiation protection in the 200 Areas.

Copy and layout were prepared at the request of Employee Benefits for a booklet containing the constitution and by-laws of the Nucleonics Employees Good Neighbor Fund. Production awaits final approval by the Board of Trustees.

Recruitment advertising was placed for Nurse Anesthetists in the "Journal of the American Association of Nurse Anesthetists," and "Hospitals;" and for Physical Therapists in the "Journal of the American Medical Association," the "Physiotherapy Review," "Hospitals," and the "American Journal of Nursing." Because 40 inquires were received by Employment as a result of an advertisement placed in "The Library Journal" in February, further advertising in the magazine for the position of Catalog Librarian was cancelled.

Copies of the following booklets were distributed throughout the 20 employee information racks: "Nine Ways to Borrow $1000," "Don't be Fire Foolish," "Be Decorating Wise," and "Plumbing Care and Repair." In addition, 1000 copies of "Your Opportunities in Science," which were secured from the National Association of Manufacturers free of charge, were distributed through the racks.

Arrangements were made for the installation and servicing of two bulletin boards in the new wing of the 703 Building.

Questionnaires were mailed to approximately 300 Hanford Works people to determine employee reaction to the current series of Sheldon-Claire employee relations posters. By the end of the month, 59% had been returned—an excellent response. Completed questionnaires will be analyzed by Statistics.

Employee and Public Relations
Employee Relations

In addition to the Sheldon-Claire employee relations posters, the following posters were distributed throughout the plant: three suggestion system posters (approximately 70 copies each), two GE photo news service posters (90 copies each) and one AEC-GE security poster (approximately 100 copies).

The death of Vice President G. R. Prout was given Works NEWS coverage through an editorial, a news story concerning memorial services held simultaneously in Richland and Schenectady, and a news story relating his service with the Company.

Publicity was given to the improved service provided to employees purchasing GE products under the Purchase Plan. A new employee of the cooperating GE dealer in the area has been assigned the function of dealing exclusively with employees purchasing products under the Plan.

Supervisors Association membership drive publicity in the Works NEWS was completed during the month. News stories and photos in several issues highlighted benefits provided by the Association to members.

Suggestion system award winners were publicized in two Works NEWS issues during the month, with pictures and story.

Safety promotion materials were publicized in each issue during the month. Major emphasis was given to the 200-W area ceremony during which the area's fifth injury-free year was observed, and to a statement by a Hanford Works trainman concerning near accidents he has observed while operating a project locomotive.

Tenth anniversary of Hanford Works, and the sixth for the Works NEWS, were given emphasis: a full-page of stories was devoted to a plant anniversary, while an editorial and editorial cartoon took notice of the Works NEWS anniversary.

The change-over to the Tri-City Herald as the Works NEWS printer was made smoothly. The first issue produced by the new printer came out on schedule, and printing quality was good. Inasmuch as the new printer operates non-union shop, a careful check was maintained to determine whether or not bargaining unit employees on the plant were refusing to accept the paper; acceptance of papers in the areas was normal. A contract for Works NEWS engraving was awarded to the Spokane Engraver Company which provided good quality engravings on schedule for its first Works NEWS issue.

Other Works NEWS promotion activities during the month included giving full-page coverage to a GenTrics style show, publishing a photo of the large "75th Anniversary" sign erected near the 703 building, publicizing the Red Cross Blood Program, and the Easter Seal Drive.

A procedure was established whereby the Termination Unit in Employment will notify the Works NEWS of all people being transferred to other GE plants. Each transfer will be publicized in the Works NEWS, and should help to reduce the feeling on the part of some employees, as revealed in the recent attitude survey, that there is no place to which they can advance.

The 10-year anniversary luncheon for employees who were employed on the project during March 1943, or who were residents of Richland at that time, was given assistance by Employee Communications. Seventeen 10-year employees attended the

luncheon, which was publicized in the March 27 Works NEWS issue.

Two letters to management from the Employee & Public Relations Manager, concerning new salary increases for all non-bargaining employees were written, produced and distributed. Two other letters to management—one concerning change in vacation pay policy and the other announcing cancellation of Mr. Cordiner's talks in the areas—were written for the Employee Relations Manager's signature and distributed.

A procedure for transmitting emergency messages to Hanford Works management by telephone through departmental channels was formulized through a letter and description of the procedure sent to all department managers by the Manager, Employee Relations.

Initial discussions were held with Radiological Sciences concerning the establishing of Round Table meetings to be conducted by supervisors within that Department. Copies of the booklet "Round Table Guide" were provided for discussion among top management of Radiological Sciences.

An opinion survey type letter was written to obtain suggestions for making the General Manager's weekly meeting with exempt employees of even greater value to those attending these meetings. The letter will be sent to members of management who previously attended a meeting. The Statistical Unit assisted in developing the letter.

"1952 at Hanford Works," the Nucleonics Division annual report to the Atomic Energy Commission, received final approval, and was sent to Central Printing for production. Target date for issuance is not later than April 15. At the end of March, production of the report was approximately 65 per cent completed.

Final art work for "1952 at Hanford Works" was completed during March by the Employee Communications illustrator, who maintained close liaison with Central Printing in the preparing of page layouts prior to plate making. Art work provided for the Hanford Works NEWS included: illustration and layout of a full-page message on "Job Importance," development of a Hanford Works NEWS photo-page layout, two editorial cartoons, and photo retouching.

The illustrator also provided a total of six illustrations and layout for the April health and safety bulletins; layout and final art work for a radiation symbol and signs poster; layout and final art work for a safety poster to announce the monthly winner of the area safety improvement contest; cover design and layout for the Nucleonics Employees Good Neighbor Fund constitution and by-laws booklet; a color layout for the technical library letterhead, and a color dummy for "Your Salary Plans" booklet.

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PUBLIC RELATIONS

During the month of March, the News Bureau issued 43 releases. The breakdown, by cateogry, distribution, and content, was as follows:

Plant or Company

Plant Services	4
Pay and Benefits	10
Employment Services	4
Education	1
Technology and Science	9
Richland and Other Communities	4
Goodwill Stories	11
Total.	43

Distribution

Local	22
Daily	2
Weekly	1
Home or College	7
Trade Journals or Company	4
Special	7

Content

Information	5
Pictures with Captions	4
Short News	21
Long News	11
Features	2

A telegram was sent to WESTERN INDUSTRY to give them additional information they requested to use with an article they are running on the new G.E. Stores building.

INDUSTRIAL SPORTS JOURNAL and a free lance writer for trade magazines were sent long articles about General Electric's Parks and Recreation program.

General Electric's teen-age magazine, ADVENTURES AHEAD, was sent a feature story with photos about a G.E. employee who was once a professional clown. This article is scheduled to appear in late summer.

Nucleonics and the McGraw-Hill News Bureau were contacted by letter concerning a proposed article on the Company's meteorology program at Hanford Works.

INDUSTRIAL MEDICINE AND SURVEY editor was quizzed on whether he wants to review an article by Caesar Branchini about Richland's Public Health Program.

CHEMICAL ENGINEERING editor was queried about an article concerning evaporative treatment of fission product waste.

United Press Photo Service was sent a letter explaining status and distribution of the sheep farm story. They want the story and pictures to send out as a wire-service picture story. We explained that we are committed to hold up further distribution until farm magazines that already have the story have had a chance to use it.

Approval has been obtained from the General Manager for a series of interviews to be conducted by a Columbia Basin NEWS reporter with representatives of Community Real Estate and Services Department and the Medical Department. The reporter plans to do a series of articles concerning community services presently available through the Company that will no longer be provided by the Company in the event of incorporation.

At the request of an Elfun Forum group, a report was prepared concerning what can be done to increase the amount of publicity given achievements by General Electric at Hanford Works. This forum group is studying methods of gaining additional publicity for Hanford Works achievements.

Caroline Houston, a college student, and former Richland resident, was sent considerable information about Richland. She is going to use the material in preparing a term paper at Vassar College.

About 50 tear-sheet copies of an article written by the News Bureau for WESTERN INDUSTRY (Dec. 1952 edition) were procured without cost from the magazine for Engineering Inspection Services Section of Engineering Department.

The progress made in the campaign to inform private industry about technological and management developments at Hanford Works was discussed in a report prepared by Public Relations. The report described progress made from October, 1952, through March, 1953. This program has been undertaken at the request of the AEC. The manager of Public Relations, who is a member of the AEC's Industrial Information Committee, presented the report at a meeting of the committee last week at Las Vegas, Nevada.

A representative of Public Relations attended a general Company publicity meeting in New York City on March 26. The trip included a stop-over at Appliance Park at Louisville, Kentucky, where the work of the local news bureau was reviewed. A meeting of all Company public relations representatives was held to discuss developments at Appliance Park. The representative of Public Relations at Hanford Works attended this meeting.

One day was spent at Schenectady where considerable information was obtained about better methods of placing signed articles, Hanford Works subjects that might be suitable for placement in popular magazines with national distribution, 75th Anniversary exhibits that might be available for use at Hanford, and methods whereby motion picture footage of activities at Hanford Works can be made available to television networks that have broad national coverage.

At the publicity meeting in New York all public relations and publicity activities in the Company were reviewed and objectives and future plans were discussed. The vice president in charge of Public Relations spoke about the role of public relations in the over-all activities of the Company. An editor of TIME magazine discussed the type of information TIME, LIFE and FORTUNE can use from a large industrial corporation.

The Atomic Energy Commission staged an observance of Hanford Works 10th Anniversary during the third week in March. At their request they were supplied with names of General Electric employees who first were employed on the project during March, 1943. Twenty-one names were supplied with background information about each individual.

The March issue of the Community Newsletter was written and distributed to community leaders in Richland, Pasco and Kennewick.

The January-February issue of the News Digest was mailed to community leaders during the month.

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D. L. Lunda, Syracuse Plant Community Relations, was furnished a description and several sample copies of Hanford's Community Newsletter. Syracuse may start publishing a similar letter.

The following papers were submitted by Hanford Works authors for presentation and/or publication at meetings of local and national societies and publications both here in the Northwest and in the East:

A presentation on Hanford Works, that included a brief history of the plant and some of the plans for expansion, was given by J. S. McMahon at a joint meeting of the Exchange and Lions Clubs in Spokane, Washington, on March 5, 1953. Mr. McMahon illustrated his talk with slides originally produced for slidefilms produced by this Section.

A paper on "Inert-Gas-Shielded Processes" was submitted by E. S. Lavelle for presentation at the Welding Lecture Series sponsored by the American Society for Metals on March 3, in Richland, Washington.

In support of application for his Professional Engineering License, G. H. Strong submitted a paper entitled "A Statistical Analysis of Compressor Efficiency."

John H. Rudd, in support of his application for a Professional Engineer's License, submitted a paper entitled "Street Lighting and Recommendations for Richland, Washington."

An abstract on, "An Introduction to the Analytical Chemistry of Plutonium" was submitted by G. B. Boston in preparation for a paper to be presented at the Summer Symposium on Analytical Chemistry to be held in Troy, New York, June 19 and 20, 1953.

A paper on "Community Health Planning-Atomic City's Results Point the Way" by Drs. W. D. Norwood, P. A. Fuqua and R. R. Sachs, was submitted for presentation at the Atomic Energy Commission Industrial Medicine Conference to be held in Los Angeles, California, April 24, 1953. This paper may also be published at a later date in the Journal of the American Medical Association.

A paper on "Ventilation of Laboratories and Process Plants for Radioactive Work Construction" was submitted by W. W. McIntosh for publication at a later date in "Heating, Piping and Air Conditioning" magazine.

A member of this Section, Jeanne Weller, was guest speaker at the Richland Rotary Club on March 23. The talk given was in respect to a scholarship provided her by Rotary and was the basis of her formalized education in her vocation.

In cooperation with the local officers of the American Chemical Society, this Section is giving special attention to processing papers from Hanford Works authors for the forthcoming Regional A.C.S. meeting in June. A special procedure has been worked out between Dr. Harry Kornberg and this Section whereby appropriate publicity through the Works NEWS and the News Bureau will be provided.

