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MONTHLY REPORT

HANFORD ATOMIC PRODUCTS OPERATION

HANFORD 51262

FOR

JUNE 1953

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By Authority of RLO-06-4

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PM Eick 4-1-92

Compiled By
DEPARTMENT MANAGERS

July 22, 1953

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By P H [redacted]

Date 5-15-73

U.S. AEC Division of Classification

RICHLAND, WASHINGTON

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

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MONTHLY REPORT
HANFORD ATOMIC PRODUCTS OPERATION
JUNE 1953

GENERAL SUMMARY

Production Operations

In the Metal Preparation Section the below forecast production of 97.5 percent was due to the complete reorganization of the work force brought about by the establishment of new seniority groupings in this operation. The chip recovery operation processed the last batch of production material on June 2, 1953.

The total reactor input production for plutonium was 105 percent of the forecast, while the output production was 102 percent of forecast. The output production for the month exceeded the record set last month. The production forecast was exceeded primarily by the improvement of the operating levels.
There was one regular uranium slug rupture during the month; this was a Group 9 slug and occurred at the C reactor. One KAPL receptacle slug ruptured at B pile and one "C" metal piece at the H pile.

Production in the T Canyon Building was 282 percent of forecast. Production from this plant was accelerated to offset the low Redox production, which was 80 percent of forecast. Production of UNH at the TBP plant was 107 percent of forecast, with the plant operating at a record average rate of 10.1 tons per day for the month with a 93.2 percent efficiency, thus giving an average daily production of 8.5 tons. UO_3 plant reached 107 percent of forecast. The month's commitment of the 234-5 operation exceeded the forecast by 8 percent.

Engineering and Technology

Heat treating of the 250 tons of rods at the feed Materials Production Center, the slugs from which are to be irradiated under Production Test 313-105-25-M, was completed on June 25. The fabrication of hot press canned slugs for the initial pile irradiation of these fuel elements was substantially completed during the month.

Design progress on Project CA-512-R, 100-K Reactor Facilities, was advanced to 91.3% completion. Contracts for operation of the North Richland Construction Camp and North Richland Steam Plant were awarded to Commonwealth, Inc., and P. S. Lord, respectively. Project CA-385, Radiometallurgy Building, was completed, with minor exceptions, on June 29, 1953.

Thirteen informal radiation incidents, four Class I and one Class II were recorded by the Radiological Sciences Department. None was of major significance. Basalt was found at a new low elevation below the 100-B and K Areas. This modifies significantly the general geological picture of the region.

Personnel and Services

Modification No. 24 to the Prime Contract was executed on June 29, obligating funds for the ensuing twelve months. The physical inventorying of all Hanford Atomic Products Operation inventory materials (excluding source and fissionable materials) which began in January, 1953 was completed in June.

[redacted]

One major injury occurred in June and one injury sustained in March and recorded as a minor was reclassified during June to a major.

Employee separation rate increased from 1.25% in May to 1.57% in June.

The execution of the new HAMTC-GE Agreement by members of the Council Negotiating Committee was accomplished on June 1.

The total number of housing applications pending is 659.

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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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HANFORD ATOMIC PRODUCTS OPERATION
NUMBER OF EMPLOYEES
JUNE 30, 1953

	EXEMPT		OTHERS		TOTAL	
	6-30-53	5-31-53	6-30-53	5-31-53	6-30-53	5-31-53
Engineering Department						
General	17	17	80	79	97	96
Design	161	164	38	35	199	199
Project	236	225	311	300	547	525
Technical Section						
General	8	8	3	3	11	11
Applied Research	120	120	54	58	174	178
Separations Technology	110	112	24	26	134	138
Laboratory Engineering	48	48	56	60	104	108
Pile Technology	104	103	70	69	174	172
Fuel Technology	59	56	51	47	110	103
Advance Technology	9	10	1	1	10	11
Manufacturing Department						
General	16	16	7	6	23	22
Reactor	247	243	1 012	1 012	1 259	1 255
Separations	308	309	1 200	1 204	1 508	1 513
Metal Preparation	92	91	424	419	516	510
Plant Auxiliary Operations Department						
General	1	1	-	-	1	1
Elect. Dist. & Telephone	32	32	140	142	172	174
Transportation	46	45	481	477	527	522
Purchasing & Stores	48	52	240	244	288	296
Plant Protection						
Patrol & Security	61	61	468	474	529	535
Safety & Fire	43	43	108	110	151	153
Office Services	23	23	305	294	328	317
Administration Main. Service	11	11	50	49	61	60
Statistical & Computing	39	38	59	56	98	94
Community Operations & Real Estate Dept.	101	102	347	334	448	436
Financial Department						
General	4	4	8	7	12	11
Accounting	45	45	195	195	240	240
Payroll & Auditing	25	25	57	60	82	85
Employee & Public Relations Dept.	48	50	171	146	219	196
Radiological Sciences Department						
General	4	4	3	3	7	7
Records & Standards	27	27	138	141	165	168
Biophysics	60	61	58	55	118	116
Biology	42	42	36	36	78	78
Medical Department	39	39	215	215	254	254
Law	3	3	2	2	5	5
General	12	15	29	29	41	44
Total	2 249	2 245	6 441	6 388	8 690	8 633

2 294 6396 8690

PERSONNEL DISTRIBUTION - JUNE, 1953

	100-B Area	100-D 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	50	63	1	12	24	21	39	73	256	333	872
Other	25	38	3	50	29	12	13	27	221	270	688
Total	75	101	4	62	53	33	52	100	477	603	1 560
Manufacturing Department											
Exempt	68	61	48	65	-	6	7	293	90	25	663
Other	244	274	365	159	-	-	108	1 085	397	11	2 643
Total	312	335	413	224	-	6	115	1 378	487	36	3 306
Plant Auxiliary Operations Department											
Exempt	20	9	8	8	5	5	25	20	15	189	304
Other	61	65	106	57	19	29	101	199	110	1 104	1 851
Total	81	74	114	65	24	34	126	219	125	1 293	2 155
Community Operations & Real Estate Department											
Exempt	-	-	-	-	-	-	-	-	-	101	101
Other	-	-	-	-	-	-	-	-	-	347	347
Total	-	-	-	-	-	-	-	-	-	448	448
Financial Department											
Exempt	-	-	-	1	-	-	-	1	1	71	74
Other	-	-	2	1	-	-	2	1	-	254	260
Total	-	-	2	2	-	-	2	2	1	325	334
Employee & Public Relations Department											
Exempt	-	-	-	-	-	-	-	-	1	47	48
Other	9	3	4	4	3	-	6	1	32	109	171
Total	9	3	4	4	3	-	6	1	33	156	219

	100-B Area	100-D 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
Radiological Sciences Department											
Exempt	1	-	43	-	-	-	2	17	58	12	133
Other	6	-	38	-	-	-	5	17	152	17	235
Total	7	-	81	-	-	-	7	34	210	29	368
Medical Department											
Exempt	-	-	-	-	-	-	-	-	-	39	39
Other	1	4	4	1	-	-	1	6	2	196	215
Total	1	4	4	1	-	-	1	6	2	235	254
General											
Exempt	-	-	-	-	-	-	-	1	2	12	15
Other	-	-	-	-	-	-	-	-	13	18	31
Total	-	-	-	-	-	-	-	1	15	30	46
Total Exempt	139	133	100	86	29	32	73	405	423	829	2 249
Total Other	346	384	522	272	51	41	236	1 336	927	2 326	6 441
Grand Total	485	517	622	358	80	73	309	1 741	1 350	3 155	8 690

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MANUFACTURING DEPARTMENT

JUNE, 1953

July 13, 1953

METAL PREPARATION SECTION

The net production for the month was 159 tons which was 97.5 percent of forecast. The below forecast production is due to the complete reorganization of the work force brought about by the establishment of new seniority groupings in this operation. The month's production included 122 tons of 8-inch material and 37 tons of the 4-inch. The overall canning yield for the 8-inch slugs was 69.2 percent and 67.6 percent for the 4-inch. The yield for the 8-inch material decreased somewhat during June due principally to increase in braze line and AlSi type rejects. However, the yield for the 4-inch slugs improved by some 30 percent because of the large decrease in corrosion type rejects of the now obsolete cans.

The melt plant produced 32 tons of billets with a yield of 87.4 percent and a solid yield of 97.3 percent.

There were no autoclave failures during the month.

The chip recovery operation processed the last batch of production material on June 2, 1953.

The production requirements for the present P-10 program were completed during the month. The month's production of the enriched fuel slugs had a yield of 95 percent and the yield for the lithium alloy target slugs was 88 percent.

REACTOR SECTION

The total reactor input production for plutonium was 105 percent of the forecast, while the output production was 102 percent of forecast. The output production for the month exceeded the record set last month.

The production forecast was exceeded primarily by the improvement of the operating levels. These higher levels more than offset the production loss which resulted from the rescheduling (July to June) of the outage for the F reactor. The outage of this pile was due to replacement of the process tube thermocouples and the reworking of parts of the Ball 3X installation and extended from June 7 to June 20.

Increases in established maximum operating levels were 20 MW at C reactor (includes 10 MW of C metal burnout) and 10 MW at D reactor.

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REACTOR SECTION (Continued)

There was one regular uranium slug rupture during the month. This was a Group 9 slug and occurred at the C reactor with a total outage time of 25.2 hours. Other ruptures that occurred during the month were one KAPL receptacle slug at B pile and one "C" metal piece at the H pile. The total outage time chargeable to these two additional ruptures was 26.5 hours.

A total of 17 scrams were experienced during the month, fourteen of which were due to premature panellit trips. One scram at H pile was caused by the plugging of a cone screen on a production test tube.

SEPARATIONS SECTION

A total of 38 runs was started in the T Canyon Building and the production was 282 percent of the forecast. The production from this facility was accelerated to offset the low Redox production. The Redox production was 80 percent of forecast. Overall production commitments for the quarter were exceeded.

The Redox plant operated at a record average rate of 5.1 tons per day while operating and the daily production rate was 3.4 tons, with an efficiency of 66 percent. The plant was shut down June 1-9 to allow vessel flushing, replacement of the D-12 waste concentrator pot, column decontamination, and replacement of 1S, 1B, and 2A columns with those columns as required for Phase I and/or Phase II rates. The plant was able to maintain a 6 ton per day rate by June 21, but only after overcoming such difficulties as jet plugging in metal solution preparation and foaming in the D-4 condensate evaporator. On June 23, due to abnormal operations in the metal solution preparation it became necessary due to high gamma activity in the uranium product to resume a three uranium cycle operation.

The TBP plant produced a net of 255.4 tons of UNH which was 107 percent of forecast. The plant operated at a record average rate of 10.1 tons per day for the month with a 93.2 percent efficiency, thus giving an average daily production of 8.5 tons.

Line rates varied due to feed concentration, erratic decontamination and waste loss performance. The maximum rates for the month were: A-line 7.2 tons per day and B-line 6.5 tons per day.

Dual scrub system was installed on both RA columns to lower the nitric concentration of the uranium product. The outage time for this installation was 77 hours.

The UO_3 plant operated normally with a production of 323 tons which was 107 percent of forecast.

During the month, 15 tons of Redox UNH was delivered to 321 Building for use by the Technical group, which reduced the potential UO_3 production correspondingly. Ten carloads of powder (331 tons) was shipped offsite representing a new record.

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SEPARATIONS SECTION (Continued)

The month's commitment of the 234-5 operation exceeded the forecast by 8 percent.

The sluicing operations continued with good results in all tank farms. Tanks 101-B, 101-C, 104-U were declared empty during the month.

GENERAL

Effective June 1, T. W. Hauff was assigned functional responsibilities in connection with Manufacturing Radiation Monitoring activities. These duties parallel his previous Process responsibilities.

Personnel

Total on roll June 1, 1953	3301
Accessions	39*
Separations	33*
Total on roll June 30, 1953	3307

*Does not include intra-department transfers.

C. N. Gross

C. N. GROSS, MANAGER

MANUFACTURING DEPARTMENT

[redacted]

MANUFACTURING DEPARTMENT

PATENT REPORT SUMMARY
FOR
MONTH OF JUNE, 1953

Richland, Washington
July 13, 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
R. D. Schilling, Reactor Section	Poison Column Control Facility

C. N. GROSS, MANAGER

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*Correction

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Richland, Washington
July 10, 1953

MANUFACTURING DEPARTMENT
METAL PREPARATION SECTION
JUNE, 1953

I. RESPONSIBILITY

Responsibilities of the Section remained unchanged.

II. ACHIEVEMENT

A. Operating Experience

1. Statistics

	June	May	Year to Date
Bare Pieces Machined (4")(Tons)	0	3	52
Machining Yield (4")(%)	0	68.2	81.6
Bare Pieces Machined (8")(Tons)	0	42	460
Machining Yield (8")(%)	0	81.5	82.2
Total Pieces Machined (Tons)	0	45	512
Acceptable Pieces Canned (4")(Tons) Gross	37	7	141
Acceptable Pieces Canned (4")(Tons) Net	37	7	138
Canning Yield (4")(%)	67.6	35.9	64.0
Acceptable Pieces Canned (8")(Tons) Gross	124	160	834
Acceptable Pieces Canned (8")(Tons) Net	122	159	824
Canning Yield (8")(%)	69.2	71.3	69.8

1. Statistics (Continued)

	June	May	Year To Date
Total Acceptable Pieces Canned (Tons) Gross	161	167	975
Total Acceptable Pieces Canned (Tons) Net	159	166	962
Acceptable Pieces Canned (4" and 8") (% of forecast)	98	106	103
Autoclave Frequency (4")(No./M)	.00	.14	.03
Autoclave Frequency (8")(No./M)	.00	.07	.02
Briquettes Produced (Tons)	1	13	85
Chip Recovery Yield (%)	19.4	87.1	84.8
Billets Produced (Tons)	32	31	287
Melt Plant Billet Yield (%)	87.4	87.5	85.9
Melt Plant Solid Yield (%)	97.3	95.9	95.9
Oxide Burned (Weight out Tons)	3	3	31
Poison Canned (Number Pieces)	0	0	4450
Chemical 68-56 Canned (Number Pieces)	0	0	0
Chemical 10-66 Canned (Number Pieces)	0	0	1449
"J" Slugs Canned (Number Pieces)	3441	2709	12104
"N" Slugs Canned (Number Pieces)	4760	3503	14008
Special Requests (Man Hours)	1233	2384	9074
305 Routine Tests (Man Hours)	92	127	789
305 Special Tests (Man Hours)	1458	1634	6919
Average Steam Generated (M lbs/hr.)	16.8	20.3	
Maximum Steam Generated (M lbs/hr.)	43.0	30.0	
Total Steam Generated (M lbs.)	12300	15200	
Coal Consumed (Tons)	867	1023	
Sanitary Water from 3000 Area (Million gallons)	38.7	41.4	
Total Water Average Rate (gpm)	896	926	
Chlorine Residual (ppm)	.42	.40	

2. Activities

The net production of acceptable slugs was 159 tons of which 77% were eight inch. The yield for eight inch slugs decreased 2% from the previous month primarily as a result of increases in braze line and AlSi type rejects. The yield for four inch slugs improved 32% as a result of a large decrease in corrosion type rejects which during the previous month had been attributed to the use of Scoville cans.

Rejects which are directly attributable to the canning operation reached a new low for the month. The yields from the canning pot lines were 96.2% for four inch and 93.6% for eight inch slugs.

There were no autoclave failures during the month.

The 305 test pile returned to one shift operation on June 22, 1953 as a result of reduced work load from the P-10 program.

The chip recovery operation was shut down on June 17, 1953.

2. Activities (Continued)

The melt plant solid yield increased slightly and the billet yield remained at the same high level. It is planned that the melt plant will shut down in mid-July.

In an effort to reduce the incidence of poor bond rejects, small amounts of aluminum additions were made to the tin bath after each truck had been canned. This test was run on one line over a five day period in comparison with another line using normal procedures. An approximate reduction of 50% in poor bond rejects was realized by this change. Additional work along this line is in progress.

Process Standards covering complete slug processing in 313 Building have now been completed, including component preparation. Standards covering slug recovery are now in preparation.

3. Special Operations

The drilling of holes in exponential test slugs for the Engineering Department continued during the month.

A total of 3441 acceptable enriched uranium-aluminum alloy fuel slugs were canned with an overall canning yield of 95%. Also included were 172 extruded type alloy fuel slugs which were canned with some difficulty because of the greater hardness of this material.

A total of 4760 acceptable lithium-aluminum alloy target slugs were canned with an overall yield of 88%.

To date, 12,038 fuel slugs and 12,476 target slugs have been delivered to the Reactor Section. This completes the production requirements for the current P-10 program; however, additional slugs will be canned to replace inpile slug failures and the P-10 alloy target slugs received from Reactor which were being used for pile flattening.

4. Schedule Variance

Canning production was 98% of forecast. Operator reclassification with the resultant training problems made it impossible to relieve the canning lines for lunch and break periods. Slug production was also adversely affected by a larger proportion of four inch material canned than was scheduled.

B. Equipment Experience

1. Operating Continuity

Electrical service to the area was interrupted for four hours on June 13 while changes were made in the electrical distribution system. No production was lost as no production overtime was scheduled for that Saturday.

B. Equipment Experience (Continued)

2. Inspections, Maintenance and Replacements

Number 1 boiler in the 384 building power house was given a "Class A" overhaul. Number 1 and Number 5 boilers were inspected and approved by the State Boiler Inspector on June 23, 1953.

C. Improvement Experience

1. Production Tests

PT-313-105-10M "Fabrication and Irradiation of Triple Dip Slugs Canned in an AlSi Bath with Impurity Level Above Normal" (HW-26860). Fabrication and testing of this material was completed in April. Shipment is awaiting completion of examination of control pieces in Reactor. Destructive tests and radiographic examination have indicated that the material was comparable to normal triple dipped slugs.

PT-313-105-14M "In-pile Evaluation of 63S Aluminum Process Tubes and Jacketed Slugs" (HW-27204). The first group of slugs canned on this test has been shipped to Reactor and charged into the piles. Two groups of slugs of about 200 each are to be canned in the future for this test.

PT-313-105-15M "Fabrication and Irradiation of 4-inch Triple-Dip Sleeveless Canned Slugs" (HW-26797). Since only about 300 acceptable slugs were obtained on this test out of an anticipated 1100, the Engineering Department is considering a revision of the test to make possible the acceptance of some of the border-line non-seat rejects. Fabrication and testing was completed in April.

PT-313-105-16M "Evaluation of Diversy 514 as an Etchant in the Aluminum Component Cleaning Process" (HW-27550). This test which was completed at the end of May indicated this etchant to be satisfactory. It is superior to phosphoric acid in that it is lower in cost, less dangerous to handle and provides a roughened surface which is easily wet by the molten AlSi. Diversy 514 also has indicator contained in it which shows when the solution is exhausted. A Process Specification revision to include the use of this etch has been proposed for approval of the Engineering Department.

PT-313-105-17M "Irradiation of 63S Aluminum Jacketed Slugs" (HW-27205). Slugs fabricated on the test thus far have been charged into the piles. Further canning on this test is pending delivery of 63S cans and caps.

PT-313-105-18M "Irradiation of Ultrasonically Tested Salt Bath Heat Treated Alpha Rolled Uranium Slugs" (HW-26759). Testing is complete and a total of 5824 four inch and 244 eight inch slugs remain to be shipped to the Reactor Section.

1. Production Tests (Continued)

PT-313-105-19M "Irradiation of Triple Dip Canned Uranium Slugs from Rods Rolled at Fernald (HW-26851). Canning is about 75% complete on this test. Yields on this material have been comparable to normal production.

2. Process Tests and Revisions

MMP-313-2 "Cap Boss as Facing Index". Caps with special bosses, coated to prevent wetting by AlSi, were used as a facing index instead of the marking fluoroscope. Results were encouraging and further work on this technique is planned.

The re-use of nitric acid from the slug pickle operation in the slug recovery process will result in an estimated yearly savings of $4500.

3. Inventions and Discoveries

Personnel in the Metal Preparation Section engaged in work which could be expected to result in inventions or discoveries advise that to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during the period covered by this report.

D. Events Influencing Costs

1. Labor Variance

No significant change.

2. Material Variance

The cost of process materials used in June increased slightly over the May experience. In May the cost was abnormally low as a result of a reduction of the in-process inventory of canned slugs.

3. Other

Other costs also increased slightly over the previous month. This variance is attributed to maintenance costs being unusually low in May, coupled with a substantial amount of special canning which shared a larger part of the indirect expense carried by a normal slug production.

E. Plant Development and Expansion

1. Project Status

Project CG-481 - "Equipment for 8" Slug Manufacture". This project was formally accepted last month and physical completion notice was issued on June 1, 1953.

1. Project Status (Continued)

Project CA-514 "Expansion of 300 Area Production Facilities". The total authorized funds ($600,000) for AE and AEM functions to be performed by the General Electric Company remained unchanged during the past month.

Scoping of the 313 production facilities is complete, detailed design 39% and construction work 2.5% complete. Work was started by the contractor on June 7, 1953. The survey work for building layout has been completed and excavation for building footings, foundation and railroad spur is in progress.

Construction of the new operations change house is about 47% complete. The foundation has been completed and work is progressing on building frame and roof.

IR-135 - "Low Frequency Induction Furnace". The physical completion notice was issued June 8, 1953.

2. Plant Engineering

Work was continued during the month on a review of operating labor and material standards. The standard for aluminum silicon consumption is being revised to reflect the substantial reductions in usage being realized from revised furnace bailing procedures and the application of agitators on the AlSi dip furnaces. Studies indicate that the consumption of aluminum silicon has been reduced approximately 50%.

Tentative IME standards have been established on the basis of past actual costs and estimated effect of increased production on future costs.

An economic study was made to determine if the use of the remaining inventory of 29,925 Scoville 4" aluminum cans could be justified. Based on the abnormally low canning yields which resulted from using these cans, it was indicated that the cost of reprocessing canning rejects would approximate $21,000 or $15,000 more than it would cost to excess them.

A study is being made of current SF accountability procedures, directed toward reducing duplication of records and minimizing the amount of clerical work involved.

A proposed metal container for the shipping and storage of bare slugs was fabricated and is currently being evaluated from the standpoint of loading and unloading features. This type of container will be compared with the disposable type wood containers now being supplied by Fernald.

F. Significant Reports

1. Routine

Number	Title	Author	Date
HW-28202	Metal Preparation Section Evaluation of FMPC Material, April-May, 1953.	S. M. Gill	6-5-53
HW-28203	Monthly Report, Process Sub-Section Metal Preparation Section, May, 1953	E. W. O'Rorke	6-1-53

2. Non-Routine

HW-28400	Interim Report Number 3 on P-10 Slug Production, June 1, 1953	H. G. Henry	6-1-53
HW-28332	Effect of Canning Bath Usage on the Non-Seat Reject Rate	C. H. Pitt	6-9-53
HW-28429	Lithium-Aluminum Alloy Sample Exchange Program Results to Date	E. W. O'Rorke	6-15-53
HW-28547	Turned Contour Slugs	E. W. O'Rorke	6-24-53
HW-28282	Removal of the Compound Layer from Decanned Hanford Uranium Slugs by the Use of Sodium Hydroxide	H. L. Brandt	5-15-53

III. PERSONNEL

A. Organization

No change

B. Force Summary

	Start of Month	End of Month	Net Change
Section General	4	4	0
Operations	210	208	- 2
Power and Maintenance	246	252	6
Process	29	29	0
Plant Engineering	19	21	2
Radiation Monitoring	3	3	0
Section Total	511	517	6

C. Safety Experience

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

D. Radiation Experience

No exposures in excess of 300 mrep per week were reported during the month although discontinuance of operator assignment rotation increased potential hazards at certain operating stations.

E. Personnel Activities

1. Visits and Visitors

L. T. Hagie visited the Savannah River Plant to discuss quality control problems.

Richland, Washington
July 10, 1953

MANUFACTURING DEPARTMENT
REACTOR SECTION
JUNE, 1953

I. RESPONSIBILITY

Responsibilities assigned to the Reactor Section were not changed during June.

II. ACHIEVEMENT

A. Operating Experience

The total reactor input production for plutonium during June was 105.1 percent of forecast. This was a new per diem production record being 1.5% above the record established in May. Total plutonium production for June was 1.8% lower than for May, a 31 day month. Forecast was exceeded primarily due to improvements in operating levels during recent months. These higher levels more than offset the production loss which resulted from the rescheduling of the F Reactor thermocouple replacement and Ball 3X rework outage from July to June.

Reactor output production (Pu) was 102.2 percent of forecast.

Increases in established maximum operating levels during June were 20 MW at C Reactor (maximum level included 10 MW of "C" metal burnout) and 10 MW at D Reactor.

An outage of F Reactor was begun on June 7 to replace the process tube outlet thermocouples and to rework parts of the Ball 3X installation. This work was successfully completed and operation resumed on June 20.

A. Operating Experience (Continued)

There was one regular (8 inch, group 9) slug failure at C Reactor during June. In addition, there was one "C" metal slug failure at H Reactor and one KAPL-113 receptacle slug (PT-105-537-SR) failure at B Reactor. Total outage time for ruptured slug removal was 51.7 hours, including 26.5 hours for the "C" metal and KAPL slugs.

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

1. Statistics

	B	C	D	DR	F	H	Total or Average
Reactor Time Operated							
Efficiency (%)	88.9	87.7	89.2	94.5	54.9	87.6	83.8
Reactor Outage Time (Hrs.)							
Plutonium Production	49.9	50.9	38.6	36.2	324.8	19.9	520.3
Special Irradiations and Tests	30.1	37.7	39.5	3.5	-	69.1	179.9
Total	80.0	88.6	78.1	39.7	324.8	89.0	700.2
Reactor Unscheduled Outage Time (Hrs.)	25.5	25.8	-	0.6	-	24.2	76.1
Metal Discharged (Tons)	30.42	39.30	27.32	42.65	19.52	28.86	188.07
Water Quality (ppm Iron)							
Raw Water Average	0.25	0.19	0.21	0.35	0.15	0.25	-
Raw Water - Maximum	0.48	0.52	0.62	0.69	0.24*	0.61	-
Process Water - Average	0.014	0.008	0.006	0.006	0.008	0.011	-
Process Water - Maximum	0.025	0.018	0.015	0.015	0.018	0.020	-
Water Pumped (MM gals.)							
Bldg. 190 to reactor	1508	2951	1855	1720	1084	1983	11 101
Bldg. 182 to 200 Areas	395	-	-	-	-	-	395
Bldg. 181	5550		4348		1257	2349	13 504
Steam Generated (MM lbs.)	130		213		80	97	520
Coal Consumed (Tons)	7886		13 861		5206	6602	33 555

*F Reactor shutdown during period of highest iron content.

2. Activities

A scheduled outage of F Reactor was begun on June 7 for replacement of the rear face thermocouples and modification of the Ball 3X hopper and step plug assemblies; the latter was necessary to prevent binding and marring of the vertical rods. Reactor Section forces successfully performed this work during the period extending to June 20 when operation of the reactor was resumed. Other work performed during the outage included replacement of No. 6 horizontal rod thimble and track, replacement of eight 2-1/2 inch crossheader by-pass valves, and installation of a new "D" test hole assembly.

b. Redox Operations

	June	May
Equivalent charges started	148	144.9
Charges completed	136.4	159.4
Tons Uranium delivered to storage	102.9	118.5
Average Production Rate per operating day, Tons	5.1	4.5
Average Daily Operating Rate for the month, Tons	3.4	3.8
Average Yield, %		
Uranium	98.8	98.9
Plutonium	100.7	97.7
Total Waste Loss, %		
Uranium	0.98	0.72
Plutonium	1.05	1.98
Average cooling time, days	80	82
Minimum cooling time, days	73	75
Percent down time	33	15

d. UO_3 Operations

	June	May	To Date
Uranium drummed, Tons	323	319	2634
Uranium shipped, Tons	331	294	2583
Average cooling time, days (Redox)	92	91	
Minimum cooling time, days (Redox)	81	86	
Waste loss, %	1.19	1.00	

e. TBP Operations

	June	May	To Date
Tons received from Metal Removal	277	235	1471
Tons shipped to UO_3 Plant	255.4	218	1370
Average Production Rate per operating day, Tons	10.10	7.45	
Average Daily Operating Rate for the month, Tons	8.51	7.10	

2. Activities (Continued)

A panellit scram occurred at H Reactor on June 9 when the cone screen on the recirculation process tube (PT-105-506-E) became partially plugged. The tube pressure was increased and reactor operation was resumed after 0.3 hour of outage but another shutdown was necessary for further investigation of the flow reduction in the tube. The cone screen was found to be partially plugged and the outage was continued for 41.6 hours to clean the screen and to replace twelve process tubes as authorized by PT-105-313-14-M (In Pile Evaluation of 63S Aluminum Process Tubes and Slugs).

Six tubes of B material which were causing surrounding tubes to limit power level were discharged during the month at B and DR Reactors. The material is being held in the storage basins due to cancellation of the July and August shipment from Hanford (letter of D. G. Sturges to J. E. Maider, June 3, 1953).

Several low voltage surges occurred on the electrical distribution system on June 15, due to difficulties on the BPA system. Three pumps at Building 181-C tripped out and the process water flow in Building 190-C decreased 5,000 gpm momentarily, but without scramming the reactor. Other reactor facilities were not affected.

The following tabulation indicates activities during June associated with special irradiations other than the P-10 program noted above.

	Tubes Charged	Tubes Discharged	Casks Shipped
Chemical 10-66	12	5	0
Chemical 72-60	0	6	0
RALA	0	7	2
Production Tests	58	22	3
Total	70	40	5

B. Equipment Experience

During June, 17 reactor scrams occurred. Fifteen of these were panellit scrams, one of which was caused by a plugged cone screen on recirculation tube 0961-H. A scram was caused at H Reactor by a faulty switch on the P-13 facility power transformer and a Beckman scram at DR Reactor was caused by a surge on the regulated voltage circuit. The total reactor outage time for these scrams was 7.5 hours.

B. Equipment Experience (Continued)

During a startup at H Reactor, a relay failed which would have resulted in dropping 3X balls into all vertical safety rod wells if the water pressure trip circuit had not been by-passed.

Attempts during the month to replace No. 2 horizontal rod thimble at B Reactor, previously reported as having a leaking thimble, were unsuccessful due to an obstruction in the channel. Further investigation is planned for the next outage.

At D Reactor the effluent water was diverted to the Building 107-DR retention basin to permit repairs to be made to the effluent line. Back pressure in the D Reactor effluent line, resulting from the indirect effluent route, apparently caused an underground water leak, presumed to be in the underground vent line from the cushion chamber corridor. The flow was returned to the Building 107-D retention basin and investigation of the water leak was in progress at month end.

Chimney inspections made at Buildings 184-F and 184-D by representatives of Custodis Construction, Incorporated, of Chicago, revealed extensive cracking and pitting. As a result, thorough inspections will be made of the six oldest 100 Area Building 184 chimneys to further evaluate the scope of future maintenance.

A representative of Traveler's Insurance Company inspected and certified one boiler in each 100 Area and approximately 40 percent of the unfired pressure vessels in the 100 Area Power buildings.

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)
Satisfactory water treatment conditions were experienced throughout the month; however, an increased amount of sludge was observed in the subsidence basins at Building 183-D. The absence of chlorine in the south basin at Building 183-DR, as authorized by Supplement A of this test, permitted some sludge to decompose and release a gas having a strong odor.

PT-105-519-E (Raising Permissible Outlet Water Temperature of Selected Tubes at "C" Pile)
Nine process tubes at C Reactor were replaced with small annulus tubes (older reactor tubes). It is planned to operate these tubes with outlet temperatures up to 105° C to investigate corrosion rates at elevated temperatures.

C. Improvement Experience (Continued)

PT-105-531-A (Enrichment at H Pile)
Two tubes of "C" metal were discharged during the month due to indications of slug failures. However, inspection revealed a leak in the weld of only one slug. The number of "C" metal tubes in H Reactor remains at 48.

PT-105-533-A (Local Controlled Increase in C Pile Tube Powers)
Operation of C Reactor in accordance with this test continued during June. During the early part of the month the established maximum level was increased 20 MW. However, following a discharge of metal which affected the flattening, severe temperature cycling was experienced which necessitated an appreciable reduction in power levels.

PT-MR-105-7 (The Effect of the Iron Content of Process Water Produced by the Ferric Sulfate Process on Over-all Economics of Pile Operation at 100-H Area)
Because of excessive film formation in process tubes, revisions in water iron content specifications were necessary during the month which, in effect, removed the differential in specifications for the two halves of the H Water Plant as provided in Supplement A of this test.

PT-MR-105-10 (Filter Capacity Test - 100-B Area)
Supplement A of this test was started June 24 when four filters began operation at a flow rate of 6,000 gpm per filter. These filters have been producing acceptable quality water on eight-hour runs.

PT-MR-105-13 (Determination of the Value of Zinc Extensions in Preventing Stuck Nozzle Inserts)
Test inserts were installed at B Reactor on June 16 to study the effect of zinc extensions on corrosion.

Seven revised Reactor Operating Standards were approved during June. A listing of these changes is contained in document HW-28593.

The report of invention indicated below was submitted during June.

Inventor	Invention
R. D. Schilling	Poison Column Control Facility.

D. Events Influencing Costs

The cost of coal consumed decreased approximately $20,000 during June compared with May primarily due to the F Reactor outage, the shorter month and warmer temperatures.

D. Events Influencing Costs (Continued)

The excessing and removal of equipment from the old warehouse at 100-D Area, Building 1729-D, was completed. Also, a reduction of landlord expense was effected by placing a number of unused buildings on a standby basis, thus eliminating the need for supplying building services and routine maintenance.

The continued high production and less unusual maintenance for June is expected to result in a decrease of approximately 10 percent in Reactor Section irradiation unit cost.

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 Reactor Section Projects, Informal Requests and Budget Items", F. A. R. Stainken to E. P. Lee, dated June 19, 1953.

CA-431 (100-C Plant)
Minor Construction forces continued, through the month, the installation of the automatic back-wash system at Building 183-C and began work on the remote control system for the Building 181-C river pumps to be operated from the Building 181-C Control Room. Funds for completion of the remaining work at 100-C Plant by Minor Construction forces have been authorized by the AEC.

CG-438 (Ball 3X Facilities for B, D, F, DR and H Piles)
All major modification of the Ball 3X system at 100-F Reactor was successfully completed during an outage between June 7 and June 20.

Examination of B Reactor VSR channels revealed a number of boron steel balls lodged between vertical channel liners. Use of the magnetic ball retriever should make possible recovery of most of these balls which currently are causing some loss of reactivity.

CG-495 (Outlet Tube Temperature Monitoring Thermocouple Replacement - 105-B, D, F and DR)
Outlet tube thermocouples were replaced at 100-F Reactor during an outage between June 7 and June 20. This essentially completes work at all reactors on this project.

CA-512 (100-K Facilities)
Reactor design is approximately 91 percent complete and Water Plant design 71 percent. Over-all project construction is estimated at 17 percent. At KW Reactor, the major shielding walls are essentially complete and some regular walls and

1. Project Status (Continued)

floors have been poured. Major shielding walls at KE Reactor have been poured up to a maximum of 32 feet.

CG-498 (Earthquake Detectors for 100-B, D, F, DR and H)
This project was completed during the month. The Seismoscope at B Reactor was placed on the automatic scram circuit on June 30. Seismoscopes at the other reactors will be placed on the scram circuit July 1.

2. Plant Engineering

A number of engineering and development studies were active in the Reactor Section during June. The studies are, in general, aimed at decreasing costs and/or increasing production. Details are given in documents HW-28571 and HW-28593. Several items of interest are reported below.

Work on the study of boiler performance in the 100 Areas consisted of calibrating meters in B, D, and F Areas, and a burning test at D Area.