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A prospective author raised the question of whether he would lose his patent rights if he wrote about an invention before filing the patent. The subject was explored with the Law Department and J. W. Underwood, who has been set up as a patent consultant on the plant. Information was relayed to the prospective author that he has one year after publication of the article in which to file the patent.

A total of 158 photography assignments were filled during the month, producing a total of 19,533 prints, of which 17,276 were "A" and "B" badge prints. Area and news work consisted of 2,257 prints.

A total of 14 color transparencies, size 4"x5" and 224, size 8"x10" prints were produced for Mr. Demers and Mr. Cowan from Los Alamos, of Project Poltergeist.

Inasmuch as a duplicate file is maintained in Employment, the practice of maintaining an active concession personnel description file at the Photography Unit has been discontinued. It also had been the practice to maintain a G.E. Termination file; personnel description cards were pulled from active file and filed in a termination file upon the employees separation from the Company. Experience has shown there is little need for this termination file in the Photography Unit.

It was felt that the Photography Unit was not the place to keep Employee Information. Elimination of these files should reduce the amount of time spent on clerical work, allowing one employee to devote more of her time for the production of identification photographs.

Two thousand, four hundred feet of 16mm motion picture film was inspected and repaired for Radio and Special Events during the month.

On March 31, the 44th consecutive broadcast of the Hanford Works SCIENCE FORUM was broadcast at 9:00 p.m. over radio station KWIE. During this month, Robert Smith, who has been a panel member on the FORUM since its beginning, left Hanford Works. A replacement has been found who will become a regular panel member in April. Plans are going ahead to include Columbia High School science class members on the SCIENCE FORUM in future programs. These students will pose their own questions to the board of "experts" who regularly appear on the program.

A new series of Public Health programs is underway for the Public Health Section. The broadcasts are being planned by a member of this Section who will act as narrator and producer. The scripts have been approved and test recordings made.

Tentative broadcast times and promotional ideas for the proposed new program series, "This Week at Hanford" have been established. Portable recording equipment for this program is now on hand. The format is a new auditory approach to personalize the people who work at Hanford, and their activities on the job. It will be kept on an unclassified basis. The target date set for the initial broadcast of this program is May 6. A member of this Section will act as moderator and producer of this program. It will serve as a dual-feature program: informing the Community and stimulating the interests of the employees in the recognition given them and their jobs by outside agencies.

A series of showings of various construction motion pictures made by other organizations were held during the month at the request of AEC personnel interested

in the possible production, by this Section of a documentary motion picture on the expansion program here at Hanford Works.

A total of 15 motion pictures were obtained from General Electric and the University of Washington Instructional Center for showings to plant groups during the month in conjunction with training and group meetings.

Two of the motion pictures produced by this Section for the Manufacturing Department, "Radiation Hazards Control" and "Operation...Sample" were loaned to the Aircraft Nuclear Propulsion Project, Evendale, Ohio, at their request for a two-week showing.

A meeting was held with members of the Process Engineering Unit, Design Section, Engineering Department, concerning the filming of the 100-K Construction program. The motion picture crew will be furnished a full-time advisor from the Process Engineering Unit, as of April 1, who will act as a guide on location and furnish technical information pertinent to the footage being taken.

Three thousand eight hundred feet of film has been exposed to date on the 100-K Construction program motion picture for the Process Engineering Unit, Design Section, Engineering Department, and 3500 feet have been processed. This footage also will be shown to members of the Process Engineering Unit and to members of the Engineering Division of the AEC who are interested in the production of a 16mm black and white motion picture, documentary in scope, of the entire Hanford Works expansion program.

Approximately ninety percent of the motion picture footage of the film being produced by this Section for Minor Construction, Engineering Department has been taken. Until the A.E.C. processes "Q" clearances for the processing studio personnel, this film cannot be developed, nor the script written for the additional "secret" documentary on the Ball 3-X conversion being done by Minor Construction.

The slidefilm production, "It's Just Knowing How" was completed and delivered to Plant Security and Services Section. They are holding special previews with management prior to the extended training sessions with plant personnel in which this slidefilm has a feature role.

Arrangements were made to provide a sound system for the noon-hour services held on the Village Green during Holy Week. The services are sponsored by the Richland Council of Churches.

<u>See attached statistical report</u> for Hanford Works Photo Unit.

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HANFORD WORKS PHOTO UNIT MONTH OF MARCH, 1953	2" X 2"	2" X 4"	5" X 7"	8" X 10"	N E G	4" X 5"	16 MM	35MM Color Slide	3¼" X 4" B & W Slides	4" x 5" EKTA-CHROME
COMMUNITY REAL ESTATE & SERVICES										
Fire		4								
Parks & Recreation			8							
Police		82	10	14	102	136				
Community Services				12	8					
EMPLOYMENT & PUBLIC RELATIONS										
Employment	770		26		154					
News Bureau		5	18	84	15					
Special Programs		12	8	23	27	58				
Training				7	6					
Works News		84	152	105	201	33				
ENGINEERING										
Design		4		294	42	5			41	
Process				35	7					
Technical						12				12
Technical Information					1					
Pile Technology			36	280	51		900'			14
Project				84	7					
MEDICAL								10	3	
Public Health			10		10				2	
MANUFACTURING										
Plant Engineers				69	23					
Metal Preparations				42	28					
Reactor Section				50						
Separations			20	23	11					
Process Unit				56	10					
RADIOLOGICAL SCIENCES									2	15
Biology				12						
UTILITIES & GENERAL SERVICES										
Offices Services				89	39	88				
Security	8,401	8,090			670					
Transportation				6	3					
GENERAL - Law				17	1					
MISCELLANEOUS										
F.B.I.		7			12					
A.E.C. Safety				96	67	24				
A.E.C. Security	15				3					
A.E.C. Property				17	18					
TOTAL:	9,186	8,288	288	1,415	1,516	356	900'	10	48	41

	JANUARY	FEBRUARY	MARCH
Total Prints	23,436	24,660	19,533
Tc Assignments	169	146	158
To Negatives	1,157	1,375	1,516

Employee and Public Relations

TECHNICAL PERSONNEL SECTION

TECHNICAL RECRUITING

For M.S. and B.S. Candidates

College recruiting visits are completed. A carefully prepared series of letters is mailed systematically to follow-up our offers to the most capable men interviewed. Including mid-year hires we now have 31 acceptances. Although our authorization permits 50 hires, we aim to finish slightly under rather than exceed this quota. Phone calls are being used to influence the acceptances of out-standing men. Only 6 acceptances have been received from engineering junior students, against a quota of 12. One man has been hired for the ANP Project toward a quota of 5. Since many of the best graduates are already committed through ROTC arrangements our acceptance percentage of offers made is substantially below the 1952 percentage.

For Ph.D. Candidates

Toward a quota of 18--20 Ph.D.s for calendar 1953, interest is now concentrated in approximately 90 candidates. This list is continually being reviewed so that our efforts may be concentrated on only the most promising men. So far, only 6 offers have been authorized by the customer departments and 1 acceptance has been received. During March, 3 were added to the rolls based on earlier negotiations. Little progress can be reported until May since these negotiations extend over substantial periods.

Experienced Engineers

Due to the continued high demand for experienced engineers no new hires can be reported. Two very promising young engineers from the Schenectady training program have been transferred to the Hanford exempt rolls; and two other experienced engineers, hired earlier, reported during March.

TECHNICAL PERSONNEL TRANSFERS AND LOSSES

Resignations	7
Intra-Company Transfers	3

In addition, we have succeeded in arranging 5 transfers within the Division for men who first expressed a wish to move or terminate.

EDUCATION

Graduate School of Nuclear Engineering

Of a second semester enrollment totaling 145, 130 students have paid full tuition and are continuing their studies. This represents the highest percentage of continued activity in the history of the School. The majority are steady graduate students carrying on continuing programs. Mr. Mayer's frequent contacts with individual instructors and students are making possible more intensive work.

Employee and Public Relations

College Extension Programs

The extension program conducted in Richland by the State College of Washington, with our support, includes the following active courses with enrollments as indicated.

Mechanics of Materials	8
Statistical Quality Control	9
Industrial Statistics	14
General Chemistry	31
Principles of Accounting	12
History of Government of the State of Washington	22

These courses, started in November, 1952, have mostly been completed during March, 1953. This joint effort is directed at serving needs for formal college-level education, as these needs can be identified.

UNIVERSITY CONTACT

This work is continuing, to build at the colleges a better professional acceptance for the Nucleonics Division. During March four professional talks have been given at colleges by the Technical Personnel Staff. Some of our current acceptances are directly attributable to such talks earlier in the season.

During this month, a visit and area tour by President C. C. French helped develop a closer relationship with the State College of Washington.

ORGANIZATION

Mr. Curtis continues to be successful in negotiating suitable individual placements for engineering trainees. Starting with 120 last July, plus about 50 left over from the 1951 class, the number is now down to 85. It is expected that this number will be reduced to 50 by further placements before the June, 1953, graduates arrive.

Although we are authorized to hire and train 5 additional graduates for the ANP Project, none are in training at Hanford now. All of the original group have completed their Hanford training and have been transferred to the ANP Project.

1215920

Employee and Public Relations

SALARY ADMINISTRATION

GENERAL:
Major effort of the Salary Administration Section in March has been focussed upon establishing recent organizational changes within the salary plans. All departments were requested to submit current descriptions on these changes by the month end. This has involved all exempt personnel in the section in rendering assistance in description development and editing, secondary organization modifications and position evaluations. Most of the descriptions were received by the month end. Plans were laid to cope with this extensive number of evaluations of new or modified positions and evaluations were in progress at month end.

ORGANIZATION ANALYSIS:
Planning for a continuing analysis of organizational structure culminated in positive action in March. Several preliminary studies of organization within sections were commenced and discussions have been held primarily at section level. A gratifying number of requests have been received for information, advice and assistance. This function, even in the formative stages, promises to be of considerable interest and scope. It is closely inter-related with position definition and therefore with evaluation and establishment of new positions.

ANNUAL SALARY SURVEY:
At month end, the national salary survey was approximately half completed. Southwest and Midwest contacts have been made with participants. Reception has been excellent and contacts are being further strengthened. Contacts were being made along the Atlantic Seaboard as the month ended.

SALARY REVIEW - EXECUTIVE AND ADMINISTRATIVE EMPLOYEES:

The review of departmental recommendation for merit salary increases for Executive, Administrative and Operating exempt employees was completed by Salary Administration during the early part of March.

BROCHURE ON SALARY ADMINISTRATION PLANS:
The orientation brochure "Your Salary Plans" for exempt employees has been developed into semi-final form. It was submitted to the Salary Committee and is being prepared at month end for final review by department managers just prior to being sent to publication.

Basic Salary Administration material was also given to the Training and Development Unit for use in a new program being developed for management training.

SALARY ADMINISTRATION - INTEGRATION WITH COMPANY:

A meeting was held at Hanford Works with L.L. Ferguson, of the Salary Administration Department, Management Consultation Services Division, and with a representative from the Knolls Atomic Power Laboratory. This meeting was a first step in integrating Hanford salary plans with the Company-wide salary administration program being established.

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Employee and Public Relations

Union Relations

UNION RELATIONS - OPERATIONS PERSONNEL

By letter of March 12, 1953, the HAMTC served notice of a desire to modify and revise our Collective Bargaining Agreement. The Company likewise reopened by letter of the following day. Informal meetings were held on March 23 and 27, at which time an exchange of tentative proposals was accomplished. Approximately 20 demands were made upon the Company, including (1) a union shop or modified union shop; (2) clearance for full time Council representatives behind the barricade; (3) show-up time; (4) discuss no strike clause; (5) severance pay; (6) improved insurance and benefit plans. The Company also presented proposals. Informal meetings are continuing.