A study to define limiting factors in 100-B, D, F and H Areas for process water flow rates was continued.

A test was performed which indicated that vapor formation in the reactor water sampling system hold-up chambers may reduce sample line water flows at a rate of about 100 cc per minute per day. Flow reductions of this magnitude could account for many of the difficulties with the present monitoring system. Two different devices for separating entrapped gases are being tested.

F. Significant Reports

1. Routine

Monthly operating reports issued for May were:

HW-28267-A	Reactor Section	EP Lee	6-10-53
HW-28269	Operations Sub-Section	JH Warren	6-3-53
HW-28261	Process Sub-Section	RO Mehann	6-1-53
HW-28233	Plant Engineering Sub-Section	FAR Stainken	6-1-53
HW-28273	Radiation Monitoring Sub-Section	PC Jerman	6-3-53
-	Maintenance Sub-Section	EE Weyerts	6-3-53
-	Power Sub-Section	JC McLaughlin	6-2-53

Other routine reports issued during June were:

HW-28246	"Slug Jacket Failures During May, 1953".	DL DeNeal	6-10-53
HW-28265	"Production Summary - May, 1953".	ET O'Sullivan	6-4-53

1. Routine (Continued)

HW-28511	"Monthly Progress Report, Reactor Section Contact Engineering Expansion Unit, Projects CA-431 and CA-512".	HT Wells	6-25-53
HW-28274	"Reactor Section, Radiation Monitoring Tech. Report for May, 1953".	PC Jerman	6-3-53
HW-28441	"Reactor Process Committee Meeting, June 16, 1953".	RO Mehann	6-17-53

2. Non-Routine

HW-28296	"P-10-A Slug Requirements for Next Twelve Months".	RO Mehann	6-3-53
HW-28241	"Method for Predicting the Maximum Scram recovery Power Level on a New Reactor".	AP Vinther	6-1-53
HW-28353	"Process Test MR-105-8, Supp. A - Discharge of Ruptured Slugs Within Allowable Scram Recovery Time".	GO Amy	6-15-53
HW-28079	"Process Test MR-105-10 - Supp. A - Filter Capacity Test - 100-B Area".	WR Conley	5-15-53
HW-27950	"Process Test MR-105-13 - Determination of the Value of Zinc Insert Extensions in Preventing Sticking Front Nozzle Inserts".	AK Hardin	6-4-53
HW-28335	"Process Test MR-105-14 - Unit Cost Reduction by the Use of Supplemental Orifices".	JE Robb	6-10-53
HW-28298	"Six Months Post Acceptance Report, Project CG-475, Crossheader Pressure Monitoring, 105-B, D, DR, F and H".	EP Lee	6-5-53
-	"Project CA-512-W - Report on Test of Model Secondary Process Water Pump".	JP Langan WJ Love CF Quackenbush	6-22-53
-	"Heating Coils - Building Ventilation Systems, 100 Areas".	FAR Stainken	6-1-53
HW-28445	"Capacity Test of Building 181 Electric Pumps - 100-B Area".	HG Harder	6-15-53
HW-28558	"Capacity Test of Building 190 Pump Unit - 100-B and 100-F Areas".	JC McLaughlin GW Wells	6-26-53

III PERSONNEL

A. Organization

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

Effective June 10, the organization of Mechanical Unit was modified so that each General Foreman now has complete responsibility for all mechanical

A. Organization (Continued)

maintenance work in one of the four 100 Areas. Under the previous arrangement one General Foreman was responsible for maintenance of reactor or power facilities in two 100 Areas.

B. Force Summary

	Beginning of Month	End of Month	Net Change
Section General	3	3	0
Operations	267	266	- 1
Maintenance	444	446	2
Plant Engineering	26	26	0
Power	416	417	1
Process	39	39	0
Radiation Monitoring	60	61	1
SECTION TOTAL	1255	1258	3

Changes during June consisted of 4 terminations, 5 new hires, 3 deactivations, 1 reactivation, 5 transfers out, and 9 transfers into the Section.

C. Safety Experience

No Major or Sub-Major Injuries occurred in the Reactor Section during June.

Two Near-Serious Accidents, Nos. 53-14 and 53-15, were investigated during the month. The former occurred when maintenance work was performed on a Drier Room motor at Building 115-D which was erroneously believed to have been locked out. In the latter incident, a welder received an eye laceration when struck by a piece of slag chipped from a weld.

The Reactor Section Supervisor Safety Training Program, begun in January, 1953, was concluded during June. Ninety-eight percent of the Section's exempt employees participated in this program.

D. Radiation Experience

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

The previously reported difficulty with high effluent water activity continued during early June. The maximum 24-hour dosage was 482 mrep at DR Reactor. However, by month end, the 24-hour dose limit was being exceeded only occasionally indicating subsidence of the manganese component in the effluent water.

D. Radiation Experience (Continued)

As the result of a study to control the over-all radiation hazard practices of the Section, the use of a "Permit Authorization Card" was started which gives closer control over entries into radiation zones.

The revised 100 Areas Master Evacuation Plan, issued during May, became effective June 1, 1953.

E. Personnel Activities

At month end, 19 employees are receiving on-the-job training for engineering or supervisory assignments in the Section; 14 of these are on assignment under the Rotational Training Program.

Major emphasis on employee communication was continued during June. Five meetings were attended by groups of approximately 50 exempt employees; one meeting on the new General Electric - HAMTC Contract, one on Radiological Sciences Department activities and three on technical engineering subjects. Four more meetings in the previously reported series of eight weekly meetings for Section non-exempt employees was held in which the expansion program and production activities were discussed.

On June 6, J. P. Langan visited the Plant of Bingham Pump Co., Portland, to observe testing of a secondary pump model for Building 190-K.

C. B. Wagner presented a paper on the subject "Maintenance Problems with Reactor Auxiliaries and Instruments", at the American Institute of Electrical Engineers' conference at Atlantic City on June 17.

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HW-28576

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Richland, Washington
July 10, 1953

MANUFACTURING DEPARTMENT
SEPARATIONS SECTION
JUNE, 1953

I. RESPONSIBILITY

The Separations Section has released landlord responsibility for Building 272-East and the Spare Parts Warehouse to AEC for reassignment to Blaw Knox Construction Company.

II. ACHIEVEMENT

A. Operating Experience

1. Statistics

a. Bismuth Phosphate Operations

	June		May	
	Normal	Acid Wash	Normal	Acid Wash
Charges started in Canyon Bldgs.	38	0	17	1
Charges completed in Conc. Bldgs.	40	0	15	1
Special charges - Conc. Bldgs.	24		35	
Charges completed - Isolation Bldg.	162	0	149	1
Average Waste Losses, %	2.2		2.1	
Special charges - Isolation Bldg	73		65	
Material balance, %	99.7		104.9	
Yield through Process, %	97.5		102.8	
Average cooling time (days)	65		66	
Minimum cooling time (days)	55		56	

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b. Redox Operations

	June	May
Equivalent charges started	148	144.9
Charges completed	136.4	159.4
Tons Uranium delivered to storage	102.9	118.5
Average Production Rate per operating day, Tons	5.1	4.5
Average Daily Operating Rate for the month, Tons	3.4	3.8
Average Yield, %		
Uranium	98.8	98.9
Plutonium	100.7	97.7
Total Waste Loss, %		
Uranium	0.98	0.72
Plutonium	1.05	1.98
Average cooling time, days	80	82
Minimum cooling time, days	73	75
Percent down time	33	15

d. UO_3 Operations

	June	May	To Date
Uranium drummed, Tons	323	319	2634
Uranium shipped, Tons	331	294	2583
Average cooling time, days (Redox)	92	91	
Minimum cooling time, days (Redox)	81	86	
Waste loss, %	1.19	1.00	

e. TBP Operations

	June	May	To Date
Tons received from Metal Removal	277	235	1471
Tons shipped to UO_3 Plant	255.4	218	1370
Average Production Rate per operating day, Tons	10.10	7.45	
Average Daily Operating Rate for the month, Tons	8.51	7.10	

e. TBP Operations (Continued)

	June	May
Average yield, %	93.77	92.74
Total Waste Loss, %	4.36	3.45
Ratio Waste Volume returned to Volume removed	1.24	1.14
Percent Down Time	7.8	4.8

f. Power

	200 East	200 West
Raw water pumped, gpm	1 508	7 671
Filtered water pumped, gpm	578	1 096
Steam generated, lbs/hr	29 568	172 656
Maximum steam generated, lbs/hr	50 000	245 000
Total steam generated, M lbs.	21 999	128 456
Coal consumed, tons (est.)	1 450	8 949

g. Waste Storage

	Equivalent Tons U
Metal Waste reserve storage capacity - T Plant	120
1st Cycle reserve storage capacity - T Plant	333
Metal Waste reserve storage capacity - B Plant	145
1st Cycle reserve storage capacity - B Plant	0
Redox Waste reserve storage capacity	735

2. Activities

a. Redox Processing

The Redox plant operated at an average rate of 5.1 tons per day at 67% efficiency. The plant was shut down until June 9 to allow for vessel flushing, column decontamination, and replacement of 1S, 1B, and 2A columns with those required for Phase I rates. The third dissolver was activated on June 12 to insure an adequate feed supply for higher production rates. The plant did not attain the 6 ton per day Phase I rate until June 21 due to limited feed supplies resulting from jetting difficulties in metal solution preparation, and severe foaming in the D-4 condensate evaporator at the higher rates. The second uranium cycle was by-passed shortly after start-up, and operations continued on two uranium and three plutonium cycles until June 23, when abnormal operations in metal solution preparation caused an increase in the gamma activity of the uranium product and dictated a return to three uranium cycles. Nine batches of uranium product did not meet the gamma specification and are being stored pending further treatment in the TBP plant or blending with low gamma material currently being produced.

b. TBP Processing

Production averaged 8.5 tons per day with rates being dependent on feed concentration, decontamination performance, and waste losses. Some abnormally high waste losses (ca. 10% of RAF) were experienced in mid-June and were primarily attributed to low uranium and high phosphate and sulfate content of certain feed batches. Decontamination was generally satisfactory throughout the month at both low and high rates. Dual scrub systems were installed on both RA columns, and this has resulted in lowering the nitric concentration of the uranium product by ca. 50%. Operation of the dual scrubs has been without incident except for a tendency of the RAIS system to air lock at the lower flow rates.

c. UO_3 Processing

Plant operations were normal and production was essentially current with feed supplied by Redox and TBP plants. Lowering the nitric concentration of TBP uranium product has decreased UNH concentrator corrosion such that the subsequent three carloads of UO_3 powder produced have been lower in metallic ion corrosion products by a factor of two.

d. Waste Metal Removal

Sluicing operations continued with good results in all tank farms. The East Area farms supplied most of the feed during the first half of June, but failure of a Johnston pump in the 244-BXR slurry accumulator on June 19 placed the bulk of the metal removal load on the West Area farms for the latter half of June. There was a rather wide variation in feed composition as three tanks were emptied (101-B, 102-C, 104-U), and sluicing operations were then started in virgin tanks. Operations were initiated at 241-TXR farm on June 12 with supernate blends from 103-T. Tank 105-TY began receiving TBP waste solutions on June 16, and current T plant metal waste was routed to 101-U on June 3.

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3. Special Operations

a. Waste Evaporation

June operating data for the 242-B and 242-T waste evaporators are as follows:

Evaporator	Gallons Feed	Gallons Sludge	Gallons Condensate	% Volume Reductions
242-T	204 875	112 062	92 813	46.2
242-B	509 438	289 381	211 057	41.4

Feed for the evaporators was first cycle bottoms from previous first cycle waste evaporation. The re-evaporation of first cycle wastes at 242-T was completed on June 20. Re-evaporation of first cycle wastes at 242-B is expected to be completed in July.

b. B Plant Stand-by

Water flushing of the B Canyon process equipment was discontinued on June 1. Acid flushes of the Concentration Building equipment continued, with 14.3% of a standard run being recovered and processed in T Plant as recycle. The product recovery program in this building is essentially complete, and only decontamination flushes remain to be completed.

c. Start-up of 241-TXR Metal Removal Facilities

Operations were initiated at 241-TXR with supernate blends from 103-T on June 12 and sluicing in 101-T on June 22. The slurry from 101-T is producing feed with a uranium content ca. two times greater than experienced in other tanks. It is expected that the harder sludge remaining in the tank will show a much lower uranium content.

d. Pu Recovery - 234-5

The equivalent of 58.8 bottles of product was processed in metal recovery during June, and the equivalent of 61.8 bottles of product was transferred to the Concentration and Isolation Buildings for reprocessing.

It was necessary for metal recovery facilities to operate continuously so as to assist in providing a maximum amount of feed material required to meet the heavy production commitment.

e. Task III - 234-5 - High Radiation Material

Processing of four batches of "S" Plant material (produced after the extended shutdown of "S" Plant) resulted in buttons of high radiation with a maximum activity of 600 mr/hr. Through special handling, these buttons were successfully blended into satisfactory castings of slightly higher than normal radiation.

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4. Schedule Variance

Redox plutonium and uranium production were both low at 80% and 76% respectively of the amount forecasted in the April Annual Forecast due to a nine day scheduled shutdown for column replacements.

T Plant produced 282% of the forecast to somewhat offset the low Redox production. The combined plutonium production of the two plants was 93% of the April forecast.

The TBP Plant exceeded May's record production by achieving 107% of the forecast.

The UO_3 Plant produced 107% of the April forecast.

B. Equipment Experience

1. Operating Continuity

Essentially all of the Redox Plant down time of 240 hours was taken for the purpose of major equipment replacement to allow higher rates. Extensive vessel flushing and decontamination operations were also performed during this time.

The A Line in the TBP Plant was down 77 hours due primarily to installation of the RA column dual scrub system and then awaiting the results of testing a similar system installed on B Line. Other factors contributing to the total down time were failure of the condenser vent blower motor and the need for changing the MG exciter sets for the variable frequency alternators.

The B Line down time was 32 hours and can be attributed to the same causes as for A Line.

A total of 332 hours was lost at 241-CR since there was no operable spare available to replace the sluice pump moved to 241-BXR.

A total of 246 hours was lost at 241-BXR as a result of a Johnston sluice pump failure, and repeated switching of sluicing operations between the various tanks.

Changing sluicing operations from 104-U to 105-U was responsible for a major portion of the 28 hours lost time at 241-UR.

2. Inspection, Maintenance and Replacement

a. D-12 Waste Concentrator Pot

The spare D-4 pot was converted to a D-12 type and was installed

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a. D-12 Waste Concentrator Pot (Continued)

during the Redox shutdown as a replacement for the leaking D-12 pot. Fabrication of a new spare D-12 pot is 60% complete.

b. Redox Centrifuge

Excessive centrifuge vibration has fractured the "B" jet jumper, the hydraulic impulse line to the plow, and caused the tachometer to fail, thus making controlled centrifugation virtually impossible. It is planned to install the spare centrifuge in July.

c. Slurry Accumulator Pump - BXR

Failure of the 241-BXR-001 slurry accumulator Johnston pump occurred on June 18. The 125 hp motor started to draw about 200 amps (normal 120 to 130 amps) and was very noisy. Thorough inspection or repair was impossible due to high radiation levels. The entire unit including the motor was removed and exchanged with the CR 001 Unit. Leakage at the vapor seal and also the seal bearing in the discharge head is very apparent and indications are that the lower motor bearing may have failed. Four similar failures have occurred since these pumps were placed in service, and studies are being made in the field to determine what improvements can be made on the four units presently in service. The Johnston Pump Company will be contacted to request an improved seal on two new units which are on order.

d. TBP Plant Pump Failures

Four pump failures occurred in the TBP canyon building during the month. Three failures were due to fractures in the boron carbide bearings and seals. Graphitar bearings and seals were installed as replacements. Of interest is the fact that no failures have occurred in the past four months to pumps where Graphitar bearings have replaced boron carbide.

e. Gang Valve Failure - 241-CR

A sticking gang valve on the heel jet of tank 102-C caused steam to back up into the instrument air lines filling them with condensate. It was necessary to drain and dry out all instrument lines before operations could be resumed. Check valves have been installed in the two inch air header to prevent recurrence.

f. Condenser Vent Blower Drive - TBP

Electrical failure of the condenser vent blower drive resulted in approximately 18 hours of building downtime. The spare unit was installed and the motor has been rewound.

g. X-19 Pump Motor Failure - UO_3

Motor bearings on the X-19 pump failed and a spare motor was installed. Of interest is the fact that the pump itself is still operating satis-

g. X-19 Pump Motor Failure - UO_3 (Continued)

factorily with the glass bearings and seals installed on May 5. Prior to this time, the pump had been equipped with Graphitar bearings and normal life was about one week.

h. Induction Coils - Task III - 234-5

One coil was damaged beyond repair by the hydraulic ram. One was ruptured when it was energized without cooling water due to failure of the "no water" alarm. The units were replaced. Inspection of the alarm system has been increased to twice weekly to prevent recurrence.

i. TD-4 Fractionator Reboiler Coils - UO_3

The UO_3 Building TD-4 fractionator reboiler coils failed due to corrosion in the welds. A new set of coils was fabricated from 347 corrosion tested stainless steel and welded into the existing tube sheet with 308 L electrodes, and the assembly was installed. Two other coil units are presently being fabricated using 304 L stainless steel.

j. 75 Ton Crane - T Plant

Routine inspection of the 75 ton crane revealed a worn bearing in the 40 HP main bridge drive motor. A replacement bearing was installed on June 29.

C. Improvement Experience

1. Process Tests and Revisions

a. Aluminum Nitrate for Redox

Operation of the Dicolite precoat filter for ANN has produced solutions with an average clarity of 98% relative to water. Delivery of acid deficient ANN, which therefore does not require caustic butting, was started on June 8 and process use was initiated on June 25. These improvements should appreciably reduce solids in the streams fed to the extraction columns.

b. Reduction of IBX Flow - Redox

The performance of the new Phase II 1B column has been sufficiently good to permit reduction of 1BS and 1BX flows from 80% to 70% of flowsheet with satisfactory separation of U and Pu. Further reductions in 1BX flow are not permissible due to critical mass considerations.

c. Dual Scrub RA Columns - TBP

Laboratory studies had indicated that corrosion of the primary UNH concentrator in the UO_3 Plant could be appreciably reduced if the nitric acid concentration in the feed (RCU) could be lowered. The necessary equipment revisions were installed in the RA columns for stripping acid from the organic overhead, and the RCU acidity has been reduced by ca. 50%. Three carloads of UO_3 shipped subsequent to this change have been lower in metallic ion corrosion products by a factor of two.

d. Single Peroxide Cycle for Redox Material - Building 231

Processing of sample cans from Redox Plant material, using one peroxide strike instead of two, was initiated on June 19, 1953. This change increases production capacity and also saves process chemicals.

e. Phase II Columns - Redox

Replacement of the 1S, 1B and 2A columns has permitted operation at 6 T/D rates and should raise the capacity of the first cycle and the second and third Pu cycles to Phase II rates. Capacity tests are scheduled for July.

f. Reduction of Casting Operation Anneal Period - Building 234-5

All normal button castings received one hour anneal periods instead of four hours with one piece being recast because of high density.

2. 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 dropped by four, due to terminations and transfers. The Operations Sub-Section force dropped by thirteen principally due to transfers to P-10 Extraction Unit and Plant Engineering.

During the month the 234-5 operating forces were reduced to standard crew size by the transfer of 3 supervisors and 9 operators to other Separations Section facilities.

2. Material Variance

a. Elimination of One Peroxide Cycle - 231 Building

Savings in chemical costs amounting to $75 per month were realized

a. Elimination of One Peroxide Cycle - 231 Building (Continued)

with the elimination of one peroxide strike for Redox material. Also, one precipitator tank is freed for filter boat production and the production potential of the building is thus increased by 90 filter boats.

b. 242-B Waste Evaporator Efficiency

Condensate removed from the feed has been gradually increased from 37.5% to 55% and thus has decreased the volume of wastes to storage.

3. Other

a. Change in Sampling Procedure - UO_3 Lots

The automatic sampler setting was changed to take a lot sample instead of a sample for each drum. It is estimated that a savings in analytical costs of $10 per lot will result from this change in sampling procedure.

E. Plant Development and Expansion

1. Project Status

Engineering scoping was completed for cribbing of First-Cycle Waste Supernatant in East and West Areas.

Decision was reached to cancel plans for installation of a new TBP Stripper.

Modified 1S and 1B Columns were installed in Redox as a part of Redox Phase I Expansion, thereby essentially completing work required to achieve Phase I production rates.

Construction of the Redox waste tie-line to U Farm is on schedule. Construction of the SX Tank Farm is on schedule. Receipt of a bid of approximately 22 cents per gallon for the SX Tank Farm will permit installation of several additional tanks beyond the 15 originally proposed.

A directive was received authorizing necessary work for the Task II and Task III portions of the 234-5 Expansion.

The possibility of reducing the Purex construction period through adoption of a six-day work week is being evaluated by the AEC and Blaw Knox.

The revised project proposal for the reactivation of the P-10 Facilities was awaiting AEC approval at month-end. Work progress during the month consisted mainly of partial installation of a loading dock, and the hoist tube from the first to the third floor of the 108-B Building.

2. Plant Engineering

The following standards were completed during the month:

Process Analytical Labor and Steam Utilization Standards for Z and T Plants.
Material Standards for 234-5 Operations.
A Steam Generation Standard at Boiler House.

All other Separations Section standards are virtually complete, and standard cost curves for the various facilities and products are being developed. Planning and scheduling of Central Shop maintenance work was begun this month under temporary direction of Plant Engineering.

F. Significant Reports Issued

1. Routine

Number	Title	Author
HW-28577	Separations Section - Operations Monthly Report	V. R. Chapman
HW-28578	Separations Section - 234-5 Operations Monthly Report	V. R. Chapman
HW-28573	Separations Section - Process Monthly Report	W. N. Mobley
HW-28592	Separations Section - Radiation Monitoring Monthly Report	A. R. Keene
Unclassified	Separations Section - Power and Maintenance Monthly Report	R. T. Jessen
HW-28434	Separations Process Committee Minutes	O. F. Beaulieu
HW-28631	Separations Section - Plant Engineering Monthly Report	C. P. Cabell
HW-28632	Essential Materials - Operations Sub-Section Separations Section	J. P. McBride

2. Non-Routine

HW-28316	Economic Evaluation of Continuous Calcination Process, 224-U Building - P. E. Report No. 65	R. H. Chesworth
Restricted	P. E. Report No. 65, Addendum No. 1	R. H. Chesworth
HW-28479	Standard Analytical Requirements - Metal Recovery Unit, P.E. Report No. 71	P. J. Norderhus

[redacted]

2. Non-Routine (Continued)

Number	Title	Author
HW-26947	Basic Information for Labor Standards 224-U Building, P.E. Report No. 49	R. H. Silletto
HW-28491	Static Corrosion Tests of Fabrication Material for D-12 Waste Evaporator	D. F. Shepard by R. W. Ritchey
HW-28443	Class I, Radiation Incident, #69	R. N. Donelson
HW-28535	Class I, Radiation Incident, #70	R. N. Donelson
HW-28588	Class I, Radiation Incident, #71	W. G. Westover
HW-28518	Study of UO_3 Pot Room Exposure Rates	A. T. Sether - R. E. Taylor

III. PERSONNEL

A. Organization

The P-10 Extraction Unit was formally established in the Separations Section on June 1 with O. V. Smiset appointed Unit Superintendent and P. R. McMurray assigned as P-10 Extraction Unit Facility Supervisor.

B. Force Summary

	Start of Month	End of Month	Net Change
Section General	5	5	0
Operations Sub-Section	626	613	- 13
Power and Maintenance Sub-Section	570	571	1
Process Sub-Section	204	200	- 4
Radiation Monitoring Sub-Section	73	73	0
Plant Engineering Sub-Section	31	32	1
P-10 Extraction Unit	4	15	11
Section Total	1513	1509	- 4

C. Safety Experience

An observation case dating back to March 28, which involved a Laboratory Assistant in the Process Sub-Section, has developed into a lost time case and has been so recorded.

Two small fires occurred in the UO_3 Plant during the month. One involved ignition of a rubber glove which had been tied over a broken instrument line discharging oxides of nitrogen. The second fire was caused from welding sparks igniting scaffolding planks on a cell floor. Damage was negligible in both cases.

D. Radiation Experience

A blowback occurred in the Redox South Operating Gallery resulting in extensive low level contamination of the South Operating and Pipe Galleries. This incident added to the already heavy decontamination load facing the Redox Plant which includes the crane and craneway and the South Sample Gallery. In addition to the Redox blowback, there was one other Class I radiation incident involving the use of a dose-rate meter which indicated measurements low by a factor of 10 because of a faulty range switch.

E. Personnel Activities

1. Non-Exempt Information Meetings

The first two of the scheduled series of non-exempt information meetings were held on June 10 and June 26 with approximately 125 in attendance at each meeting. The reaction of these people was most enthusiastic, and leaves no doubt that the time and effort expended to bring these meetings about was a good investment.

2. P-10 Training Program

Supervision in the recently established P-10 Extraction Unit attended a P-10 training program conducted by members of the Technical Section. Additional programs will be held as production operators are assigned to the Unit.

3. G.E. Supervisory Selection Program

Evaluation of three candidates from the Radiation Monitoring Sub-Section was completed during the month.

New lists of candidates for evaluation are being prepared by the Sub-Sections and may include self-nominees as per the new policy adopted by the Separations Section.

4. Emergency-Disaster Training

The various emergency procedures were reviewed and combined into a single comprehensive procedure. Recruitment of personnel for training in emergency-disaster rescue work is in progress, and the emergency shelters have been equipped with benches, desks, and telephones.

5. Laboratory Technical Personnel

Four lectures were held during the month with a total attendance of 118 technical personnel.

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6. Radiation Monitoring Training for Power and Maintenance Personnel

Nine lectures on the subject content were presented to Power and Maintenance exempt personnel with a total attendance of 35 shift men.

7. Visitations

J. F. Kane attended the G.E. Plant Engineers Lighting Conference at Nela Park, Cleveland, Ohio on June 8-10. The latest developments in industrial lighting were presented at this meeting along with group discussions on engineering and maintenance problems pertaining to lighting.

S. G. Smolen visited the Los Alamos and Rocky Flats installations on June 22 and 23 to review designs for the Task III installation of the 234-5 Building.

On June 10 and 11, Mr. H. R. Nebeker, District Manager of Shell Chemical Corporation, participated in discussions and inspection of Redox Plant handling procedures for hexone. His comments indicated complete satisfaction with the solvent handling methods employed by the Separations Section.

ENGINEERING DEPARTMENT

JUNE 1953

TECHNICAL SECTION

The modified "Head-End" $KMnO_4$ procedure was continued at the Redox Plant during the first half of the month utilizing two uranium cycles to produce specification grade UNH. Mid-month three cycle operation was resumed due to loss of tachometer on the centrifuge which interfered with process control and reduced effectiveness of $KMnO_4$ treatment to a simple ruthenium votalization procedure. The new 1B Column as well as replacement of 1S Column with spare 1A and replacement of 2A with 1S permitted higher throughput which reached 6.5 T/D on two uranium cycle operation and 6.0 T/D on three uranium cycle operation.

Tank farm feed preparation procedures and solvent extraction processing at the Metal Recovery Plant were relatively stable and unchanged during the month. The working capacity of the 224-U Building, 60 percent UNH concentration, was demonstrated to be equivalent to a 15 Ton of U/Day rate by improving the condenser condensate draw-off system. The uranium loss experienced in the TBP stripper was reduced tenfold through installation of a cyclone separator on the vapor take-off line. Product UO_3 quality improved markedly as a result of operational and flowsheet changes. Of the ten carloads produced, five had a total metallic impurity of less than 200 ppm. The entire production had a metallic impurity of 270 ppm which reduces to 220 ppm on a nine car basis.

The modifications and repairs to the Hot Semiworks Unit were completed during the month. The Purex Prototype Unit in 300 Area was completed with the exception of the demineralized water system and operations will start on schedule July 1, 1953.

Only one normal uranium rupture occurred during the month. This was of Group 9 metal. The rupture occurred in a tube in the "hot spot" portion of C Pile which has operated typically at approximately 640 KW per tube. This rupture breaks a record production run of 39 days since the last rupture of a natural uranium slug.

One C-metal slug ruptured during the month, occurring on June 9, in tube 0577-H, orifice zone 0.318. Type of failure: pinhole in cap.

Power levels were limited primarily by vapor binding considerations during the month, except for C and D Piles. Graphite temperatures limited B and F Piles at times. These conditions were controlled by helium addition at D, DR, and H, to prevent such limitation. C Pile was operated during the month at a fixed maximum power per tube in the program to explore the possible slug rupture dangers of increased local power generation rates. D Pile was operated under production test conditions with modified boiling limits.

A graphite allocation for KW Pile has been completed. Recently obtained data on the radiation characteristics of all types of graphite have been used to make the allocation compatible with the present schedule for machining, lay-up, and color zoning, and at the same time use the various graphites so that each, with its particular characteristics, will be in a region of pile flux and temperatures necessary to minimize the harmful effects of irradiation.

Heat treating of the 250 tons of rods at the Feed Materials Production Center, the slugs from which are to be irradiated under Production Test 313-105-25-M, was completed on June 25. A higher percentage of seams has been observed in the slugs machined so far from these rods. As a result, it is possible that less than 40,000 acceptable slugs will be received at Hanford. About 11,000 have already been received.

Six suspected failures of "C" slugs were found after the May 7 outage in H Pile--two in each of three tubes. It is presently believed that the failures are caused by water entering through a defective area in the weld which results in formation of corrosion products within the slug jacket followed by swelling and rupture of the jacket. In an effort to improve this situation, experimental canning of aluminum dummies with a brazed and welded closure was continued. Plans are being made to can the reject fuel slugs from the third and fourth quarter charges in the DR-10 load by this means.

Preliminary testing of a group of mechanically bonded slugs has been completed. The aluminum jacket of these slugs is mechanically keyed to the anodically-roughened uranium core. Results of these tests show that all slugs were unbonded at both ends and had lower thermal shock resistance than triple-dip slugs. For such a slug to be successful, it would be necessary to concentrate on developing a high integrity enclosure to preclude water entry through the aluminum jacket. The number of slugs tested was not sufficiently large to be considered a complete evaluation of mechanically bonded slugs but the information obtained to date appears to be sufficient for a basis for rough comparison with triple-dipped slugs.

The fabrication of hot press canned slugs for the initial pile irradiation of these fuel elements was substantially completed during the month with the canning of 114 pieces. Of these, 50 slugs will be selected following cleaning and non-destructive test for charging into the pile.

Measurement of the physical properties of an irradiated uranium metal wafer following exposure to 150 MWD/T revealed an increase in average hardness of about 15% and an increase in electrical resistance of about 4%. No discernible changes were observed by x-Ray diffraction and metallographic studies.

Optimum conditions for the preparation of plutonium trifluoride from the oxalate using Freon-12 have been established, involving the successive steps of drying the plutonium oxalate, calcining the exalate to the oxide and

fluorinating the oxide with Freon-12. The resulting plutonium fluoride is easily reduced to the metal with high yield. Corrosion tests of a number of candidate materials for freonation equipment fabrication indicated nearly all were essentially inert with respect to Freon-12, in contrast to the very corrosive action of hydrofluoric acid which is currently used for fluorination.

Buckling measurements have been completed on the solid 1.67 inch diameter slugs in the dry 6-3/16 inch and 7-1/2 inch lattices preparatory to drilling them for hollow slug exponential measurements. The insertion of a layer of enriched slugs in the bottom of the exponential pile has been proposed and is under consideration as a means of raising the flux approximately ten-fold, thus increasing the rate at which exponential experiment data may be obtained.

Direct measurement of the low energy gamma rays from uranium isotopes has been developed into a method for isotopic analysis which gives the U-235 content in the natural uranium range with a standard deviation of 0.01% absolute as the average of three determinations. Although not yet as precise as mass spectrometer determination, the method requires only 15 minutes per determination.

Continued mass spectrometric analysis of the C Pile atmosphere has shown that the graphite burn-out, as indicated by the carbon monoxide content, has not increased although the power level has been raised from 700 MW to 970 MW. From these analyses and literature data, the nitrogen content of the C Pile has been estimated to include 1400 moles locked-in the graphite and 340 moles in the pile atmosphere under current conditions.

DESIGN SECTION

Direct engineering effort of the Section for June was distributed approximately 63% to the Expansion Program, 20% to other design projects and 17% to research and development studies.

Design progress on Project CA-512-R, 100-K Reactor Facilities, was advanced 5.6% during June to 91.3% complete. During the month, 130 detail drawings were approved, bringing the total to 1668 drawings which have been approved. A structural design analysis of building 105-K was prepared by a structural consultant firm and one set of drawings was approved by the firm subject to incorporation of recommended changes.

Approval was received from the AEC for fabrication of a model of the 105-K process unit. The work will be done by the Graphics Unit and is scheduled to be completed by September 15, 1953.

Detail design of the 200 Area Expansion Program, Project CA-513, continued. The Purex Waste Facility advanced 9% during the month to 37% complete, the Purex Outside Facilities design advanced 10% during the month to 86% complete; the design of the Metal Conversion Plant expansion advanced 3% during

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the month to 97% complete. The tank farm was moved west 30 feet to provide additional space east of a diversion box. The process condenser water will be segregated from other more radioactive waste waters to facilitate possible future heat recovery. Lack of vendor instrument information continues to delay design on the Metal Conversion Plant.

Design work on Project CA-431-C, Metal Examination Facility Equipment, was started during June and is 5% complete. This work is estimated to require a total of 97 drawings.

Detailed design work on the 300 Area Expansion Program, Project CA-514, exclusive of the addition to the 313 Building structure and services which are being done by an AE, was advanced 12% during the month to approximately 42% complete.

Detail design of the Recuplex installation, Project CG-496, is approximately 90% complete, an advance of 5% during the month. Sixty-one drawings were approved during the month bringing the total of approved drawings to 171, of the 240 required.

Design of the Redox Tank Farm, Project CA-539, was advanced 4% during the month to 89% complete. An increase made in condenser capacity will necessitate redesign of the condenser water drain system.

Design work on Project CG-549, Activate Task I, Building 234-5, is 10% complete. Twelve scope drawings were issued for comment during June with detail design scheduled to begin early in July.

Detail design on Reactivation of P-10 Facilities, Project CG-550, advanced 23% during the month to 35% complete. All material procurement orders were placed except for a few items.

Design work on Project CG-551, Expansion of Building 234-5 Facilities, was started. The estimated total number of drawings required is 228. Requisitions totaling $17,865 were issued for critical procurement items.

Construction work for installation of the prototype fuel element canning machine in the 314 Building was started on June 22. The canning machine is scheduled to be received from the Puget Sound Naval Shipyard on July 20 after mechanical testing. The furnace is scheduled to be delivered July 15 and the controls August 15.

PROJECT SECTION

At the end of the month, completion status of major projects was as follows: CA-431-A, 100-C Waterworks, 99.9%; CA-431-B, 100-C Reactor, 99.8%; CG-438, Ball Third Safety System, overall, 96% (adjusted to allow for future improvement); CG-483, Downcomer Repairs, overall, 100%; CG-496, Recuplex, 10%; CA-506, Repairs to 100 Areas Retention Basins, overall, 99%; CA-512,

100-K Area Facilities - Water Plants, KW, 22%, KE, 14% - Reactor Buildings, 105-KW, 14.8%, KE, 8.4%; CA-513, Purex Facility, Part "A," overall, 2.5%, Part "B," 9%, Part "C," 98%; CA-514, 300 Area Expansion, overall, 3%.

Some improvement has been noted in the time lapse from requisition date to purchase order date for procurement on Expansion Program projects. However, there were instances of rejections and re-advertising which will cause delays. There were also numerous rejections because of poor quality of forgings, castings, welding, and dimensions. Even with relaxed requirements, the filling of many orders is being delayed.

Satisfactory results were obtained on the model pump manufactured by Bingham Pump Company for the 100-K Area, and on the prototype crate fabricated by Puget Sound Navy Yard.

The strike by millwrights employed by Kaiser in the 2101 Building ended June 5 when 46 of the 63 strikers returned to work. Blaw-Knox has suffered a critical shortage of pipefitters since June 5, 1953, following the discharge of four foreman and a general foreman. From June 9 to June 23, the Carpenters' Union refused to dispatch carpenters because of a dispute concerning travel pay.

Contracts for operation of the North Richland Construction Camp and North Richland Steam Plant were awarded to Commonwealth, Inc., and P. S. Lord, respectively.

Reproduction group set a new record with an output of 1,020,460 square feet for 25 working days and three "limited-crew" Saturdays.

On June 23, bids were opened for a contract to furnish and install central office equipment for the plant telephone system. The apparent low bid of $261,000 was submitted by Stromberg Carlson. However, all bids were rejected by AEC because of non-compliance with specifications.

Project CA-385, Radiometallurgy Building, was completed, with minor exceptions, on June 29, 1953.

For the 100-C Area Water Plant, installation of the automatic backwash system for 183-C was substantially completed. Work orders were issued for completion of various miscellaneous items.

For the 100-K Area Water Plants, work was progressing on forms, concrete placement, and installation of piping. The 60" raw water lines and 42" sewer line in the central tunnel are being placed. For the reactor buildings, structural concrete was 80% complete at 105-KW and 55% complete at 105-KE. The base membrane plates for both process units were installed and welded. Erection of structural steel at 105-KW was begun June 10, and was about 30% complete on June 30, 1953. Construction of 2101 Building was 86.5% complete, about three weeks behind schedule.

First samples of graphite were received from Speer Carbon Company under a contract with the Commission to furnish 2,000 tons of purified, pile grade graphite. 305 tests of these samples indicated a purity comparable to National Carbon material.

Overall design for Purex was 53% complete, and temporary construction was 55% complete. Excavation for Building 202-A was finished, and some foundation forms have been set. Construction for UO_3 Expansion was 9% complete. The Purex Prototype was turned over to Technical Section on June 5. This project was 98% complete, with exceptions for undelivered items. For the Redox Capacity Increase, Phase II, architect-engineer design was 27% complete, and G-E design was 42% complete. Overall design of the Redox Tank Farm, 241-SX, was 93% complete, and the portion of construction being managed by G-E was 22% complete. A lump sum contract for the Redox Tank Farm was awarded on June 15, and a Notice to Proceed was issued immediately.

ORGANIZATION & PERSONNEL

Total on Roll, June 1, 1953	1,543
Accessions	37
Separations	25
Total on Roll, June 30, 1953	1,555

Effective July 1, 1953, the Laboratory Engineering and Facilities Unit of the Technical Section was dissolved and the Unit functions were reassigned to other organizational components within the Department. The Analytical Laboratories were transferred to the Separations Technology Sub-Section and Laboratory Engineering, including equipment development, contact engineering, and shops was transferred to Fuel Technology. Responsibility for processing patent applications for Operation personnel was transferred to Engineering Administration.

A. B. GRENINGER, MANAGER
ENGINEERING DEPARTMENT

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ENGINEERING ADMINISTRATION SUB-SECTION

JUNE 1953

The reference librarian attended the forty-fourth annual meeting of the Special Libraries Association held at Toronto, Canada, June 22-25, 1953. Among topics discussed were the recruitment and training of librarians, organization and services of special libraries, machine systems for literature searching, library public relations and publicity, and the current status of United States and foreign documentation. Numerous displays and demonstrations by library supply agents, book dealers and office machines manufacturers provided an opportunity to examine the latest materials and equipment available for specialized library use.

During the month, work on the transfer of documents presently charged out to SF Accountability personnel by Classified Files was continued. This includes SF Shipping Logs, SF Shipping Forms, Supplement to and Erratum for SF Shipping Forms, Request to Ship, Approvals for Shipment, Daily Accountability Reports, and Myrnalloy Accountability Reports. Surplus copies of these documents are being destroyed. When the job is completed, the Classified Files will no longer carry accountability for any SF documents.

Receipts listing all documents directly charged to General Engineering Laboratory personnel were completed and checked during the month and accountability for these documents transferred from Classified Files to the Document Control Center, General Engineering Laboratory, thus relieving the Hanford Operation of any further responsibility for these items.

A report entitled "Periodic and Series Reports, Hanford Products Operation 1943-53" was completed during the month. This document lists the classified periodic and series reports originated at Hanford from its inception in 1943 to June 1953. The list traces the continuity of reports that have undergone title changes during this period. This has been done by cross referencing to titles previously or subsequently used.

During the month, the following major items of work were handled by the Contract Unit:

1. Informal proposals were solicited from seven companies in the Northwest for operation of the Richland Bus System. Proposals were due to be submitted to General Electric on June 23, 1953. No response has been received from any of the companies contacted. The AEC was so advised by letter dated June 29, 1953.

2. Modification No. 3 to Special Agreement No. G-12, and Modification No. 5 to Special Agreement No. G-5 (both between General Electric and National Carbon Co.) covering changes in physical and process specifications for graphite, were returned completely executed by National

Carbon Co. on June 26, 1953.

3. A proposed contract covering the editing and sound processing of training films has been delayed pending clarification of an AEC directive covering additional filming to be included in the contract for the Commission. The directive as issued is too restrictive on individual editing operations and requires advertising bids for the work, whereas the General Electric Photographic Unit believes that best results can be obtained most economically by negotiating with W. A. Palmer Films, Inc. of San Francisco. In the interim, Commission approval was received to use a negotiated purchase order for developing and editing a short film on graphite stacking, urgently needed as a training film in the current expansion program.

4. Modification No. 2 to Consultant Agreement No. 113 between General Electric and Dr. S. T. Cantril was approved by the Commission on June 3, 1953.

5. Modification No. 2 to Consultant Agreement No. 115 between General Electric and Dr. P. E. Kendall providing an extension of time in his contract providing for services in the field of cardiology, was approved by the Commission June 2, 1953.

6. Invitations to bid covering publishing of the Richland telephone directory were issued to six companies. Bids were opened and tabulated June 26, 1953, and of the three bids received, the apparent successful proposal was received from the General Telephone Directory Company of Long Beach, California.

7. Modification No. 3 to Special Agreement No. G-21 between Bird Machine Co. and General Electric covering additional work and extension of time for the purpose of developing a new centrifuge casing was executed by General Electric June 11, 1953, approved by the Commission June 16, 1953, and finally executed by Bird Machine Co. June 19, 1953.

8. Modification No. 1 to Consultant Agreement 107 between General Electric and Dr. Sidney Marks providing for the use of Government-owned vehicles by Dr. Marks, was approved by the Commission June 12, 1953.

9. Modification No. 1 to Consultant Agreement No. 105 between General Electric and Moffatt, Nichol & Taylor providing an extension of time for completion of design analysis of the 105 Buildings, was approved by the Commission June 3, 1953.

[redacted]

HW-28576

PILE TECHNOLOGY SUB-SECTION

JUNE, 1953

[redacted]

VISITORS AND BUSINESS TRIPS

E. E. Baldwin visited here from Knolls Atomic Power Laboratory, Schenectady, New York, June 2 through 12, for consultations on KAPL-114 experiment in C Pile.

W. E. Crandall visited here from California Research and Development Company, Livermore, California, June 2 and 3, for consultations on physics of neutron detection.

W. E. Drummond visited here from California Research and Development Company, Livermore, California, June 8 and 9, for physics consultations.

J. Ise visited here from the University of California Radiation Laboratory, Berkeley, California, June 2 and 3, for technical consultations of physics of neutron detection.

J. A. Berberet visited Argonne National Laboratory, Lemont, Illinois, June 8 and 9; Knolls Atomis Power Laboratory and General Engineering Laboratory, Schenectady, New York, June 10 and 11; Brookhaven National Laboratory, Upton, Long Island, New York, June 12; Westinghouse, Pittsburgh, Pennsylvania, June 15 and 16; and Oak Ridge National Laboratory, Oak Ridge, Tennessee, June 17 and 18; to discuss special irradiations.

L. P. Bupp and A. T. Whatley visited Phillips Petroleum Company, Arco, Idaho, June 17 and 18, for technical consultations.

D. J. Foley attended the First Basic Materials Conference in New York City, New York, June 15 through 18.

R. L. Dickeman visited Oak Ridge National Laboratory, Oak Ridge, Tennessee, June 15 through 18, to attend the Reactor Safeguard Committee Meeting and for physics consultations; and Argonne National Laboratory, Lemont, Illinois, June 19, for reactor physics consultations.

ORGANIZATION AND PERSONNEL

Personnel totals are as follows:

	May	June
Administrative	4	4
Pile Engineering	79	81
Pile Materials	67	66
Special Irradiations	24	24
Total	174	175

Pile Engineering: One Secretary B transferred in from Laboratory Engineering and Facilities Unit, and one Stenographer was reactivated from a three month leave of absence.

Pile Materials: One Junior Engineer terminated, and one Technical Graduate was converted to Junior Engineer.

PROCESS TECHNOLOGY

Power Level Limits

Power levels were limited primarily by vapor binding considerations during the month except for C and D Piles. Graphite temperatures limited B and F Piles at times. These conditions were controlled by helium addition at D, DR, and H to prevent such limitation. C Pile was operated during the month at a fixed maximum power per tube in the program to explore the possible slug rupture dangers of increased local power generation rates and D Pile was operated under production test conditions with modified boiling limits. At the end of the month, the necessary Panellit tube pressure monitor maintenance work at H Pile had been completed and the process test authorization to operate the pile at "trip before boiling" limits, as at D, was circulating for approval.

Slug Rupture Experience For June

Three tubes which were discharged at H Pile on May 27, were discovered to contain two ruptured C-metal pieces each. One of these pieces exhibited a small hole in the cap. In each of the other five cases the rupture was a crack in the side of the can. One C-metal piece which was discharged from tube 0577-H on June 9, appeared to have a small hole in the cap.

One regular metal rupture occurred during June. This was a Group 9 Metal failure which occurred in the central orifice zone at C Pile. This rupture has been classified as a uranium cleavage failure with a disc approximately one inch thick being broken completely away from the rest of the slug. This was the first regular metal rupture to occur in 39 consecutive days of pile operation.

Process Specifications

The Engineering Department specifications for reactor operation have been approved and are being issued.

The revised Engineering Department specifications for reactor cooling water treatment, alum activated silica process, are being circulated for final approval.

100 - 300 Area Process Development Study

The process development study is being published as HW-27574, "Some Economic Factors Associated with Pile Operation", L. H. McEwen, R. J. Shields, T. H. Niemi. 100 Area production and cost data are presented and have been evaluated to determine the magnitude of losses attributable to specific causes and the gains obtainable through changes in operating limits and equipment. Related estimates of construction and operating costs have been prepared.

Zone Charging of Reject Slugs

A study is being made of the possibility of relaxing the inspection criteria for pieces charged in low temperature and low power regions of the process tubes. No ruptures have ever been observed in the front eighth of any tube. An increase

in over-all slug production appears possible, therefore, by controlled relaxation of inspection standards for Frost Test, Thin Cap, Al-Si, Poor Braze and Marred Surface for pieces to be charged in such locations.

Protection Against Boiling Damage

Certain aspects of protection against boiling damage pertaining to increases in allowable tube power at D Pile have been discussed in HW-28563, "Technical Note on Protection Against Boiling Damage", L. H. McEwen.

Higher Specific Power Operation

Production Test 105-532-A-2: Increased specific slug powers are being obtained by the irradiation of uranium slugs enriched to 1.75 per cent U^{235}. Operation was routine during the month with maximum slug powers varying between 50-55 kw/foot of uranium, an equivalent tube output of 770-850 kw, were these slugs the maximum power slugs in a tube with cosine distribution of slug powers. At these powers, end cap boiling is calculated to have taken place for the last two months.

Production Test 105-533-A: The effects of increased tube powers localized in a central region of about 100 tubes in C Pile are being investigated by changes in the poison arrangement. Fifty tubes are now being operated at from ten to 17 per cent above the 600 kw per tube limit outside the experimental zone. Examination of the slugs from one tube and of a process tube discharged in June indicated no serious effect of the increased output. One rupture occurred in this region during the month.

Operation With Maximum Panellit Pressure Protection

Operation with the reduced trip ranges continued to be satisfactory during June with the pile power level increased about ten per cent under Supplement A to Production Test 105-534-A. The use of approximately 30 per cent helium was required to maintain the graphite temperatures below currently specified limits.

PROCESS PLANNING

The technical justification for the proposed expansion of water plant facilities at the present piles is given in "Water Plant Expansion - Technical Bases", HW-28426, issued June 22, 1953. The justification presented is based on the assumption that technical developments will be made which will permit relaxation of many of the limitations to pile power level currently in force, so that the increased water supply can be utilized.

Since the problem of water capacity is closely related to that of operating limits, an extensive survey of these limits, compiled by members of Pile Technology Sub-Section, was included in the document. The purpose of this survey was to evaluate the current status of each limit, to describe the development that is being directed toward relieving the limit, and to propose a schedule for advancing the power level at each pile as the required developments are accomplished.

PILE PHYSICS

Pile Enrichment

Work has been initiated on a final report on the radial enrichment experiment at H Pile (Production Test 105-531-A, Supplement A) in collaboration with the Process Technology Sub-Unit. The physics aspects of both the pile and the enriched material operating characteristics relative to theoretical considerations will be discussed. Actual production data will be used to compute the best estimate for additional plutonium atoms gained per U^{235} atom consumed in the enriched columns.

Approvals for enrichment of C Pile is still pending following elaboration to the AEC of the original estimates of potential gains. It was pointed out that whereas enrichment of C Pile appears justified to present, the timing for future tube power limit increases may permit the available water flow to be utilized more economically without enrichment at a later date.

The DR Pile reactivity status with the DR-10 loading approaching completion is enough lower than was originally anticipated that from five to ten kilograms of enriched material in separate columns may be required to provide sufficient excess reactivity for adequate rod control as the present P-10 loading nears its exposure goal. A letter has been sent to Manufacturing Department (HW-28455) recommending that the required amount of enriched material be made available. It will be possible to estimate the amount needed more exactly next month, following a long equilibrium operating interval with the completed loading.

Pile Control Studies

The investigation of the control requirements of the enriched pile has been continued. The calculation has been extended to solve the problem in the two dimensions in the horizontal plane, with the control system and flattening characteristics considered the same to a good approximation in the vertical direction as in an infinite pile. Two sets of assumptions, one liberal and the other conservative have been employed to test the sensitivity of the calculation. It still appears that the 29-rod piles have inadequate control to cover enrichment under the present safety-control philosophy and that the K Pile safety system is adequate only under certain conditions.

Scram Transient Studies

A production test is being written to cover the tests for calibrating vertical safety systems. The preliminary IBM calculations required for data analysis are continuing.

Arrangements have been made to check scram transient techniques and instrumentation in the test pile prior to experiments in the operating piles. A check on the status of the available ion chambers and space for placing chambers has been made at the various piles.

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Recommendations for Handling "J" and "C" Slugs

On the basis of Oak Ridge "J" slug critical mass data, Document HW-28209, has been issued which relaxes discharge handling recommendations with respect to the allowable number of enriched slugs in contact with natural uranium. "C" slugs had not previously been covered in such recommendations. No changes were made in storage and shipping requirements for enriched slugs.

Supplementary Control

HW-28356, "Final Report: Production Test 105-528-A, Alteration of Two C Pile Horizontal Safety Rods for Temperature Distribution Control", was completed for issue as a formal report. On the basis of the improved C Pile temperature control observations, it was recommended that consideration be given to altering the "long" control rods in the other piles.

Ink Facility tests (Production Test 105-529-A) were discontinued during the month due to instrumentation troubles.

Polonium Predictions

Recent extended outages and sudden increases in operating levels require that the polonium buildup calculation be treated on an inventory basis rather than being averaged over the entire exposure interval. By projecting the prediction date by 20 days in order to minimize the effect of the five-day mother decay, a simplified method of accounting for the buildup of polonium 210 from irradiation of bismuth 209 can be utilized. Document HW-28517 illustrating the method will be issued shortly.

Plutonium and Higher Isotope Yield Calculations

Calculations of the expected yields of higher isotopes in irradiated natural uranium have been completed. The yield of plutonium 241 is calculated to be about 0.3 per cent of the total plutonium yield at 600 MWD/ton average exposure. Yields of the higher isotopes are strongly dependent on the exposure rate as well as accumulated exposure. The yield of americium 241 in 600 MWD/ton material is calculated to range from 0.003 per cent to 0.01 per cent of the total plutonium yield; additional americium 241 forms after discharge from the 14 year half-life beta decay of plutonium 241. The calculated yield of curium 242, likewise dependent on the average tube power, ranges from approximately 0.3 to 0.8 milligram per kilogram of plutonium at discharge; the calculated curium 242 yield falls off after discharge with a relatively short half-life (162.5 days).

A formula was devised for weighting the concentration of individual columns so that the fraction of plutonium 240 present in any discharge would not exceed acceptable limits. The formula and method of application are given in Reactor Process Specification no. 25.00. Its use will permit wide variations in individual tube power, but in general will discourage over-exposure.

SHIELDING STUDIES

Magnetite-Limonite in K Pile

Final neutron attenuation data obtained using the DR facility have substantiated the initial results; these indicated the thermal neutron attenuation characteristics of magnetite-limonite to be comparable to those of iron limonite, whereas the fast neutron and gamma attenuation characteristics are not as good as in the more dense concrete.

The compressive strength of irradiated magnetite-limonite concrete which contains ores to be used in K Pile was observed to decrease in approximately the same manner as previously irradiated concretes. An evaluation of the radiation damage data obtained during the month and comparison of the nearly completed test data from Troutdale with the engineering properties of other concretes indicate that magnetite-limonite will be satisfactory for use in the pile shield.

On the basis of the above data, the use of magnetite-limonite concrete at K Pile is considered feasible in the locations indicated in Drawing Number H-1-21629.

Radiation and Thermal Damage Studies

A production test is being prepared to determine the effects on the biological shield temperature at C Pile of (1) varying the shield cooling water flow and (2) displacing exposed natural uranium columns into the shield. The first part of the test is designed to approximate the possible case of an old pile shield whose innermost masonite layer has shrunk due to extended high temperatures, whereas the second test is designed to show the effects on shield temperatures of recent operating expedients. The large number of C Pile shield thermocouples make such a test possible.

A first approximation has been made to describe the net rate of deterioration of shield masonite as a function of fringe tube power. The breakdown in polymer molecular chains due to temperature and humidity effects results in changes in chemical composition, density, and mechanical strength which may be described as a time decay effect for a given exposure rate. Considerably more data are required to establish these rates to good precision.

Perforate Leakage Studies

The final report on Production Test 105-479-N, "Upstream Dummy Slugs", has been completed and will be issued as HW-27191. The reported tests indicated that complete removal of the front end-supported dummies would not materially affect dosage rates with the tubes full of water; however, loss of water from one or more tubes would create a greater radiation hazard if the dummies were not present. A shielding dummy against the upstream end of the uranium charge would permit safe elimination of the end-supported dummies.

Measurements have been completed on the taper bore gun barrel assembly in "A" Test Hole at D Pile (Production Test 105-502-N). The data will be analyzed with respect to the neutron and gamma leakage through a ring and donut assembly previously tested in the same location.

Miscellaneous Shielding Calculations

K Pile prints of shield components are being checked and calculations made to insure satisfactory shield performance.

The calculations of the radiation intensities to be expected from the P-13 steel thimble assembly following removal from H Pile have been brought up to date for the Mechanical Development Sub-Unit. Cobalt, present in the steel components of the assembly, is calculated to be the most intense source at the time of removal. A 12-inch thick lead cave has been recommended in case the assembly is temporarily stored on the experimental level as is presently planned.

EXPERIMENTAL PHYSICS

Slug Rupture Detection

The experimental prototype of the scintillating crystal gamma ray spectrometer slug rupture detection system developed for full pile effluent monitoring continued to operate routinely at H Pile. The simplified electronic circuitry which was developed to replace more complex and expensive laboratory equipment which had been employed with the spectrometer demonstrated excellent stability. The prototype installation positively indicated the presence of aluminum-uranium-^{235} alloy slug (C slug) ruptures on crossheader number five at H Pile several days before normal water sampling techniques also detected the presence of the alloy slug ruptures. The H Pile beta monitor did not detect these ruptures at any time. A survey of the process tubes on this crossheader during the subsequent outage isolated two definite suspects; these were discharged and both found to contain enriched alloy slug ruptures. A positive signal on the gamma detector continuously since the ensuing startup indicates that still other ruptures are present in the process tubes emptying into this same crossheader. Recent effluent water sample analyses belatedly substantiate this observation; however, there has still been no indication on the beta monitoring system.

The excellent performance of the gamma detector has lead to the recommendation that the existing beta sensitive systems be replaced at the earliest possible date. The continued emphasis on increasing plutonium production rates and reducing unit product costs will result in higher slug power generation rates, elevated slug temperatures, increased stresses and, possibly, an expanded use of enrichment. The gamma monitor provides increased pile protection through detecting the presence of ruptures earlier and more positively in the case of natural uranium and is the only demonstrated continuous monitoring technique capable of detecting enriched alloy slug failures. Time and cost estimates prepared by Project Engineering indicate that the replacement effort will be modest on both accounts. It was further recommended that one installation be expedited ahead of the rest. In this way, one pile is given earlier protection without appreciably delaying the remaining installations and the experience in detailed design, equipment procurement, and early operation can be used to advantage in accomplishing the mass replacement effort.

duPont Rupture Detection Tests

A report HW-28566, "Testing of Savannah River Slug Rupture Detectors - Final Report on Production Test 105-523-A and Production Test 105-536-A", R. S. Paul, has been issued discussing those aspects of the tests which are of interest to Hanford. The data obtained indicate (1) that the use of filters in the Hanford system would not offer any clear advantage but does possess potential disadvantages, and (2) the choice of the two to three Mev gamma energy band for fission product detection in the presence of background radiations appears optimum.

Neutron Distribution in a Hanford Lattice Cell

The aluminum-uranium^{235} alloy detectors which have been used in determining the thermal neutron distribution in a standard Hanford lattice cell were accurately intercalibrated to eliminate errors resulting from the non-homogeneous dispersion of the uranium in the alloy. The major portion of the data describing the distribution of fission and plutonium producing reactions in the Hanford slug are complete and a formal report discussing these data is being prepared.

Equipment design and fabrication is under way to provide facilities for extending these measurements to lattices containing enriched uranium slugs. A partial column of Eisenhower metal will be utilized in this work with detectors fabricated from similar material.

Gamma Spectrometer as a Corrosion Indicator

It has been recognized for some time that important corrosion data might be obtained from a gamma ray spectrometer which monitors the aluminum activity in effluent passing through a specially designed corrosion studies facility under controlled conditions. The capabilities of such an energy selective detector in this application are being reviewed and the pertinent conclusions will be utilized by corrosion studies groups in experimental designs.

Pile Instrumentation

The G.E.C.L. Mark I High Temperature Ion Chamber has been irradiated in the reflector regions of the "A" Test Facility at F Pile for over two years with no apparent deleterious effects. A recent series of tests show that the chamber will saturate in thermal neutron fluxes of 6 x 10 inches neutrons per cm^2 per second which yields an output ionization current of four milliamperes. These characteristics have been maintained throughout a total integrated exposure of 8 x 10^{19}nvt.

From a reactor safety viewpoint, it is quite important that the low level neutron flux behavior at pile startup be closely monitored. At high power levels, safety systems which are activated by a power level sensitive trip are adequate if system delay times are minimized. In the case of low power levels or reactor startup, dangerously fast rising periods can occur if operating procedures are not rigorously followed. For this reason low level neutron sensitive instrumentation monitoring the rate of power increase would provide

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substantially increased pile protection. Several period indicating systems have been tested and found unreliable. However, both the Oak Ridge National Laboratory and the Argonne National Laboratory possess circuitry of this type which is in routine use. These circuits have been obtained and will be tested and/or modified until a "rate of rise" monitor sufficiently reliable for Hanford use is developed.

Fast Neutron Flux Monitoring

A series of exposures of threshold detectors in the "E" Test Facility at F Pile has been made to ascertain that high cross-section impurities in low abundance will not bias the high energy activation data for which the reaction cross-sections are quite low. In most cases, satisfactory compounds containing the desired elements have been obtained.

The initial series of measurements in this program consisted of a traverse in graphite irradiation facilities using the S^{32} (n,p) P^{32} reaction. Facility cooling was inadvertantly lost and the detectors probably impaired. A series of measurements over the fringe process channels and into the reflector will be initiated next month in an attempt to determine the neutron spectrum in these locations.

Automatic Tube Outlet Water Temperature Recording Facilities

The Flexowriter automatic tube outlet water temperature recording facilities installed at both B and H Piles were operated routinely during the month. A formal technical report discussing the development of both the initial and the improved Flexowriter installations is in the final stages of preparation.

Test Pile - Routine Tests

Regular slug testing proceeded routinely during the month. Eight lots of Mallinckrodt billet eggs were tested with TDS values ranging from 13 to 14. Twenty lots of lithium-aluminum alloy slugs were tested with 19 accepted on the basis of reactivity tests.

Test Pile - Graphite Testing

Reactivity measurements were completed on 114 heats of TS-GBF graphite produced under contract G-5; a total of 218 heats have thus far been tested. In addition, 46 express shipments of TS-GBF material and 15 lots of unpurified TS-AGOT material were tested. The TS-GBF material averages dih (purity); + 1.00, dih (effective); + 0.98 and density; 1.634. The unpurified TS-AGOT material yielded a dih (purity) of + .02, a result appreciably in excess of indications from small scale sampling.

The accumulative results to date on TS-GBF production testing are summarized as follows:

dih (purity)	.80-.85	.86-.90	.91-.95	.96-1.00	1.01-1.05	1.06-1.10
No. of Heats	3	2	23	74	108	8

The results obtained on material tested during the month yield the following purity distribution:

dih (purity)	.80-.85	.86-.90	.91-.95	.96-1.00	1.01-1.05	1.06-1.10
No. of Heats	2	2	19	59	32	0

In general, both the graphite purity and density have been low during the past month although indications of quality recovery are being evidenced at the end of the month. The results obtained from a one hundred per cent single bar test on an individual heat indicate systematic purity variations with furnace location. These data indicate that bars located in the top layer and at the furnace ends purify better than those at other locations. Test results to date are being summarized and submitted to National Carbon for process improvement action.

Test Pile - Special Tests

Calibration of the graphite testing stringers to accept the smaller graphite bar size appropriate to the 7.5 inch K Pile lattice has been initiated to permit the reduced size bar tests to be accurately related to the quality of the primary standards. It is not certain that either the purity or density calibrations will extrapolate linearly over the ranges involved.

Calculations have been made to ascertain the maximum power level at which the test pile may be safely and feasibly operated. The results thus far indicate that power levels in the range of several kilowatts are permissible for short periods with the salient factors being radiation leakage through shield perforations and the loss of test precision for short periods following the higher level irradiation resulting from the temperature coefficient of reactivity.

HEAT TRANSFER

Tube Flow Studies

H Pile process tubes are being installed by the Pile Coolant Studies Sub-Unit in C Pile under Production Test 105-519-E in order to obtain corrosion data which will apply to H Pile. Since high outlet temperatures are desired, assistance was provided in determining the required orifice size and Panellit trip settings for the tubes. It was calculated that a 0.262 inch orifice would allow flows of about 30 gpm through these tubes. The Panellit pressures are expected to be about 245 psig and calculations indicated that the Panellit trips should be about 45 psi or less apart for the required 90 C permissible Δt's. This information is presented in greater detail in "Flow and Panellit Considerations for Production Test 105-519-E", R. G. Vanderwater, HW-28420, June 17, 1953.

It has been recommended by the Technical Section that a second flow monitoring instrument be installed on each process tube in order to provide sufficient pile safety. Three instruments (a) a second Panellit gage, (b) a Meletron switch, and (c) a Mercoid control have been tested in the laboratory and are being tested on the pile for operational suitability. Consequently, a document is being written

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which gives a comparison of the three from the standpoints of reliability, cost, ease of installation, maintenance, size and operating characteristics. A discussion of the use of Venturi meters is also included since such meters would probably be needed as a part of a Mercoid control system and would be desirable with either of the other two. The study will not be completed until preliminary data are obtained from the on-pile testing of the Mercoid controls.

"Production Test 105-542-A, Testing of Tube Instrumentation Devices - Mercoid Differential Pressure Controls and Venturi Assemblies", W. D. Gilbert, HW-28416, June 17, 1953, has been issued to obtain on-pile data on the use of these instruments. It is planned that pigtail-Venturi assemblies will be installed on about 30 tubes. The Mercoid control pressure lines will be connected to pressure taps at the entrances and throats of the Venturis. The normal, tube Panellit gages will also be connected at the throat positions. The Panellits will remain in the pile safety sircuit, but the Mercoids will not be installed in the circuit until after preliminary testing. For some of the process tubes, the orifices will be removed. In those tubes a flow rate of about 30 gpm is anticipated; in the remaining tubes, 27 gpm is expected.

During the shutdown at H Pile on June 9, 1953, the trip limits of the 30 Meletron pressure switches undergoing on-pile tests for operational suitability were checked against the original calibration of May 11, 1953. It was found that approximately 50 per cent of the switches had changed in calibration by five psi or more; however, it is felt that this test may not be a true indication of the fidelity of the gages since several of them were tripped by manual manipulation during this period. One false trip was observed during the month which would have caused an unnecessary pile shutdown had the switches been connected into the pile safety circuit.

Installation of a high pressure, 40 gpm centrifugal pump in the 105-F Flow Laboratory was completed during the month. The pump will permit flow calibration studies to be made during periods in which the normal process water pressure is not available.

Five 0.313 inch orifices were selected at random from H Pile for flow calibration in the laboratory. These orifices were from the group that were put on the H Pile central zone tubes in place of the 0.285 inch orifices. Differences of about a mil in the diameter size between these five orifices were found. Also, the orifice holes were not uniform or smooth. Tests are being run to determine the effect of these variations on flow.

Consideration is being given to additional thermal cycling experiments to more thoroughly investigate the dimensional effects of exceeding the β phase temperature in the slug. In order to extend the time during which the slugs are held at the high temperature during laboratory cycling, it is necessary to have additional electrical current capacity. The feasibility of mounting another generator on the present motor-generator shaft is being investigated. It appears that the current capacity could be increased 50 per cent for an expenditure of about $30,000. The possibility of constructing an a-c transformer to provide the required current is also being considered. A simple, economical design which offers considerable merit has been proposed by E. A. Eschbach.

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Preliminary laboratory tests to determine the temperature drop from uranium to aluminum in the case where the metals are bonded by a cold-canning technique have been completed. Although the data have not been analyzed in detail, it appears that the drop across the bond would be on the order of 10 C for the hottest slug in a 600 MW pile. This temperature drop would be expected to vary in proportion to the specific power level. Further tests are planned in which additional specimens of this and other types of bonding will be studied. In addition, tests will be made to determine the drop across a conventional Al-Si bond. This program is being carried out jointly with Fuel Technology Sub-Section personnel.

Calculations of slug axial temperatures for various tube powers have been completed. This material will be assembled and reported in a separate document.

The study of the effect of small diameter slugs on the flow through a process tube is continuing. The dependence of flow on slug diameter and surface temperature on rib height is very critical, and the results of this study may depend largely upon the actual rib heights and slug tolerances considered.

Other Studies

Calculations were made to determine the effect of the installation of an H Pile process tube on the C Pile graphite temperatures. They indicated that the graphite temperatures in the 10 mil coring zone would probably rise about 10 C to 20 C. It is not expected that these temperatures will limit the pile power level.

An effort was made to determine the heat generation in the graphite of the C Pile. Data obtained for startup conditions indicated that the graphite conductivity had changed significantly before equilibrium conditions were reached, which makes accurate calculation of such effects very difficult. Since this problem was more time consuming than anticipated, it is being set aside until more pressing work can be completed.

From a production standpoint, higher outlet water temperatures are desirable. However, it is believed that such temperatures may lead to operational difficulties in the rear face piping. For example, sufficiently high temperatures would result in steam formation which might affect the pile flow. This steam formation might also lead to serious erosion or corrosion of the downcomer. In addition, the steam escaping from the piping might lead to excessive contamination of the pile building. This entire problem is being considered to determine its seriousness.

Equipment was installed on two horizontal control rods at the F Pile to permit accurate measurement of the heat generation in a rod. No data have been obtained yet.

Calculations were made in regard to the exposure of uranium test specimens at specified temperatures. The aim of the work was to find a design which would result in a temperature gradient of 100 C to 1000 C along a three-inch rod. The details of the calculations are given in "High Temperature Metallurgical Test Specimens", D. E. Amos to J. J. Cadwell, HW-28368, June 11, 1953.

MECHANICAL DEVELOPMENT

Charging and Discharging Studies

The experimental work in connection with the charge-discharge equipment, as designed under the former "G" Pile program, has been completed. Final runs were made with Tru-Line slugs canned in commercially made cans. These tests indicate that cocking, which can normally be expected when slugs are washed down stream under full flow conditions, is largely eliminated by the use of Tru-Line slugs.

A final report summarizing all work done on continuous charging to date is being published. In general, it has been concluded that application of such procedures to presently operating piles is not practical. It is believed that the cost and downtime required for installation would offset the expected production gains which would result for quite some time. The additional hazards to pile operation would be difficult to evaluate but it is obvious that charging into the pile during operation would increase the possibility of cooling water failure which would have very serious effects.

Horizontal Rod Studies

Assembly of the experimental modified replacement rod for B, D, F, DR, and H Piles is nearly complete. All components, except the rod tip, have been fabricated and are being assembled on the full-scale mock-up in the 189-D Laboratory. The rod tip is being fabricated in the B Area Rod Shop from solid stock which will be milled out and then welded together to form a tube with elliptical cross-section. The boron will be applied to the cooling tubes in the form of B_4C-Al sintered rings which will be shrunk to the tubes.

Samples of various materials which have been proposed for control purposes have been irradiated but have not been inspected for irradiation damage as yet. These include, in addition to the above mentioned sintered rings, several types of adhesives and cements mixed with boron carbide.

The experimental washer seal undergoing tests at 105-C has developed a moderate leak during the month. The amount of leakage appears to depend on the position of the rod. The maximum leakage recorded to date, approximately 2.5 cu.ft/hr., is very undesirable but could be tolerated if the advantages of this type seal appear to warrant it.

Vertical Rod and 3X Studies

Testing of the Electromatic Ball Conveyor has been suspended. The last runs were made with heated balls to determine if the coils would overheat when handling hot balls. With the balls heated to 360 C in the hopper and the coils preheated to 50 C by applying a no-load current, it was possible to get coil temperatures as high as 186 C. The maximum temperature occurred in the first coil of the lower horizontal run, just below the hopper. Although the system operated satisfactorily at these temperatures until the balls cooled down, it is not believed that the coils would operate at such temperatures indefinitely. The prototype equipment will be dismantled and stored.

Testing is in progress to evaluate the operating characteristics of the segmented metallic seals which have been proposed for use on the K Pile vertical rods.

Supplemental Control

It has not been possible to run any further tests on the "Ink" system during the month because the DR Pile has been extremely short on reactivity as a result of the special DR-10 loading. Instrument trouble is still being experienced with the specific gravity equipment.