Hanford employees not in the bargaining unit have been granted a wage increase effective March 16. The present "payroll adder" of 8.74 per cent will be raised to at least 9.28 per cent (based on the high point of the "old series" BLS Cost-of-living Index last year), and an additional 1.25 per cent will be added to make a new total of 10.53 per cent or an increase of at least 1.79 per cent. If the "old series" BLS Index for March should be greater than the high point of 192.4 reached last July 15, the Company will increase the 9.28 per cent to the extent of the additional cost-of-living rise. A formal offer was made to the HAMTC by letter of March 25.

The Company has indicated a willingness to proceed to arbitration with the fifteen Instrument grievances and has named the Company representative on the Arbitration Committee. Judge Harold A. Seering of Seattle has been selected as the impartial member of the Committee. In view of the reluctance on the part of the Council's attorney to make known the specific cause of action and relief sought, the attorney has been advised that we will make a formal request for such clarification before the arbitrator. Definite arrangements for the hearing have not been completed.

It has been announced that J. N. Dupuy has been assigned as Regional Manager, G. E. Union Relations, in New York. Mr. Dupuy will remain on the Project until completion of current contract negotiations. No announcement has been made as to his successor.

Effective March 5, an understanding was reached with the Hanford Guards Union relative to seniority groups No. 50, Area Patrolmen, and 50-A, Community Police, whereby in times of layoff employees may claim jobs in either seniority group on the basis of their seniority, ability and qualifications. The agreement will provide long-service employees in Community Police the opportunity to "bump" into Security Patrol at such time as the Community is eliminated from G.E.'s operating responsibility.

The Council has concurred in an arrangement whereby an individual may be hired or transferred at the 21-month step rate of the Substation Trainee progression schedule. This is an exception to the customary practice of hiring or transferring only at the starting rate or one step below the job rate of a classification and is expected to expedite the procurement of critically needed substation personnel.

Employee and Public Relations

The Teamsters have for some time objected to the assignment of work in connection with the operation of heavy duty fork-lift trucks. Considerable progress has been made toward resolving this issue without sacrificing our prerogatives of utilizing Stockroom Keepers intermittently in our Stores operation or permitting the use of this equipment by Operations personnel to transport process material at 224-U Building.

The Tri-City Herald, a nonunion shop, has been awarded a contract for printing the Works NEWS. The first issue printed under the new contract was March 27. In spite of information from several sources that the unions would take some form of protest action, the distribution last Friday was made without incident. There was likewise no evidence of a boycott of the NEWS by an organized refusal to read the paper. Rumblings continue to reach us that the Council will yet advise their members to refrain from reading the Works NEWS in support of the International Typographical Union squabble with the Tri-City Herald.

Grievance Statistics:

Status of Grievances

	1953 Unit	1953 Nonunit
Received this month	31	1
Received this year	93	3
Settled at Step I this month	12	1
Settled at Step I this year	36	5
Pending settlement at Step I at end of month	3	1
Settled at Step II this month	12	0
Settled at Step II this year	37	1
Pending settlement Step II at end of month	213*	0
Brought to arbitration during the month	0	0
Pending settlement by arbitration	9**	0
Total number pending settlement	225	1

*Includes 175 bargaining unit grievances brought to Step II by the Union prior to January 1, 1953, but not scheduled for Step II processing by the Union to date.

**Includes 8 grievances brought to arbitration level by the Union prior to January 1, 1953, but no further action has been taken by the Union to date.

Analysis of Grievances Received this Month

Department	Unit	Nonunit
Manufacturing Department		
Reactor Section	7	1
Separations Section	8	0
Metal Preparations	7	0
Total for Department	22	1

Employee and Public Relations

Department	Unit	Nonunit
Utilities and General Services Department		
Plant Security & Services Section	5	0
Transportation Section	1	0
Total for Department	6	0
Community Real Estate and Services Department		
Community Real Estate Section	2	0
Community Services Section	1	0
Total for Department	3	0
Radiological Sciences Department	0	0
Medical Department	0	0
Engineering Department	0	0
Law Department	0	0
Financial Department	0	0
Employee and Public Relations Department	0	0
GRAND TOTAL	31	1

Subject Unit Grievances		Subject Nonunit Grievances	
Jurisdiction	14	Health-Safety-Sanitation	1
Health-Safety-Sanitation	2		
Hours of Work	2		
Overtime Rates	1		
Holidays	1		
Sick Leave	1		
Information to Council and Employees	2		
Wage Rates	6		
Shift Premium	1		
Subject not covered by Contract	1		
TOTAL	31		1

Four meetings were held during the month for the purpose of processing seventeen grievances at the Step II level.

CONSTRUCTION LIAISON

Resignations of individual members of the Davis Panel which had been submitted in deference to the new President were accepted on March 2. The reason advanced at that time was economy in Government in line with the general reorganization. On March 24, President Eisenhower directed that an Atomic Energy Labor Relations Panel be established within the framework of the Federal Mediation and Conciliation Service. In a statement, President Eisenhower said that the establishment of such a panel is in line with the administration's policy to put "primary reliance upon negotiation, collective bargaining, mediation and conciliation to settle labor-management disputes". It is our understanding that industry will participate in the formulation of the rules under which the panel will operate. A demand for "nonprofessional arbitrators" as members of the new panel appears to be gaining strength.

Picket lines were established by the Machinists at all entrances to the Plant including the North Richland bus lot on March 4 and the action was continued in a more restricted fashion the following day. Work was resumed on March 6 on the basis of a status quo arrangement pending Davis Panel action to resolve the dispute. In view of the resignation of Panel members, two members of the Federal Mediation and Conciliation Service were sent to the Project on March 16 in an effort to mediate the dispute. At their suggestion, the parties agreed to submit the matter to a special panel named by David L. Cole, Director, FMCS. A panel, consisting of Aaron Horvitz, Chairman; Edwin Witte; and Godfrey Schmidt, heard the dispute on March 28. The recommendation for settlement is expected within the next 30 days. In view of the fact that the basic issues involved here are of many years' standing between the two crafts, it is difficult to be optimistic regarding this panel's ability to resolve the dispute.

Seventeen (17) Plumbers in Minor Construction, White Bluffs Shop, terminated on March 19 in protest over the assignment of work in connection with the loading of excess material. Replacements (for the most part the same men who had quit) were dispatched by the Union the following day. Normal production was resumed by Monday, March 23. Minor Construction work outside the shop was not affected.

Discussions in this regard appear to have centered around Kaiser as the new Service Contractor. The necessity of having a manpower pool of "Q" cleared craftsmen to augment the fluctuating Minor Construction forces is the controlling factor in the considerations.

Local papers carried notice of the death of Vincent Larish on March 26 in Walla Walla. Funeral services will be at the Catholic Church in Pasco on Wednesday, April 1.

Some 300 Carpenters on Kaiser's payroll failed to report for work on March 26. Some question apparently exists regarding the reason for the action. Although certain on-the-job "beefs" are existent, it is quite probable that failure to obtain certain demands in current Schedule "A" negotiations is a part of the underlying cause. Work was resumed on March 27. Minor Construction was not affected.

1215925

Employee and Public Relations

Kaiser is presently negotiating initial contracts with both the Technical Engineers and Office Workers. On March 26, the Technical Engineers voted unanimously to impower their negotiators with strike authority against Kaiser. The Office Workers are scheduled to take similar action on March 31. Neither of these strike votes appear to be significant at this time but are probably calculated to lend bargaining strength to the individual unions. However, past experience has proven that both Locals will use the authority when and if negotiations reach the point of stalemate.

WAGE RATES

Plant visitations were made in regard to compiling rate information for the 1953 Northwest Area Rate Survey.

With the end of wage controls, plans were made to grant merit increases to Business and Technical Graduates to the job rate. A review is being made to give consideration to Business and Technical Graduates who received limited merit increases because of Wage Stabilization regulations.

The Wage Rates Unit participated in a wage survey conducted by the Allied Chemical and Dye Corporation, Hedges, Washington.

On March 31, 1953, the Wage Rates Unit vacated its area office in the Hanford High School Building. Arrangements are being made to establish this office in the 300 Area as soon as space is available.

As a result of the agreement with the HAMTC providing that job openings in the plant will be filled by transfer of employees from the Community Real Estate and Services Department where possible, the hiring of Miscellaneous Operators at one step below the job rate was discontinued.

A policy was established to cover the employment and transfer rates for the classification of "Expeditor C" as used in the 101 Building.

In connection with the continuation of our work on craft assignments, a review was started to determine what crafts actually are being assigned to certain jobs. This information will be compared with the determinations that were made by the superintendents, area engineers and general foremen as to proper craft assignment.

Three hundred forty (340) automatic and 6 merit increases were processed during March. Requisitions for 103 employees were processed. Fifty-three (53) new hires and 23 reactivations were investigated concerning replacement, job, pay grade and qualifications. A review was made of 98 reclassifications, 64 temporary reclassifications and 113 transfers before approval was given.

1215926

COMMUNITY OPERATIONS AND
REAL ESTATE DEPARTMENT

MONTHLY REPORT SUMMARY
MARCH, 1953

ORGANIZATION AND PERSONNEL

Number of employees on roll:	SUFFIX	BEG. OF MONTH	END OF MONTH
General Administration	310	5	5
Community Operations Section			
Administration	320	4	3
Public Works	321	72	72
Engineering	326	8	8
Recreation & Civic Affairs	327	5 3/4	5 3/4
Library	327	10 1/2	10 1/2
Fire	328	67	68
Police	329	50	52
Sub-Totals		217 1/4	219 1/4
Community Real Estate Section			
Administration	330	3	3
Housing Rental	331	24	24
Maintenance	333	148	150
Commercial Property	337	13	13
Sub-Totals		188	190
Civil Defense Program	360	2	2
GRAND TOTALS		412 1/4	416 1/4

There was an increase of four employees in the Department during the month of March, 1953.

GENERAL

The Richland Community Council election was held on March 10; incumbents Grigg, Clagett, Lewis and Sutch were returned to office. At the Council meeting held on March 14, Councilman Fred Lewis was elected President and Councilman Fred Clagett was elected President Pro Te

F. R. Rice began operation of a rug cleaning and renovating service and upholstering business in a privately-owned building on Stevens Drive.

Skyline Theater, Inc., commenced operation of a drive-in motion picture theater, located at Spengler Road and George Washington Way.

Richland Realty Company started construction on a multiple-business building in Block 5, Uptown Richland. This construction will complete the development of Block 5.

Richland Post #71, The American Legion, began construction of a post home on George Washington Way, south of the Central Fire Station.

A license agreement was awarded to Tri-City Television, Inc., to use government-owned power, light poles, and other facilities for the installation of television by coaxial cable.

Kenmison Furs opened for business March 11, 1953, at 235 Symons.

A lease was signed with the Richland Labor Temple Association, Inc., covering construction and operation of a labor temple on Knight Street near Stevens Drive.

The first completed units of Wherry Act housing, constructed by Bauer-Day Company, were made available during the month.

Total housing applications pending - 715.

HARoot/jak
4/10/53

1215928

COMMUNITY OPERATIONS SECTION

SUMMARY

MARCH 1953

ORGANIZATION & PERSONNEL:

	BEGINNING OF MONTH		END OF MONTH	
	Exempt	Non-Exempt	Exempt	Non-Exempt
ENGINEERING	6	2	6	2
FIRE	67	0	68	0
LIBRARY	4	6 1/2	4	6 1/2
POLICE	18	32	18	34
PUBLIC WORKS	14	58	14	58
RECREATION & CIVIC AFFAIRS	3	2 3/4	3	2 3/4
	112	101 1/4	113	103 1/4

The Richland Community Council election was held on March 10; incumbents Grigg, Clagett, Lewis and Sutch were returned to office. At the Council meeting held on March 14, Councilman Fred Lewis was elected President pro tem.

Plans for the creation of the Richland Electrical Unit are progressing. The Unit will be created as of April 27. The organization has been established and position descriptions and individual responsibilities have been worked out. Operating procedures are being drawn up.

1215929

COMMUNITY REAL ESTATE AND SERVICE
PUBLIC WORKS UNIT
March 31, 1953

ORGANIZATION AND PERSONNEL

	Exempt	Non-Exempt
Employees Beginning of Month	14	58
Transfers Out	—	4
Transfers In	—	3
New Employees	—	1
Terminations	—	—
Total End of Month	14	58

SANITATION

Total weight of waste material collected and disposed of during March was 1229 tons. The exceptionally warm days during the month encouraged an early spring clean-up of yards, and the volume of material placed out caused collections to run late several times.

ROADS AND STREETS

Plans are about complete for performance of the 1953 Seal-Coat Program under which approximately 11 miles of streets will receive a surface treatment of asphalt and rock. The major part of this work will be on streets located between Thayer and Wright on the east and west, and Symons and Duportail on the north and south. The work is scheduled for May and June, and the rock is now being crushed at a pit south of the By Pass Highway.

Repair of lawns which were disturbed during Improvement of Thayer Drive is now under way as part of Project CG 486.

Work has started on installation of approximately 100 replacement street identification signs which have been on order at the sign shop for several months. These will be installed as available.

Spengler Road between George Washington Way and Stevens Drive has been bladed, shaped and aligned. That part of the road which was narrow and caused somewhat of a hazard where the irrigation canal crosses, was widened and brought into alignment by re-locating the access ramp leading to the canal bank.

Routine seasonal maintenance of streets, drainage, public sidewalks and parking lots was continued.

PARKS AND PUBLIC GROUNDS

The northwest section of Wellsian Lake has been made approximately 1.5 feet deeper by removal of this depth of material from the bottom prior to flooding. The purpose was two-fold;--to eliminate the thick tule growth in this area, and to provide a fish habitat more propitious to the development of the fish life in the lake.

Planting of street trees in front of the 300 houses built under the Fourth Housing Addition Project was accomplished during March through the co-operative efforts of the residents and this sub-unit. The locations at which trees were to be planted were staked, and a card was delivered to each resident affected with instructions as to how the trees should be planted. A total of 475 shade trees were dug out at the Tree Nursery and on 3-20-53 these trees were delivered to the 300 Fourth Housing Addition houses (and to older houses located in the immediate vicinity). By 3-23-53 approximately 95% of the trees had been planted by the residents.

About 100 privet hedge plants were removed at the nursery and delivered to the Fire Department for planting at the Central Fire Station, and 12 trees and 5 shrubs were removed and prepared for transportation to the 200 West Area.

Spraying of lawn areas with 2-4-D for dandelion control has been started but cold weather and high winds have delayed progress.

Moving of the headquarters and shops of this sub-unit from 700 Area to the 700-B Area is in process and will be complete by early April.

Routine seasonal maintenance of parks and public grounds was continued.

DOMESTIC WATER

Normal seasonal operation and maintenance were continued and average daily consumption for March was 6.92 million gallons. Peak usage during the month occurred on 3-29-53 when 10.89 million gallons were consumed.

The fire hydrant on Knight Street at the corner of the service drive directly west of dormitory W-15 has been hit several times by automobiles turning into this service drive, and to minimize future serious damage, the hydrant was moved about 6 feet away from the drive.

Construction work on the Water Development Project has progressed satisfactorily during the month. The line under the Yakima River has been placed, but anchoring blocks have not been poured, nor has it been connected to the lines on either side of the river. All other feeder mains included in the project have been installed but have not been tied into the system.

DOMESTIC WATER (Continued)

Production and consumptions recordings for March are as follow:

DOMESTIC WATER

	Well Production Million Gallons	Av. Daily Production	Total Consumption Million Gallons	Av. Daily Consumption
Richland	89.4996	2.8871	137.7091	4.4422
North Richland	84.9490	2.7403	35.5408	1.1465
Columbia Field	40.1004	1.2936		
300 Area			41.3712	1.3346
TOTAL	214.5490	6.9210	214.6211	6.9233

SEWERAGE

Annual inspection and flushing of sewer mains and manholes was continued and is now 90% complete.

Several sewer main stoppages occurred during the month due to entrance of tree roots into the lines.

A 4" line was run from the irrigation water line which supplies the school farm into the North Richland trunk sewer to add dilution water to the sewage and thereby increase the dissolved oxygen content for odor control purposes.

Routine seasonal operation and maintenance of the collection system, lift stations, and treatment plant were continued, and average daily sewage flow for the month was 2.586 million gallons.

Meter recordings at the Treatment Plant for March are as follows:

SEWAGE

	Total Sewage Flow Million Gallons	Average Daily Flow Million G.P.D.	Average Rate of Flow Gallons Per Minute
Plant No. 1	25.410	0.820	569
Plant No. 2	54.746	1.766	1226
TOTAL	80.156	2.586	1795

IRRIGATION SYSTEM

Cleaning of canals was entirely completed early in the month. Water was returned into 3000 Area percolation basin on 3-2-53 after repair of a canal break west of railroad tracks, and was turned into canals and lines to Columbia Field and #3 Irrigation Station on 3-30-53.

IRRIGATION SYSTEM (Continued)

Water was run through Richland canal and into Richland percolation basin on 3-31-53.

Seasonal overhaul of irrigation pumps and motors has been completed and this equipment is ready for service.

Testing and repair of the irrigation water distribution system will begin in April.

1215933

RECREATION AND CIVIC AFFAIRS UNIT

MONTHLY REPORT

MARCH, 1953

ORGANIZATION AND PERSONNEL

	Exempt	Non-Exempt
Beginning of Month	3	2-3/4
New Hires	0	0
Terminations	0	0
Transfers - IN	0	0
- OUT	0	0
	3	2-3/4

SCHOOLS

The following is a tabulation of full-time paid School District #400 personnel as of March 31, 1953:-

Administration	7
Principals & Supervisors	14
Clerical	24
Teachers	289
Health Audiometer	1
Cooks	44
Nursery School and Extended Day Care	0
Bus Drivers	1
Maintenance	17
Operations	42
	439

CLUBS AND ORGANIZATIONS

As of March 31, 1953, the employees of the listed organizations, exclusive of those included in the Real Estate, Commercial and Other Properties Unit Report, include:-

Youth Council - Chest	1
Boy Scouts	1
Camp Fire Girls	1
Hi Spot Club	2
Girl Scouts	2
Justice of the Peace	1
Y.W.C.A.	2
Chamber of Commerce	1
	11

12:59:34

The regular monthly meeting of the Parks and Recreation Board was held on March 12, 19. The Board recommended that 12 sections of portable type bleachers be permanently assigned only to those areas which are a part of the park system and hold the most spectator interests.

The Board recommended that the Community House and Memorial Softball Committees be reappointed to serve during 1953. Mr. C.G. Nielsen was appointed to serve as Chairman of the Softball Committee.

It was moved and seconded and the motion passed that a carnival not be allowed to operate upon park property. The next regular meeting of the Board will be April 9.

The number and types of organizations presently served by the Recreation and Civic Affairs Unit include:-

Business and Professional Organizations		23
Churches and Church Organizations		27
Civic Organizations		19
Schools		10
Fraternal Organizations		25
Political Organizations		5
Recreation and Social Clubs -	Alumni	3
	Arts, Music, Theater	11
	Bridge	3
	Dance	5
	Garden	3
	Hobby	9
	Social	11
	Sports	19
Veteran and Military Organizations		14
Welfare Groups		7
Youth - Boy Scouts		20
Girl Scouts		49
Campfire Girls		36
Miscellaneous		15
		314

RECREATION

Practice field bookings on all Recreation and Civic Affairs Unit fields are now being accepted at the Community House.

The Adult Activities Program at the Spalding Gymnasium was brought to a close on April 1.

All tennis court nets were installed and located during the month of March. Lights were turned on at Columbia Tennis Courts on the first of April.

12.5.35

Recreation and Civic Affairs Unit (Continued)

Below is a cumulative attendance record of the Athletics and Recreation Program being sponsored by the Unit:-

	Children	Adults	Total
Sponsored Programs	74	286	360
Special Events	109	117	226
Permit Groups	-	-	-
Totals For Month	183	403	586

Indoor Attendance Total 4,793

Outdoor Attendance Total 79,592

COMMUNITY HOUSE

The Community House Board met in the East Social Room on Monday, March 23, 1953.

The Richland Youth Council held its monthly meeting at the Community House, Monday, March 9, 1953.

Registration was completed Tuesday, March 29 for the Table Tennis Tournaments in four age brackets which will be held in the Community House Games Room on April 6, 7, 8 and 9.

The Red Cross Blood Bank visited on March 31 in lieu of the April Bloodmobile visit at the Social Room of the Community House.

The Fall and Winter Craft Program at the Community House came to a close the last week of March.

Attendance - Community House

	Children	Adults	Total
Sponsored Programs	7,334	1,546	8,880
Special Events	-	-	-
Permit Groups	148	2,022	2,170
Totals For Month	7,482	3,568	11,050
Fiscal Year Totals To Date	50,748	26,254	77,002

Indoor Attendance Total 77,002

1215936

RICHLAND PUBLIC LIBRARY

MARCH 1953

ORGANIZATION AND PERSONNEL	Exempt	Non-Exempt
Employees - Beginning of Month	4	6½
Transfers In	0	0
Transfers Out	0	0
New Hires	0	0
Terminations	0	0
End of Month	4	6½

GENERAL

Circulation

Books	15,228	(Adult - 9,160; Juvenile - 6,068)
Magazines	463	
Pamphlets	48	
Records	987	
Interlibrary Loan	62	
Grand Total	16,788	

Current Book Stock

Books added this month	360	
Books dropped this month	1	
Grand Total	23,658	

Registration

Adult	141	
Juvenile	27	
Total	168	
Total Registered Borrowers	12,587	

Children's Story Hour Attendance 232 (Pre-school)

1215937

An American Foreign Policy Series discussion group was started this month. This is a follow-up series to the World Politics discussion series which is sponsored by the American Foundation for Political Education and was co-sponsored by the library last fall. The American Foreign Policy Series is offered with the same sponsorship. Only participants of the World Politics group are eligible for participation in the American Foreign Policy Series. The leaders for this group are Mrs. James Lutton and Mr. L. Wheaton Smith. Both leaders attended leader training meetings in Portland, Oregon in December. These meetings were sponsored by the American Foundation for Political Education.

An American Heritage discussion group was also started this month. The subject of this group is "The Values and Problems of Mass Education in America". Mr. F. X. Olanie is the discussion leader. Seventeen persons registered for participation in this group.

Eighteen meetings were held in North Hall during March.

Paintings by Mrs. Ruth Fluno, Walla Walla artist, were exhibited in North Hall, March 14 through March 28. On Saturday, March 28, Mrs. Fluno was in Richland to put on a demonstration of her painting technique. The exhibit and display were attended by approximately three hundred people.

The regular meeting of the Richland Public Library Board was held March 4, 1953.

1215938

RICHLAND POLICE DEPARTMENT

MARCH 1953

ORGANIZATION	Exempt	Non-exempt
Employees - Beginning of Month	18	32
Transfers In	0	6
Transfers Out	0	2
New Hires	0	0
Terminations	0	2
Total - End of Month	18	34

GENERAL

The Richland Police Department was host to the quarterly joint meeting of the Washington Police Officers Association and the Washington Chiefs of Police Association at the Desert Inn Hotel on Saturday, March 21. During the luncheon hour, the traffic safety film, "Day In Court" was shown to a group of approximately 70 who were in attendance at this meeting.

A complete inventory of police equipment was taken during the month of March.

The first class of an explosive ordnance disposal school was held on March 30 in the Community Building. The school will run for approximately five weeks, and an effort is being made to have all members of the department attend one of the classes. Following their completion of the course, they are to be known as "Reconnaissance Agents".

evised Deputy Sheriff Commissions, approved by the Legal Department, are now being issued to members of this department.

A new flag pole holder receptacle has been installed in front of Police Headquarters, and a new flag and pole has also been obtained through the efforts of Judge E. W. Brown. The flag will be flown on all legal holidays.

A total of 13 bicycles were impounded during this past month for operating without proper lights after the hours of darkness on the streets of Richland; 5 were also impounded from North Richland.