Orders have been placed for the necessary equipment to build a BF_3 Control mock-up in the laboratory. Procurement will probably require 60 days on some components.

Process Tube Pressure Limits

Equipment has been designed and fabricated for determining the bursting strength of irradiated process tubing. This is being done as part of the program to determine the safe operating pressures for pile tubes in their present distorted, corroded, and irradiated condition. The present limit of 300 psi would not be adequate for the proposed power levels and it is believed that 400 to 450 psi can be permitted, provided adequate tests are performed to insure that such pressures will not jeopardize pile operation.

SPECIAL IRRADIATIONS

The second experimental unit for studies pertaining to in-pile calibration of thermocouples was charged into F Pile June 9. This unit contains eight thermocouples of two types, iron-constantan and chromel-alumel, with varying insulation and size. Calibrations are accomplished at 436 C by observing thermocouple readings at the melting point of a magnesium-aluminum eutectic. Failure of the in-pile heater used to melt the eutectic has prevented actual calibration studies. Data obtained at ambient temperatures of approximately 410 C show a correlation between the emf of the couples and the diameter of the wire; couples made of wires of larger diameters exhibit higher emf's. Studies will be made to evaluate this correlation. Steps are likewise being taken to supply adequate heat to the eutectic to perform the desired calibration.

The in-pile assembly for the study of the creep rate of fuel pins for SIR (KAPL 105) was charged into F Pile June 9. Creep data obtained do not agree with that obtained from the single previous successful experiment. Due to the rupture of all three creep samples, all studies with this assembly have been concluded. Failure of the experimental unit for the study of the in-pile creep rate of copper (WAPD 111) to function properly has been determined to be due to internal elements in the assembly. Work has been initiated to effect its repair.

The experimental unit for determining the effects of fission fragments on p-type germanium (KAPL 115) was charged into F Pile June 9. The data now being obtained are not consistent with predicted behavior.

Studies based on spectrographic analyses and irradiations indicate that DR-10 slugs will be more radioactive than P-10 slugs. Additional irradiations are in progress to obtain a more quantitative determination.

Studies to determine the temperature distributions in two magazine facilities are in progress at F and DR Pile.

Plant assistance work and gamma irradiations continue at an accelerated rate. Due to the lack of exposure facilities, an extensive back-log of materials for isotope production are now on hand.

GRAPHITE STUDIES

Pile Monitoring

A vertical height traverse of the D Test Hole at F Pile was obtained on June 18. This was the third in a series of recent traverses made to measure the expansion of the tube blocks and the filler blocks. Traverses of the DR and H Piles showed that the vertical height between both filler and tube blocks varied only a few mils from the nominal values. In contrast, the traverse of the D Test Hole at F Pile shows a decided difference in the height between filler and tube blocks, about 0.8 per cent. A preliminary survey of the traverse indicates that the vertical height between tube blocks is 35 mils less than the nominal 4.1875 inches while the vertical height between filler blocks is approximately 20 mils greater than nominal. The vertical height between tube blocks may be an indication of the plastic deformation of graphite blocks while the vertical measurements between filler blocks is an indications of both filler and tube block expansion. These measurements along with those previously obtained from the A Test Hole at D Pile are being analyzed and conclusions will be issued soon in a formal report.

Full-size bars of TS-GBF graphite were charged into the A Test Hole at C Pile on June 12. These bars had been measured individually for size, neutron cross-section, and weight prior to charging. These measurements will be repeated when the bars are discharged approximately January, 1954. The measurements will provide direct data on physical expansion, burnout of parasitic neutron absorbers, and graphite oxidation under actual pile conditions of neutron flux and temperature. Additional bars of unimpregnated TS-GBF are being prepared for similar charging into the D Test Hole of C Pile. Data on these bars will provide similar information on bars with a density of 1.50.

In conjunction with the graphite monitoring program being carried out at D Pile under Production Test 105-534-A, Supplement A, weighed graphite samples held in specially constructed wire cages have been charged into the empty process channel 3478-D. Both virgin and previously irradiated samples were charged and centered in the channel. Additional virgin samples were placed near the front and rear faces. These samples will be discharged immediately prior to the next power raise scheduled for October, 1953. The data obtained from these samples will give a direct measure of graphite burnout on small laboratory samples under current pile conditions.

As a means of re-evaluating the 410 C graphite temperature limit and to provide a direct measure of graphite burnout at higher temperatures in actual pile atmosphere, the experimental heater assembly, as authorized in Production Test 105-514-E, was charged at F Pile on June 18. The temperature is currently being controlled at 530 C. An exposure of one month is anticipated at which time the samples and heater assembly will be discharged and a new assembly charged in its place. These heater assemblies are considered to be expendable and are discarded at the end of each exposure.

Graphite Allocation for the KW Pile

A graphite allocation for the KW Pile has been completed. It utilizes recently obtained data for the radiation characteristics of all types of graphite to be used in the pile. This allocation is compatible with the present schedule for machining and lay-up. It is also compatible with the present color zoning. The allocation aims at allotting the various graphites so that each, with its particular characteristics, will be in a region of pile flux and temperatures necessary to minimize harmful effects caused by irradiation. The most important aspects of the allocation are as follows:

1. All tube blocks should be made from TS-GBF or AGOT-TS graphite. The behavior of this material under irradiation provided the basis for the present tube block design for the KW Pile. Large quantities of purified CS-GBF graphite are now on hand in Hanford inventories. It is foreseen that the use of CS-GBF material as a substitute for the TS-GBF tube blocks could lead to serious operational difficulties within the expected pile life of the KW Pile.

2. All trunnion blocks should be made from CSF or CS-GBF graphite. This is the most satisfactory material now available for trunnion blocks.

3. The CHF (AGHT) graphite color zoned blue should be allotted to the top or bottom reflector. The CHF (AGHT) graphite color zoned green should be placed in filler block positions in the hottest regions of the pile. The CHF graphite has an unusually high thermal conductivity. This recommendation allots the material to regions of the pile in which no significant reduction of temperature and no corresponding high expansion rate will be caused by the high thermal conductivity.

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4. All Kendall coke graphites should be placed in the top reflector or in the bottom reflector of the KW Pile. The Kendall coke graphites have a high rate of expansion. This allocation assures that these materials will be placed in a region of the pile such that this difficulty will be minimized.

Thermal Conductivity of Gases

Previously calculated values for the thermal conductivity of certain gaseous mixtures have been found to be in error and have been recalculated. As pointed out by personnel of the Heat Transfer Sub-Unit, incorrect values of the Sutherland constant for helium were used in calculating the thermal conductivity of gaseous mixtures and incorrect curves were published in HW-21741. The values have been recalculated and a correction will be issued.

The corrections which are being made in the case of helium-carbon dioxide mixtures are especially pertinent to technical study of the D Pile experiment which utilizes a helium-carbon dioxide atmosphere. The examination of the previous calculations and the corrected ones show that the principal effect of the correction was to flatten the curve of thermal conductivity as a function of increasing helium percentage in the region up to 50 per cent helium. For example, considering temperatures of 400 K, the previously used thermal conductivity values would have predicted a 77 per cent increase in thermal conductivity in going from zero to 25 per cent helium whereas the corrected relations show only a 50 per cent improvement in that region.

These calculations have not been completely confirmed by experiment, however, it is significant that the corrected calculations agree well with the thermal conductivity of gaseous mixtures which have been experimentally determined by the Graphite Development group.

WATER PLANT DEVELOPMENT

Flow Laboratory Studies

Operation of the five in-pile water quality tests at 105-D Flow Laboratory continued. These tests are evaluating the use of lime-free water with a floating pH, and water at pH 7.7 adjusted by caustic addition. Three of the five tubes were discharged during the month and examination of the slugs is proceeding. Film formation continued to be quite low, and the front tube sections remained free of barnacles.

Minor equipment modifications are being made in the flow laboratory in preparation for a raw water testing program. The initial tests are scheduled to begin early in July. The horizontal rod test continued during the month. Several test runs of the K-type downcomer model were made by photographing flow characteristics at various flow rates. The operation of the diatomaceous earth type filter was improved; considerable reduction of turbidity, iron, manganese, and bacteria count is being obtained.

Revisions to new K Flow Laboratory scope drawings were made this month. Final scope drawings are now nealy completed.

Water Quality Evaluation Studies

Production test operation of the areas using the alum-activated silica treatment continued. Specifications for the process have been prepared and will be issued in the near future. Evaluation of chlorine requirements at DR Area showed little evidence that chlorine is required for successful filter plant operation, although it appears to have some beneficial effect in controlling film rates in the pile.

A report was prepared describing the film control procedure developed for use with the alum-activated silica process.

The high filter rate test at 100-D is being expanded to include a study of the hydraulic capacities of the various flumes in the filter plant.

Recirculation Studies

The one-tube in-pile recirculation test continued during the month. The out-of-pile test using water with an impurity concentration of 25 ppm was shut down because of operating difficulties. Preliminary results from the recirculating chloride solution tests show that two ppm of dichromate protects against a chloride concentration of five ppm.

Water Plant Capacity Studies

The maximum capacity studies were completed with the issue of a summary of the D - DR plant capacity tests. Work is continuing on determination of maximum filter capacities and on optimum methods of water plant expansion to meet requirements on higher pile power levels. An investigation was made of the possibility of expanding the activated silica facilities at 183-C to provide sufficient capacity for both C and B Areas at proposed higher process water flow rates.

PILE COOLANT STUDIES

In conjunction with Production Test 105-519-E, nine H-type process tubes have been inserted in the central zone of C Pile, charged with weighed slugs and operated since June 15, 1953. Although temperatures are slightly below the target temperatures of 95, 100, and 105 C, seasonal rises in the inlet water temperatures are expected to permit these tubes to reach the intended test temperatures.

The fabrication and procurement of equipment for an internally heated corrosion tube was started. This equipment is intended to reach the goal of duplicating pile thermal fluxes for corrosion testing more satisfactorily than was possible with the induction heater. The 50 KW motor-generator set from the induction heater will be used as a power source. To assure that no unwanted corrosion effects arise from the induction effect of a 3,000 cycles per second current, a study was made of the solution potential of aluminum in various a-c fluxes.

The solution potential of an aluminum sample was constant in the presence of fields produced by 3,000 cycles per second currents up to 125 amps in a coil of 97 turns.

Impingement tests in dichromate-free alum water were continued with an increased velocity of 110 feet per second. Donut-shaped pitting occurred on these high velocity samples in less than 42 hours at 90 C. The effect of suspending five ppm diatomaceous earth in the water was studied by impinging 50 feet per second jets of such water on a group of samples. The entire surfaces of these samples were abraded smoothly with small pits at the centers.

A survey of the possibility of using raw river water for pile cooling was completed by this group in conjunction with Water Plant Development personnel. The survey suggests sufficient probability of success and savings are so great that an experimental study of the raw water should be carried out.

The four process tubes in 105-D that were cleaned six months ago on Production Test 105-516-E were examined again and showed no barnacles. The production test is being closed out with a final report that compares the results obtained at the F and D Piles. An interim report on the study of the effect of dichromate concentration on front tube corrosion has been written. Long term data are still being obtained with the 50-tube mock-up.

The absorption of metal ions on autoclaved and unautoclaved aluminum surfaces is being studied with aluminum turnings. Mg, Pb, Sn, and Zn have been found to adsorb on the unautoclaved turnings but not on the autoclaved ones. Studies of the corrosion rate of autoclaved and unautoclaved slugs are continuing in the flow laboratory.

A month and a half exposure of a magnesium dummy slug at 90 C produced so much corrosion product that the slug stuck in the process tube. However, upon removal from the tube it was not found to be pitted. A similar test at 60 C resulted in almost no corrosion product or pitting on the magnesium slug.

A survey of the possibility of diatomaceous earth purging at full power level is almost completed. A study is suggested that will determine the optimum diatomaceous earth concentration and duration of purge.

In order to determine the effect of pH adjustment on the particle size of colloidal material in the cooling water, film samples were collected from lime-free alum water. Films deposited from this water were made up almost entirely of small (less than 0.2 micron) particles. Films from this type of water that had been pH adjusted with sodium hydroxide contained many large particles (one to five microns) as has been previously reported for lime-treated water. A process tube receiving the adjusted pH water has a significantly lower film formation rate than a tube receiving unadjusted water.

The examination of a total of eight process tubes, four from B Pile, three from C Pile, and one from H Pile, was carried out during the month. No new corrosion evidence that has not been reported previously was discovered in these tubes.

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Tube 2377-C, removed for the hot spot at C on May 5, 1953, showed no detrimental corrosion. Seven other tubes were transported to the 108-B Building for examination from the DR, H, and C Storage Basins where no underwater facilities now exist. Underwater facilities at D are being used to examine a total of ten tubes (25 per cent completed) which were recently removed from the pile. A device for labeling tube sections as they are removed from the pile was fabricated and tested at D Pile during the last shutdown. Although the device worked as planned, the labels were pulled from a few tube sections when the tubes rubbed against the guillotine. This flaw in the device is being corrected.

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 /RCX
R. B. Richards
Manager, Pile Technology

RBR:mvt

[redacted]

SEPARATIONS TECHNOLOGY SUB-SECTION

MONTHLY REPORT

JUNE, 1953

VISITORS AND TRIPS

C. George and D. H. Marquis visited here from General Engineering Laboratory, Schenectady, New York, June 23 and 24, to determine the functional performance of RM Line.

M. R. Fenske visited here from Petroleum Refining Laboratory, State College, Pennsylvania, June 24 and 26, for consultation on continuous calcination processes relating to 200 Area operations.

F. W. Schumacher visited here from Standard Oil Development, Bayway, New Jersey, June 29, for consultation on continuous calcination processes relating to 200 Area operations.

R. J. Isler visited here from Brookhaven National Laboratory, Uptown - Long Island, New York, June 23 and 24, to discuss waste concentration.

[redacted]

S. L. Lawroski visited here from Argonne National Laboratory, Lemont, Illinois, June 25 and 26, for consultation on continuous calcination processes relating to 200 Area operations.

R. W. Samsel visited here from General Engineering Laboratory, Schenectady, New York, June 26, for consultation on process.

B. F. Judson attended the American Chemical Society Regional Meeting at Pullman, Washington, June 12.

C. G. McCormack visited Knolls Atomic Power Laboratory, Schenectady, New York, May 29 through June 5, for process consultations.

E. T. Merrill visited Argonne National Laboratory, Lemont, Illinois to attend symposium on nitric acid - organic material reactions and to discuss Separations Technology - Development, June 10 through 12.

J. F. Fletcher and C. R. McNutt visited Solar Aircraft Company, San Diego, California to examine plant and facilities with regard to fabrication of P-10 furnace pots, June 8 and 9.

J. T. Stringer visited Corning Glass Company, Corning, New York to attend Sleeve Bearing Committee Meeting, June 1 and 2.

A. G. Blasewitz visited Hi-Lite Manufacturing Company, Seattle, Washington, to discuss equipment design and fabrication problems, June 5; Filtros Corporated, East Rochester, New York, to discuss equipment design and fabrication problems, June 8 and 9; Mixing Equipment Company, Rochester, New York, to discuss equipment design and fabrication problems, June 10; Norton Company, Worcester, Massachusetts, to discuss equipment design and fabrication problems, June 11.

ORGANIZATION AND PERSONNEL

Personnel totals are as follows:

	May	June
Administrative	2	2
Chemical Development	81	85
Plant Processes	55	54
P-10 Process Studies	6	6
Total	144	147

Development: Two Technical Graduates - Rotational were transferred in from Technical Personnel Section, four Engineering Assistants were transferred in from Technical Personnel Section, one Junior Engineer was transferred in from Plant Processes Unit, one Material Expeditor terminated, and one Secretary "B" went on leave of absence.

Process: One Junior Engineer transferred to Chemical Development Unit, one Stenographer was promoted to Secretary "C", and one Chemical Engineer terminated.

PUREX DEVELOPMENT

Purex Plant Design Liaison

The following information was transmitted to the Purex Project Unit:

1. Standardization of pulse leg lengths on IO and 20 Columns.
2. Shielding requirements for HC Column internals.
3. Recommendations for stainless-steel instead of iron pipe lines between CR Master Diversion Box and 241-A Diversion Box (connecting the Purex waste disposal system with the 200 East-200 West Area cross-country pipeline).

Chemical Engineering Development

Solvent-Extraction Studies - Twenty-eight Purex solvent-extraction pulse column studies were carried out with "cold" uranium in the 321 Building pilot plant. These included 15 IB Scrub, 11 2B, and two IO Column H.T.U., flooding, and extended-period stability studies in three-inch diameter glass pulse columns. The approximate conditions of Purex Chemical Flowsheet HW #2 were employed, with plutonium omitted; but uranium was used as a stand-in for plutonium in some of the 2B Column runs. The highlights of the new findings are as follows:

1. The IB Scrub Column was found to exhibit delayed instability effects, similar in many respects to those first discovered in the Uranium Recovery RA Column. These instability effects (cyclic coalescence and cyclic local flooding) limited the capacity of a three-inch column with a 13.5-foot high plate section (the plate-section height contemplated for the Purex Plant) to approximately 1150 gal./(hr.)(sq.ft.), sum of flows, corresponding to approximately an 11-ton U/day processing capacity for the plant-size (seven-inch diameter) IB Scrub Column. At stable operating conditions adequate uranium removal ($<$1000 parts U/10^6 parts Pu) was obtained. No instability occurred in 24 hours of continuous operation at 1050 gal./(hr.)(sq.ft.), sum of flows, corresponding to ten tons U/day in a seven-inch diameter column, employing a one-inch pulse amplitude and a frequency of 40 cyc./min., in a column which, except for its three-inch diameter, simulated that specified for the Purex Plant (13.5-foot plate-section height, stainless-steel plates with 0.125-inch holes, 23 per cent free area, spaced two inches apart; aqueous phase continuous).

2. The 2B Column with the sieve plates specified for the Purex Plant (stainless-steel plates with 0.06-inch holes, 21 per cent free area, two-inch plate spacing) gave highly satisfactory performance even at rates as low as 70 gal./(hr.)(sq.ft), sum of flows, corresponding to three tons U/day based on a seven-inch diameter (i.e., plant-size) 2B Column. Twenty-five hours of continuous operation revealed no instability in the 2B Column.

3. In the IO Column, an increase in the aqueous-to-organic phase flow ratio was found to exert an important beneficial effect on uranium clean-up. Thus a three-inch diameter IO Column with fluorothene plates and the organic phase continuous operated with a three-foot H.T.U. at an L/V (aqueous-to-organic volume flow ratio) of 0.5 at conditions at which an L/V of 0.2 resulted in a six-foot H.T.U. value. At a superficial volume velocity of 100 gal./(hr.)(sq.ft.), sume of flows, corresponding to three tons U/day based on a 34-inch diameter 20 Column, an H.T.U. as low as 1.5 foot was obtained with an L/V of 1 (at 0.5-inch amplitude, 100 cyc./min.), indicating the operability of the 20 Column at that low rate with a proper flow ratio adjustment.

Liquid-Liquid Phase Disengagement - The liquid-liquid deentrainment effectiveness of the three-inch high slab-type disengagement sections ("beaver tails") for the Purex IB Scrub and 2B Columns was tested by means of the scaled-down model employed in the 2A Column tests reported last month. Excellent deentrainment was obtained at a variety of operating conditions of potential plant interest: 0.02 per cent or less entrainment in the organic effluent (2BW) and 0.01 per cent or less entrainment in the aqueous effluents (IBP, 2BP). The model was tested in conjunction with a three-inch diameter pulse column.

Prototype Pulse Column Tests - Upon substantial completion of the construction of the Purex Prototype Facilities and beneficial occupancy of the facilities by Chemical Development Unit personnel on June 8, preparations were made for the experimental testing of the HA and HC Column prototypes. At the end of the month these preparations were nearing completion. The actual process testing of the columns is expected to begin early in July.

The following informal report was issued during the month:

HW-28312 "Effect of Radiation on Fluorothene Internals In Purex Columns", by G. Sege, dated June 5, 1953.

Mechanical Development

Bearing Development - Chemical resistance tests of two types of pile graphite (No. 72 Gulf Cleves Coke and No. N19 Texas Coke) and two types of Graphitar (No. 2 and No. 14) have been completed. Both types of pile graphite were unaffected by 408 hours exposure to either boiling 100 per cent UNH or boiling 60 per cent HNO_3. Graphitar No. 2 and No. 14 disintegrated after 48 hours exposure to either boiling 60 per cent HNO_3 or boiling 100 per cent UNH.

A Peerless four-LA (P-5A) deepwell turbine pump with a five-foot drive shaft has been equipped with five pile graphite (No. 72 Gulf Cleves Coke) bearings. This pump has operated smoothly for 32 hours pumping 6 M HNO_3 at 50 gal./min. against a five-foot discharge head. The test is continuing.

Pulse Generator Development - Seven Teflon bellows manufactured by the United States Gasket Company are operating on life test. None of the bellows shows any sign of failure after 2,600,000 to 35,000,000 cycles.

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Instrumentation - A Kates Flow Regulator (range of 0.1 to 1.5 gal./min.) has operated on water for 1576 hours. The Kates regulator depends upon an adjustable orifice to regulate flow. During the period of operation, with a dial setting of 0.7 gal./min. the flow rate has varied from +5.6 to -22.0 per cent of the average flow rate.

The following informal report was issued during the month:

Jet Feeder for the Purex 2EU Concentrator, K. L. Adler, June 8, 1953.

Materials Testing

Plastic Raschig Rings - The three-inch diameter glass column packed with one foot each of Kel-F and polythene Raschig rings has operated 104 days with pulsing 2 M HNO_3 and Shell Spray Base plus 30 per cent TBP. The polythene rings have settled a total of 4-7/8 inches and the Kel-F rings have settled a total of 1-1/2 inches.

Radiation Stability of Kel-F - Tests have been initiated to determine the effect of gamma radiation on Kel-F sheet. Samples of Kel-F sheet mounted on a steel rod are being exposed to the radiation from a tantalum source, which has a maximum gamma-radiation intensity of 7×10^5 R./hr. The samples will be removed after 137 hours exposure.

REDOX DEVELOPMENT

Process Studies

Recently various process modifications and innovations have been suggested for incorporation in the Redox Plant under Phase II of the Redox capacity increase program. These include: (a) the back-cycling of ANN wastes, (b) the recently demonstrated "streamlined" head-end procedure, and (c) the rearrangement of the solvent-extraction columns to permit operation of a co-decontamination cycle (HA and HC Columns analogous to the proposed Purex Plant flowsheet).

In HW-28424, "Redox Plant Alternative Flow Schemes", currently being issued, a number of schemes incorporating the above processing innovations (either alone or in combination) have been considered for possible use in the Redox Plant. Although ten schemes are presented, only three are recommended for construction and installation in the plant. These three provide an orderly stepwise approach (as equipment may be made available) to the co-decontamination column arrangement (complete back-cycling included; head-end optional) recommended for sustained Redox Phase II operation.

Silica Gel Column - Uranium product currently made in the Redox Plant, operating with the "streamlined" head-end treatment followed by two uranium decontamination cycles, barely meets the decontamination requirements. Studies are in progress in the Redox Plant and in the laboratory to improve process decontamination by employing partial scavenging techniques in the head-end treatment.

An alternative method of obtaining additional decontamination is by the use of a silica gel column. Preliminary calculations show that a 2.5-foot diameter bed ten feet long, operated on a 16-day regeneration cycle (185 bed volumes) and shielded by approximately six to 12 inches of concrete is capable of processing approximately eight tons of uranium per day (as 60 per cent UNH). Decontamination factors of five or more for Zr and Nb are predicted for such a silica-gel treatment. Zr and Nb are the fission products expected to break through during periods of off-standard operation of the "interim" Redox flow scheme.

URANIUM RECOVERY DEVELOPMENT

Continuous Calcination

The pilot-plant fluidized bed continuous calciner was operated during the month with aluminum nitrate feed on a magnesium oxide bed and (two runs) with UNH feed on a UO_3 bed. During the first UO_3 run approximately 16 pounds of uranium were calcined over a three-hour period with the formation of a relatively few elongated lumps about 1-1/2 inches long and 1/2 inch in diameter. A significant portion of the bed consisted of particles ranging up to 1/8 inch in diameter, but most of the UO_3 produced was in powder form. Analyses of the powder indicated essentially complete calcination.

A short run was made with the mechanically agitated laboratory fluidized-bed unit. Direct addition of 60 per cent UNH to the top of the agitated bed calcined without lumping.

Mechanical Development

Base Metal-Ion Contamination in 60 Per Cent UNH - A series of runs was made in a single-tube long-tube evaporator using as feed RCU with reduced nitric acid content. These runs were performed over the concentration step six to 60 per cent UNH at superficial throughput rates corresponding to four, six, and eight tone U/day based on the U.R. Plant Uranium Product Concentrator (EB-1). Nitric acid in the concentrate ranged from 0.07 to 1.1 M. Iron pickup ranged from 65 to 175 parts Fe per million parts U, increasing with the nitric acid concentration. In this low range of HNO_3 concentration there was no apparent correlation of iron pickup with throughput rate. On the basis of these findings a dual-scrub (water-terminal-scrub) RA Column solvent-extraction flowsheet was adopted in the Uranium Recovery Plant to reduce the nitric acid content of the RCU.

HOT SEMIWORKS

Attempts to decontaminate the A Cell process equipment to radiation levels below those reported last month (0.5 to 1 R./hr., with "hot" spots up to 5 R./hr.) have met with no important success.

The maintenance work scheduled for the present shutdown period was continued and is nearing completion. Replacement of the IAF pump is proceeding under working time limits of one to two minutes per man-day.

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Conversion to Purex

The Project Proposal for the conversion of the Hot Semiworks to the Purex process (Part D of Project CA-513) was approved by the Atomic Energy Commission. The design of process equipment was continued.

METAL RECOVERY

Tank Farms - Feed Preparation - Waste Handling

Metal Removal

All four tank farms were employed to produce a blend containing an average of 4200 gallons of stored metal waste per ton of uranium. In addition, an average of 3360 gallons of water was used per ton of uranium for sluicing. This feed supplied 100 per cent of new feed to the TBP solvent extraction batteries.

The TXR Tank Farm began operating on June 13, with 103-T supernatant. On June 20, 102-T supernatant was employed to sluice 101-T sludge to produce a slurry blend. Initial sluicing rates were abnormally high, compared to start-ups in the other farms, obtaining rates as high as 13 tons of uranium per day. The first accumulator batch was collected by merely pumping the 102-T supernatant through the 101-T tank to the accumulator. Water sluicing techniques were continued in 104-U until the tank was emptied and in 102-C until shutdown of the CR Farm. Tank 101-U was released to T Building for storing current metal wastes on June 1. One accumulator batch using 102-BX supernatant to sluice 101-BX sludge is currently being processed. Preliminary feed batch data indicate probable gross dilution of the 2.5 years (minimum age) uranium with more "aged" uranium. Consequently, only small deviations in product RCU fission product activity may be anticipated from this material.

No Nagle pump failures were encountered, but the 001-BXR Johnston pump failed on June 19.

Acidification and Concentration

Acidification of above wastes proceeded routinely using an average of 13,400 pounds of HNO_3 per ton of uranium processed. This dilute feed is concentrated routinely to produce a feed to the columns. The concentrated product at month end generally had a low $K^{1/2}(NO_3)$ value. Excessively dilute feed (ca. 0.15 pounds uranium per gallon) limited the capacity of the concentrators in the 221 Building.

Waste Handling

The volume of waste returned to the tank farms was 101.3 per cent of the volume of metal waste removed with the volume equivalent to 4260 gallons per ton of new uranium processed, and contained 3.7 per cent of uranium in the RAF. The waste was routinely neutralized to a pH of eight-nine and concentrated to a density of 1.36 at 80 C. Clearing point determinations averaged 22 C with a range of 37 C maximum to 16 C minimum.

SOLVENT EXTRACTION

Process Performance

The uranium processed by the solvent extraction batteries was 111.4 per cent of the nominal design input. The rework uranium processed was only 0.5 per cent of the total, and a waste loss of 3.7 per cent of the virgin feed uranium was sustained. Essentially HW #4 TBP Flowsheet conditions were employed except that hydrocarbon diluent containing 20 volume per cent TBP was adopted as standard extractant on June 8, and dual-scrub RA Column operation was begun on June 9. The following generalized flowsheet conditions were employed:

RAS:RAIS:RAF:RAX:RCX = 0.25:0.25:1.0:1.56:2.0*

RAS: Demineralized water
RAIS: 4 M HNO_3, 0.1 M $FE(NH_4)_2(SO_4)_2$, 0.2 M NH_2SO_3H
RAF: 0.27 M U, acidified slurry
RAX: 20 volume per cent TBP in Shell Spray Base
RCX: Demineralized water, 0.01 M HNO_3

*The flow rates given are the nominal flow rates for HW #4 Flowsheet feeds. The general experience has been that feed compositions have been off standard, generally with low $K^{1/2}(NO_3)$ values, resulting in high waste losses. To off-set these waste losses, the RAX has been adjusted upwards as high as 170 per cent flowsheet rates. It was found necessary to correspondingly increase the RAIS rates to retain an L/V ratio of 0.25 or greater in the lower portion of the scrub section in order to get adequate plutonium decontamination. Adjustment of rates under this flowsheet are under continued study.

The folumn feeds during the first half of the month were generally low in phosphate and sulfate, giving low waste losses and satisfactory decontamination. During the latter half of the month, however, the salt content of the feed increased and improved decontamination with considerably higher waste loss and lower production rates resulted.

The month's operation may be characterized by three periods: (1) with good (high uranium, low phosphate and sulfate) feed and a standard RA Column flowsheet, (2) with good feed and shake-down of the dual-scrub flowsheet, and (3) with dual-scrub flowsheet and feeds containing relatively large amounts of sulfate and phosphate. Summary data are:

Period No.	Line	Average Processing Rate, % Design	Per Cent of Feed U Loss RAW	RCW	RCU Decontamination Pu(a)	dF	B(b)	dF	G(c)	dF
1	A	150	2.3	0.1	6	1.9	77	3.4	205	3.5
	B	143	2.6	0.5	7	1.7	35	3.8	136	4.4
2	A	98	2.0	0.2	6	2.0	74	3.6	208	3.7
	B	115	1.9	0.3	6	2.0	29	3.9	120	4.3
3	A	95	4.6	0.2	9	1.8	38	3.8	177	4.3
	B	100	4.4	0.3	9	2.1	24	4.2	106	4.6

(a) Parts Pu per 10^9 parts of uranium, using new Pu analysis started early in June causing a ten-fold decrease in reported plutonium analyses.

(b) Per cent of the beta activity of aged natural uranium.

(c) Per cent of the gamma activity of aged natural uranium.

Good agreement of RAW losses for the two lines during any one period was brought about by the adoption of 20 per cent TBP in Shell Spray Base as extractant for both lines and by extensive blending of feeds in the 241-WR vault. The fission product decontamination achieved in "B" Line was consistently better than that achieved in "A" Line. Dual-scrub RA Column operation at 3.5 to 5 tons of uranium per day resulted in at least a 50 per cent reduction of RCU nitric acid concentration and no significant change in waste loss or decontamination when compared with previous operation at five to seven tons per day. The effect of poor feeds (high phosphate and sulfate and resulting low $K^{1/2}(NO_3)$ values) on waste losses during the last period of the month is clearly shown in the above tabulation. It is also significant that with the lower RC Column nitric acid concentrations brought about by the RA Column flowsheet changes the RCW losses remained steady with no indications of an upward or downward trend.

Product (RCU) Composition

On June 2, the laboratory method for plutonium analysis was revised to eliminate errors caused by entrained or dissolved TBP. This resulted in about a ten-fold decrease in reported plutonium analyses and a probable error of about 1.0 in all previously reported plutonium dF's.

The decontamination of the RCU from plutonium has generally been satisfactory throughout the month. However, during the processing of supernate-type feeds which required increased extractant rates some of the reported plutonium analyses of the RCU were as high as 50 parts per billion parts of uranium. This increase may have been caused by (1) frequent RAIS line plugs or air locks, (2) inaccurate analyses, and/or (3) the decreased ratio of aqueous to organic phase (L/V) in the bottom half of the RA Column scrub section. Since high plutonium concentrations generally occured at L/V's less than 0.25 (in lower half of scrub section) subsequent operation was aimed at controlling RAIS flow to maintain not less than this minimum scrub-section L/V.

Spectrochemical analyses of 13 RCU batches showed that the RCU contained about 135 parts of metallic impurities per million parts of uranium. Dual-scrub operation caused no significant change in RCU purity, however, the use of raw water in RAS increased the sodium from 50 to 1000 parts per million with the other impurities remaining essentially constant.

Dual-scrub RA Column operation originally appeared to be quite effective in decreasing the RCU nitric acid molarity from about 0.13 M to less than 0.01 M. RCU samples taken more recently, however, show the RCU is currently about 0.06 M in nitric acid. The cause of this change may be flow ratios, feed composition, and/or some other variable, and will be investigated further.

ORGANIC TREATMENT

Solvent quality was maintained at a satisfactory level during the period. RO Column aqueous scrub consisted of five per cent sodium sulfate solution and the periodic solvent treatment in the 276-U Building consisted of two five per cent sodium carbonate washes per batch. For each ton of uranium processed in the 221-U Building ca. 15 gallons of diluent and ca. six gallons of TBP were required.

CONCENTRATION-CALCINATION

Effect of Low Acid RCU on Impurity Pickup

With the dual-scrub RA Column Flowsheet (water as top scrub and 4 M HNO_3 as intermediate scrub) the nitric acid content of the RCU was reduced to approximately one-half of its former value. The acid content of the boiling liquor in the primary UNH concentrators was thus reduced to ca. 0.5 M HNO_3. Corrosion product pickup, as measured in the concentrator bottoms was materially decreased, e.g. iron content was decreased to 100 to 200 ppm, compared to iron contents of 200 to 500 ppm with former single scrub (2 M HNO_3) flowsheet. Three out of four carloads of UO_3 powder produced from this low acid RCU have contained a net of $<$ 200 ppm total metallic impurities (tentative K-25 specifications).

Steam Stripper, T-B-4

An inverted cyclone was installed on the T-B-4 vapor outlet line on June 25, to reduce the amount of entrained uranium going overhead with the condensate and lost to the cribs. Preliminary data indicate a ten to 20-fold reduction in uranium entrainment with an estimated savings of $1000 to $3000 per day in uranium. Although stripper capacity with the inverted cyclone was reduced by ca. five per cent, this capacity was regained by decreasing the pressure drop across the condenser. Present capacity of the steam stripper is ca. 17 tons of uranium per day.

Sixty Per Cent UNH Concentrators, E-B-1 and E-D-1

A capacity test performed on E-B-1 indicated a 9.3 tons uranium per day rate. This rate was made possible by removal of an orifice from the E-B-3 condensate drain line, thus eliminating a build-up of condensate and lowering the over-all pressure drop across the condenser. However, with the later addition of the inverted cyclone to the Steam Stripper (T-B-4), the pressure drop across the total system was again increased and present capacity of E-B-1 is ca. 7.5 tons uranium per day. The combined capacity of E-B-1 and E-D-1, with both orifices removed and with the cyclone installed on T-B-4 is estimated to be ca. 17 tons uranium per day.

One Hundred Per Cent UNH Concentrator, E-D-2

The apparent over-all heat transfer coefficient of E-D-2 was only 80 BTU/hr./sq.ft./°F at the beginning of the month. Since this low coefficient was believed due to a scale soluble in hydrofluoric acid, an HF flush was given

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the concentrator. The heat transfer coefficient was improved to 200 BTU/hr./sq.ft./°F, but in two days was down to 160 BTU/hr./sq.ft./°F, where it remained for about one week. Two weeks after the HF flush, the coefficient was only 110 BTU/hr./sq.ft./°F.

UO_3 Conversion

Pot room daily production ranged from 5.4 to 18.0 tons of uranium as UO_3 per day. Individual pot cycles averaged from 6.7 to 8.0 hours with an average of 540 pounds of uranium per charge. Included as possible contributors to the variations in pot cycles between individual pots are:

(1) unbalanced electrical feeder system,
(2) partially burned out Calrod units,
(3) excessive clearance between agitator blades and pot walls,
(4) conditions preventing complete closure of cooling dampers, and
(5) TC-2 thermocouples out of calibration.

Nitric Acid Recovery

The chloride build-up in the Nitric Acid Absorber (TA-1) has increased two to five fold since adoption of the dual-scrub (low acid RCU) flowsheet. Further study of chloride concentration throughout the system will be made in July.

It was necessary to by-pass the Nitric Acid Fractionator (T-D-4) during the first few days of the month because of badly leaking reboiler coils. The coils were replaced with a tube bundle consisting of type 347 stainless-steel tubes with type 308-L stainless-steel welds. Several samples of fractionator bottoms taken during the by-pass disclosed a reddish colored acid, containing appreciable concentrations of corrosion products (spectrographic analysis indicated strong iron, moderate chromium and moderate nickel). Examination of the bottom section revealed a pasty red solid on the bottom of the fractionator. Further study of this corrosion problem is under way.

Process Chemistry

Solvent Extraction: Back-Cycling of RDW as RAS - In connection with the possible employment of a two-cycle solvent-extraction process for uranium recovery from younger wastes, the effect of back-cycling RDW (second-cycle waste) as RAS (first-cycle scrub) on decontamination was studied by means of batch contacts. No adverse effect was observed.

Decontamination of TX Tank Farm Wastes - The decontamination characteristics of RAF (feed) prepared from Tank 101-TX sludge mixed in a 1:8 volume ratio with Tank 104-TX supernate were studied by Mini mixer-settler and batch contacts. This waste is approximately 2.3 years old. A Mini run with two scrub stages produced RCU with beta and gamma activities of 1700 per cent and 3400 per cent of those of aged natural uranium, respectively. Batch contacts, with one to three scrub stages, gave more favorable results: 60 to 170 per cent beta and 600 to 2400 per cent gamma. These findings lead to the expectation that the 2.3-year old TX Tank Farm wastes could not be adequately decontaminated with a single solvent-extraction cycle in the present Uranium Recovery Plant equipment.

Dual-Scrub RA - A series of single-scrub and dual-scrub RA Column runs was made under varying conditions of stream flows and compositions, using the 12-stage Mini mixer-settler, to determine further the effect of dual-scrub operation upon the HNO_3 content of the RCU and upon beta, gamma, and Pu decontamination factors. From these results, it may be concluded that (a) dual-scrub RA Column operation decreases the RCU nitric acid concentration by a factor of three to eight; (b) dual-scrub operation improved gross beta and gamma decontamination factors by factors of four and two, respectively, when processing young waste (mixture of Tank 104-U slurry and Tank 101-TX supernate); and (c) some indication is given that Fe^{++} is superior to $C_2O_4^{=}$ (by a factor of three to five) as a Pu partitioning agent. These differences may, however, merely reflect analytical difficulty in determining such small quantities of Pu.

Decontamination in Calcination - Calcination of Redox Plant-derived uranium solution (obtained with head-end treatment and two uranium cycles) resulted in a slight (10 to 50 per cent) reduction in the gamma radioactivity. This decontamination is attributed to ruthenium volatilization in the calcination step.

REDOX PROCESS TECHNOLOGY

Summary

The Redox Plant was shut down for nine days, May 31 through June 8, while several equipment pieces were changed: (1) the IS, IB, and 2A Columns were replaced with larger units, thus completing planned column changes until Phase II columns are available; (2) a replacement D-12 Waste Concentrator (altered D-4 Evaporator spare) was installed; and (3) several Phase II flow control valves and rotameters were installed. With these equipment changes, an instantaneous production rate of six tons uranium per day is permitted, and this rate was first attained on June 22. A complete evaluation of plant performance at this rate has not been made; however, it is evident that this rate is near the maximum attainable with series operation of the Second and Third Uranium Cycles. During the month, this plant was operated for the most part with two Uranium Cycles and three Plutonium Cycles with $KMnO_4$ Head-End Oxidation of ruthenium and partial scavenging of zirconium and niobium.

Process Performance

The following table summarizes decontamination performance data by solvent extraction cycle for the period indicated. Because samples of individual column aqueous waste streams cannot be obtained regularly, over-all waste losses only are given:

> Period covering June 12, 1953, to June 16, 1953; nominal production rate of 5.0 tons uranium per day, processing 90-day "cooled" metal with $KMnO_4$ volatilization of Ru and partial scavenging of Zr-Nb with MnO_2.

Cycle	Gamma Decontamination Factors (dF) U	Gamma Decontamination Factors (dF) Pu	Per Cent of Waste U	Per Cent of Waste Pu
Feed Prep.	0.3	0.3	0.05	0.10
1st	4.0	3.9	----	----
2nd U	By-passed	----	----	----
3rd U	2.0	----	----	----
2nd Pu	----	2.3	----	----
3rd Pu	----	1.0	----	----
Overall	6.3	7.5	1.03	0.99

These data are representative of performance for the majority of the month when the Second Uranium Cycle was by-passed. The over-all gamma decontamination factors (dF) of 6.3 and 7.5 for the uranium and plutonium products, respectively, compare with the values of 6.3 and 6.6, respectively, obtained with the standard dichromate oxidation (without Head-End) and three Uranium Cycles and three Plutonium Cycles.

Feed Preparation

The C-2 Dissolver was activated and used for the first time on June 13.

The average age of 29 IAF batches prepared was 90 (80 to 99) days. All batches were oxidized by the $KMnO_4$ Head-End oxidation procedure described last month, utilizing partial scavenging of Zr-Nb by MnO_2 all but two batches. Uniformity of scavenging has not been obtained as yet, but additional steps in that direction are being taken in the plant.

During the month, several equipment failures and resulting operating difficulties in feed preparation have limited the success of Head-Eng procedure testing. The major items were: (1) blowback through chemical addition line to H-4 Oxidizer, (2) H-2 Centrifuge tachometer failure, (3) failure of dip line on H-2 Centrifuge feed system, (4) admixture of coating removal waste to feed system, and (5) H-1, IAF Make-Up Tank agitator shaft failure.

Uranium Extraction and Decontamination

During the shutdown at the start of the month, the five-inch diameter IS Column was replaced with the 6.5-inch diameter IA Spare Column (packed with one-inch Raschig rings) and equipped with piping for a dual-scrub flowsheet. The IB Column was replaced with the Phase II, plant-fabricated IB Column (packed with 3/4-inch Raschig rings) (HW-26849). Thus, the First Extraction Cycle Column capacity is essentially that of Phase II rates.

In general, nominal conditions of the ORNL June, 1949 (acid-deficient) Flowsheet (Document HW-22834) were employed for the First Extraction Cycle and the Second Uranium Cycle. The major exceptions currenly employed are:

1. The IBX and IBS flows were reduced from 80 to 75 per cent of flowsheet on June 15, with no appreciable change in U-Pu partitioning efficiency; on June 25, these flows were reduced to 70 per cent of flowsheet.

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2. The Second Uranium Cycle was by-passed (by pumping through the columns) from June 12 to 23. The 3D Column has continued to operate as a dual-scrub column with the 3DS introduced at the 3DF inlet tee and the 3DA introduced at the top of the column.

Plutonium Extraction and Decontamination

During the shutdown at the start of the month, the four-inch diameter 2A Column was replaced with the partially-decontaminated five-inch diameter IS Column (packed with 3/4-inch Raschig rings, also). The capacity of the Plutonium Cycle Columns is believed to be essentially that of Phase II.

After two months' operation of the 2B Column on a reducing-type flowsheet (see May report), the 2B Column Flowsheet was returned to the 0.04 M HNO_3 2BX Flowsheet on June 25, in anticipation that improvements in Head-End processing will allow two Plutonium Cycle operation. The product from the reducing-type flowsheet is unsuitable for concentration and isolation because of the high aluminum concentration.

Waste Processing

During the shutdown at the start of the month, the altered D-4 Condensate Evaporator pot was installed as a replacement for D-12 Waste Concentrator. Operation has been satisfactory. Inspection of D-12 Pot No. 2 has been possible in 221-B after extensive decontamination, and general corrosion is evident. Laboratory corrosion tests indicate that of three metals tested (304-L, 309-SCb, and Carpenter 20) 304-L is the most suitable material.

The D-4 Condensate Evaporator became inoperable at the 6.5 T/D rate, the primary cause was believed to be foaming. The entire plant was shutdown until the D-4 Pot could be flushed out. Since the flush, erratic operation has been encountered, but the increase of the tower reflux rate and the reduction of the condensate rate for short periods (shut-down of the D-12 Waste Concentrator) has allowed the return to normal operation at 6.0 T/D.

The D-8 Waste Neutralizer deep-well turbine pump, installed on May 19, has operated satisfactorily until June 22, when it stopped pumping half-way through a waste batch. It was assumed that gelatinous $Al(OH)_3$ formed in the tank due primarily to inadequate agitation on a few specific batches, and appropriate action was taken to correct the situation. Apparently the difficulty was overcome, and the pump is working satisfactorily again.

Aluminum Nitrate

Filtration of all ANN used in the Redox Plant was initiated on June 1, the procedure involves filtering from one large storage tank to the other.

Purchase of "acid-deficient" (1.1-1.6 weight per cent) ANN from the vendor was started on June 8, and the first batch was used in the plant on June 25.

Process Chemistry

Head-End Runs in Redox Plant - Redox Plant operation with head-end and only two solvent-extraction cycles for uranium has resulted in a uranium product with a gamma activity from fission products of less than three times the gamma activity of natural uranium. This performance has been obtained by leaving some of the head-end MnO_2 undissolved in the metal solution sent to centrifugation. However, this "partial scavenging" has not been reproducible, and efforts are being made in the plant (supported by laboratory studies) to control this scavenging.

Solvent Extraction - Dual-scrub IA Flowsheet development - A series of runs is being made in the laboratory Mini mixer-settlers to study the effect of chemical variables on IA dual-scrub operation. The work will be extended to include the effect of back-cycling as IAS (intermediate scrub stream) the 2DW resulting from Plant operation with head-end.

Fission Products in Redox Uranium Product - The nature of the gamma activity in the Redox Plant uranium product stream resulting from operation with head-end treatment and two uranium cycles was investigated. About 80 per cent of the gamma activity was found to be due to zirconium and niobium.

Plutonium waste losses were sensitive to the IAA (top scrub stream) composition. In the absence of dichromate in the IAA (0 to 0.04 M HNO_3) the 12-stage extraction bank operated with a 12 to 13 per cent plutonium loss. This loss decreased to four per cent when 0.01 M sodium dichromate was used in the IAA. For comparison, the plutonium loss determined in a single-scrub run (with 1.9 M $Al(NO_3)_3$, -0.25 M HNO_3, 0.01 M $Na_2Cr_2O_7$ as the scrub stream) was two per cent.

Dual-scrub gross gamma dF's (logarithmic values, referred to IAF) were 3.2 to 3.4 for the IAP and 3.8 to 4.0 for the IBP stream. Five IA scrub stages were employed.

Z AREA - ISOLATION, PURIFICATION AND FABRICATION PROCESS TECHNOLOGY

TASK I (WET CHEMISTRY - 231 BUILDING)

S-Plant Single Peroxide Cycle Approval

Authorization for single peroxide cycle processing of Redox product solution for AT solution product (HW-28928) was issued during the report period and S-Plant runs are now processed through a single peroxide cycle for sample can load-out. Four six per cent nitric acid washes were specified to insure the satisfactory removal of sodium from runs processed through cell two, which has no filter sticks. No physical difficulties have been encountered thus far. When filter sticks have been installed in all cells, it may be possible to reduce the number of six per cent nitric acid washes required.

T-Plant Re-cycle

The loss to re-cycle for T-Plant F-10-P solution peroxide precipitation continues to be lower since the 30-minute digestion at 25 C was renewed and the

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50 per cent H_2O_2 addition was increased ca. 12 per cent. The loss to re-cycle for master re-cycle F-10-P solution averaged nine per cent and ranged from four to 20 per cent (12 recent runs). The loss to re-cycle for normal F-10-P solution averaged six per cent and ranged from three to eight per cent (16 recent runs).

PURIFICATION FABRICATION BUILDING

Task II (Dry Chemistry)

Based on fluoride color 21.4 per cent of the runs processed required refluorination. This is comparable to 20.2 and 21.8 per cent in April and May, respectively. Furnace No. 6 retort failed for the second time. The failure appeared as a crack at the junction of the Hastelloy "C" retort and "Z" nickel flange. These materials should be heat treated for stress relief after welding; and, since heat treating is not practical for repairs made by welding in place, repairs made by welding in place will undoubtedly be short-lived.

A recording thermocouple was imbedded in the cake of four runs. Preliminary data indicate that both damp and dry plutonium oxalate is fluorinated with the present Tast II cycle.

A check of the pressure on 14 HF cylinders disclosed that four had internal pressures greater than ten psi above the vapor pressure of HF and eight has pressures greater than 8.5 psi above the vapor pressure of HF. The presence of hydrogen in three of the cylinders was confirmed by mass spectrograph analysis. The gas above the HF contained six to ten mole per cent hydrogen.

Task III (Reduction)

Reduction yields for 158 runs averaged 95.8 per cent as compared to 94.1 and 94.6 per cent for May and April, respectively.

The use of 70-58 oxide in the Task III reduction operation was initiated during the month of June. The use of the oxide permits the blending of this agent with the charge to yield greater homogeneity of 70-58 in the button. The oxide is not available in the quantity required for its use with all production. A total of four castings were made from buttons charged with 70-58 oxide. All were acceptable.

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234-5 Development

Solution Chemistry: 231, Task I

Gas Evolution from Concentrated Plutonium Solution

A second series of laboratory-scale, storage tests under simulated, sealed, sample-can conditions is being made with 25 tubes which have been set up with the plutonium in five Pu(VI)/Pu(IV) ratios, five HNO_3 concentrations (5.3 to 8.5 M), and five plutonium concentrations (100 to 500 g/l.). Gas

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evolution rates have been low in those samples with normal AT concentrations of plutonium and nitric acid ($>$300 g/l Pu and $>$8 M HNO_3). More significantly, the solutions which were treated with hydrogen peroxide (one per cent by weight) and then boiled before being placed in the storage containers have shown no significant gas evolution.

Experimental, Task I Precipitation Vessel

In laboratory work with an experimental model of the Task I precipitation vessels, it has been demonstrated that thorough circulation and rapid agitation can be achieved in the vessels (which are six inches in diameter and ca. five feet in length) with equipment which consists of (a) a central stirring shaft with two to four propellers, set to move the solution upwards; and (b) a three to 3.5-inch I.D. draft tube, which surrounds the shaft, and which has overflow windows placed at the proper height to permit circulation when the vessel is full. A solution head of ca. 35 inches will be necessary, at the start of the precipitation, to permit circulation. A water head of 43 inches has been obtained with the shaft rotating at 1700 RPM, and improvements are anticipated when better propellers are obtained.

Task II (Dry Chemistry)

Calcination of Plutonium(IV) Oxalate

Calcination of three, 35 gram samples of a freshly precipitated plutonium(IV) oxalate batch has again demonstrated the exothermic nature of the reaction, with the temperature of the powder bed rising as much as 390 C above the temperature of the reaction tube. It was further shown that (a) the quality of the oxalate is important in determining the reaction rate, and hence the extent of the temperature rise (the oxalate used in this case was thixotropic and slow filtering, as compared with the easily - crumbled cakes whose calcination seems to be more easily controlled); and (b) combustion of the CO produced by decomposition of the oxalate is probably responsible for the heat evolution. Calcination in an inert atmosphere offers hope of preventing the attainment of excessive temperatures.

Fluorination with Anhydrous HF - O_2

Recent laboratory work on the fluorination of PuO_2 with HF - O_2 has been done to investigate the dependence of the reaction rate upon the reaction temperature and upon the previous history of the PuO_2. Using equipment which permits weighing of the sample during the reaction, the experimental observations gave evidence of either a two-stage reaction, involving the formation of a slowly-reacting intermediate compound, or the existence of two species of oxide which reacted at greatly different rates. The proportion of the more slowly-reacting species, or of the intermediate, increased with an increase in calcination temperature and, to a lesser extent, with the fluorination temperature. Consequently, it appears that the optimum fluorination conditions will be those which prevent the cake temperature from exceeding 300 C during the calcination and during the preliminary stages of the fluorination reaction. Following the 300 C treatment, the powder would be heated briefly to 500 or 600 C.

Task III (Metal Reduction)

Evaluation of Off-Standard Fluorides

In the laboratory investigation of the need to refluorinate "blue" fluoride powders, four plant runs have now been sampled before and after refluorination. Fluoride analyses of two sets of the samples indicated formulae of $PuF_{3.3 - 3.3}$ for the blue powders and $PuF_{3.6 - 4.0}$ for those which have been refluorinated. Laboratory reduction yields for three of the blue powders were two to six per cent lower than those for the corresponding samples after refluorination. Bomb pressures were variable, with no significant differences.

Recuplex

Alundum Filter - Plate for Filtration of Slag and Crucible Solution

The use of a Norton, sintered alundum filter plate for filtration of slag and crucible solution has shown:

1. filtration rates five times as great as those obtained with Micrometallic, sintered stainless steel, grad D (65μ), with comparable efficiencies;
2. no blinding of the filter, when protected by a 1/4-inch Dicalite -4200 precoat, after the passage of the equivalent of ten plant runs; and
3. a significant decrease in filtration rate after four runs which were made without a precoat.

The alundum plate has also shown excellent resistance to hot, 3-4 N HNO_3 and to cold, 30 per cent caustic.

Recuplex - Construction

The removal of the contaminated supernatant-recovery facilities from the 234-5 Building is approximately 70 per cent completed. The materials within Hoods 29, 30, 31, and 32 have been buried and disassembly of the hood panelling has commenced.

P-10 PROCESS STUDIES

The June activity of the Sub-Unit followed the pattern described previously. Extraction plant design and construction liaison and extraction operations materials liaison proceeded routinely. The training program which was prepared in May, was presented to P-10 Extraction Unit supervisory personnel.

At the end of the month, the program for reactivation of the tritium extraction equipment (the Metal Line) virtually was completed.

Two members of the Sub-Unit visited Solar Aircraft Company, San Diego, California, (low bidder on the Manufacturing Department requisition for furnace pot procurement) to evaluate that facility with regard to extraction furnace pot fabrication. The technical report on Solar's plant and technology was favorable and that vendor was accepted.

Late in the month, information was received from Los Alamos that " 'O' ringed valved vacuum tanks had leaked (lost product) during Los Alamos storage". The implications of that report are not clear, however, pending a more complete definition of the problem, procurement of vacuum tanks (product shipping containers) for the current Hanford Atomic Productions Operation tritium program was postponed.

Specification HWS-5656 which describes three specially formulated compounds which have been tested and which were demonstrated to possess superior resistance to deterioration in tritium service was approved for the procurement of 'O' ring gaskets for use in the P-10 program. The compounds were developed by the E.I. duPont deNemours Company, and were tested in tritium service by the Knolls Atomic Power Laboratory.

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	Title
Paul E. Collins (deceased) W. L. Lyon	The preparation of plutonium alloy castings directly in the reduction bomb, thus combining into one operation reduction and casting.

V. R. Cooper

V. R. Cooper, Manager
Separations Technology Sub-Section

July 9, 1953

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July 13, 1953

APPLIED RESEARCH SUB-SECTION

June, 1953

VISITORS AND BUSINESS TRIPS

K. H. Kingdon, Knolls Atomic Power Laboratory, spent June 8-10 at Hanford discussing solid state physics problems.

Prof. G. W. Watt, University of Texas, Austin, spent June 15-20 here as a consultant on chemical research problems.

T. E. Usher, General Engineering Laboratory, Schenectady, spent June 15-30 at Hanford discussing mass spectrometers and related problems.

Applied Research Sub-Section

Prof. D. McLachlan, Jr., University of Utah, Salt Lake City, visited here June 17-19 as a consultant on metallurgical research problems.

D. Imhoff, California Research and Development Corporation, Livermore, spent June 22 at Hanford discussing physics programs.

H. G. Hicks, California Research and Development Corporation, Livermore, spent June 29-30 in consultation on radiochemical techniques.

J. L. Daniel spent June 2-3 at the Mallinckrodt Chemical Works, St. Louis, Missouri, attending an information meeting on analysis for impurities in uranium.

R. M. Wagner spent June 10-12 at Argonne National Laboratory, Lemont, Illinois, presenting a paper at the organic symposium.

F. W. Albaugh, T. W. Evans, J. J. Cadwell and M. J. Sanderson visited the Chemical Processing Plant, STR, EBR and MTR installations at the National Reactor Testing Station, Idaho, on June 11-12. Irradiation of experimental Hanford specimens was discussed at MTR.

D. E. Davenport and E. D. Clayton spent June 15 at Project Dynamo, MIT, Boston, Massachusetts, discussing lattice constants and exponential measurements. June 16 was spent at AEC-NYOO, New York, June 17 at Brookhaven National Laboratory, Upton, L. I., New York, and June 18 at Nuclear Development Associates, White Plains, New York, discussing exponential measurements.

D. E. Davenport spent June 22-23 at Argonne National Laboratory, Lemont, Illinois, discussing exponential measurements.

L. L. Burger, B. R. Jones, F. J. Leitz, I. M. Rehn, H. R. Schmidt, W. P. Van Meter, R. A. Watts and A. S. Wilson attended an ACS meeting in Pullman, Washington, on June 12-13. Burger and Wilson presented papers.

Visits to KAPL were made by A. H. Bushey on June 16-17 and by G. B. Barton and A. Chetham-Strode on June 17 and to the Research Laboratory, Schenectady, by all three on June 18 for discussions of separations and analytical chemistry. June 19-20 was spent attending and presenting papers at an ACS summer symposium in Troy, New York.

A. H. Bushey and G. B. Barton spent June 23-24 and June 22-23, respectively, at ORNL, Sites X-10 and K-25, discussing separations and analytical chemistry.

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Applied Research Sub-Section

A. H. Bushey spent June 26 at the Minnesota Mining and Manufacturing Company, St. Paul, discussing properties of perfluorocarbons.

M. J. Sanderson spent June 15-16 attending a joint U.S.-Canadian Committee meeting at the Fernald Feed Materials Production Center, Cincinnati, Ohio; June 17 at KAPL discussing irradiation effects and June 18-19 at ANL discussing the Argonne MTR irradiations.

B. R. Leonard attended an APS meeting in Rochester, New York, on June 18-19; June 22-24 was spent at KAPL discussing cross section experiments.

W. A. Horning attended an American Mathematical Society Meeting in Missoula, Montana, on June 19-20.

T, K. Bierlein visited ANL on June 22, KAPL June 23 and GERL June 25-26 discussing single crystal studies, electron miscroscopy and diffraction, and use of NaK. June 29-30 was spent in Atlantic City, New Jersey, attending an ASTM meeting.

W. E. Roake discussed radiometallurgy equipment design, and separations problems at KAPL on June 29-30.

ORGANIZATION AND PERSONNEL

Personnel totals as of June 30 were as follows:

	Exempt	Technical Graduates		Non-exempt	Total
		Permanent	Rotational		
Physics Unit	27	3	2	9	41
Metallurgy Unit	41	3	2	25	71
Chemistry Unit	50	2	2	16	70
Administration	2	-	-	5	7
Total	120	8	6	55	189

PHYSICS

Lattice Physics

In a theoretical investigation of methods for producing plutonium by graphite-uranium piles conducted by the Advance Technology physics group, the use of hollow slugs showed considerable promise. In order to validate some of the conclusions drawn from the theoretical study, it was decided some time ago to perform exponential experiments in lattices utilizing hollow slugs. Although the most promising hollow slug had a diameter considerably greater, it was decided nevertheless to use slugs which could fit into present process tubes since these holes were available at the exponential experiments and in presently operating Hanford piles. Accordingly, a supply of slugs of diameter 1.67

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inches sufficient to carry out exponential experiments was ordered. It was planned that these slugs would first be inserted into a lattice as solid slugs; subsequently two different size holes would be successively drilled along their axes and in this way lattices utilizing two sizes of hollow slugs could be measured.

During the month, buckling measurements on the solid large size slugs were completed in two lattices, namely, the 6-3/16 inch lattice and the 7-1/2 inch lattice. Since these slugs are solid and since they completely fill the process tube, only the dry buckling value for each lattice was obtained. The buckling value for the 6-3/16 inch lattice was $-152.7 \pm 2 \times 10^{-6}$ cm^{-2} as given by the BF_3 counter and $-158.7 \pm 3 \times 10^{-6}$ cm^{-2} from indium foil measurements. For the 7-1/2 inch lattice the BF_3 counter gave $73.1 \pm 1 \times 10^{-6}$ cm^{-2}, while the indium foils gave a value of $71.5 \pm 1 \times 10^{-6}$ cm^{-2}. In these measurements, there were no aluminum spacers between the slugs in the process tubes to simulate end caps on canned slugs. Although the reactivity effect of such spacers is expected to be small, a measurement is being made to determine its magnitude.

The solid slugs have now been removed from the exponential piles and are being drilled with a 0.810 inch diameter hole in preparation for hollow-slug exponential measurements.

With a hole of this size, it is predicted that the optimum lattice spacing will be somewhat less than 7-1/2 inches. It thus appears that the use of such slugs in the old piles, whose lattice dimension is 8-3/8 inches, would not be at the optimum spacing.

While the large slugs are being drilled, the 1.176 inch diameter slugs will be measured both wet and dry in the 6-3/16 inch and 7-1/2 inch lattices.

In view of the increasing amount of information which is becoming available on various types of lattices and slug sizes from the exponential experiments, a series of calculations is being conducted by means of diffusion theory in an attempt to find a set of consistent nuclear constants which could then be used in further lattice calculations. Preliminary results on such constants agree reasonably well with values reported from Harwell, Chalk River and certain American laboratories.

Discussions on the methods of making lattice calculations were held with interested people at Argonne National Laboratory, Brookhaven National Laboratory and Nuclear Development Associates. Although no definite quantitative comparisons could be made, it appeared that the adjustments to the constants being made at Hanford were in the same direction and of about the same magnitude as those being made in other laboratories based on independent information.

Preparations have been completed for increasing the rate of obtaining data at the exponential experiments by the insertion of a layer of enriched slugs in the bottom of the exponential pile. The presence of these slugs is expected to raise the flux by about a factor of 10. This procedure is described in some detail in document HW-27899.

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Some experiments, designed to test the strong transient method for doing lattice calculations, have been completed. The experiments are as follows: The flux is measured on the axis of the empty exponential pile at a point several diffusion lengths above the plane in which the sources are located. One tube-bearing layer of the pile is next loaded with process tubes containing P-10 material and the flux at the same point is again measured. It is then possible to calculate the blackness of the process tube from the two flux measurements, utilizing small-source theory. Two such experiments have been performed. In the first, every lattice site in the layer contained a P-10 tube and here the blackness obtained is 0.50. In the second experiment, only every other lattice site contained a tube; the blackness obtained was 0.47. These values are yet to be corrected for transverse leakage from the pile; when such correction is made, the two blackness values should agree within experimental error if the theory is valid.

Nuclear Physics

Information obtained recently from ORNL on the status of their program for measuring the total neutron cross-section of Xe-135 indicates that: 1) the ORNL program will produce cross section information over a wider energy range than the Hanford program, 2) the energy resolution of the data from the two sites will be comparable and 3) the data from ORNL will be produced sooner than that from Hanford. After considering these facts and the cost of finishing the experiment planned here, it has been decided to cancel the Hanford program. A report is being prepared describing the work accomplished to date.

The most feasible way of measuring neutron fluxes as a function of energy and position in a lattice cell appears to be the activation of foils whose physical size can be smaller than the distances over which the flux would be expected to vary appreciably and whose presence would, therefore, perturb the flux only negligibly. A scheme for measuring the absolute epi-cadmium flux as a function of energy using foil activation techniques has been reported in the literature recently. Although the method is claimed to be accurate to ± 15%, a critical analysis of the calibration data and assumptions, leads to the preliminary conclusion that the degree of accuracy claimed is overly optimistic. A search of the literature reveals no better calibration data than those used here. However, since the general method appears promising, more work has been and will be done to try to improve the assumptions, especially in the threshold detector region of the spectrum (0.5 to 10 Mev). In the resonance region (1 to 10^4 ev) another recently reported foil technique shows more promise. The calibration is perhaps more tedious, but can be done in Hanford piles without additional facilities other than the special foils. In connection with the above work, average thermal and resonance flux spectra for a Hanford-type reactor, as a function of power level and flattening, have been calculated by making simple approximations and have been issued in document HW-28303. These spectra are intended to be useful only for purposes which are equally approximate.

Plant Physics

The methods of two-group diffusion theory are well suited for calculating many

problems associated with Hanford-type reactors. For this reason, a series of four two-hour lectures on two-group theory has been prepared for presentation to interested personnel at Hanford. These lectures explain and illustrate certain time-saving computational techniques which have been developed during the last few years by Mr. G. M. Muller.

Present uranium accounting methods make it possible to calculate the equilibrium amount of Xe-135 in a Hanford pile directly from tube powers on a routine basis without referring to the degree of flattening. The procedure for carrying out these computations has been developed and will be described in a forthcoming document.

It had been planned to determine the conversion efficiency of the H-10 load from the data obtained by the American Cyanamid Company at Arco, Idaho, on the depletion of U-235 in the J slugs. However, an operational mistake occurred in which the slugs to be used were mixed with others; thus, most of the useful data are lost. It may still be possible at this time to obtain one, or possibly two, values for the conversion efficiency from the information that is left.

A number of critical mass problems, arising in the separations facilities, have been worked out and the results transmitted to the appropriate personnel.

METALLURGY

Physical Properties of Uranium

Tensile properties have been determined for samples of high purity (low carbon-content) uranium metal in both the as-rolled and beta heat-treated conditions. No appreciable reduction in strength was noted for the low carbon material; however, the ductility was considerably less than that for normal production metal.

Uranium Fabrication Studies

A tube-rolling technique has been used suscessfully to fabricate a small hollow cylinder of uranium metal. An assembly consisting of a hollow ingot having the core fitted with a solid uranium rod was rolled at 550 C to a total reduction in area of 77%. After the final reduction, the central rod section was removed. Inasmuch as this method shows considerable promise as a means of obtaining hollow fuel elements by a rolling process, additional experimental rollings are being planned to examine various variables and to determine the practicability of the technique.

Equipment is being designed to provide laboratory facilities for preparing small compacts of uranium by powder metallurgy techniques. The equipment includes a unit to prepare and decompose uranium hydride, and facilities for the safe handling and pressing of uranium metal powders. Several attempts have been made to reduce uranium dioxide with calcium, using an iodine booster. The finely divided metal particles produced to date have hindered the leaching operation necessary to remove the slag. Additional experiments are in progress to establish the optimum conditions for this operation.

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Bonding Studies

The survey of chemical reagents which will produce optimum surface roughening of uranium metal preparatory to cold canning is continuing. Metallographic examination of uranium metal surfaces which had been anodically etched in hydrochloric-phosphoric, trichloroacetic, trichloroacetic-phosphoric, and ammonium chloride-phosphoric acid baths indicate that the hydrochloric-phosphoric acid treatment gives the best surface for subsequent mechanical bonding.

A series of cold canned slugs has been prepared to determine the feasibility of producing a fusion weld closure on the face of the cap rather than on the edge and to explore the possibilities of using a pressure weld at the cap end of a slug to improve the can-to-cap closure. Metallographic examination of a closure formed in this manner is in progress.

Effects of Irradiation on Uranium

Hardness and metallographic studies were completed on the irradiated uranium wafer, which had been previously examined for its electrical resistivity and x-ray diffraction properties, to determine the effects of irradiation after an exposure of 150 MWD/T on PT-313-105-1M. X-ray diffraction measurements and metallography showed no apparent change. Average hardness values increased 10 points R_G (ca. 15%) and the electrical resistivity values increased about 4%.

Four low melting point binary and ternary alloys of Bi, Pb, and Sn have been prepared to determine their utility as heat transfer mediums for canning uranium samples which are to be irradiated. The alloys have been cast into 2S aluminum capsules with uranium and are being tested at a temperature above their melting point to determine if diffusion or corrosion between the alloys and the uranium or the aluminum will occur.

X-ray diffraction studies are being continued to determine the crystallographic orientation existing in selected uranium metal samples. When these studies are completed, the specimens will be canned and subjected to pile irradiation in an attempt to correlate quantitatively dimensional instability with preferred crystallographic orientation.

Irradiated Slug Examinations

Metallographic examination of the can wall from two ruptured C slugs (C2-463 and C2-464) indicated that the can was originally pulled apart at the edge of an area where the can was well bonded to the slug. Observation of the can wall microstructure shed no light on the nature of this bond. There was no evidence that any inherent defect in the can wall caused the rupture. After examining seven other C-slug ruptures through the underwater viewing facilities, it was concluded that the region of the cap assembly, particularly the weld, is the most suspect area as a cause for failure.

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Rupture #16, which is a cap type rupture with a very fine crack extending about 1/4 of the circumference of the cap, was placed in the circulating 75 C water, slug rupture tester. It is hoped that the mode of failure of this obviously defective slug can be correlated to activity pick-up in the circulating water.

Samples have been obtained from the fractured area of the first Group IX split type rupture (#250) to better define the observed macroscopic differences by chemical and spectro-chemical analyses.

Examination of Other Irradiated Materials

Metallurgical investigation of the vertical safety rod which failed at 105-B on April 25, 1953 indicates that the rod failed in tension due to a suddenly applied overload. Metallographic examination did not reveal any microstructural differences between the samples of rod taken above and below the fracture. An interim report is in process.

Radiometallurgy Facilities

The dry storage unit, wet storage basin, decontamination cell and the 60,000 pound tensile machine in the 327 Building were tested and found acceptable. The completion date for building construction has been estimated as July 1, 1953.

The Bergsman micro-hardness tester was installed in the 111-B Building and is now being calibrated.

Equipment was designed and fabrication begun to permit underwater removal of cap assemblies from unbonded and bonded fuel elements for metallurgical investigations.

Replacement of Hydrofluoric Acid in 234-5 Operations

Freon-12 - Optimum conditions for the preparation of plutonium trifluoride by Freon-12 have been established and are as follows: (1) dry the plutonium oxalate slurry in an air stream at a furnace temperature of 125 to 150 C for 3 hours, (2) convert the plutonium oxalate to the oxide in an air stream at a furnace temperature of 275 to 300 C for 1 hour, and (3) fluorinate with Freon-12 at a furnace temperature of 400 C for 1 hour. The resulting plutonium trifluoride is easily reduced to metal with high yield.

Various metals were tested for corrosion resistance during the conversion of cerium oxide to cerium trifluoride using Freon-12 at 450 C. The corrosion rates in inches per month were: platinum, 0.000066; Haynes 25, 0.00024; nickel, 0.00031; Inconel, 0.00056; Hastelloy A, 0.00062; B, 0.00063; C, 0.00014; and D, 0.0019; and 2S aluminum 0.0024. Since nearly all the metals tested are essentially inert with respect to Freon-12, furnace tubes, boats, valves, etc., could be made from a number of metals, any one of which would be safe from a plant operations standpoint.