Thirty-five prisoners were processed through the Richland Jail during the month of March, 12 of which were from North Richland.

Eighteen guns and 63 bicycles were registered with the Police Department during the month of March.

A total of 296 police and traffic reports were processed through the records section of the Police Department, consisting of reports originating from both Richland and North Richland.

1215939

TRAFFIC

There were 20 reportable traffic accidents in Richland during the month of March, as compared to 21 in February. There were also 20 in March of 1952. This brings the total accidents for this year to 62, as compared to 92 for the same period last year, or a decrease of 32.6%.

There were 3 persons who received minor injuries in automobile accidents this month. There was only one person injured last month but there was one fatality, one major injury and 3 minor injuries in March of last year. This brings the total injuries for this year to 1 fatal and 5 minor, as compared to 1 fatal and 14 injured for the same period last year.

Four of the above accidents occurred in the business district, 15 in the residential districts and 1 in an open area outside the residential district. Twelve of the above accidents occurred during the daylight hours and 8 were during hours of darkness.

Property damage as a result of automobile accidents in Richland this month was $3,310.12 or an average of $165.51, as compared to last month's average of $257.14. The total financial loss through property damage as a result of vehicle accidents this year has been $12,296.12 as compared to $31,933.00 for the same period last year.

In many respects the accident picture is greatly improved over last year; however, ideal weather conditions have, no doubt, contributed to these results.

Members of the Richland Police were called upon to investigate 13 of this month's accidents and these investigations resulted in criminal complaints being signed against 8 drivers for violation of traffic laws.

Traffic violations which contributed to the accidents this month were:

Following too closely	5
Fail. To Yield right-of-way	3
Negligent driving	3
Improper backing	3
Disregarding stop sign	2
Reckless driving	1
Hit and run	1
Improper passing	1
Pedestrian violation	1

There were 5 traffic safety meetings conducted this month by members of the traffic control section. These meetings were attended by approximately 600 plant and village personnel.

There were a total of 10 reportable accidents in North Richland during the month of March with 2 injuries.

TRAINING

Advance training for Richland Police members at the Small Arms Range for the period in Field Instruction was as follows:

.38 Caliber Revolver - - - - - ½ hour

Total number of men reporting at the Range - - - - - - 20
Total number of men instructed in Field - - - - - - - 20
Number of men fired over the Army-L Course - - - - - 20

Qualifications on the Army-L Course as follows:

Expert - - - - - - - - - - - - - - -	6	30%
Sharpshooter - - - - - - - - - - - -	4	20%
Marksman - - - - - - - - - - - - - -	7	35%
Unqualified - - - - - - - - - - - -	3	15%

ACTIVITIES AND SERVICES

	February		March	
	Richland	No.Richland	Richland	No.Richland
Doors and windows found open in facilities	45	9	33	10
Children lost or found	9	1	15	0
Dogs, cats reported lost or found	18	0	5	0
Dog, cat, loose stock complaints	4	1	7	2
Persons injured by dogs	1	0	2	0
Bank escorts and details	1	4	1	4
Fires investigated	6	4	11	1
Miscellaneous escorts	20	4	13	6
Complaints investigated (no enforc.action)	20	1	31	1
Deaths reported	0	0	1	0
Property lost or found	28	1	25	1
Records inquiries	94	0	93	0
Letters of inquiry	121	0	72	0
Law enforcement agencies assisted	5	0	5	0
Private individuals assisted	12	3	11	2
Plant departments assisted	19	0	13	2
Emergency messages delivered	8	59	11	72
Street lights out reported to Electrical	80	5	85	15
Totals	491	92	434	116

121941

MONTHLY REPORT
RICHLAND POLICE DEPARTMENT
(RICHLAND - NO. RICHLAND)
MARCH 1953

OFFENSES	KNOWN Rich.	KNOWN No. Rich.	UNFOUNDED Rich.	UNFOUNDED No. Rich.	CLEARED Rich.	OTHER* No. Rich.	CLEARED Rich.	ARREST No. Rich.
PART I								
1. Murder								
2. Rape								
3. Robbery								
4. Aggravated Assault	-	1	-	-	-	-	-	1
5. Burg.-Break. & Entry	2	-	-	-	-	-	1	-
6. Larceny Over $50.00	4	1	1	-	-	-	-	1
Under $50.00	18	6	1	-	1	1	4	1
7. Auto Theft	-	-	-	-	-	-	-	-
TOTAL PART I CASES	24	8	2	-	1	1	5	3
PART II								
8. Other Assaults	3	2	-	-	3	-	-	2
9. Forgery & Counterfeit	-	-	-	-	-	-	-	-
10. Embezzlement & Fraud	3	-	-	-	2**	-	-	-
11. Stolen Prop:Buy:Rec.	-	-	-	-	-	-	-	-
12. Weapons:Carrying:Poss.	1	-	-	-	1	-	-	-
13. Prostitution	-	-	-	-	-	-	-	-
14. Sex Offenses	-	-	-	-	-	-	-	-
15. Offenses Ag.Fam.&Child	-	-	-	-	-	-	-	-
16. Narcotics-Drug Laws	-	-	-	-	-	-	-	-
17. Liquor Laws	-	-	-	-	-	-	-	-
18. Drunkenness	13	6	-	-	-	-	13	6
19. Disorderly Conduct	-	-	-	-	-	-	-	-
20. Vagrancy	1	1	-	-	-	-	1	1
21. Gambling	-	-	-	-	-	-	-	-
22. Driving While Intox.	3	-	-	-	-	-	3	-
23. Violation Rd. & Dr. Laws								
Failure to Stop & Identify	5	1	-	-	-	-	2	1
Speeding	21	2	-	-	-	-	21	2
Stop Sign	9	7	-	-	-	1	9	6
Reckless Driving	3	1	-	-	-	-	3	1
Right of Way	5	-	-	-	-	-	5	-
Negligent Driving	4	5	-	-	-	-	4	5
Defective Equipment	4	8	-	-	1	8	3	-
Illegal Passing	1	1	-	-	-	-	1	1
Following too Close	1	-	-	-	-	-	1	-
24. Parking	17	62	-	-	5	53	12	9
25. All Other Traffic Viol.	14	13	-	-	2	7	12	6
26. All Other Offenses:								
Malicious Mischief	5	1	-	-	3	-	-	1
Vandalism	15	4	1	1	4	1	-	-
Disturbance	-	1	-	-	-	1	-	-
Dest. Gov't. Prop.	1	-	-	-	1	-	-	-
Public Nuisance	2	-	-	-	-	-	2	-
Bike Violations	12	4	-	-	5	1	-	-
Prowler	1	-	-	-	-	-	-	-
Dest. of Pers. Prop.	1	-	-	-	-	-	-	-
Carried forward to page LF-5 TOTALS	215	142	119	1	1	27	72	91	40

OFFENSES	KNOWN Rich.	KNOWN No. Rich.	UNFOUNDED Rich.	UNFOUNDED No. Rich.	CLEARED Rich.	OTHER* No. Rich.	CLEARED ARREST Rich.	CLEARED ARREST No. Rich.
Totals brought forward from page LF-4	144	119	1	1	27	72	91	40
Annoy. Tel. Calls	2	1	-	-	1**	-	-	-
Investigation	4	-	-	-	4	-	-	-
Pickup for Outside	1	-	-	-	1	-	-	-
Family Disturbance	3	1	-	-	3	1	-	-
Illegal Entry	2	-	-	-	-	-	1	-
Juvenile Delinquency	2	-	-	-	2	-	-	-
Car Being Stripped	1	-	-	-	1	-	-	-
Runaway Juvenile	1	-	-	-	1	-	-	-
Neighborhood Trouble	1	-	-	-	1	-	-	-
Illegal Use of Guns	-	1	-	-	-	1	-	-
Overdose of Sedative	-	1	-	-	-	1	-	-
27. Suspicion	-	-	-	-	-	-	-	-
TOTAL PART II CASES	161	123	1	1	41	75	92	40
PART III								
28. Missing Persons	3	-	-	-	3	-	-	-
Lost Persons	11	-	-	-	11	-	-	-
Lost Animals	2	-	-	-	1	-	-	-
Lost Property	30	6	-	-	21	5	-	-
29. Found Persons	-	-	-	-	-	-	-	-
Found Animals	2	-	-	-	1	-	-	-
Found Property	1	-	-	-	-	-	-	-
TOTAL PART III CASES	49	6	-	-	37	5	-	-
PART IV								
30. Fat.M.V.Tr.Acc.								
31. Pers.Inj.M.V.Tr.Acc.	2	2						
32. Prop.Dam.M.V.Acc.	18	8						
33. Other Traffic Acc.								
34. Public Accid.)								
35. Home Accidents)	No Accurate Statistics Kept							
36. Occupational Acc.)								
37. Firearms Accidents								
38. Dog Bites								
39. Suicides	1							
40. Suicide Attempts	1							
41. Sud.Death&Bod. Found								
42. Sick Cared For								
43. Mental Cases	1							
TOTAL PART IV CASES	23	10						
COMPOSITE TOTALS								
PART I,II,III,IV CASES	257	147	3	1	79	81	97	43

*Cases listed under "Cleared Other" are those cleared by various means other than arrest, such as; orders from prosecutor, juvenile probation officer or other situations in which a mutual agreement is obtained. They are definitely "cleared" cases and differ from the arrest column only in that there was no arrest. **Cases cleared this month which occurred in previous month.

Property reported stolen	Richland	$656.00
Property reported stolen	No. Rich.	$145.00
Property recovered	Richland	$216.00
Property recovered	No. Rich.	$ 77.00

215943

MONTHLY REPORT — RICHLAND POLICE DEPARTMENT — JUVENILES INVOLVED — MARCH 1953

OFFENSE	NO. CASES	JUVENILES	SEX	5	6	7	8	9	10	11	12	14	15	16	17
RICHLAND															
Damaged Property	1	2	M					2							
Vandalism	3	5	4-M	1		1				1					1
			1-F	1											
Larceny	3	6	M						1	1		1		2	1
Illegal Entry	1	2	M					2							
Investigation	2	5	3-M	1	2										
			2-F											1	1
Malicious Mischief	3	4	M				1		1	1	1				
Juvenile Delinquency	2	4	M						1				1		2
Assault	1	2	F											2	
Second Degree Burglary	1	6	M											1	5
TOTALS	17	36		3	2	1	1	4	3	3	1	1	1	6	10

NORTH RICHLAND															
Vagrancy	1	1	M											1	
Larceny	1	2	M							2					
Assault	1	2	M							2					
Illegal Use of Firearms	1	1	M								1				
TOTALS	4	6								4	1			1	

RICHLAND POLICE DEPARTMENT
(Community of Richland)

Number of Offenses known to police per 25,000 inhabitants in cities of 25,000 persons:

Wash.Ore. & Calif. Six Months (Jan.-June 1952)		One Month Average	1952 Jan. - June	1953 Feb.	1953 March
Murder	.405	.067	-	-	-
Robbery	10.850	1.808	-	-	-
Agg. Assault	8.500	1.416	-	-	-
Burglary	67.975	11.329	8	2	2
Larceny	210.800	35.131	163	15	22
Auto Theft	34.475	5.745	4	1	-

Number of offenses known to police per 25,000 inhabitants regardless of whether offenses occurred in cities or rural districts.

State of Washington Six Months (Jan.-June 1952)		One Month Average	1952 Jan. - June	1953 Feb.	1953 March
Murder	.355	.059	-	-	-
Robbery	10.000	1.666	-	-	-
Agg. Assault	2.650	.441	-	-	-
Burglary	62.575	10.429	8	2	2
Larceny	209.125	34.854	163	15	22
Auto Theft	31.650	5.275	4	1	-

The percentage of offenses committed by persons under the age of 25 years is shown:

National Average Percentage of Cases Jan. - June 1952		Richland 1952 Jan. - June	Richland 1953 Feb.	1953 March
Robbery	55.1	-	-	-
Burglary	60.2	38%	-	50%
Larceny	43.4	12%	7%	18%
Auto Theft	69.4	75%	-	-

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."

121995

RICHLAND POLICE DEPARTMENT
(Community of North Richland)

Number of offenses known to police per 10,000 inhabitants in cities of 10,000 persons:

Wash.Ore. & Calif. Six Months (Jan.-June 1952)		One Month Average	1952 Jan. - June	1953 Feb.	1953 March
Murder	.162	.027	-	-	-
Robbery	4.34	.723	-	-	-
Agg. Assault	3.40	.566	-	-	1
Burglary	27.19	4.531	1	2	-
Larceny	84.32	14.053	45	5	7
Auto Theft	13.79	2.298	2	-	-

Number of offenses known to police per 10,000 inhabitants regardless of whether offenses occurred in cities or rural districts.

State of Washington Six Months (Jan.-June 1952)		One Month Average	1952 Jan. - June	1953 Feb.	1953 March
Murder	.142	.023	-	-	-
Robbery	4.01	.668	-	-	-
Agg. Assault	1.06	.176	-	-	1
Burglary	25.03	4.171	1	2	-
Larceny	83.65	13.941	45	5	7
Auto Theft	12.66	2.111	2	-	-

The percentage of offenses committed by persons under the age of 25 years is shown:

National Average Percentage of Cases Jan. - June 1952		No. Richland 1952 Jan.	June	No. Richland 1953 Feb.	1953 March
Robbery	55.1	-		-	-
Burglary	60.2	-		-	-
Larceny	43.4	-		-	14%
Auto Theft	69.4	-		-	-

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 age group because of the practice of some jurisdictions not to fingerprint youthful offenders."

121596

1-53-12-

RICHLAND POLICE DEPARTMENT
RICHLAND JUSTICE COURT CASES
MARCH 1953

VIOLATION	NO OF CASES	NO OF CONV.	NO OF FORF.	CASES CONT.	CASES DISM.	WARR. ISS.	SENT JAIL	SENT SUSP.	LIC. REV.	CASES ORIG. PREV. MON.	CASES INCL. OTHER VIOL.	BAIL FORF.	FINES	FINES SUSP.
DEFECTIVE EQUIPMENT	6	4		2						2	2	$	$ 21.00	$ 17.50
DRIVERS LICENSE	13	6	6	1						2	6	22.00	16.00	
DRUNKEN DRIVING	3	3							3				275.00	
FAILURE TO SIGNAL	2	1		1									5.00	
F.T.S. & I.	2	1	1									50.00	10.00	
F.T.Y.R.O.W.	2	2											15.00	
FOLLOWING TOO CLOSELY	1		1									7.50		
ILLEGAL PARKING	18	11	3	3	1					1		10.50	45.00	34.50
ILLEGAL PASSING	2	1	1								1	5.00		
IMPR. PLATES	6	4	2							1	1	7.50	20.50	
NEGLIGENT DRIVING	17	11	2	3	1				1	8		40.00	225.00	40.00
NO REGISTRATION	6	3	3							1	6			
PERMITTED UNLIC. OPER. TO OPER. VEH.	1	1											3.50	
RECKLESS DRIVING	4			4						1				
SPEEDING	25	7	13	5						3		151.50	65.00	10.00
STOP SIGN	13	7	4	2						1	2	22.50	27.00	
CARRYING CONCEALED WEAPON	1	1											25.00	25.00
CONSPIRACY TO COMMIT A CRIME (B&E)	1	1					1	1						
DOG ORDINANCE	1				1									
INJURY TO ANOTHERS PROPERTY	3	2		1						1			50.00	50.00
LARCENY BY CHECK	1				1					1				
NON-SUPPORT	1			1						1				
PETIT LARCENY	2			2						1				
PUBLIC INTOXICATION	12	6	6									75.00	97.50	65.00
PUBLIC NUISANCE	2	1	1									15.00	15.00	
VAGRANCY	1	1											15.00	15.00
TOTAL	146	74	43	25	4		1	1	4	24	18	$406.50	$930.50	$257.00

TWO PETIT LARCENY CASES AMENDED TO INJURY TO ANOTHER'S PROPERTY.
ONE DRUNKEN DRIVING CASE AMENDED TO NEGLIGENT DRIVING.
ONE RECKLESS DRIVING CASE AMENDED TO NEGLIGENT DRIVING.

RICHLAND POLICE DEPARTMENT
NORTH RICHLAND JUSTICE COURT CASES
MARCH 1953

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.
DRIVERS LICENSE	4	2	2								2	$ 7.50	$ 7.50	$ 7.50
DRUNKEN DRIVING	1			1						1				
F.T.Y.R.O.W.	1		1									15.00		
ILLEGAL PARKING	9	1	5	2	1							19.00	3.50	3.50
ILLEGAL PASSING	1	1									1			
ILLEGAL USE OF SPOTLIGHT	1	1								1			15.00	
IMPROPER PLATES	4	4											27.50	22.50
NEGLIGENT DRIVING	6	4	1	1						1		50.00	80.00	15.00
RECKLESS DRIVING	1	1							1				35.00	
SPEEDING	4	3		1									32.50	
STOP SIGN	6	2	3	1								15.00	10.00	
MALICIOUS MISCHIEF	1	1									1			
PETIT LARCENY	1	1											27.50	27.50
PUBLIC INTOXICATION	8	2	6									105.00	60.00	
SECOND DEG. ASSAULT	1			1										
THIRD DEG. ASSAULT	3	2		1			2	2		1				
TOTAL	52	25	18	8	1		2	2	1	4	4	$211.50	$298.50	$76.00

ONE RECKLESS DRIVING CASE AMENDED TO ILLEGAL USE OF SPOTLIGHT.
ONE RECKLESS DRIVING CASE AMENDED TO NEGLIGENT DRIVING.
ONE SECOND DEGREE ASSAULT-ATTEMPTED RAPE CASE TAKEN TO SUPERIOR COURT.

POLICE DIVISION - TRAFFIC CONTROL STATISTICS
MARCH, 1953

MOTOR VEHICLE ACCIDENTS REPORTABLE:

	Total Number		Fatilities		Major Injuries		Minor Injuries	
	Feb.	Mar.	Feb.	Mar.	Feb.	Mar.	Feb.	Mar.
Richland	21	20	0	0	0	0	1	2
North Richland	9	10	0	0	0	0	0	2

ACCIDENT CAUSES:

	Negligent Driving		Failure to Yield Right of Way		Reckless & Drunken Driving		Other Cases	
	Feb.	Mar.	Feb.	Mar.	Feb.	Mar.	Feb.	Mar.
Richland	1	4	10	3	1	1	9	13
North Richland	2	3	2	2	0	0	5	6

PLANT WARNING TRAFFIC TICKETS ISSUED:

	Speeding		Stop Sign		Parking		Imp. License		Def. Equipment		Other V.		Totals	
	Feb	Mar	Feb	Mar	Feb	Mar	Feb	Mar	Feb	Mar	Feb	Mar	Feb	Mar
Richland	0	0	1	0	2	5	5	2	5	1	0	0	13	8
North Richland	0	0	0	1	32	53	0	7	3	8	0	0	35	69

TRAFFIC CHARGES AND COURT CITATION TRAFFIC TICKETS ISSUED:

	Speeding		Stop Sign		Drunken Dr.		Reckless Dr.		Right of Way V.		Neg. Drvg.		Parking V.		Other V.		Totals	
	Feb	Mar	Feb	Mar	Feb	Mar	Feb	Mar	Feb	Mar	Feb	Mar	Feb	Mar	Feb	Mar	Feb	Mar
Richland	30	22	16	12	5	3	2	4	8	2	16	9	12	17	45	33	134	102
No.Richland	4	4	9	6	3	0	3	1	2	1	3	5	5	9	10	9	39	35

TRAFFIC VOLUME: No Traffic Volume Count taken for the month of March, 1953.

NOTE: TRAFFIC CONTROL STATISTICS SHOW ORIGINAL CHARGES ONLY.

COMMUNITY OPERATIONS

RICHLAND FIRE DEPARTMENT

MARCH 1953

Organization and Personnel	Exempt	Non-Exempt
Employees - Beginning of Month	67	0
Transfers In	2	0
Transfers Out	0	0
New Hires	0	0
Terminations	1	0
End of Month	68	0

Fire Protection		Richland	North Richland
Fire Loss (Estimated):	Government	$ 6.00	$ 0.00
	Personal	52.00	18.64
	Total This Month	58.00	18.64
	Total This Year	$1,288.00*	$2,543.63

* Not including February fire loss on Bauer Warehouse fire for which figures are not yet available.

Response to Fire Alarms	35	13
Investigation of Minor Fires and Incidents	2	0
Ambulance Responses	27	
Inside Schools or Drills	28	9
Outside Drills	18	9
Safety Meetings	10	3
Security Meetings	4	1
Fire Alarm Boxes Tested	185	112

On March 9th, fire apparatus stood by at the AEC Airport during the landing and take-off of a plane.

Four Boys Scouts were examined during the month for their Firemanship Merit Badges.

Eight groups of 143 students, Boy and Girl Scouts and nursery students, accompanied by 17 teachers or leaders, visited No. 1 Fire Station.

Two officers and four firemen attended the six hour training course in Explosive Ordnance Disposal conducted by the U. S. Army.

Fire Prevention

Two hundred and twenty six Richland and ten North Richland hazard inspections resulted in 36 hazard reports. Four hundred and twenty one fire extinguishers were inspected, 154 removed, 75 installed, 7 refilled and 13 relocated. Twenty four fire hose standpipes were inspected.

1213950

As requested by Community Engineering, construction plans for the new American Legion Hall, and alteration plans for the Southside United Protestant Church, Jason Lee School and Spalding School were reviewed.

On recommendation of the Fire Marshal's office, internal alarm and sprinkler systems in the new Central Stores warehouses were renumbered to facilitate Fire Department identification and simplify maintenance.

The Fire Marshal assisted the School District maintenance supervisor on the initial inspection of the new School Shop building on Thayer Drive.

AEC Safety and Community Engineering were advised of hazardous trash conditions and power line safety hazard existing in the Uptown alley. Code requirements and suggested regulations covering commercial area incinerators were submitted to Community Engineering.

Following receipt of inspection authority from AEC, inspections were started on Guthrie and Bauer apartments and dwellings.

Installation was completed on new dry powder chemical fire extinguishers in all 700 Area buildings.

Assistance was given Community Engineering on an acceptance inspection of the Sky-Line Drive-In Theatre.

1215951

COMMUNITY REAL ESTATE AND SERVICES
DEPARTMENT - ENGINEERING UNIT

MARCH 1953

PERSONNEL	Exempt	Non-Exempt *	Total
Employees - Beginning of Month	6	2	8
Employees - End of Month	6	2	8

* Two employees on loan from other departments.

The Status of Active Projects is as Follows:

K-713 - Vehicle Activated Traffic Light, George Washington Way & Van Giesen - Work 75% complete. Waiting delivery of traffic actuated bars and pedestrian buttons.

K-740 - Improvements to Richland Dog Pound - 100% complete.

L-662 - Mansfield Street Improvement - 100% complete. (To be closed when C-486 is complete since the two are under same contract.)

C-486 - 1952 Street Improvement Program - 98% complete. Completion date extended to June 30, 1953. No change.

C-488 - Additional Erosion Control and Development, Public Areas, F.Y. 1952 - By-Pass Highway Shelterbelt Extension - Dupertail to Thayer Drive. Bid opening on Shelterbelt March 5, 1953. Jason Lee Playground to be revised. Contract awarded on Shelterbelt - Jason Lee Playground being prepared for letting.

Status of Active ESR's:

396-CA - Site Map CAP Field - Deferred for other work pending decision by others on land to be included in map.

510-M - Roads and Streets Drawings, 1950 Construction - Deferred for other work.

544-SD - Tree Planting for Schools - Work being initiated with P.T.A. groups for fall work.

565-RC - Site South of Tract House 0-1224 - Deferred for other work.

571-M - Free Methodist Church - Progressing slowly - 97% complete.