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Phosgene - The use of phosgene as a halogenating agent would, of course, produce plutonium trichloride rather than the fluoride, as at present. This may lead to a minor complication in subsequent operations, viz., chloride removal from reduction slag and crucible material would appear necessary to present subsequent corrosion of the stainless steel Recuplex facilities. Preliminary results indicate that simple treatment of the reduction slag with water, followed by filtration and washing of the insoluble plutonium hydroxide residue does not give the desired complete separation from chloride ion.

Wet Plutonium Fluoride Studies

The direct precipitation of plutonium (IV) fluoride by addition of concentrated hydrofluoric acid to aqueous AT solution is under investigation as a simple means of preparing material suitable for reduction purposes. Unfortunately, for reason(s) as yet unknown, the precipitation yield is erratic. Plutonium loss to supernate is usually low, viz., ca. 0.6%; however, occasionally waste losses as high as 35% occur under presumably identical conditions.

Thus far, metal reduction studies using dried plutonium (IV) fluoride prepared from aqueous solution have been thwarted by bomb failures during firing.

Electrolytic Reduction of Plutonium

Several electrolytic reductions from molten salt baths using cerium as a "stand-in" for plutonium have been performed. The product obtained reacts vigorously with water, evidently due to contamination of the cerium with potassium metal and frozen salt containing colloidal cerium metal. However, after the product was purified by vacuum melting, the cerium metal was found to be 99.8% pure.

Graphite crucibles saturated with sodium silicate and magnesia crucibles impregnated with silica are being tested to determine whether they are suitable materials for cell fabrication.

Recovery of Plutonium from Skulls

Since plutonium skulls are unavailable at the present time, partially oxidized cerium metal is being used as a plutonium "stand-in". Cerium metal and oxide were added to a system containing a calcium fluoride-calcium chloride eutectic flux and calcium metal. When the entire system is molten, the cerium metal appears to be miscible with the flux. The cerium product recovered from the melting crucible had a strong odor of acetylene and reacted violently with dilute nitric acid. It is postulated that plutonium skulls which are highly reactive contain appreciable amounts of plutonium carbide or calcium carbide.

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Thermal analysis - Heating runs have been made using a new center assembly in the thermal analysis furnace. The heating rate of the furnace increased from 1.3 degrees per minute for the old assembly to 3.5 degrees per minute for the new, using a temperature difference of 50 C across the nichrome cylinders. The heating rate increased from 2.7 to 7.4 degrees per minute when a 75 C temperature difference across the nichrome cylinders was employed. The sensitivity of the apparatus is markedly increased by the new center assembly.

Metallographic preparation - Testing of the metallographic equipment with non-radioactive specimens is nearly completed. Laminac 4116 catalyzed with Laminac 347 was the most suitable plastic casting compound tested. Grinding of the specimens on emery paper is not too satisfactory because of the time required and the difficulty of obtaining a flat specimen surface.

Hoods - All hoods in the laboratory with the exception of the dilatometer hood have been completed and sealed or are waiting to be sealed.

Materials of Construction

The corrosion resistance of type 304L and type 309SCb stainless steel was determined in one of the mercaptan-containing solutions which has been proposed for ruthenium decontamination. Both steels were free of pits and suffered little weight loss when exposed to the solution which contained a precipitate formed by the action of silver nitrate and the mercaptan.

Two additional runs were completed with the equipment designed to study concentration cells in the iron, chromium, and nickel pick-up problem. The current flowing betwen two specimens of 309SCb stainless steel, one immersed in 60% UNH, the other in 100% UNH, appears to be a function of (1) specimen skin temperature, (2) solution concentration, and (3) internal resistance of the solution.

The first portion of a program to evaluate the chemical resistance of candidate bearing materials for use in Purex equipment was completed. The commercial specimens of Graphitar proved unsatisfactory, but specimens of partially graphitized carbon (special pile graphites) would be suitable for use in applications where the temperature does not exceed 120 C.

Visual inspection of the recently failed Redox D-12 evaporator indicated considerable corrosion of the coils. To facilitate finding a material which will give a satisfactory corrosion life, a specimen holder was designed and fabricated which will allow twenty-nine test specimens to be exposed simultaneously in the D-12 evaporator. Pending outcome of these tests, an interim recommendation was made to the Design Section to use 304L stainless steel, welded with 308L, for a new evaporator. Thirty Huey tests and eight oxalic acid screening tests were conducted to select material for the spare evaporator which is to be fabricated here at Hanford.

Metallurgical examination of the broken shaft from the C-Reactor tube handling crane indicated the failure to be a fatigue-type fracture.

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During the month, development of a welded closure for canning of unbonded specimens for special production testing was continued. The technique which currently appears best suited to such specimens is one in which the can top is curled over the cap, welded, and finally warm-pressed.

CHEMISTRY

Process Studies

Second cycle Purex studies compared the overall decontamination obtained with feeds from normal and from high acid first cycle runs. Equal DF's were obtained in the second cycles. The IBU was well within beta specifications, but out of gamma by a factor of three for the normal flowsheet feed and by eleven for the high acid first cycle feed. Hence, the overall results show a disadvantage for the high acid first cycle, when adequate scrubbing is employed. Considerable decontamination from zirconium and niobium was obtained in the IB section.

To test whether off-standard Purex streams might cause explosions if inadvertently exposed to bare steam coils, samples of ICU, 1AX, HNO_3, "Red Oil", and combinations thereof were dripped into a steel cup at 200 C. Steady decomposition ensued but no explosive reactions occurred.

Laboratory tests of the downdraft dissolution procedure showed little effect on decontamination in Redox systems, but in Purex, zirconium-niobium decontamination was decreased ten-fold. This result suggests the need for a careful semi-works study of the effect of downdraft dissolving on overall decontamination. Study of the phosphate catalyzed dissolution of uranium has been completed, and a summary report is in preparation.

A reflux flowsheet for the Redox 2A-2B cycle has been designed. The flowsheet requires the high reflux ratio of 40 to achieve a plutonium concentration of 60 g/l. Due to the potential hazard of high HNO_3 concentrations with hexone, conditions must be such as to insure against HNO_3 buildup. Accordingly, the flowsheet is built around the use of Pu(VI) in the system, and $\frac{L}{V}$ in the extraction section is kept high to favor HNO_3 elimination with the waste stream. A preliminary Mini test of a low reflux flowsheet has resulted in a product 20 g/l Pu and 2 $\underline{M}$ HNO_3. Batch equilibrations have been conducted to determine plutonium distributions at high concentrations in the system, preparatory to a full level run.

Hexone irradiated to 10^8 R was mixed with pure hexone. The disengaging time increased from 9 seconds to 18 seconds for 1% irradiated hexone, to 60 seconds for 100% irradiated hexone.

The stability of hexone dispersions is under study. Emulsion stabilizers such as SiO_2 and irradiated hexone were employed to enhance dispersion, and the effect of emulsion inhibitors such as "plastilube" and synthetic detergents

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was tested. Some improvement in disengaging time was effected, but the reagents were either unstable or caused increased dispersion time. In all cases when the dispersion was changed to organic continuous, the disengaging time decreased and became more independent of additives.

Tests on the system used in pulse column flooding studies showed that while the disengaging time varied from 12 seconds to 30 seconds over a two month period, the flooding velocity remained constant. Since the emulsification (dispersion) times remained constant, this latter test is a measure of the flooding performance of the system, rather than the disengaging time test. The introduction of colored droplets into the packed section showed that coalescence was indeed a rare event, hence of minor importance.

The effect of surfactants on the rate of uranium transfer, aqueous to organic, was further studied. With hydrophilic reagents of concentration less than 40 ppm, a definite retardation was observed, although the systems dispersed much more rapidly. With hydrophobic reagents a concentration of 500 ppm was required to decrease dispersion time, and hinder the rate of extraction. When experiments were done with the organic phase continuous, the transfer rates were more rapid and not affected by small amounts of surfactants.

An interim report, HW-28408, describing the knowledge of the art of cesium removal from Uranium Recovery waste was issued during the month. Further study of the settling characteristics and stability of copper ferrocyanide in the supernate of neutralized wastes has shown that the carrying of cesium by this precipitate decreases over a period of several days at a pH of 8. The rate of settling is such that it would take several days before an adequate separation obtains. A limited study indicates that at pH 7, cesium adsorption on copper ferrocyanide is stable for a longer time than at pH 8. Scouting studies with manganous and nickelous ferrocyanides have shown that these precipitates will carry cesium as well as copper ferrocyanide and may be more stable at higher pH's.

The capacity of a Dowex-50 resin column for the removal of radiocerium from synthetic Uranium Recovery product solution was found to be 350 column volumes. Regeneration by reverse flow with 4 M nitric acid required 10 column volumes to reduce the ratio of the cerium activity in the regenerate solution to that in the feed to eight. Twenty column volumes are required to reduce the ratio to one.

A solution of uncomplexed ruthenium(III) was prepared by eluting the ruthenium (III) with 2 M perchloric acid at 0°C from a Dowex-50 column. As expected, the spectrum of the ruthenium(III) prepared in this manner is the same as that of ruthenium(III) prepared in trifluoroacetic acid, a substance which has only a small tendency to form complexes. This ruthenium(III) will be used as a starting point for the preparation and study of various nitrate, nitrite and nitroso complexes. Contrary to results reported by Argonne, perchloric acid did not readily oxidize ruthenium(III) to (IV) on warming the sample to room temperature. However, partial oxidation of one of two samples was observed when they were allowed to stand overnight exposed to air.

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The chemistry of potassium ruthenium nitrite, $K_4Ru(NO_2)_6$, is being investigated since it is known that ruthenium extracts into organic solvents from nitric acid solutions of this compound. It was found that this substance is not readily oxidized by chlorine in 1 M nitric acid despite the fact that chlorine is considered a good oxidizing agent for ruthenium. Peroxide, however, is able to effect the oxidation. In addition to this, the spectra and basic thermodynamic and kinetic properties of various ruthenium species have been investigated to characterize better the chemistry of this important fission product element.

Radiochemistry

The isolation and purification of americium-241 to be used as a source for gamma-ray photometry and for the preparation of a neutron source is underway. Thus far, 280 mg of impure but concentrated americium are available. The application of the Am-241 60 Kev gamma to gamma-ray photometry has been investigated and appears to be most useful for measuring the concentration of solutions containing 10 g/l or more of some heavy element, such as uranium or plutonium. The characteristics of the less abundant 26 Kev gamma from Am-241 are being investigated in the hope of application to a photometer which would determine concentrations of uranium of 1 g/l or less.

Inasmuch as neutron activation is a very sensitive analytical method for many elements, a scheme of analysis based on neutron activation and gamma ray spectrometry is being investigated. Thus far, 11 elements have been irradiated in the 305 pile and the characteristic radiations from these elements have been measured with the HAPO-designed gamma ray spectrometer.

A program for the recovery of 50 mg of highly irradiated plutonium is being worked on jointly with the Radiation Laboratory at Berkeley. To produce the 50 mg of high g/T plutonium, 500 mg of plutonium were radiated extensively in the MTR at Arco. This sample will be processed in one of the multicurie caves of the 222-S Building; it is expected that 200 curies of fission product will be associated with the sample. The isolated plutonium will be used to determine nuclear constants of plutonium-241, and for plutonium isotope separation studies. Equipment for recovery of the lithium iodide, which was used as a neutron monitor in the carbon-12 cross section problem, has been constructed and tested. After recovery, the lithium will be analyzed isotopically at ANL to determine the lithium-6 burnout. In addition to the lithium recovery, the tritium formed from the $Li^6(n, \alpha)$ reaction will also be recovered.

Several carefully prepared plutonium discs are being made for the physicists for use in experiments to determine the cross section of Hanford plutonium at various neutron energies.

Radiochemical Instrumentation

In light of the recent change in beta and gamma activity specifications for

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uranium product, an in-line gamma monitor for Uranium Recovery Process product is much more necessary than the in-line beta monitor previously referred to. Accordingly, a gamma monitor, which is a simplified version of the one in the Redox Process, has been designed and is being fabricated for plant use.

The sensitivity of the in-line plutonium monitor for Recuplex Process waste was extended to 30 mg/l plutonium in the presence of 0-100 uc/l of mixed fission product through use of a differential counting system which automatically compensates for fission product Compton interference. Without the differential system, the limit of detection of plutonium is 100 ± 50 mg/l for the normal 55 uc/l of mixed fission product. The instrument is very stable, showing only a 1% drift in five days of continuous operation measuring a sample containing 300 mg/l plutonium and 55 uc/l of mixed fission product.

A re-evaluation of the data obtained on the determination of U-235 in a mixture of U-235 - U-238 by direct measurement of the low energy gamma rays from the uranium isotopes has shown that the U-235 can be determined with a standard deviation of ± 1.5% for the average of three determinations. A single determination, although not as precise as a mass spectrometer determination, requires only 15 minutes. Neutron activation of U-235 - U-238 mixtures, with subsequent measurement of the barium-140 fission product gamma, permits no better precision in the determination of U-235 than direct gamma measurement of the isotopes.

Mass Spectrometry

The resolution of the mass spectrometer being used for uranium isotopic analyses is such that about 10% of the uranium-236 peak overlaps the uranium-235 peak, and therefore, at present Hanford levels, the uranium-235 is probably biased to the extent of approximately + 0.001% absolute. This is not sufficient to require correction of routine values but will be sufficient to affect calculations of burn-out in research studies.

Experiments are being continued with the Consolidated Model 21-221 mass spectrometer on surface ionization techniques for heavy metal isotopic analysis. Significant ion peaks have been obtained from uranium-235 and uranium-238; the useful peak being that of UO_2^+. Refinements in technique and circuitry are being made in order to obtain quantitative data.

Recent analyses of the pile atmosphere indicate that the graphite burn-out rate in the C Pile, as indicated by carbon monoxide concentrations, has not increased, although the power level has been raised from 700 MW to 970 MW. The appearance of several extraneous and unexplained mass peaks in the C Pile mass spectrum during the month is being studied. Analytical data, now being collected on the D Pile gas, indicated that carbon monoxide levels are lower than expected.

In cooperation with personnel of the Pile Technology graphite group, studying the function of graphite purity in pile reactivity, nitrogen concentrations in graphite were determined. From limited literature data on the gas content of virgin graphite and our own pile gas data, it was estimated that the locked-in nitrogen in a new pile of the C type amounts to 1400 moles, while the pile atmosphere contains an additional 340 moles under current conditions.

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Spectrochemistry

Using the recently installed D-3 x-ray head in the x-ray photometer, a survey of the relative absorption coefficients as a function of voltage for a number of solvents and aqueous solutions of process interest has been made. With this information it is possible to select optimum voltages and to predict analytical accuracies for the analysis of many process solutions and reagents. It was shown, for example, that TBP can be determined in either 15 or 30% concentrations in Shell Spray Base with high precision. Scattered radiation in the vicinity of the x-ray beam from this new head was measured in order to provide shielding information for the special Hanford x-ray photometer being designed at the General Engineering Laboratory.

A thorough study of the applicability of flame photometry to the determination of iron, manganese, and copper in process water was made. It was found that the sensitivity for all three substances is limited by serious interferences due to the relatively high concentrations of potassium, sodium, calcium, and magnesium in process water. This would require an elaborate separation step in order to apply flame photometry.

Steps have been taken to apply the light scattering microphotometer to the measurement of turbidity of process water. The high sensitivity of this instrument enables the detection of small differences between samples from different sources. Preliminary measurements have, in fact, indicated significant differences in turbidity of water from the several 100 Areas.

In a program to extend the knowledge of the structure of certain inorganic compounds and complexes, infrared spectra have been obtained for several oxides of rare earths and related elements. Significant differences in the infrared spectra of several rare earth oxides have been observed and correlation of these differences with available structural information is being attempted.

Instrumentation

In the process of plant testing the first model of the automatic uranium analyzer for Uranium Recovery Process feed solution, the seats of some of the valves in the hot stream failed in a short while. A greatly simplified model requiring no valves in the radioactive stream has been constructed. Laboratory performance is good, and a field test is pending. In addition, an automatic sampler of the stopcock type has been constructed of stainless steel and Teflon. Laboratory tests are encouraging; the leak-through is tolerable and the delivery precision is approximately ± 5%. In further work with the automatic polarographic analyzer for uranium in Uranium Recovery waste streams the range of the instrument has been extended up to 5 g/l, a level occasionally reached in current operation.

In coulometric analysis of the aluminum nitrate-nitric acid system using the recording titration equipment, a relatively sharp pH break corresponding to the titration of the free acid is obtained. Several additional pH breaks are obtained, but the addition of fluoride ion eliminates some or all of these,

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depending upon the relative concentrations of fluoride and aluminum. The chemistry involved is not well understood. Attempts are being made to conduct the direct coulometric titration of nitric acid and uranium in Purex type feeds by a manual procedure to eliminate costly apparatus. Unfortuanately, the endpoint breaks, which are sharp and distinct in the recording titration, are obscure and poorly defined in a manual titration.

Miscellaneous

In a preliminary investigation, directed toward attempted plutonium isotope separation, ten successive TBP extractions were performed on a $Pu(NO_3)_4$ solution, followed by ten successive strips. No appreciable isotope separation was achieved, as indicated by constancy of the Pu-240 content of all samples.

A search for a suitable primary standard plutonium compound has shown that plutonium trifluoride is very promising. The compound can be prepared by simple precipitation with hydrofluoric acid from a trivalent plutonium solution, followed by filtration, washing and air drying. The resultant solid, which is the monohydrate of plutonium trifluoride, has good stability, a fixed composition, and is readily soluble in dilute acids. As a primary standard, the compound will be considerably more convenient to use than either plutonium metal or plutonium dioxide. Analysis of several preparations by accepted assay methods have yielded excellent recoveries of Pu.

The previously reported method for the rapid determination of tin in Al-Si by metal solution potential measurements is being set up in the canning plant for test. It is hoped that the method will permit a sizable reduction in the spectrographic analysis load.

In an application of recently developed micro-spectrographic techniques using the Hilger spectrograph, the corrosion film in a crack in a reject uranium slug was identified as consisting only of oxides of uranium, silicon, and aluminum. In another study, samples of adhering scale on a de-canned reject slug were identified as bronze by micro-spectrography and x-ray diffraction. In the case of the bronze spots, further study suggested that a "freezing" of the bronze may be occurring in the bronze dip pot because of the use of cold tongs for handling. Since no suitable method is available for removing the bronze spots, preventive measures are required. Samples of typical slag from the bronze pot were analyzed and identified as being chiefly uranium dioxide. Recovery measures for the uranium were recommended.

In the continuing study of the micro inclusions in uranium, a 10- to 100-fold concentration of the metallic impurities of uranium in the inclusions was confirmed by spectrographic analysis. It is possible that the concentration of the metallic impurities may be partially due to adsorption phenomenon, since many of the isolated inclusions are very finely divided . By employing a flotation technique using a high density inert liquid, light and heavy fractions of the isolated inclusions have been separated. The heavier fraction proved to be almost exclusively solid cubes, whereas the light fraction consisted of hollow shells and angular particles, containing higher concentrations of carbon, hydrogen, and nitrogen.

Applied Research Sub-Section

Standard test samples processed through analytical control laboratories consisted of 6 samples with 50 determinations in 100 Area laboratories, 29 samples with 29 determinations in 300 Area technical service laboratories and 18 samples with 68 determinations in 200 Area laboratories.

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 belief, no inventions or discoveries were made in the course of their work during June, 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
M. T. Walling, Jr.	Application of Fluidized Beds to Volatility Separations Processes
W. W. Schulz	Use of H_3PO_4 to Increase Rate of Solution of Uranium Metal in Nitric Acid Solutions
W. W. Schulz	Use of Benzyl Mercuric Acetate for Removing Chloride from Process Solutions
W. V. Cummings, Jr., D. C. Kaulitz and M. J. Sanderson	Double Crystal X-Ray Spectrometer for Study of Irradiated Materials

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

FWA:ltc

[redacted]

LABORATORY ENGINEERING AND FACILITIES UNIT

JUNE 1953

VISITORS & BUSINESS TRIPS

Two off-site trips were made by members of this Unit during the month.

D.C. Kaulitz spent June 3, 1953 at the National Appliance Co. plant at Portland, Oregon where he inspected finishes on gloved boxes being fabricated by that firm.

J.F. Gifford and L.F. Miller visited the Naval Radiological Defense Laboratory at SanFrancisco on June 2-5, 1953 and the University of California Research Laboratory on June 2-5, 1953. During their visits they inspected equipment for decontamination and reviewed equipment and procedure to be used in a heavy element separation to be performed here in cooperation with U.C.R.L.

One off-site visitor was sponsored by this Unit during the month.

G.C. Westfall representing American Cyanamid Co., Idaho Falls, Idaho, visited the Equipment Development group on June 4, 1953. The purpose of his visit was "Remote Control Pipetters, Coating and Decontamination".

ORGANIZATION & PERSONNEL

Personnel totals for Laboratory Engineering and Facilities Unit are summarized as follows:

	May	June
Laboratory Engineering	40	38
Analytical Laboratories	45	45
Equipment and Materials	11	11
Laboratory Facilities	9	9
Administration	3	3
	103	106

Effective July 1, 1953 the activities of this Unit were transferred to the various Sub-Sections within the Technical Section. This consisted of the transfer of 1 exempt and 9 non-exempt to Applied Research, 23 exempt and 22 non-exempt to Separations Technology, 20 exempt and 23 non-exempt to Fuel Technology, 1 exempt to Advanced Technology, 1 exempt to Radiological Sciences, 1 exempt and 1 non-exempt to Project Section, 1 exempt and 1 non-exempt to Pile Technology, 1 non-exempt to Technical Information, and 1 non-exempt to Technical Administration.

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LABORATORY ENGINEERING SERVICES

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

Work volume statistics for the Mechanical Shops are as follows:

	Customer Unit or Program	May No. of Jobs	May Man-Hours	June No. of Jobs	June Man-Hours
Work Done on Jobs Completed	Applied Research	20	396	21	520
	Pile Technology	37	787	47	928
	Fuels Technology	19	444	13	257
	Separations Tech.	2	106	4	194
	Lab. Eng. & Fac.	9	209	5	88
	Others	24	410	26	313
	Sub-Totals	111	2352	116	2300
Work Done on Jobs Not Complete	Applied Research	9	398	8	632
	Pile Technology	17	262	6	163
	Fuels Technology	0	0	4	225
	Separations Tech.	0	0	2	12
	Lab. Eng. & Fac.	5	404	5	584
	Others	6	155	9	122
	Sub-Totals	37	1219	34	1738
Total Work Done			3571		4038
Work Backlog			Man-Hrs. to Comp.		Man-Hrs. to Comp.
Jobs Started	Applied Research	9	587	8	380
	Pile Technology	17	243	6	77
	Fuels Technology	0	0	4	227
	Separations Tech.	0	0	2	44
	Lab. Eng. & Fac.	5	307	5	197
	Others	6	178	9	253
	Sub-Totals	37	1315	34	1178
Jobs Not Started	Applied Research	6	278	8	1183
	Pile Technology	5	108	5	108
	Fuels Technology	3	195	2	40
	Separations Tech.	0	0	2	32
	Lab. Eng. & Fac.	0	0	1	6
	Others	2	76	4	519
	Sub-Totals	16	657	22	1888
Total Backlog			1972		3066
These Figures Include:					
Cross-orders		1	40	4	256
Outside Vendors		0	0	0	0
Total Net Backlog			1932		2810

[redacted]

The net backlog of 2,810 hours will require approximately 17 crew-days to complete. The backlog was nearly doubled during the month partially as a result of vacations which reduced the force.

The following work was completed for the Technical Units:

Applied Research

The Exponential Pile process can and tube welding for the hollow slug program progressed rapidly with a total of 264 man-hours being expended. Fabrication of miscellaneous parts and equipment for the startup of the Radiometallurgy Building required an expenditure of 158 man-hours.

Fabrication of an autographic in pile dilatometer for studying the effect of radiation upon uranium samples was completed.

Work was started on the special equipment required for the heavy element separation to be made in cooperation with personnel from U.C.R.L.

Pile Technology

Platens for a 50-ton hydraulic press were fabricated from 2½" steel plate. A floating "O" ring seal, a 40' gear rack and housing and an oil seal transition were fabricated for use on the horizontal rod problem.

A special pair of elbow jointed tongs were fabricated for the underwater inspection facility. These cable operated tongs were 20' long.

Fuels Technology

Two series of special sizing dies, 20 molds, and a 50-ton press frame were fabricated for the new canning program.

Fabrication of a manipulator for use with a slug optical comparator was started.

Separations Technology

A replacement bearing block was fabricated for the first Hanford miniature mixer-settler. The mixer-settler was highly contaminated and special care was necessary while fitting the bearing block.

A laboratory model 4" cyclone separator was fabricated of stainless steel.

A total of 66 hours were used in fabricating forty special fiberglass filters which will be used to replace CWS filters. The cost of these units approximates $10 each as compared with $40 for the CWS units.

A special Lucite helix type impeller was fabricated for 234-5 Building studies. This helix is approximately 3" in diameter and 14" long and the vane is approximately ½" x 1" in cross-section.

A full sized mock-up of the control console for the P-10 metal-line was completed and will be used in training personnel for metal-line operation.

Laboratory Engineering and Facilities

Fabrication of various pieces of equipment for the Laboratory Equipment Development RDS required the expenditure of 247 man-hours.

Fabrication of work benches, welding stands, special tool cabinets, etc. which will be needed for the startup of the Mechanical Development Building continued as the workload would permit.

Others

Two gloved boxes were modified for the 222-S Building Process Control Laboratories.

A can and sleeve feed mechanism for the new 300 Area canning machine was fabricated for the Design Section.

One hundred special stainless steel sample containers were fabricated for the Metal Preparation Section for use in studies in connection with the 300 Area mechanization program.

GLASS SHOP

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

	May	June
New Jobs	89	98
Revisions	22	31
Repairs	14	16
Total	125	145

The backlog in the shop continued at approximately 3 days allowing immediate service on nearly all new work. An increase in the amount of quartz fabrication indicates the upward trend in quartz utilization. This month 34 jobs requiring quartz fabrication were requested.

Equipment Development

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

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	May			June		
	Eng.	Misc.	Drafting	Eng.	Misc.	Drafting
Pile Technology						
Pile Materials	10	20	161	36	61	116
Pile Engineering	19	21	90	7	24	67
Pile Services	-	1	12	-	-	-
Fuel Technology						
Pile Fuels	148	102	391	164	123	210
Pile Materials	64	22	-	55	21	75
Separations Technology						
Chemical Development	149	94	112	124	111	169
234-5 Plant Assistance	-	-	-	53	1	4
Applied Research						
Chemistry	257	146	133	507	181	159
Physics	14	3	17	137	3	-
Metallurgy	408	193	207	509	204	344
Manufacturing						
Process Assistance	45	151	66	26	102	27
Lab. Eng. & Facilities						
RDS #TC-1	640	129	279	380	221	403
Engineering	598	288	127	538	232	120
Tech. General	-	-	32	-	-	13
Mechanical Shops	-	-	-	40	-	-
Miscellaneous						
Biology Section	-	-	-	-	4	25
AEC-(6559-999)	-	6	46	-	-	-
Totals	2352	1176	1673	2576	1288	1732

Principle development activities are indicated below:

Pile Fuels

Assistance was given in the engineering and design of a slug centrifuge, a slug plating bath, and revisions on the automatic radiograph mechanism.

Pile Materials

Design was completed on a slug manipulator for an optical comparator, a rubber band applicator, and a slug cleaning tank.

Chemical Development

A number of "hot" laboratory equipment developments and revisions were made. Among these was a stopcock plug holder, and redesign of a multicurie cell liquid transfer station.

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234-5 Plant Assistance

Assistance was given on the design of a fiber glass gloved box filter and a variable stroke agitator.

Metallurgy

A jig was designed to hold uranium rod sections for grinding. Design was completed on a die heater. The electropolishing unit was given a final test before being turned over to the customer. Scoping was started on a slug testing set-up to be used at the MTR in Arco, Idaho. Design was completed on the high-speed "hot" slug sampler.

Chemistry

A "hot" test run was made with the uranium burning equipment. Design was started on a remote valve actuator. A base was designed for an electrochromatography apparatus. Scoping was started on a remote recovery unit. A stirring rod manipulator was designed and put into use. The waste ice cream carton flaring tool was redesigned. An electro-dissolver for uranium was designed. The fluorine gloved box design was completed. A crane to load pig and piglet casks was designed and drafted.

RDS #TC-1

A small diaphragm pump was modified to enable it to handle corrosive chemicals. A small, compact bottle holder was designed. Design was completed on a remotely operable lead casek cap lock.

New Laboratory Planning

Mechanical Development Building - Project C-406

This building is approximately 93% complete. Laying of floor tile in the office area is proceeding. The major item of remaining construction work consists of completing the Heating and Ventilation system.

Radiochemistry Building - Project C-381

This building is approximately 90% complete. This completion figure, however, includes all materials on site and does not represent the actual physical completion status of the building. During the month a concerted effort was made to finish the piping trim in one of the laboratory areas. This finished piping together with the subsequent pressure testing was rushed in order that the vinyl flooring could be laid and furniture set. By month's end the furniture had been set in about three laboratories and the installation of the hoods had begun. The placement of the hoods was somewhat hampered by alignment problems between the hood and the wall. During the last week of the month, the pipe-fitting was on a two shift basis.

Radiometallurgy Building - Project C-385

The modified remote control metallograph for use within one of the intermediate level cells was installed by the vendor and accepted by General Electric. The building was accepted from the lump sum contractor by representatives of the Commission and General Electric on June 29. Necessary fencing has been installed and this building is now included within the 300 Area operational area.

Outside Facilities and Utilities - Project C-394

The final components of this project were accepted with minor exceptions during the month. Those items accepted included the roads and walkways and Waste Disposal and Neutralization facilities.

Pile Research and Development Building - Project C-414

At month's end this project is approximately 89% complete. Laboratory furniture is being installed and painting was continuing in the basement laboratories. Completion is now scheduled for August 1, 1953 with air balancing to be completed thereafter.

Laboratory Supply Building - Project C-458

The project proposal has been prepared and is ready for submission to the next meeting of the A&B Committee.

Solvent Storage Building - Project CA-441

The revised project proposal has been completed and is ready for submission to the next meeting of the A&B Committee.

ANALYTICAL LABORATORIES

The Analytical Laboratory in support of Chemical Research and Chemical Development continued the analyses of samples for Process Improvement, Process Scouting, Process Chemistry, Mechanical Development and Chemical Engineering Development. Redox and Purex solvent extraction-scrub studies and the subsequent fission product evaluation accounted for much of the work. A number of second cycle Purex samples were analyzed. Plutonium bearing samples, covering a wide range of plutonium concentration were analyzed in connection with a study involving an attempt to concentrate Redox II BP to a suitable 234-5 process feed.

The Spectrochemical Laboratory continued to support the 300 Area Metal Preparation process. This laboratory also rendered support to a number of different programs and groups through qualitative analyses of miscellaneous samples.

The Special Analytical Laboratory performed analyses in connection with a number of plant problems and investigations. Low-level chloride (10-100 ppm) in uranium analyses were accomplished through a distillation of the chloride followed by the usual turbidimetric method. A number of analyses were made on weld button samples in support of an investigation of weld failures in the 200 Areas. Several metallic organic compounds were analyzed for metal ions following decomposition in a Parr Bomb.

The Water Quality Laboratory continued to support the programs of Water Plant Development and Pile Coolant Effects. Informal Request No. 133 (Project) has been completed. It is noted that the hoods in this laboratory are now functioning satisfactorily.

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The Mass Spectrometer Laboratory is making preparations for the P-10 project. The C-N Spectrometer is now idle. Some time has been spent checking the electronics and spotting minor ills which have accumulated. An attempt is being made to clean a spare C-N ion source, which was used during the last P-10 project, by hydrogen flaming. This consists of baking the source in a high vacuum, then introducing hydrogen and cycling, following by high vacuum baking. It has been observed that constant factors and stable operation of the G.E. Spectrometer exists when the filament current is uniform. This current is low and stable for about 24 hours following conditioning with butene-1, it then slowly rises with attendant instability in operation and again becomes stable at a higher value for about one month, at which time it is necessary to condition again. Recently, butene-1 has been added each night. It appears that this is a sound practice. It will be observed further.

Work volume statistics for the Analytical Laboratories are as follows:

	May		June	
	No. of Samples	No. of Det'ns.	No. of Samples	No. of Det'ns.
Research and Development				
Applied Research Unit	1696	3246	2122	3585
Pile & Fuel Tech. Units	262	1512	470	3265
Sep. Tech. Unit	687	1777	626	1458
Lab. Eng. & Fac. Unit	0	0	0	0
Process Control	500	2596	470	2339
Others	256	3134	180	1236
Total	3401	12265	3868	11883

Standards and Calibrations

Number of standard solutions prepared	17	18
Stock solutions dispensed	91	58
Number of calibrations performed	16	120
Number of calibrated glassware dispensed	12	63
Number of checked glassware dispensed	85	83
Total	221	342

[redacted]

EQUIPMENT AND MATERIALS

Material Control, Photographic Services and Miscellaneous Services activity is summarized as follows:

	May	June
Purchase Requisitions		
Total number processed	78	128
Number requiring emergency	0	0
Photographic Services		
Number of work requests	38	45
Number of negatives	175	244
Number of prints	794	1313
Number of slides	35	59
Color photos	2	9
Miscellaneous Services		
Stores stock requests	0	0
Office furniture requests	26	1
Office machines sent in for repair	15	9
Precious metal transactions	8	10
Special messenger trips	42	44
Catalogues and bulletins issued	225	363
Letters written for catalogues and information	548	85
New catalogue additions	277	337

A complete kardex file on all photographic equipment used in the Research and Development program was instituted.

Approximately twelve hundred (1200) capital equipment items were inventoried in the Chemistry Unit-Applied Research Sub-Section. Control cards for the Chemistry Unit and capital equipment cards for the Technical Equipment Control Center were typed for each item. In numerous instances an identifying number had to be installed on the equipment.

Color shots of slugs through the periscope were completed with satisfactory results. Requests for color work are increasing.

The narrative of 105-C construction was tied into the film.

LABORATORY FACILITIES

Laboratory Facilites services are summarized as follows:

	May	June
Work orders processed	58	75
Work requests processed	23	10
Special requests	60	89
Special work permits	46	55
Lock and Key requests	15	11

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An operational check of Building 340, Waste Retention and Neutralization, was made by 300 Area Maintenance after acceptance from Construction. The truck loading pump was discovered to be slightly out of line and without packing; this correction and other minor equipment adjustments were made to prepare for operation. The Bio-physics Building was notified that the "Crib Waste" system was ready for use on June 18. Collection since that date, by monometer reading, totals 100 gallons.

To accomodate high level waste which is expected to result from operation of Building 327, materials have been accumulated to do concreting at 3706. The facility in the Radiochemistry Building will not be ready for several months which makes this temporary activity necessary. The location and equipment will limit the work to experimentation and waste which is not feasible to handle by other methods.

All other activities of the group continued routinely.

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 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)
D.C. Kaulity, W.V. Cummings, and M.J. Sanderson	Double Defraction X-Ray Spectrometer

J. W. Underwood
Laboratory Engineering and
Facilities Unit

mbs

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MONTHLY REPORT
DESIGN SECTION

VISITORS AND BUSINESS TRIPS

N. L. Field, Truscon Steel Company, Youngstown, Ohio, visited Hanford June 5 to discuss prestressed underground concrete waste storage tanks.

H. Powell, consultant, visited Hanford June 8, to discuss prestressed concrete design.

J. J. Closner, The Preload Company, Inc., New York City, visited Hanford June 18 to discuss design of prestressed underground concrete waste storage tanks.

C. A. Mansius visited Grove Company, Detroit, Mich., to discuss design of pneumatic test facilities, June 1 - 17.

Ezra Hollister visited the Western Gear Works, Seattle, Washington, for inspection and expediting of canning machine parts on June 1 and Puget Sound Naval Shipyard, Bremerton, Washington for inspection of canning machine fabrication work, June 12.