572-M - First Baptist Church - Progressing slowly - 72% complete.

574-M - Assembly of God Church - Progressing slowly - 47% complete.

579-M - Goethals Drive to Williams, Study of Intersection - Deferred for other work.

581-RC - "As Built" Plans for LDS Church - Received for checking - Deferred for other work.

1215952

ENGINEERING UNIT

588-RC - Alteration Permits - An open active file.

591-M - Preparation of Advice Pamphlet for Contractors - Deferred for other work.

612-RC - "As Built" Plans for Richland Thrift Drug - Received for checking - Deferred for other work.

628-M - Prepare "As Built" Plans for Richland Fire Alarm System - Given to Engineering Department for completion with other work.

630-M - Correction of Master Plan - Open active file.

631-M - "As Built" Plans for Sewer System - Work progressing.

632-M - "As Built" Plans for Water System - Work progressing.

633-M - "As Built" Plans for Streets - Work progressing.

634-M - Engineer Liaison, Richland Water Expansion - Work progressing - Following construction closely by inspections.

663-M - Plan Checking, Richland Development Co., Block 5, North Commercial Area - Construction progressing - 99% complete.

665-RC - Richland Labor Temple Site for Labor Hall - 100% complete.

674-RC - Uptown Parking Lot Study - Temporarily deferred for more urgent work.

686-RC - Utility Lines, Vacant Commercial Sites - Work continued.

689-RC - "As Built" CD Joseph Building #2 - Awaiting receipt of "As Built" plumbing plans.

697-M - Plans, Specifications and Inspections, Drive-In-Theater - Construction progressing - 99% complete.

698-RC - Plans, Specifications and Inspections, Rug Cleaning Plant - Construction complete - Final inspection to be made.

705-RC - Field Supervision, Parking Lots, Chief Joseph Jr. High School - Work resumed 3-31-53.

706-RC - Plans, Specifications and Inspections, Medical-Dental Properties, Inc. - Construction progressing - 98% complete.

711-PW - Study and Estimate, Sewer Main, Swift Boulevard - Deferred for other work.

712-M - Survey of Richland, Washington, Liaison and Assistance - Work continued.

715-M - Television Antennae - An open active file.

ENGINEERING UNIT

722-M - Erosion Control & Development of Public Areas, F.Y. 1953 - Study Stage

724-M - Preliminary Engineering - Hospital Grounds Improvements - Work in progress.

725-M - Plans, Specifications and Inspections, McVicker Bldg., Lee & Goethals - Awaiting submission of plans by lessee.

726-M - Plans, Specifications and Inspections, CD Joseph Bldg. #4, Richland Realty Co. - Construction progressing - 49% complete.

729-M - Plans, Specifications and Inspections, Grace Bacon Bldg. - Waiting resubmission of plans.

730-M - Plans, Specifications and Inspections, Richland Realty Co., Symons & Jadwin - Construction started - 3% complete.

731-M - Plans, Specifications and Inspections, Richland Gas Company - Work progressing. 98% complete.

742-M - Plans, Specifications and Inspections, Addition to Standard Oil Company Bldg., Lee Boulevard - Work completed - Final inspection to be made.

746-M - Preparatory Engineering - Rebuild Parshall Flume at 1182 Reservoirs - 99% complete

747-M - Preparatory Engineering - Float Control Valve at Sewage Lift Station - 95% complete.

749-M - Installation of Radio Equipment - North Richland Fire Apparatus - Temporarily withheld pending decision by others.

750-M - Preparatory Engineering - Alterations to Richland Public Library - Project proposal being prepared.

751-M - Preparatory Engineering - Increased Turning Radii, Knight & Goethals - Project proposal in hands of Contract Supervisor.

753-M - Preparatory Engineering - Flow Control Valve, Sewage Treatment Wet Well - 99% complete.

754-M - Preparatory Engineering - Air Conditioner, Columbia Playfield Shelterhouse - Project proposal being prepared.

755-M - Preparatory Engineering - Tie-in Richland & N. Richland Fire Alarm Systems - Scoped - Project estimate submitted.

756-M - Preparatory Engineering - Installation of Traffic Light, Swift & Wright - Work temporarily delayed.

759-RC - "As Builts" Richland Investment Company - Being completed.

ENGINEERING UNIT

760-RC - Sewer Extension to Labor Temple - Preparatory Engineering Design 99% complete.

761-M - Review Plans & Specifications, Alterations to Richland Investment Co. Bldg. - 100% complete. Final inspection made and accepted.

765-RC - All Saints Episcopal Church, "As Built" Plans - Deferred for other work.

767-M - Plans, Specifications, and Inspections - Cannon-Joseph Bldg., Lee & George Washington Way - Awaiting submission of electrical plans - Work started on partial permit - 15% complete.

768-M - Plans, Specifications and Inspections - Carl Peterson Bldg., Lee & Gillespie - Construction progressing - 38% complete.

769-RC - Parker A. Hanson (Tastee-Freez) - 100% complete - Final inspection made.

770-M - Latter Day Saints Storehouse, West Jadwin Street - Construction progressing - 5% complete.

772-M - Alterations to Diettrich's Grocery - Plans received for checking - Exceptions were noted - Partial permit issued for footings.

773-RC - Irrigation Line Removal - Labor Temple Site - 100% complete.

774-M - Rennovation of Structures Below Flood Elevations - Riverside Park and Vacinity - Study on part complete. Held open for further study.

775-RC - Legal Description - Randolph Insurance - Temporarily delayed.

776-RC - Areas - Uptown Business District - 100% complete.

777-RC - Kennill-Ellis Site - Revised Legal Description - 50% complete.

778-M - Landscaping -2704 Building - 100% complete.

779-M - Plans, Specifications and Inspections - Richland Labor Temple - Work Progressing - 12% complete.

780-RC - Carl E. Peterson Site - Lee & Gillespie - 100% complete.

781-RC - American Legion - Utility Extension - Work order issued - Construction not started.

782-RC - Legal Description - 1125-2B Excess Building - 90% complete.

783-M - American Legion Building, Plans, Specifications and Inspections - Work started - 2% complete.

784-RC - Carnation Milk Co. - Code Study - 100% complete - Report submitted to Commercial Facilities.

ENGINEERING UNIT

785-RC - McVicker Bldg. #4 - "As Built" Plans - Plans received - Deferred for other work.

786-RC - Bathtub Rennovation Contract - E.S.R. Cancelled by originator.

787-RC - Tastee-Freez Bldg. - "As Built" Plans - Plans received - Deferred for other work.

788-M - Loaned Labor, Engineering Department - 100% complete.

789-RC - Extend Water Service to Richland Labor Temple - Work order issued. Construction not started.

1215956

REAL ESTATE SECTION

SUMMARY

MARCH
1953

ORGANIZATION AND PERSONNEL:

	BEGINNING OF MONTH		END OF MONTH	
	Exempt	Nonexempt	Exempt	Nonexempt
Real Estate Section				
330	2	1	2	1
Housing & Maintenance Unit				
331	5	19	5	19
333	13	135	13	137
Commercial Property Unit				
337	7	6	7	6
	27	161	27	163

Increase in number of employees 2

GENERAL

F. R. Rice commenced operation of a rug cleaning and renovating service and upholstering business in a privately-owned building on Stevens Drive.

Skyline theater, Inc. commenced operation of a drive-in motion picture theater, located at Spengler Road and George Washington Way.

Richland Realty Company started construction on a multiple-business building in Block 5, Uptown Richland. This construction will complete the development of Block 5.

Richland Post #71, The American Legion, commenced construction of a post home on George Washington Way, south of the Central Fire Station.

Invitations to bid and bid assemblies were mailed to interested parties for ground sites in the Uptown, Downtown, and Light Industrial areas; for one site each in the Heavy Industrial Area, Duportail and Hartford and the Veterinary site, west of Richland on Van Giesen; and for the Government-owned building formerly occupied by Binyon's, in Downtown Richland. The bid opening date is set for April 23 for all awards, except, that for the Government-owned building, which is set for April 28.

The first completed units of Wherry Act housing, constructed by Bauer and Day Company, were made available during the month.

1215957

HOUSING & MAINTENANCE UNIT

March, 1953

ORGANIZATION AND PERSONNEL

Number of employees on payroll:

Beginning of month:	18 exempt	
	154 nonexempt	
	172	172
End of month:	18 exempt	
	156 nonexempt	
	174	174

1215958

RICHLAND HOUSING

HOUSING UTILIZATION AS OF MONTH ENDING MARCH 31, 1953

HOUSES OCCUPIED BY FAMILY GROUPS

	Conventional	A&J	T	Precut	Ranch	Prefab	Dorm Apt	A&J Apts	2BR Apts	Fourth Housing	Tract	Total
G.E.Employees	2214	258	9	376	811	1169	10	50	59	196	35	5187
Commercial Facilities	105	15	1	34	84	55		5	5	9	3	316
Community Activities	9			1	6	6					1	23
Medical Facilities	3	17			2	1			1	3		27
Post Office	6				2	12				1	3	24
AEC	84	26		21	59	16		5	2	16	3	232
Other Government	6	2			5	4			1		1	19
Schools	53			6	10	57		1	1	2		130
Charles T. Main	1			3	5	11				1		21
Kaiser Engineers	6	8			5			1	1			21
Atkinson Jones	2	3		1	4	1		1				12
Vitro Corporation	4	2			2	1		1				10
P.S.Lord	1				2					1		4
Newberry Neon	1	1		1								3
Vernita Orchards											5	5
Urban-Smythe-Warren					2							2
Blaw-Knox		1		1								2
[illegible]versal Foods						1						1
Total	2495	333	10	444	999	1334	10	64	70	229	51	60
Houses assigned leases written	1					2						3
Houses assigned leases not written	4			6	1	6				1		18
Houses available for assignment												
Total	2500	333	10	450	1000	1342	10	64	70	230	51	6060

	Begin Month	Moved In	Moved Out	End Month	Difference
Conventional type	2496	26	27	2495	Minus 1
A&J type	333	6	6	333	
"T" type	10			10	
Precut type	449	6	11	444	Minus 5
Ranch type	999	9	9	999	
Prefab type	1338	31	35	1334	Minus 4
Dorm apartments	10			10	
A&J apartments	63	2	1	64	Plus 1
2 BR apartments	70			70	
Fourth housing	230	8	9	229	Minus 1
Tracts	51			51	
Total	6049	88	98	6039	Minus 10

1215959

March 1953

DORMITORY

Dormitories:

		Beds Available	Vacant Beds	Occupied Beds
Men's	15	616	0	616
Women's	12	481	51	430*
	27	1097	51	1046*

* Includes 2 beds used for dormitory office space.

	Waiting Lists	
	Single Rooms	Double Rooms
Men	39	23
Women	80	0

HOUSING CANCELLATIONS AND ALLOCATIONS

STRAIGHT CANCELLATIONS

Voluntary terminations	20
R.O.F.	2
Discharge	0
Transfers	7
Retirement-divorce-misc.	6
Move off project	12
Deaths	0
Total	47

ALLOCATIONS

Houses allocated to new tenants	40
Exchanged houses	29
Moves	12
Turnovers	5
Total leases signed	86
Total cancellations	93
Houses assigned "As Is"	33
Houses sent to renovation	30
Applications pending	715

1215960

TENANT RELATIONS PROGRESS REPORT

	Orders Incomplete as of February 28	Orders Issued 2-28 to 3-28	Total Orders Incomplete as of March 28, 1953
Service Orders	291	1745	287
Work Orders	437	733	581
Service Charges		333	

Principal work order loads

	Incomplete as of February 28, 1953	Incomplete as of March 28, 1953
Laundry tub replacement	28	30
Bathroom renovations (tub, tile, linoleum)	38	65
Tileboard - bathroom	6	0
Kitchen floor linoleum	46	114
Kitchen cabinet linoleum	78	113
Shower stall	20	10

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84 alteration permits were issued, as compared to 75 permits issued during February.

Install fence	22	Raise shelf in kitchen cupboard	1
Install automatic dryer	9	Construct tool shed	2
Install automatic washer	13	Reverse range and hot water heater	1
Install patio	5	Sand and refinish floors	1
Raise heat duct	1	Install driveway	1
Basement excavation	4	Install dishwasher	1
Remove flower box shelf	1	Install linoleum on floors	2
Install water softener	2	Remove coal bin partition	1
Install air conditioner	3	Install ventilating fans	1
Remove shelves in utility room	1	Change position of range	1
Install back door	1	Remove closet	1
Install oil burner	2	Add one room	1
Install TV antenna	1	Install excess panel in attic	1
Move hot water heater	2	Install fireplace	1
Install 110 V receptacle	1		

1391 inspections were made, as compared to 1354 inspections made during February.

Alteration permits	3	Shades	7
Bathtubs	64	Shower stalls	13
Cupboards	1	Sidewalks	26
Drainage	2	Sinks	30
Floor boards	16	Tileboard	47
Grass seed	17	Toilet seats	41
House siding	1	Topsoil	37
Jack and shim	6	Walls	4
Leaking basements	11	Dormitories	92
Linoleum	227	Windows	1
Lot lines	1	Cancellations	55
Paint	140	Renovations	61
Porch and steps	23	Shows (new tenants)	41
Screen doors	9	Miscellaneous	415

1215961

REAL ESTATE MAINTENANCE PROGRESS REPORT

MARCH, 1953

WORK SUMMARY

JOB TYPE	ISSUE DATE	BACKLOG	JOBS COMP.	COMP. TO DATE F. Y. 1953
BATHTUBS	1/29/53	93	7	262
KITCHEN FLOOR TILE	12/1/52	149	18	248
BATHROOM TILE	None	0	8	38
KITCHEN SINK TOP	11/10/52	129	33	439
SHOWER STALLS	12/10/52	1	14	171
LAUNDRY TUBS	1/22/53	28	17	198
MOJOR SEWER STOPPAGES	None	0	13	191
REPLACE OIL TANKS	None			
ROOF COATING	11/13/53	10	4	104
REMOVE TREES	2/11/53	24	7	98
RENOVATION	3/27/53	5	14	203
WATER HEATERS	None	0	4	171
REBUILD PORCHES	10/22/52	36	6	153
ASPHALT SERVICE WALKS	10/10/52	26	0	36
ASPHALT STEPS	10/23/52	12	17	161

1215962

MONTHLY PROGRESS REPORT
INTERIOR REDECORATING REPORT
FISCAL YEAR - 1953

TYPE UNIT	NO. UNITS SCHEDULED	COMPLETED THIS MONTH	COMPLETED TO DATE	BALANCE TO BE PAINTED
A	201	9	90	111
B	359	39	132	227
C	0	0	0	0
D	4	0	1	3
E	33	0	12	21
F	103	9	26	77
G	3	0	1	2
H	74	8	19	55
K	0	0	0	0
L	3	0	1	2
M	16	0	14	2
Q	110	1	104	6
R	124	1	118	6
S	12	0	12	0
T	6	0	0	6
U	17	1	13	4
V	101	0	88	13
Y	776	115	397	379
Z	42	4	20	22
1 BR.	4	0	2	2
2 BR.	9	0	9	0
3 BR.	4	1	3	1
TRACT	7	1	4	3
1 BR. APT	35	0	33	2
TOTAL:	* 2043	189	1099	944

Scheduled Hours: 10,097
Actual Hours: 8,997

* 1437 Units scheduled for interior redecoration, Fiscal Year, 1953

1215963

PLUMBING SHOP (10 employees)

JOB DESCRIPTION	NUMBER COMPLETED
Replacements - Major fixtures:	
Bathtubs	1
Laundry tubs	36
Electric Water Heaters	24
Shower Stalls (Plumbing For Sheet Metal)	14
Routine Plumbing Repairs	39
Plumbing for floor tile replacements	9
Cleared major sewer stoppages caused by tree roots	32
Steam Work Orders	25

In process of turning on domestic irrigation water. Copper sulphate program for control of tree roots in sewers is approximately 75% completed.

SERVICE ORDER CREW (11 employees)

The following is a status report on Service Orders:

A.	On hand at the beginning of the month:	291
B.	Received during the month:	1745
C.	Completed during the month:	1759
D.	On hand at the end of the month:	287

E. A total of 405.5 man hours were spent on work orders aside from the Housing Routine work orders.

F. Service orders backlog by craft:

Carpentry:	92
Electrical:	105
Plumbing:	90

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RENOVATION & LABOR CREW (14 employees)

JOB DESCRIPTION	NUMBER COMPLETED
Housing units renovated	33
Dormitory rooms redecorated	31

Performed miscellaneous work including assisting the Plumbing Shop in sewer repairs and removing trees; assisting Carpenter Shop in moving furniture, replacing bumper logs in parking compounds; delivering furniture to and from dormitories; and removing sand from yards adjacent to the Bauer-Day construction area.

LINOLEUM CARPENTRY CREW (8 employees)

JOB DESCRIPTION	NUMBER COMPLETED
Replaced bathroom floor tile	19
Replaced kitchen floor tile	33
Repaired kitchen sink top linoleum	61
Repaired roofs damaged by wind	27
Applied roof coating	22
Chempoint	227

In addition, performed miscellaneous work, including repairs to porches, steps, windows, doors and roofs of houses and dormitores.

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CARPENTER SHOP (14 employees)

JOB DESCRIPTION	NUMBER COMPLETED
Paint Touch-ups	48
Interior Carpentry Repair for Paint (Housing Units)	195
Ranch House Screen Doors Repaired (Exterior Carpentry Repair Progress)	171
Exterior Main Doors Repaired (Shop)	40
Cabinet Doors Replaced	97
Cabinet Drawers Repaired (Shop)	23
Time Spent on Office Equipment (Man hours)	28.5
Precutts - Carpentry Repair for Exterior Paint (Exterior Carpentry Repair Progress)	173
"K" Houses - Screen Door Hardware Installed	5
"C" Houses - Screen Door Hardware Installed	16

MECHANICAL SHOP

A. Millwright Crew: (4 employees)

JOB DESCRIPTION	NUMBER COMPLETED
Furnace Service Orders	100
Routine furnace inspection	250

GENERAL: The A & J type houses are 100% complete for routine service and lubrication.
The Precut houses are 10% complete for routine servicing and lubrication.
All Dorms are 100% complete for repairs and lubrication on Air Conditioners.
The clinic is 100% complete for repairs and lubrication on Air Conditioners.
Theatres are 100% complete for repairs and lubrication on Air Conditioners.

B. Sheetmetal Crew: (2 employees)

Replacement of shower stalls	14
Replacement of gutters	12
Fabricated metal thrusholds	48

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COMMERCIAL PROPERTY - REAL ESTATE SECTION

March, 1953

PERSONNEL - COMMERCIAL PROPERTY:

	March
Beginning of month	13
End of month	13
Net difference	0

PERSONNEL - COMMERCIAL AND NONCOMMERCIAL FACILITIES:

	Commercial		Noncommercial		Total	
	Richland	North Richland	Richland	North Richland	Richland	North Richland
February	1,464	183	120	1	1,584	184
March	1,484	178	123	1	1,607	179
Net difference	20	5	3	0	23	5

SUMMARY OR ROUTINE ITEMS PROCESSED:

	Commercial		Noncommercial		Total		
	Richland	North Richland	Richland	North Richland	Richland	North Richland	Total
Work Orders	59	18	7	0	66	18	84
Back Charges	5	0	0	0	5	0	5
FY Work Order Total	427	205	47	0	474	205	679
FY Back Charge Total	35	0	15	0	50	0	50

CONTRACTS AND NEGOTIATIONS:

A. Commercial:

1. Leases:

a. Naimy's Barber Shop -- A month-to-month lease of space in a Government-owned building.

2. Supplemental Agreements:

a. Donald M. Lone -- To amend the Use of Premises, so as to provide for the operation of a Used Car Dealership, adjust the payments and otherwise amend the lease in accordance with the current lease form.

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b. Medical-Dental Properties, Inc. — To add new parking areas and access ways and to amend the payments article.

c. Campbell's Food Locker — To extend the lease term for 55 years commencing December 1, 1952, adjust payments and otherwise amend the lease in its entirety in accordance with the current lease form.

d. C. D. Newland and W. J. Howells (The Mart) — To provide for the payment of a flat sum rental for space sublet to the ATA Aircoach, Inc.

e. North Richland Tavern — Agreement No. 4 providing for wine sales and rental payments thereon.

3. Invitation for Bids:

a. Bid assemblies were mailed to interested parties for plots in the Uptown, Downtown, and Light Industrial Districts and for one plot each in the Heavy Industrial Area, Duportail and Hartford, the Veterinary site west of Richland on Van Giesen, and for the Government-owned building formerly occupied by Binyons in Downtown Richland. The bid opening dates are set for April 23, for all parcels except the Government-owned building, which is set for April 28.

B. Noncommercial:

1. Leases:

a. Richland Labor Temple Association, Inc., covering the construction and operation of a Labor Temple to be located on Knight Street near Stevens Drive.

GENERAL:

A. Commercial:

1. Kennison Furs opened for business March 11, 1953, at 235 Symons, Automatic Laundry Company building.

2. F. R. Rice opened for business March 15, 1953, north of New City Cleaners, although his building is still under construction.

3. Skyline Theatre, Inc. opened for business March 20, 1953, at Spengler Road and George Washington Way.

4. Binyon Optometrists opened for business March 23, 1953, in their new location, 706 George Washington Way.

5. Amusement Enterprises started their summer operation March 28, 1953.

6. The first tenant moved into Bauer-Day Housing Project March 30, 1953.

7. Richland Realty Corporation started construction on its building, which completes the development of Block 5, Uptown Richland, on March 9, 1953.

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8. Construction was started on a building addition to Diettrich's Market.

B. Noncommercial:

1. Richland Post No. 71 of The American Legion started construction on its building on George Washington Way south of the Central Fire Station.

2. Eight pasture permits were issued, and one permit was cancelled.

COMMERCIAL PROSPECTS:

Inquiries were received during the month concerning the establishment of the following types of commercial enterprises:

Richland	North Richland
Fruit & Produce Market	General Merchandise
Cabinet & Carpentry Shop	Box Lunches
Photographic & Camera Supply	Dairy Queen
Engineering Office	Cocktail Lounge
Veterinary Hospital	

NONCOMMERCIAL PROSPECTS:

n inquiry was received from the Richland Jewish Congregation for a suitable location for the construction of a place of worship.

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SUMMARY OF OCCUPANCY AND EXPANSION STATUS

A. COMMERCIAL	FEBRUARY			MARCH		
	Richland	North Richland	Total	Richland	North Richland	Total
1. Number of Government-Owned Buildings	36	8	44	36	8	44
a. Number of Prime Lessee Businesses	40	9	49	39	9	48
b. Number of Sublessee Businesses	17	0	17	17	0	17
c. Total Businesses in Government-Owned Buildings	57	9	66	56	9	65
2. Doctors and Dentists in Private Practice	27	0	27	27	0	27
3. Number of Privately-Owned Buildings	50	7	57	50	7	57
a. Number of Prime Lessee Businesses	39	9	48	41	9	50
b. Number of Businesses Operated by Sublessees	61	2	63	63	2	65
c. Total Businesses in Privately-Owned Buildings	100	11	111	104	11	115
4. Privately-Owned Buildings Under Construction	7	0	7	8	0	8
5. Total Number of Businesses in Operation	157	20	177	160	20	180
B. NONCOMMERCIAL						
1. Government-Owned Buildings						
a. Churches	4			4		
b. Clubs and Organizations	8			8		
c. Government Agencies	3			3		
Total	15			15		
2. Privately-Owned Buildings						
a. Completed and in Use	10	1	11	10	1	11
b. Under Construction	5		5	6		6
Total	15	1	16	16	1	17
3. Pasture Land Permits	81			88		

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700 AREA CLASSIFIED FILES
1953