E. S. Day, Jr. visited the Bailey Meter Company, Cleveland, Ohio, to clarify design reponsibilities and examine prototypes, June 2 - 5 and Panascan, Incorporated, Chicago, Illinois to establish design details on Pressure and Temperature Monitors for Project CA-512-R, June 5 - 9.

W. J. Love visited the Bingham Pump Company, Portland, Oregon, on June 5 to witness test of "K" pump model and attend the Heat Transfer and Fluid Mechanics meeting held in Los Angeles, California, June 24 - July 1.

M. F. Wiitala visited the General Electric Company, Nela Park, Cincinnati, Ohio, to attend Plant Engineers Lighting Conference, June 8 - 10.

H. S. Davis visited McFarland Hullinger Company, Toole, Utah, to discuss inspection of limonite, June 13 - 14.

W. J. Dowis attended the AIEE meeting in Atlantic City, New Jersey, June 15 - 17.

E. P. Peabody visited the General Electric Company, Philadelphia, Pa., to firm-up engineering details of switch-gear order for 100-K Water Plant, June 15 - 18.

R. R. Claar attended the 85th Annual AIA convention in Seattle, Washington, June 16.

B. E. Woodward visited Pacific Scientific Company, Portland, Oregon, to discuss details of Gas Analysis Equipment for Project C-431-B, June 17.

E. L. Reed and Ezra Hollister visited the Puget Sound Naval Shipyard, Bremerton, Washington for inspection of canning machine fabrication, June 19.

DEL

C. A. Pursel attended the Annual Meeting of American Mathematical Society at Missoula, Montana, June 19 - 21.

W. P. Ingalls and E. O. Swain visited Los Alamos, New Mexico on June 22 and Rocky Flats, Colorado, June 23 for inspection of equipment.

T. W. Jeffs visited Los Alamos Scientific Laboratory, Los Alamos, New Mexico, for inspection of electrical portion of existing facilities preparatory to electrical design and also visited The Dow Chemical Company, Rocky Flats, Colorado, for the same purpose, June 21 - 24.

B. R. Elder visited Aluminum Company of America at LaFayette and Pittsburgh to discuss fabrication difficulties, June 22 - 27.

ORGANIZATION AND PERSONNEL

Personnel Statistics:

	May 31			June 30		
	Exempt	Non-Exempt	Total	Exempt	Non-Exempt	Total
Design Management	2	1	3	2	1	3
Process Engineering Sub-Section	60	12	72	59	12	71
Design Planning Unit	16	13	29	16	13	29
Design Engineering Sub-Section	85	9	94	84	12	96
Total Section Personnel	163	35	198	161	38	199
Technical Graduates (Rotational)	-	11	11	-	12	12
TOTAL	163	46	209	161	50	211
Personnel on loan to Design Section			2			1
Temporary loan fron ANP			0			3

Accessions - 8
Separations - 6

GENERAL

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

	Man Months Expended	% of Total
1952 Expansion Program	106.4*	63.0
Research and Development	29.5	17.5
Other Projects and Design Orders	33.0*	19.5
	168.9*	100.0

*Equivalent man months expended reflects amount of overtime on Expansion Program and other Design Projects.

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The Design Section budget for FY-1954 was revised in accordance with the Research and Development budget and revised schedules were submitted to the Financial Department.

DESIGN DEVELOPMENT

Statistics:

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

		Man Months Expended	% of Total
RDS-D-10	Reactor Design Development	2.6	8.8
RDS-D-11	Water Plant Design Development	10.9	36.9
RDS-D-12	Separations Design Development	1.9	6.4
RDS-D-13	Mechanical Design Development	8.6	29.2
RDS-D-14	Utilities & Services Design Devel.	2.5	8.5
RDS-D-15	Engineering Standards and Materials Development	3.0	10.2
		29.5	100.0

Total research and development costs for FY 1953 are as follows:

RDS-D-10	Reactor Design Development	$ 65,952
RDS-D-11	Water Plant Design Development	67,587
RDS-D-12	Separations Design Development	81,454
RDS-D-13	Mechanical Design Development	422,347
RDS-D-14	Utilities & Services Design Development	16,816
RDS-D-15	Engineering Standards and Materials Development	44,492
	Total Costs	$698,648

RDS-D-10 - Reactor Design Development

Work scheduled on the development of a new reactor design was curtailed during the month due to the urgency of 100-K project work and the improvement program for existing reactors. It is expected that sufficient manpower will be available in the near future to again resume the work. An outline of some of the possible improved safety or backup instrumentation was prepared.

Final work on 16 mm sound film covering the machining and stacking of 105-C graphite is now in progress. This film will be classified secret and will be approximately 20 minutes in length.

RDS-D-11 - Water Plant Design Development

A study to determine the modifications that should be made to existing plants is in progress. Several of the studies are now complete for 100-B Area. The results of the studies will be issued in a series of documents; the first document will be issued in July.

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A study stage project proposal was prepared in which funds are requested for initiation of design for modification to the existing Reactor and Water Plants. It is tentatively proposed that the flows from the water plant be increased to 100,000 gpm at C Plant, and 64,000 gpm at 100-B, D, F, DR, and H Plants, thereby increasing the production capacity of these plants.

RDS-D-12 - Separations Design Development

Various schemes for operation of the Redox Plant have been proposed to achieve increased production rates as soon as possible, to permit required decontamination of uranium and plutonium and to permit processing at reduced costs. These include head-end treatment, two-cycle decontamination of uranium, and pre-cycle operation and backcycling of ANN. All these proposals have been reviewed, and it has been determined that they have little effect on the design of the Phase II capacity Redox Plant since (except for a larger uranium concentrator) they require only the construction of jumpers to obtain the desired routings. It was concluded that head-end treatment, coupled with parallel operation of the second and third uranium cycles, was desirable on an interim basis to permit earliest achievement of a higher capacity. However, the inherent inflexibility, capacity limitations, and less assurance of meeting uranium specifications would not warrant cancellation of the larger second and third uranium columns.

RDS-D-13 - Mechanical Design Development

Construction work for installation of the prototype fuel element canning machine in the 314 Building was started on June 22. Final assembly of the canning machine at the Puget Sound Naval Shipyard is underway and is scheduled to be received on July 20 after mechanical testing. The furnace is scheduled to be delivered July 15 and the controls August 15. It is estimated that cold testing on the machine in the 314 Building will start in August with hot testing scheduled for the early part of October.

A new pump for removal of uranium from underground tanks has been designed and fabricated and is expected on site in July for testing. Since the frequency of failure of existing pumps has markedly decreased and since an adequate supply of spare pumps is available, it was concluded that the new pump should be cold tested only and then put in storage for possible future use.

Design of a meter to give indication of the eccentricity of a rotating shaft over a range of plus or minus one-half inch as in a centrifuge was continued. Bridge and amplifier circuitry has been assembled and provision was made for connecting a potentiometer recorder to the meter.

A Moore Instrument Company pressure regulator has been set up and tested for use as a pressure transmitter in the Purex plant design. The characteristics were quite satisfactory for the planned use, which will result in considerable cost saving over the conventional type of pressure transmitter. A brief report is being prepared on its operation.

RDS-D-14 - Utilities and Services Design Development

During the month of June, several methods of accomplishing the aims of the study to reduce steam costs and increase flow for reactor cooling water were outlined. A plan was presented which was believed to provide maximum benefit from the proposed modifications. This plan consists of increasing water plant capacity to 64,000 gpm by the installation of additional pumping capacity at the 181, 182, 183, and 190 pumping stations, and the conversion of the water treatment plant to the alum-activated silica process. In the process pump house, the present secondary pumps and set of new booster pumps would supply normal process water in an all-electric system. The present primary pumps would be normally by-passed, but would be held in stand-by condition with steam turbine drive to supply emergency cooling water.

Recommendations concerning the ground water survey were prepared for submission to AEC and were incorporated into a document HW-28414, "Reactor Cooling Water, Emergency Supply", from A. B. Greninger to D. F. Shaw and dated 6-17-53.

RDS-D-15 - Engineering standards and Materials Development

The HW Standards Committee approved the following standards and revisions to standards during June:

E-1-1a	Graphical Symbols for Maps, Revision 1
D-7-14	Street Lighting Transformer Structure, Type "L"
HW-4966-S	Standard Specification for Disinfecting Sanitary Water Supply Systems
HW Approved Codes List, Revision 2	

The progress on standards and material development work for June is as follows:

a. The five approved Standard Welding Specifications will be issued in a separate Standards Welding Book. Additional welding standards will be added to this book as they are completed.

b. Existing standards specifications will be revised to allow the use of nitrogen instead of argon as a purging gas in the welding of stainless steel and thus permitting more economical fabrication.

DESIGN PROJECTS:

Statistics:

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

		Man Months Expended	% of Total
CA-512-R	100-K Reactor	67.9	48.6
CA-512-W	100-K Water Plant	5.7	4.1
CA-513	Purex Separations Facility	18.5	13.3
CA-514	300 Area Expansion	11.7	8.4
CG-551	Expansion of Building 234-5 Facilities	2.6	1.9
Major Projects - Other than Expansion Program		28.7	20.6
Minor Projects and Design Orders		4.3	3.1
	TOTAL	139.4 *	100.0

*Equivalent man months expended reflects amount of overtime on Design Projects.

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CA-512-R - 100-K Reactor Facilities

Design progress on Project CA-512-R, 100-K Reactor Facilities, was advanced 5.6% during June to 91.3% complete. During the month, 130 detail drawings were approved, bringing the total to 1668 drawings which have been approved.

Expenditures to date are approximately $1,547,900 against an authorized amount of $2,781,500. Eight hundred and eighty 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 $15,700,000.

A structural design analysis of building 105-K was made for the General Electric Company by a structural consultant firm. One set of drawings was approved by the firm subject to the incorporation of certain minor recommended changes.

A visit was made to vendors plants to evaluate the status of process tube fabrication and horizontal rod tip fabrication. A new fabrication technique is being developed to produce the process tubes. This consists of extruding the ribs in place and then drawing the ribs down to size. The tubes did not meet specifications but the vendor believes that they will successfully fabricate the tubes for the test order within six weeks. The horizontal rod tip sections were also unacceptable at this time but it is expected that successful fabrication will be made in 30 days.

A re-evaluation was started on the effect of a negative graphite temperature coefficient in evaluating four simulated cases of reactor disasters. In the previous study, consideration was not given to the fact that a wet reactor (with a positive graphite temperature) will decrease in reactivity with an increase in graphite temperature in going to a dry reactor, resulting in a negative graphite coefficient. An optimistic, a pessimistic and an intermediate case are being considered and will be described in a report to be issued in July.

The decision was made to retain the effluent water beta monitor system and provide for future installation of a gamma monitor system. These changes have been made and are covered in a letter "Provisions Incorporated in 105-K for Gamma-Type Effluent Water Activity Monitor". The changes made were limited primarily to structural changes required for heavier equipment and shielding loads in the sample room.

Tests were completed on several commercial varieties of resistance thermometers to evaluate radiation damages. Exposure to gamma radiation equivalent to ten years in the effluent water produced no detectable change in the bulb resistance temperature characteristics and caused no significant damage to the insulating properties.

A study made indicated that at the indicated higher power levels with enrichment, loss of water in a single thermal shield cooling tube would result in melting of the lead. At the more probable power levels, two adjacent tubes would have to fail in order for the lead to melt. Although the probability of this event occurring is small, a simple system of temperature (or flow) monitoring is believed to be justified.

Approval was received from the AEC for fabrication of a model of the 105-K process unit. The work will be done by the Graphics Unit and is scheduled to be completed by September 15, 1953.

CA-512-W - 100-K Water Plant Facilities

A visit made to the vendor to witness the testing of an approximately one-half size model of a secondary process pump which was constructed as a required part of the preliminary design work connected with the construction of the pumping units for process water. To the extent that a model can predict proper head, flow, efficiency and cavitation of a full size pump, the model test was completely satisfactory. This indicated that a firm basis is available for guidance in design and fabrication of the process pumps.

The chemical feed system for the 183-K water treatment plant was approved by the Project and Design Committees. The drawing shows the feed systems for sodium silicate, caustic soda, sodium dichromate, chlorine and liquid alum. A second meeting of the Project Committee was held to discuss the Water Quality and Radiography Laboratory.

Review of drawings submitted by the architect-engineer to the Project Section continued through the month.

Unforeseen circumstances prevented the issue of the system stability study report. The report is in the rough draft stage but all drawings are complete. The short circuit study report is being prepared.

CA-513 - Purex Facility

Design work on CA-513-B, UO_3 Plant Expansion, was advanced 3% during the month to 97% complete. Fifteen of the twenty electrical drawings which are being revised have been modified and issued to construction. Instrument design continued to be delayed due to lack of vendor instrument information.

Detail design of the Purex Waste Facility was advanced approximately 9% during the month to 37% complete based on 133 drawings required for construction exclusive of standards or study drawings. The tank farm was moved 30 feet west of the location indicated by the Design Criteria to provide increased operating space east of a diversion box. Connecting lines to the tank farm have been redesigned. The change required 45 man days of additional engineering time and 100 man days of additional drafting time.

Over-all design of the Purex Outside Facilities was advanced 10% during the month to 86% complete. Six drawings were approved and 18 drawings were issued for comment. Four Vendor's drawings for the export water line were reviewed and approved.

Review of electrical and instrument drawings submitted by the Vitro Corporation was continued during the month.

Since the Purex Plant will be a large steam consumer, the possibility of providing for future heat recovery from process water has been reviewed. The process condenser water will be segregated from other more radioactive waste waters to

facilitate possible future heat recovery.

Additional work required on the Purex Prototype Facility includes the structural, mechanical and electrical design necessary for the installation of a water demineralizer system. The design is approximately 50% complete.

It was decided that removable shielding should be provided to protect the fluorothene in the HC column and the Vitro Corporation was requested to determine the most satisfactory method. A method to minimize loss of material in dissolver heals by modifying the bottoms was accepted. The use of rupture disks in place of, or in addition, the proposed seal-pots in the Purex Plant has been studied. It was concluded that seal-pots were adequate and superior to rupture disks for Purex Plant evaporators.

CA-514 - 300 Area Expansion

Detailed design work on the 300 Area Expansion Program, exclusive of the addition to the 313 Building structure and services which are being done by an architect-engineer, was advanced 12% to 42% complete. The architect-engineer submitted preliminary drawings on the monorail layouts for the furnace and autoclave areas in the 313 Building. Review of final A-E drawings on foundations and structural details is proceeding. Design activities were concentrated on the 313 Building process equipment and remodeling of the existing structure. Specifications for component and slug cleaning equipment, and penetration etch equipment were completed and approved, and were transmitted to the Project Section for procurement. The use of well-type instead of boss type caps was approved by the Design Committee.

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

Funds were authorized by the AEC for the completion of the revision of drawings to the as-built status and to follow instrumentation of the gas analysis system.

A preliminary design of the new horizontal rod tip section and connector is essentially complete. The cross-sectionof this rod will be similar to the 100-K rod design but will be made from two extruded pieces instead of one.

CG-496 - Recuplex Installation - 234-5 Building

Detail design of the Recuplex Installation is approximately 90% complete, an advance of 5% during the month. Sixty-one drawings were approved during the month bringing the total of approved drawings to 171, of the 240 required. Two major instrument design changes made during the month were the addition of steam to instrument purge lines and the relocation of the instrument control panel for the reception and blending hood and the solvent extraction hood. The design of the carbon tetrachloride analyser was reviewed and it was decided to provide four sampling points.

CA-535 - Redox Capacity Increase, Phase II

Design of Redox Capacity Increase, Phase II was advanced to approximately 70% complete. Design work for six new jumpers and revision of eleven existing jumper drawings were completed. Specifications were written for process control valves.

CA-539 - Redox 241-SX Tank Farm

Detail design of the Redox Tank Farm was advanced 4% during the month to 89% complete. Four drawings and one specification were approved and nine drawings were issued for comment and approval. An increase in condenser capacity will necessitate redesign of the condenser water drain system. One partial set of plans was marked to show changes necessary to enlarge the farm to 18 or 20 tanks. These were prepared for AEC use in contract negotiation.

CA-549 - Activate Task I, Building 234-5

Design on Activate Task I, Building 234-5, is 10% complete. Twelve scope drawings were issued for comment during June with detail design scheduled to begin early in July.

CG-550 - Reactivation of P-10 Facilities

Detail design on Reactivation of P-10 Facilities advanced 23% during the month to 35% complete. All procurement orders were placed except for a few items. Eighteen drawings of 87 required have been issued for comment.

CG-551 - Expansion of Building 234-5 Facilities

Design work on Expansion of Building 234-5 Facilities was started. The estimated total number of drawings required is 228. Requisitions totaling $17,865 were issued for critical procurement items. The directive received from the AEC authorized $400,000 for initiating design and procurement of engineering equipment and bulk materials. The directive limits the work to the Task II and III production facilities and requests further justification, in a revised project proposal, for (1) the necessity of the additional inspection facilities, (2) the design cost estimate of $136,000, and (3) the necessity for pre-assembly and testing of the Task III equipment. Preparation of the revised project proposal was started and it is expected that it will be complete in July.

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

Electrical drawings and specifications were reviewed and a field check of lighting and review of the lighting requirements for the building were made.

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

All design is complete except electrical and instrument. Six approved drawings cover the structural and mechanical details and layout. Instrumentation design for water monitoring was continued with reviews and a field trip.

D.O. 100471 - Linear Differential Transformer

A linear differential transformer was designed and fabricated, and a Schavitz recorder was modified for use with the transformer.

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D.O. 100473 - Hot Ball Detection, Ball 3-X System

A test procedure was outlined in a meeting with representatives from the Manufacturing and Radiological Sciences Departments. An investigation of the suitability of an electromagnetic trap to deflect the "hot" balls is underway.

D.O. 100476 - Positive Ion Accelerator Laboratory

Design was advanced 10% during the month to approximately 95% complete. The drawings and specifications are complete, and the remaining work consists of checking the contractor's shop drawings.

D.O. 100513 - UNH Stripper

Design work on the UNH stripper was stopped during the month. All prints and information will be assembled and kept on file pending authorization to complete design.

D.O. 100526 - P-13 Pressure Assembly Removal

Design was continued on the P-13 pressure assembly removal and three of six required drawings were completed. The remainder are scheduled to be completed in July.

D.O. 100529 - Ball Third Safety System - Ball Recovery System

Detail design was continued on the revisions to the existing Ball Recovery System and four of 17 required mechanical drawings on the ball separator and hose feed drive were issued for comment. The electrical portion is 95% complete.

D.O. 100500 - Hot Semiworks Conversion

Because of a shortage of funds, work on this project has been held to a minimum. The design of the extraction column drawings was reviewed and recommendations were made with regard to several design features. Design work is approximately 5% complete.

D.O. 100577 - Gamma Monitor Chambers - 107 Basins

Design of exit water gamma monitor chanbers for the 107 Retention Basin was started and is 15% complete.

D.O. 100580 - Painting Specifications for Meteorology Tower, 622 Building

The specification for this work is 80% complete.

D.O. 100583 - Redox Waste Evaporator Redesign (D-12)

Three drawings for redesign of the D-12 pot, Building 202-S, were completed and approved in June. The new D-12 pot design was completed and includes as the

essential feature a pair of vertical, remotely removable tube bundles for parallel operation at relatively low steam pressures. Should one bundle fail, the second bundle can carry the load at a higher steam pressure until it is convenient to replace one or both bundles.

D.O. 100584 - New Bio-Assay Laboratory

The review of drawings and specifications prepared by the architect-engineer for award of a lump sum contract is approximately 80% complete.

D.O. 100592 - Beta Monitor

Requisitions for an improved beta monitor system for 105-F were complete and then the project was cancelled.

DESIGN SECTION WORK IN THE CLOSING STAGES OR COMPLETED DURING JUNE

*D.O. 100444	Fuel Element Pilot Plant
*D.O. 100474	Dock and Partition 300 Area Library and Files Building
*D.O. 100494	Biology Laboratory Additional Facilities - 108-F
*D.O. 100497	Revise Monorails 105-C Metal Examination Facility
*D.O. 100500	Combined Civil Defense and Plant Disaster Mobile Control Centers
*D.O. 100553	Hanford Works Official Telephone Exchange

* Design Section Work Completed During June.

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.

INVENTOR	SUBJECT
H. C. Ellsworth	A vertical safety rod counting device "Pulse Integrator System"
C. A. Simsen	A liquid interface monitor. A device to give a remote indication of the level of the interface between two fluids

R. H. Beaton
MANAGER, DESIGN

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DESIGN SECTION WORK STATUS

PROCESS ENGINEERING SUB-SECTION
ENGINEERING MAN MONTHS *

Description	Backlog Start Of Month	Orders Received During Month	Time Spent During Month	% of Total Effort	Backlog End of Month	July	Aug.	Sep.	Oct.	Nov.	Dec.	Balance
CA-512-R	390.2		28.5	52.8	261.7	26.0	25.0	18.0	12.0	11.0	11.0	258.7
CA-512-W	33.4		1.1	2.0	32.3	1.0	1.0	1.0	1.0	1.0	1.0	26.3
CA-513	24.9		2.7	5.0	22.2	1.5	1.5	1.5	1.5	1.5	1.5	12.7
CA-514	28.8		2.2	4.1	26.6	2.0	1.0	1.0	1.0	1.0	1.0	19.6
CG-551	40.0		1.3	2.4	38.7	2.0	2.0	2.0	2.0	2.0	2.0	26.7
Pile Modifications								3.5	7.5	8.0	8.0	
RDS	472.6		16.6	30.8	418.0	20.0	21.5	27.0	29.0	29.5	29.5	261.5
Design Orders	15.9	12.0	1.5	2.9	26.4	2.5	3.0	1.0	1.0	1.0	1.0	16.9
TOTALS	965.8	12.0	53.9	100.0	925.9	55.0	55.0	55.0	55.0	55.0	55.0	622.4

DESIGN ENGINEERING SUB-SECTION
ENGINEERING MAN MONTHS *

CA-512-R	147.1		22.7	28.8	124.4	20.0	18.0	15.0	13.0	12.0	12.0	34.4
CA-512-W	39.0		4.2	5.3	34.8	2.0	2.0	2.0	2.0	1.5	1.5	23.8
CA-513	88.2		13.2	16.7	75.0	15.0	11.0	11.0	6.0	3.0	3.0	26.0
CA-514	45.8		7.6	9.5	38.2	7.0	7.0	6.0	4.0	4.0	2.0	8.2
CG-551	24.0		1.0	1.3	23.0	2.0	2.0	3.0	4.0	4.0	3.0	5.0
RDS	229.0		5.5	7.0	229.0	6.0	9.0	11.0	16.0	21.0	23.5	142.5
Major Projects - Other	125.0	8.0	21.8	27.5	111.2	22.0	22.0	18.0	14.0	10.0	10.0	15.2
Minor Projects & Design Orders	61.8	4.0	3.1	3.9	62.7	6.0	8.0	8.0	10.0	10.0	10.0	10.7
Available for Anticipated Future Work							1.0	6.0	11.0	15.0	15.0	
TOTALS	774.1	12.0	79.1	100.0	698.3	80.0	80.0	80.0	80.0	80.0	80.0	265.8

Present Total Backlog is distributed over the five engineering branches in terms of man months as follows:

	Authorized Projects	Anticipated Future Work	Totals
Architectural & Civil	110.0	35.0	145.0
Mechanical	219.0	56.0	275.0
Electrical	175.0	45.0	220.0
Instrument	148.0	27.0	185.0
Standards	46.3	13.0	59.3
TOTALS	698.3	186.0	884.3

* Exclusive of Technical Graduates and people on loan from other sections.

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MONTHLY NARRATIVE REPORT - JUNE 1953

PROJECT SECTION

I. SUMMARY

A. ORGANIZATION AND PERSONNEL

Two key employees assigned to Reactor Projects were taken ill during the month. It is anticipated that each will be absent for three or four weeks. Project Section placed particular emphasis on information meetings for employees. Plans are being completed for a general section meeting. The major increase of personnel was within the Inspection and Materials Unit.

Following is a summary of personnel data for the Project Section covering June, 1953.

	June 1, 1953	June 30, 1953	Net Change
Employees on Payroll	532*	548	+16
Technical Graduates-Rotational	12	13	+ 1

The end-of-month status involved these changes:

	Project Section Personnel	Tech. Grad. - Rotational
Payroll Additions	12	
Payroll Removals	3	
Transfers into Section	8	1
Transfers from Section	1	
Transfers within Section	2	

*Increased by six over May total through transfers which were effective June 1, 1953.

B. SCOPE OF ACTIVITIES

At the end of the month, completion status of major projects was as follows: CA-431-A, 100-C Waterworks, 99.9%; CA-431-B, 100-C Reactor, 99.8%; CG-438, Ball Third Safety System, overall, 96% (adjusted to allow for future improvement); CG-483, Downcomer Repairs, overall, 100%; CG-496, Recuplex, 10%; CA-506, Repairs to 100 Areas Retention Basins, overall, 99%; CA-512, 100-K Area Facilities - Water Plants, KW, 22%, KE, 14% - Reactor Buildings, 105KW, 14.8%, KE, 8.4%; CA-513, Purex Facility, Part "A", overall, 2.5%, Part "B", 9%, Part "C", 98%; CA-514, 300 Area Expansion, overall, 3%.

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C. MATERIAL PROCUREMENT

Some improvement has been noted in the time lapse from requisition date to purchase order date for procurement on Expansion Program projects. However, there were instances of rejections and re-advertising which will cause delays. There were also numerous rejections because of poor quality of forgings, castings, welding, and dimensions. Even with relaxed requirements, the filling of many orders is being delayed.

Satisfactory results were obtained on the model pump manufactured by Bingham Pump Company for the 100-K Area, and on the prototype crate fabricated by Puget Sound Navy Yard. The low bid for the 15 waste storage tanks for Redox (241-SX) indicated that three additional tanks might be purchased from alloted funds. A revision to the contract is being considered. The estimated number of requisitions for CA-513-A, Purex Facility, was revised to 290, of which 131 have been received, and 95 approved.

D. CRAFT LABOR

The strike by millwrights employed by Kaiser in the 2101 Building ended June 5 when 46 of the 63 strikers returned to work. There has been some increase in work accomplished. Blaw-Knox has suffered a critical shortage of pipefitters since June 5, 1953, following the discharge of four foremen and a general foreman. From June 9 to June 23, the Carpenters' Union refused to dispatch carpenters because of a dispute concerning travel pay. Negotiations with bricklayers resulted in an increase from $3.00 to $3.25 per hour. Negotiations with roofers began during the week of June 15-19 on the subjects of increased wages and isolation pay. By mutual consent the maintenance work on equipment for the North Richland well field was reassigned from construction to G.E. maintenance forces. Contracts for operation of the North Richland Construction Camp and North Richland Steam Plant were awarded to Commonwealth, Inc., and P. S. Lord, respectively.

E. SAFETY AND SECURITY

The eight regular meetings for discussions of Safety, Security, and health topics were attended by about 345 personnel. The 15 designers and draftsmen employed under the drafting assistance contract have accepted a standing invitation to the Drafting Room safety-security meeting. The Project Control Unit has adopted a system of distinctive file folders as a means of reducing security violations. Field forces continued special meetings as follows: special hazards, Monday morning "tool box", and foremen's meetings. There was also continued study of absenteeism and the preventable causes.

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F. HIGHLIGHTS OF UNIT ACTIVITIES

Inspection, Drafting and Estimating Sub-Section: Inspection and Materials Unit added ten people to keep pace with the increasing workload. The Unit completed inspection on 29 orders, assigned 374 orders to inspection, and transmitted 154 requisitions for the Expansion Program. Drafting production was 302 new drawings, 27 charts and graphs, and 494 revisions. The work of designers and draftsmen furnished under the drafting assistance contract has been satisfactory. Reproduction group set a new record with an output of 1,020,460 square feet for 25 working days and three "limited-crew" Saturdays. The Estimating group completed 25 estimates, of which seven were project proposals. Field Surveys group continued with procurement of field data for the 300 Area Expansion and for the Purex facilities. This group also assisted with information for several AEC contracts.

Minor Projects Sub-Section worked on 60 project items and four informal requests, representing an estimated total of $23,054,400. Completed work consisted of four projects and nine engineering requests. Three project proposals were transmitted to sponsors. Two project proposals were approved by the A&B Committee. Three authorizations were granted by the AEC. Three engineering requests were accepted during the month. On June 23, bids were opened for a contract to furnish and install central office equipment for the plant telephone system. The apparent low bid of $261,000 was submitted by Stromberg-Carlson. However, all bids were rejected by AEC because of non-compliance with specifications. Important projects now in progress include Recuplex Installation, 300 Area Expansion Program, and Fuel Element Pilot Plant.

Reactor Projects Sub-Section: Project CA-385, Radiometallurgy Building, was completed, with minor exceptions, on June 29, 1953. For the 100-C Area Water Plant, installation of the automatic backwash system for 183-C was substantially completed. Work orders were issued for completion of various miscellaneous items. For the 100-K Area Water Plants, work was progressing on forms, concrete placement, and installation of piping. The 60" raw water lines and 42" sewer line in the central tunnel are being placed. For the Reactor Buildings, structural concrete was 80% complete at 105KW and 55% complete at 105KE. The base membrane plates for both process units were installed and welded. Erection of structural steel at 105KW was begun June 10, and was about 30% complete on June 30, 1953. Construction of 2101 Building was 86.5% complete, and about three weeks behind schedule. National Carbon Company delivered 487 tons of graphite, making a total of 1,630 tons of acceptable material received to date. First samples were received from Speer Carbon Company.

Separations Projects Sub-Section completed work to transfer CG-187-D, Redox Production Plant to Plant Accounts as of June 30, 1953. Overall design for Purex was 53% complete, and temporary construction was 55% complete. Excavation for Building 202-A was finished, and some foundation forms have been set. Construction for UO_3 Expansion was 9% complete. The Purex Prototype was turned over to Technical Section on June 5. This project was 98% complete, with exceptions for undelivered items. For the Redox Capacity Increase, Phase II, architect-engineer design was 27% complete, and G.E. design was 42% complete. Overall design of the Redox Tank Farm, 241-SX, was 93% complete, and the portion of construction being managed by G.E. was 22% complete.

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A lump sum contract for the Redox Tank Farm was awarded on June 15, and a Notice to Proceed was issued immediately

The Project Control Unit continued its routine functions on budgets, reports, and administrative instructions. The Control group issued Unitization Reports on 14 projects. History group published three histories.

G. MONTHLY REPORT OF INVENTIONS AND DISCOVERIES

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

NONE

J. S. McMahon, Manager - Projects

June 30, 1953

I. STATISTICAL AND GENERAL

A. SIGNIFICANT ASSIGNMENTS

1. Initial Reporting

ER-A-750 - Metal Stock Storage, Building 3717

Design was 5% complete. A project proposal is being prepared to provide metal stock storage facilities for the Instrument Shop. The facilities include a 12'x30' building to be attached to the existing 3717 Building and a 3,850 square foot concrete pad.

ER-2741 - Conversion of 200-W Laundry to Offices

Work is scheduled to begin soon.

ER-2742 - Improved Ventilation Facilities, 201-C

Design was 35% complete. The informal request to revise a portion of the ventilation system at the Hot Semiworks Area is being reviewed by the A&B Committee.

2. Final Reporting

CA-385 - Radiometallurgy Building

The building was officially inspected on June 29, 1953, and accepted with minor exceptions.

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CG-483 - Downcomer Repairs in 100-B, D, DR and H and Replacement in 100-F

Both design and construction were completed on June 12. Information for the Completion Notice and the Stop Charge Notice was issued on June 16. Total expenditures are about $272,000. As-built drawings are being completed.

CG-495 (ERE-483) - Outlet Tube Temperature Monitoring Thermocouples

Construction progressed 20% to completion. Revision #2 of the project proposal, estimated cost of $387,000, was submitted to the A.E.C. on June 3, 1953. As-built drawings are being prepared. Manufacturing Department has management of this project.

CG-530 (ERA-3096) - 314 Building Revision for Canning Development

Both design and construction were completed, with no exceptions. The Physical Completion Notice was issued on June 22, 1953. Accruals of $500.00 have been allowed for as-builts and unitization.

CA-542 (ERA-733) - Asbestos Shakes - 100-B, D, and F Buildings

With design at 50% complete, the project proposal was finally rejected by the A.E.C. The Manufacturing Department has requested that no further work be done.

ERA-744 - Installation of Steam Meters, 100-B, D, F, and H

With design at 5% complete, the Manufacturing Department requested that further work be cancelled because of lack of justification.

ERA-1188 - Xenon Generator

With design at 11% complete, this request has been cancelled because of similar work being performed at Oak Ridge.

ERA-1195 - Two Phase Flow Facilities

Design progressed 13% to a total of 80%. At this stage, the Pile Technology Unit requested cancellation because funds have not been authorized for fiscal year 1954.

ERA-1196 - Pile Test Hole Mock-Up

With scoping at 75% complete, this project was cancelled because of shortage of funds in the budget, fiscal year 1954. Total expenditures against ERA-1196 were $761, which included scoping sketches, a cost estimate, and a rough draft of an informal request letter.

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ERA-1197 - X Level Cask Handling Facilities, 105-B, C, D, DR, F, and H

This project was cancelled because of shortage of funds in the budget, fiscal year 1954. No work was performed and no charges were made.

ERA-1198 - E Test Hole Facility, 105-B

This project was cancelled because of shortage of funds in the budget, fiscal year 1954. No work was performed and no charges were made.

ERA-1199 - Heat Transfer Process Tube Mock-Up

This project was cancelled because of shortage of funds in the budget, fiscal year 1954. No work was performed and no charges were made.

ERA-1203 - Manipulator for Cave in 108-B Building

With design at 5% complete, the project was cancelled because of shortage of funds in the budget, fiscal year 1954. Total expenditures were $332, including scoping data and a cost estimate.

ER-2736 - Replacement of Mixing Equipment Task III, RMA Line, 234-5 Building

With design at 5% complete, the Manufacturing Department requested cancellation of the project proposal.

3. Current Projects

CA-192 - Remodeling Building 108-F for Biology Laboratory

Design had been completed previously; construction for the total project remained at 89% complete. Construction on Parts III and IV progressed 6% to a total of 15%. The lump sum contractor is about 5% behind schedule on the conversion of the train shed. All ventilation work for Room 205 and the Animal Rooms has been released to Minor Construction.

The purchase order for the G.E. Maxitron X-Ray has been placed. The current strike at the General Electric X-Ray Plant has prevented establishing a delivery date for the machine.

CA-431-A - New Reactor - 100-C Plant (Waterworks)

Design had been completed previously; construction progressed 0.1% to a total of 99.9%. On June 12 a directive from A.E.C. authorized initiation of the remaining work. One of the major items, the installation of the automatic backwash system in the 183-C Filter Plant, has been substantially completed. Work Orders were issued to Minor Construction for remaining work.

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CA-431-B - New Reactor - 100-C Plant (Reactor)

Completion status remained at design 100%, construction 99.8%. Funds have been authorized by A.E.C. for completion of work on the Reactor. Minor Construction forces have started work on those items to be completed in the examination basins.

CA-431-C - Metal Examination Facility - 105-C

Design progressed 10% to a total of 24%. An authorization of $30,000 has been forwarded to the Design Engineering Sub-Section for design of those items to be fabricated at Hanford. Design work has been started on the viewing manipulator and cartridge loader for the storage basin, the cartridge unloader, the slug cleaner, the surface photography unit, and the slug breaker. A design of these items is scheduled for completion in the period from August through December, 1953.

A quotation was received from the General Engineering Laboratory for design work on a slug cleaner, cartridge loader and a slug transfer mechanism. However, the General Engineering Laboratory has been informed that design of these items is being done at Hanford as originally planned.

CG-438 - Ball Third Safety System

Design had been completed previously; construction was revised downward to 96% to provide for future improvement work. The rework of the 105-F system was accomplished between June 7 and June 20, 1953. Late delivery of the resistors used to lower battery voltage prevented the installation of solenoids during this shutdown. Design of the improved recovery system was about 40% complete, and design of improved circuits was about 65% complete. The revised project proposal is being circulated for final approvals.

CG-482 - Pile and Pile Water Plant Improvements

Design had been completed previously; construction progressed 1% to a total of 99%. Work is proceeding on completion of exceptions.

CG-506 - Repairs to the 107 B, D, F, & DR Retention Basins

Completion status remained at design 100%, construction 99%. Following an inspection on June 1, 1953, it was established that repairs could not be justified in the 107-F basin. The expansion joints are in better condition than those found in 107-B, but the Thiokol compound has partially deteriorated. Leakage rates are relatively low, 287 g.p.m. in the east basin and 221 g.p.m. in the west basin.

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CA-51% - 100-K Area Facilities

100-KW and 100-KE Water Plants

The overall design of the Water Plants progressed 4.5% to a total of 84.5%. Construction progress was as follows: KW progressed 5% to a total of 22%; KE progressed 4% to a total of 14%. General facilities are 27.4% complete. The total excavation in KW Water Area was 745,000 yards, and in KE Water Area 475,000 yards. Total concrete placed in the KW Water Area was 45,600 yards, and in KE Water Area 28,400 cubic yards.

Work on the various structures of the Water Plants consisted of the following:

In 181-KW and KE Buildings, forms for operating floor slab are being set.

Forms are being placed for 183-KW head house footings. Concrete is being placed in the basin areas and filters.

For 183-KE, concrete work is in progress in the basin area filter section, and clear well section. Excavation is continuing for the effluent water lines between the 107 tanks and the emergency crib.

In 190-KW, form work and placing of reinforcing steel for basement floor slab has been started.

In 165-KW, the under-floor piping is being laid in preparation for start of concrete floor.

For the outside lines, the 60" raw water lines and 42" sewer lines in the central tunnel are being placed.

105-KW and 105-KE Buildings

Overall design progressed 5% to a total of 92%. Construction progressed as follows: KW progressed 6.7% to a total of 14.8%; KE progressed 3.3% to a total of 8.4%. The concrete for the main structure of 105-KW was topped out, and the erection of steel was begun on June 10. The total concrete in place was 17,400 yards or about 80% of total. At the end of the month about 30% of structural steel for 105-KW was in place. The fan room was about 95% complete. The contractor for the exhaust stack was stopped at elevation 5'-0" because forms were dented and rusty. The A.E.C. has permitted the contractor to make two sample pours of concrete which will be inspected on July 1 or 2. Fabrication of crates has improved, but fabrication of cross headers is slow.

For 105-KE, the structural walls have been completed to +32' elevation. The total concrete placed was 11,900 yards, or about 55% of the total structural concrete.

The base membrane plates for both process units have been installed and welded. All process gas and Ball 3X piping is installed and accepted up to the membrane.

2101 Building, 200-E Area (A.E.C. administered)

Construction progressed 1.1% to a total of 86.5%. Construction of this building is about three weeks behind schedule.

The former 101 Building has been evacuated except for clean-up and temporary storage of materials that can not be moved to the 2101 Building until permanent installations have been completed.

The transfer of stocks of graphite to 2101 Building was completed June 25. The National Carbon Company delivered 487 tons of graphite during the month making a total of 1630 tons of acceptable material received to date. The first samples from Speer Carbon Company have been received.

The Technical Section has requested that all tube blocks be made of the new material only because of the heat shrinkage of carbon blocks with the new power levels anticipated in 105-K Reactors. It now appears that pre-shop machining can not be started until July 15 instead of June 20 as scheduled.

The second large mill has been received and is being installed with temporary transformer banks. Trial runs are scheduled for the first week of July, 1953. It has been necessary to arrange with the Puget Sound Navy Yard for modifications to the deep hole drilling machines. These machines were being modified by the Moore Industrial Company, San Jose, California, but the recent death of Mr. Moore and the resultant freezing of assets made the company unable to complete the work on time.

The work of tooling the Tube Shop for cross header fabrication was completed during June.

CA-513-A - Purex Facility

Overall design for the Purex Facility progressed 12.6% to a total of 53%; temporary construction was 55% complete. Overall construction for the architect-engineer was 2.5% complete. Excavation for Building 202-A was complete during the month, and some wood forms for the foundation mat have been set.

During June, 132 drawings, 101 revised drawings, and 5 specifications were approved by General Electric. These approvals bring the total of approved drawings to 582, or about 25% of the total. Of the 290 requisitions required, 95 have been approved.

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Modification #3 of the contract for development of centrifuge equipment has been signed by all parties. The Bird Machine Company is developing a 12" liquid-liquid separation centrifuge at their own expense. Results from development of this centrifuge should assist the development of the larger centrifuge for Hanford.

The railroad contractor is behind schedule, and General Electric is unable to use the railroad facilities. Work is proceeding on other facilities.

CA-513-B - Uranium Oxide Conversion Facility

Design progressed 6% to a total of 89%; construction began and progressed to 9%. Temporary construction and foundations are complete. Present work consists of structural steel fabrication.

CA-513-C - Purex Prototype 321 Building

With construction 98% complete, the prototype was turned over to the Technical Section on June 5. Exceptions were made for parts of the water demineralizer which have not been delivered.

CA-514 - 300 Area Expansion Program - Production Facilities

The overall scoping progressed 3% to completion; detailed design progressed 9% to a total of 37%; construction progressed 2% to a total of 3%.

A. Process Facilities

Scoping progressed 2% to completion; detailed design progressed 9% to a total of 39%; and construction progressed 1.2% to a total of 2.5%.

Minor Construction has completed the preliminary site preparation. The construction contractor began site survey work on June 7 and excavation on June 10, 1953. The process outer area was released to the contractor on June 17. Specifications are being prepared and routed for approvals.

B. Acid, Caustic and Methanol Facilities

Scoping progressed 3% to completion; detailed design progressed 50% to a total of 75%. Construction has not begun. The architect-engineer has all necessary information.

E. Decontamination Station

Scoping progressed 15% to completion. Detailed design was 5% complete, and the design work has been awarded to an architect-engineer.

G. Railroad

Both scoping and detailed design had been completed previously; construction progressed 13% to a total of 15%. Plant forces have completed the turnout and have delivered materials, with one exception, to the work area. The lump sum contractor is excavating for his portion of the work.

H. Process Sewer

Both scoping and detailed design had been completed previously; construction progressed 30% to a total of 90%. This work was completed to the diversion box. About 210' of 24" line would have to be installed when the south pond has been drained.

J. Operations Change House

Both scoping and detailed design had been completed; construction progressed 38% to a total of 47%. This job is considerably behind schedule, and the A.E.C. is reviewing the contractor's claim that difficulty in obtaining personnel clearances was the cause of the delay.

K. Manufacturing Office Building, Gate House, and Parking Lot

Scoping progressed 2% to completion. Manufacturing has been informed that Technical Section will vacate about 25,000 square feet in the 3706 Building. This removal is being carefully considered because of its consequences to all parts of the 300 Area Expansion Program.

Design of the parking lot is to be performed by an architect-engineer under a new contract.

L. Change House Renovations 3707-A and B

Scoping was completed. A design criteria has been issued. General Electric will perform the design of these facilities.

M. Oil and Paint Storage

Scoping was completed. A design criteria has been issued. General Electric will perform the design of these facilities.

N. Steam and Water Facilities

Scoping progressed 4% to completion. Design work has been stopped pending a study to be made after the Laboratory Area is fully occupied.

P. Hutment Removal

Scoping progressed 25% to completion; no further work was done.

Q. Fire Alarm System

With scoping complete no further work was done.

R. Telephone and Security Alarms

With scoping complete no further work was done.

B. OTHER ASSIGNMENTS

CG-187-D - Redox Production Plant

Work was completed to transfer this project to Plant Accounts as of June 30, 1953. For Project CA-187-D-II design was begun and progressed to 20% complete. Work on back-cycle jumpers is to be undertaken with Project CA-535.

CA-406 - Phase II, Mechanical Development Building

Design had been completed previously; construction progressed 10% to a total of 85%. It has been estimated that the general contractor should complete his work by August 10, 1953. The installation of shop equipment, which will require 4 to 6 weeks, is the responsibility of General Electric. Arrangements are being made for this work.

CA-434 - New Bio-Assay Laboratory

The design by the architect-engineer progressed 10% to a total of 90%. The lump sum bid opening for Phase I (architectural and laboratory equipment) was held June 24. The apparent low bid was $67,830. The review of final design and specifications for Phase II (electrical and mechanical) has been completed.

CA-441 - Solvent Building

Design completion status remained at 25%. The revised project proposal has been approved by the A&B Committee and is awaiting authorization of the A.E.C.

CG-447 - Portable Meteorological Mast

Completion status remained at design 100%, construction 99%. It is now planned to submit a revised project proposal requesting a time extension to purchase the component meter. The required data analysis equipment is to be purchased following the evaluation of the component meter.

CA-455 - Replace Two Elevated Water Tanks in 200-E Area

Completion status remained at design 95%, construction 0%. The A.E.C. recently submitted revised design drawings for General Electric approval or comments. The drawings are being examined by persons concerned.

[redacted]

CG-477 - Building 284-W - Fifth Boiler Addition

Completion status remained at design 100%, construction 99%. The contractor spent considerable time clearing up difficulties with turbine steam seals, packing glands, and other small items. If present repairs are not adequate, the contractor will replace deficient items with others of different design.

CA-489 - Neutron Monitoring Calibration Facilities

Design progressed 20% to completion. Final design and specifications were completed June 19, 1953. All information necessary to preparation of lump sum bid assemblies has been submitted to the A.E.C. Purchase order for the accelerator unit has been placed with the High Voltage Engineering Corporation.

CG-496 - Recuplex Installation, 234-5 Building

Design progressed 9% to a total of 90%; construction progressed 9% to a total of 10%. The vessel fabricator has submitted a list of the material which he wishes General Electric to supply. This list will be discussed by a General Electric engineer who is visiting the plant in Los Angeles. Work on the hood removal is proceeding rapidly. The work release for the remainder of the Minor Construction work is being prepared, and the Estimating group is making the cost breakdown.

CA-497 - New Substation Fences and Grounding of Existing Fences

Design had been completed previously; construction progressed 7% to a total of 98%. A Stop Charge Notice for work performed by General Electric was issued on June 12, 1953. The A.E.C. has issued a revised directive which extends the completion date to December 1, 1953.

CG-511 - Completion of Minor Construction Fabricating Shops

Design progressed 50% to a total of 90%; construction progressed 28% to a total of 38%. All electrical design was completed, and mechanical design is adequate for field use. The remaining construction funds are to be released about July 10, 1953.

CA-516 - Gable Butte Railroad

Completion status remained at design 50%, construction 0%. The project proposal, for an estimated cost of $104,000, is being routed for approvals and is to be submitted to the A&B Committee in July. The present work scope includes re-alignment of about 2,000 feet of track and the re-laying of 2,826 feet of existing track.

CA-517 - Fire Protection Buildings, 272-E and W

Completion status remained at design 30%, construction 0%. The Manufacturing Department has requested that all proposed work on Building 272-WB be deleted from the present scope. The project proposal is being prepared for installation of a sprinkler system in Building 272-W only.

[redacted]

[redacted]

CG-519 - Replacement of 100-D Reactor Effluent Line

Design completion status remained at 98%; construction progressed 6% to a total of 28%. Excavation work began June 22, 1953. Flow was diverted to the "DR" effluent line during that week. The fill under the existing concrete line was shored up and excavation was completed. Energy dissipators have been installed in both basins. Shop fabrication was essentially complete.

CG-520 - P-13 Pressure Assembly Removal

Design progressed 50% to a total of 60%. A field release has been issued for Minor Construction to perform the fabrication and installation work. The shortage of draftsmen has delayed issuance of final design for construction, but a complete list of material requirements has been issued for procurement.

CA-525 - Permanent Auxiliary Combined Civil Defense and Plant Disaster Control Center

Completion status remained at design 100%, construction 0%. The lump sum bid opening was held June 15, with the contract being awarded at a bid price of $29,926. The total estimated project cost was $50,000. The revised project proposal has been submitted to reflect reductions in scope and estimated cost.

CA-527 (ER-2718) - Fire Protection - 200 East and West Spare Parts Warehouse

Design had been completed previously; construction completion by plant forces was revised downward to 96% to include tie-ins to area main, and plugging of existing hydrant line. The lump sum portion was awarded to the low bidder, and the contractor began work on June 22, 1953.

CA-529 - Personnel Meter Gatehouse Facility Improvements

Completion status remained at design 100%, construction 0%. The drawings and specifications are being held by the A.E.C. until further justification is submitted. This information is being prepared.

CA-533 (ERE-479) - Hanford Works Official Telephone Exchange

With scoping at 82% complete and design 12% complete, bids for the exchange equipment were opened on June 23. Both bids were rejected by the A.E.C. on the basis of non-compliance with specifications. The study by A.E.C. for the use of the 702 Building as an official exchange has been submitted.

CA-535 - Redox Capacity Increase, Phase II

The architect-engineer portion of design progressed 7% to a total of 27%; the General Electric portion progressed 7% to a total of 42%. Work orders have been issued to plant forces for fabrication of jumpers and vessel mock-up.

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CG-536 (ERA-686) - Painting High Tanks - 105-B and 105-F

Design had been completed previously; construction progressed 41% to a total of 52%. Painting of the two 105-F high tanks has been completed, and work is now proceeding at 105-D Area. Progress has been very satisfactory.

CG-538 (ER-2734) - Install Underground Waste Line Between "S" Area and "U" Area 200-W

Design progressed 8% to a total of 86%; construction progressed 20% to a total of 25%. A section of about 150 feet of encasement was completed with pipe lines tested. About 600 feet of encasement and 300 feet of pipe have been installed. All of the pipe has been received, and the condensers are promised for delivery in August. The A.E.C. has been requested to approve the addition of two condensers to the 241-S tank farm. These condensers would allow self-concentration of solutions, with major savings being possible. Overall design progressed 8% and was on schedule. The portion of construction to be managed by Minor Construction was 22% complete. A lump sum bid of $2,428,468 was accepted, and a contract was awarded on June 15. The Notice to Proceed was issued immediately.

The low bid for 15 tanks has indicated that authorized funds could provide for three (3) additional tanks. A revision to the contract is being considered.

CA-543 (ER-2733) - Replace Sanitary Tile Field 200 West Administration Area

Design progressed 5% to a total of 35%. A revised project proposal, based on performance by a lump sum contractor, is being prepared. The revised work scope includes a tile field for the 200-W Administration Area, and a tile field for the 200-U Area. The estimate for this revised scope of work is $57,000. Radiological health hazards have been resolved.

CG-545 (ERA-724) - Soil Science Laboratory Facilities

Design progressed 10% to a total of 40%. The revised project proposal has been prepared to include only the work authorized by the A.E.C. Directive. Material procurement has begun.

CA-546 (ER-3099) - Fuel Element Pilot Plant

Scoping progressed 2% to completion. The design criteria were issued in final form. The A.E.C. has selected an architect-engineer to perform detailed design.

CG-549 (ER-2731) - Activate Task I, RMA Line - Building 234-5

Design progressed 5% to a total of 20%; construction began and progressed to 3%. Scoping and preliminary design are proceeding rapidly. Demolition and site preparation was about 90% complete.

[redacted]

[redacted]

CG-550 (ERA-746) - Reactivation of P-10 Facilities

Design progressed 5% to a total of 25%; construction progressed 4% to a total of 12%. A revision to the initial project proposal, to alter design and construction funds, was submitted to the A.E.C. Plant forces are to do the reactivation work.

CG-553 (ERE-484) - Outlet Tube Temperature Monitoring System - High Speed Electric Transcriber for 105-D, DR, and F Areas

Design had been completed previously. The project proposal for construction funds of $43,000 was forwarded to A.E.C. on June 16. It was recommended that Manufacturing Department have project management.

IR-116 (015) - Combined Civil Defense and Plant Disaster Control Center

Design progressed 20% to completion, detailed design drawings have been completed and approved. The project proposal for construction funds of $40,000 was submitted to the A.E.C. by the A&B Committee without recommendation.

IR-133 - Water Quality Laboratory, 108-B Building

Design had been completed previously; construction progressed 1% to a total of 99%. The transite duct was received and installed. An inspection was scheduled for the near future.

* * * * * * * * * * * * *

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 27%. The information received from the Savannah River and Arco Plants was not suitable for purposes of comparison with electrical distribution activities at Hanford; so the project proposal as currently prepared was submitted.

ERA-725 - Particle Problem Animal Exposure Equipment

Design completion status remained at 5%. Further work is awaiting resolution of the scope by the Radiological Sciences Department.

ERA-727 - 313 Building Roof Repair or Replacement

Design completion remained at 50%. Further work is to be coordinated with the new 313 Building in 1954.

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ERA-735 - Graphite Hot Shop and Storage Building

Design completion status remained at 15%. The completed project proposal was delayed during signature routine for further study by the Pile Technology Unit.

ERA-736 - Transportation Garage and Facilities - 2713-E

Design completion status remained at 10%. Since justification for this work may be marginal, a study is being prepared.

ERA-741 - Renovation of 3722-A, 3702, and 3703 Buildings

Design completion status remained at 50%. The using department is still considering painting the buildings rather than applying asbestos shakes.

ERA-742 - Remodeling First Aid Buildings 100-B, D, and F

Design completion status remained at 1%. Work was delayed because construction funds are not available until fiscal year 1955.

ERA-747 - Hot Semiworks Conversion

Design completion status remained at 10%. The A.E.C. issued a directive on June 29 to authorize the requested funds for design and material procurement.

ERA-748 - Laboratory Supply Space, 3706 Building

Design progressed 10% to a total of 25%. The rough draft for this proposal has been revised to strengthen the justification. The proposed use of Building 3706 may cause major revisions in scope and planning.

ERA-1200 - Heat Transfer Laboratory

Design was 5% complete. Work on the project proposal began June 26. Present scope indicates that work will consist of installing three steam-jacketed process tubes with process water supply facilities and steam service capable of operating nine process tubes simultaneously. This facility is to be installed in the 189-D Building. The total project cost was estimated at $90,000, with Minor Construction to perform the work.

ERA-1201 - X Level Controlling and Recording Equipment

Design completion status remained at 15%. Funds for this project are being obtained from those budgeted for construction of the 105-C Reactor. The total estimated project cost was $54,000. The project proposal has been prepared, and is being routed for signatures.

[redacted]

ERA-1204 - Panellit Gauge Testing Facilities

Neither design nor construction has begun. The pump is being tested to determine whether or not gauge testing can be performed without shuting off the flow from the control room to the front face. If the valve is found to be unnecessary, the project cost can be reduced about $130,000. Tests at 105-DR are scheduled for performance about July 13, 1953.

ERA-1205 - New Facility for Lattice Testing

Neither design nor construction has begun. A project proposal requesting $48,000 for building design and reactor scoping is being routed for signatures. Design is being scheduled to permit start of construction early in fiscal year 1955.

ERA-3098 - Cobalt 60 Source for Radiation Studies

Design progressed 10% to a total of 60%. Before submitting information for the project estimate, investigations are being conducted to determine whether the cobalt may be irradiated in the Hanford piles.

ER-2723 - Steel Handling System - 272-W

Design completion status remained at 20%. Since no funds are available in present appropriations, an informal request is being prepared on a lower priority basis.

ER-2737 - Fiscal Year 1954 Water Tank Replacements

Design progressed 5% to a total of 20%. Comments obtained during review of the rough draft are now being incorporated in this project proposal.

ER-2739 - Redox Cooling Water Disposal Basin

Design completion status remained at 15%. The project proposal has been approved by the A.E.C. Project Review Board, and is now awaiting final approval.

ER-6020 - Future Records Storage Study

Design progressed 40% to a total of 90%. Work was nearly completed on this study to determine the comparative economies of operating the Records Center at present site and a portion of the 2101 Building after 1955.

CC-5051 - Complete Automatic Backwash - 183-C Building

Installation of the backwash system was on schedule, and is to be completed during the first week of July 1953.

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CC-5461 through CC-5464 - Thermal Insulation at Building 2101-E, 200-E Area

Insulation on the domestic hot and cold water piping was about 80% complete. The seven (7) exhaust stacks were finished. The job has been rescoped and is in the process of being re-estimated.

CC-5634 - Remote Control System - 181-B Building

Field work began June 18. Equipment provided by the vendor is being installed.

C. RELATED FUNCTIONS

Minor Construction Contract

On June 1 the contract governing Minor Construction became effective. The contract was negotiated for two years with an option for extension, and with an annual fee of $90,000. The contractor, J. A. Jones, has entered into subcontracts with the following: Urban Engineering Corporation for piping; Pacific Electric Company for electrical work; V. S. Jenkins Company for insulation.

The scope of the work, as stated in this contract, is similar to the previous Labor Service Contract and provision is made for the possibility of the contractor furnishing materials and equipment and management services, if directed by the A.E.C. As of June 1, 1953, a letter was received from the A.E.C. designating the General Electric Company as the duly authorized representative of the Commission for managing the work under this contract. This authorization was supplemented by an agreement between the Manager, Projects, and the Chief, Engineering and Construction Division, A.E.C., defining the method of operation and types of work to be performed by Minor Construction. The method of operation as agreed to, is essentially the same as it has been in the past.

The changeover from the previous contract with Atkinson-Jones to the new contract was accomplished in the field with little or no interruption to the work. All of the previous contractors' supervision and management employees as well as craftsmen were retained by the new contractor. After one month of operation under the new contract, it appears that very satisfactory performance and working relations exist between the Minor Construction Management Unit and the labor services contract.

Inspection, Drafting and Estimating

Five exempt and five non-exempt people were added to the payroll to keep pace with the increasing workload of inspection. The range of inspection difficulties during the month extended from poor quality of limonite ore for concrete shielding to poor finish on specialized equipment. There were numerous rejections which even with relaxed requirements delayed the filling of several orders.

Two orders which were the subjects of intensive inspection work have been cleared with very satisfactory results. The model pump manufactured by Bingham Pump Company for the 100-K Water Plants and the prototype crate manufactured by the Puget Sound Navy Yard have proved to be of better quality than originally expected.

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The following is a resumé of inspection activities during the month:

ITEM	NUMBER
Open requisitions requiring inspection	186
Orders assigned to inspectors	374
New orders received	76
Orders completed	29
Sub-vendor orders assigned to inspectors	15
Total requisitions for Program "X" transmitted	154
Total orders for Program "X" placed - Engineered Equipment	231

At the end of June there had been grand totals of 1313 Program "X" requisitions transmitted, and 1,074 Program "X" orders placed for engineered equipment.

Drafting production for the month was 302 new drawings, 27 charts and graphs, and 256 revisions. The Drafting Room average was 6.2 man-days per drawing. This production was accomplished with only 815 non-exempt and 56 exempt hours of overtime. There are now 28 drafting personnel working in the 713-A Building. Drafting work is generally on schedule and progressing satisfactory. The percentage complete for the 100-K Reactors was 92.5.

The Reproduction group produced 1,020,460 square feet during the new reporting period of 25 working days and 3 "limited crews" Saturdays. This record production was obtained with only 160 overtime hours. The larger orders processed during June were 37,037 prints for CA-512-R, 6,337 prints for CA-512-W, and 7,842 prints for CA-513.

The Estimating group completed 25 estimates during the month. The completed estimates comprised the following: project proposal 7, comparative 2, fair cost 6, high spot 2, scope 6, and miscellaneous 3.

The Field Surveys group continued with procurement of field data for the 300 Area Expansion and for the Purex Facilities in 200-E Area. The group also checked monumentation and boundry lines for the survey of Richland and for several other A.E. contracts.

The Project Control Unit continued its routine functions on budgets, reports and general administration. The Control group issued unitization reports on the following projects: AEC-103, AEC-131, AEC-134, AEC-125, AEC-126, AEC-138, CA-451, CG-478, CG-492, CG-493, CG-526, CG-442, and CG-443. The History group published three histories, bringing the cumulative total to 97.

D. CRAFT LABOR

Voluntary termination of construction contractor personnel (Kaiser Engineers and associated contractors) dropped slightly to 4.2% for the month. The percentage of voluntary terminations by employees of J. A. Jones and C.P.F.F. subcontractors was 1.2%, and for Blaw-Knox 14%.

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A reassignment of maintenance work on equipment for the North Richland well field was arranged through mutual agreements among General Electric, the union, and the A.E.C. The maintenance which was previously performed by both construction contractor fitters and General Electric fitters is to be accomplished by General Electric personnel. This reassignment was made to allow more economical and efficient operation of the North Richland well field.

A 1-1/2 year contract for operation of the North Richland Construction Camp was awarded to Commonwealth, Incorporated. This management group is also responsible for the renting and minor maintenance of the Bauer-Day housing addition. The contract for operation of the North Richland Steam Plant was renewed with P. S. Lord for 1-1/2 years.

Negotiations with bricklayers resulted in adoption of the rate which has been in effect within the Pasco local for several months. Effective June 1, 1953, the Schedule "A" rate for bricklayers was increased from $3.00 to $3.25 per hour.

Negotiations with roofers were opened during the week of June 15-19. Their demands included an increase of 36 cents-per-hour ($2.39 to $2.75), plus isolation pay of $6.00 per day.

The sheet metal workers and other local unions attended a meeting on June 24-25 to discuss an area agreement for adjacent parts of Washington, Oregon and Idaho. No agreement was reached.

The work stoppage which began May 28 with the walkout of millwrights employed by Kaiser Engineers in the 2101 Building was partially settled on June 5. Of the 63 millwrights on strike, 46 returned to work on the basis of a temporary work assignment which allowed duplication of work on an inspection function. A member of the special panel of the Federal Mediation and Conciliation Service visited Richland on June 20-21 to interpret the original recommendations. The panel member gave his findings to both disputing parties, subject to concurrence of the other two panel members.

A work stoppage began on June 5 by plumbers employed by Blaw-Knox and continued throughout the month. Following the discharge by Blaw-Know of a general foreman and four foremen who refused to instruct their men to handle certain piping materials, the Plumbers' Union refused to furnish men. Of about 30 plumbers on the payroll on June 5, only two or three remained on the job. Blaw-Knox has failed repeatedly through contacts with the international office to obtain men, and the lack is becoming critical.

From June 9 to June 23, the Carpenters' Union refused to dispatch carpenters because of a dispute concerning travel pay. The Union contends that the dollar-per-day travel allowance should apply on the day a new employee processes through the employment office. The disputants have agreed to arbitrate and are now in the process of selecting an arbitrator.

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HW-28576

MONTHLY REPORT

FUEL TECHNOLOGY SUB-SECTION

JUNE, 1953

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VISITORS AND BUSINESS TRIPS

Visitor	Date	Address	Purpose
G. B. Grable R. P. Sopher	6-24/25-53	Battelle Memorial Institute	Discussion of welding problems
Howard Long	6-4-53	General Electric Sales, Seattle, Wash.	Discussion of welding problems
R. W. Samsel	6-22/26-53	General Engineering Laboratory	Consultation of ultrasonic flow detection and decontamination

Name	Date	Place Visited	Purpose
P. J. Pankaskie	6-8/11-53	AEC-Pittsburgh Operations Office, Pittsburgh, Pa.	Consultation on zirconium fabrication
C. Groot	6-14/20-53	Argonne National Laboratory, Lemont, Illinois	Discussion of corrosion problems
R. W. Benoliel	6-25/30-53	General Engineering Lab. & Battelle Memorial Institute	Consultation on fuel element development program
R. L. Reynolds	6-27/30-53	General Engineering Laboratory	Consultation on underwater examination equipment
F. B. Quinlan	6-30-53	Precision Machine Works, Tacoma, Wash.	Instrumentation consultation

URANIUM DEVELOPMENT

Fabrication of Uranium

The first 500 uranium powder metal compact slugs of a total of 5000 slugs for pile irradiation were received from Sylvania Electric Products Company. The slugs were fabricated from uranium hydride derived from three sources: (a) MCW ingots, (b) FMPC reject slugs, and (c) MCW derbies. Slugs produced from the first two source materials are expected to be of similar chemical composition; however, the slugs produced from MCW derby material are expected to be of higher purity and especially lower carbon content. Because of the anticipated difference in chemical composition, the "derby" slugs will be tested separately and will not be considered as a portion of the 5000 slugs for in-pile testing.

Six uranium rods extruded in the high alpha phase have been received from the Massachusetts Institute of Technology. These rods were fabricated under varying extrusion conditions to determine the conditions which would result in an optimum uranium structure. After selection of the best extrusion conditions, MIT will extrude sufficient material for a preliminary pile test.

Uranium tubes were successfully extruded in the high alpha phase by the Bridgeport Brass Company. Hollow slugs machined from these tubes will be used for initial tests to determine the most suitable canning techniques.

Component parts have been fabricated for the casting of hollow billets to be extruded as hollow rods by Knolls Atomic Power Laboratory.

Uranium Alloys

The second tube containing six uranium plus 0.4 atomic per cent chromium alloy slugs will be discharged at an exposure of about 200 MWD in July. No information has been received concerning the alloy slugs discharged during June at an exposure of 148 MWD.

Five pound uranium billets containing small additions of silicon were cast and the as-cast structure determined. The addition of silicon to natural uranium resulted in a marked decrease in the as-cast grain size. However, little difference was noted between the 1/2 and the 5 atomic per cent silicon alloys.

Process Tube and Can Metals

Nine 63S unclad aluminum process tubes were charged in H Pile. Insertion of the tubes in the pile, flanging, fitting and charging of the tubes with 63S and 2S aluminum canned slugs proceeded satisfactorily. A slightly longer time was required for the flanging of 63S aluminum tubes than 2S-72S clad aluminum tubes. Approximately 1700, 63S aluminum jacketed slugs were charged into 2S-72S clad aluminum process tubes to determine the corrosion behavior of 63S aluminum in 72S aluminum clad process tubes.

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COATINGS AND CORROSION

Flow Cup Laboratory

The laboratory has been in partial operation during the past month. The samples for determination of weight loss and solution potentials are being prepared and will be placed in the flow cup next month after the equipment for addition of sodium dichromate has been installed and tested.

Corrosion Studies

The uranium slugs canned by Sylvania were examined for indications of any conditions which might lead to accelerated corrosion. On many of the slugs, anodic spots and deposits of graphite or buffing compound were noted. Laboratory tests have shown no significant corrosion after 12 days' exposure.

Corrosion current studies indicate that 63S will behave satisfactorily in contact with either 2S or 72S. An experiment was designed to test the tendency of several aluminum alloys to stress corrosion. The first results indicate that 63S in a stressed, over-aged condition and 2S in a stressed, annealed condition do not corrode at an accelerated rate. These studies are being undertaken in an attempt to determine whether the failure of the irradiated C slug resulted from stress corrosion.

Studies to determine the relative values of steam autoclaving and water autoclaving have been started. The first series of aluminum samples used in the water autoclave were pitted as a result of iron inclusions picked up in the rolling or sample cutting operation.

A test which had run for 93 days has shown that dichromate inhibits the corrosion of aluminum by mercury. Some estimation of the protective value of the different concentrations of dichromate may be obtained from the results of the test.

Thermogalvanic Effects

A production test to study quantitatively the effect of hot spots on a slug jacket in an irradiation field has been written and is being circulated for approvals.

Graphite Removal

Laboratory studies have shown that graphite which has been pressed into aluminum surfaces may be removed by any one of several methods. Anodizing is unsatisfactory because it takes so much time and requires such high current densities. Fuming nitric acid or nitric acid with oxidants requires approximately six hours, but removes the graphite efficiently with very low loss of aluminum. Electrocleaning is rapid and efficient, but removes approximately 0.001 inch of aluminum. Approximately 100 slugs are being electrocleaned for laboratory and production tests.

Fission Current Corrosion

Electrical measurements have shown that the compound layer does not act as a semiconductor either before or after irradiation. The resistance of this layer is so low that it would be impossible to measure any fission current generated during irradiation.

Rate Studies

The rate of dissolution of aluminum in two different solutions used for etching has been studied. A temperature coefficient similar to an activation energy has been calculated to be 2.9 K cal/mol.

Coating Studies

Attempts to fabricate slugs with a diffusion barrier of nickel or copper by the cold canning technique have been unsuccessful.

Examinations of evaporated coatings have revealed the presence of a large number of circular holes. It appears that these holes are formed during the evaporation, probably as a result of the presence of liquid droplets on the surface.

FABRICATION TECHNIQUES

Hot Press Canning Program

The fabrication of hot press canned slugs for the initial pile irradiation of these fuel elements was substantially completed during the month with the canning of 114 pieces. Of these, 50 slugs will be selected following cleaning and non-destructive test for charging into the pile. The rough draft of the production test is being circulated.

Previous work on residual can wall thickness had been done on three canned slugs. During the month six more hot pressed canned slugs were tested and the values for the minimum can wall thickness were 22, 25, 23, 21, 23, and 21 mils. Instead of the usual black surface appearing on penetration in hot caustic, the color of the zinc coated Al-Si was a metallic gray. The aluminum jackets on these slugs have a large grain structure presumably due to the cold sizing followed by hot pressing. This grain structure causes selective etching in the caustic to take place at the grain boundaries.

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Metal Fabrication Laboratory

The large number of experiments requiring experimental machining of uranium necessitates the continued six-day week. During the month, slugs were prepared for the hot press canning program, specimens were machined for the monthly quality control check on Hanford production rod, and experimental machining was completed for Pile Physics personnel. Experimental machining by the Metal Preparation Section of the hollow slugs for exponential pile tests was continued during the month. The Fuel Survey group will assist the Metal Preparation Section in expediting tools and equipment in order to assure the completion of this project in the time specified.

New Facilities

It is expected that a decision will be made on the architect-engineer services in connection with the design of the fuel element pilot plant early in July. The writing of specifications for equipment to be purchased and installed in the new pilot plant is nearing completion.

An electroplating installation complete with exhaust blower and connections to water lines and process sewer has been installed in the 314 Building. The hydraulic presses used in the hot press canning program have been removed from the 3730 Building and reinstalled in 314 Building. Additional laboratory equipment will be installed and plans are in process to provide all necessary laboratory facilities required by the groups occupying the building.

URANIUM QUALITY

Evaluation of Rolling at Simonds

The January and February rollings at Simonds Saw and Steel have been evaluated except for orientation studies. No differences of a significant nature were observed with respect to mechanical properties, grain size, and inclusion count in samples from the 1953 and late 1952 rollings at Simonds.

Uranium Reduced from UF_6 Parent Material

The production test for the evaluation of uranium produced from UF_6 parent material from the K-25 cascades is in rough draft form, samples of metal produced from uranium tetrafluoride made using hydrogen and simulated cracked ammonia as reductants are being evaluated metallurgically preliminary to canning the slugs. The approximately 1350 eight-inch slugs should arrive at Hanford in July, and it is planned that these will be charged in the piles in August.

Beta Heat Treatment of 250 Tons of Rods at Fernald

The heat treatment of the rods for Production Test 313-105-25-M was completed on June 25. It is possible that less than 40,000 slugs will be received at Hanford because of the five per cent higher percentage of seams observed in slugs machined from beta transformed rods. Fernald still expects that all eight-inch slugs machined from this stock will arrive at Hanford by July 15.

Deformation of Secondary Pipe in Cast Uranium During Rolling

Samples cut from reject Mallinckrodt ingots containing secondary pipe have been reduced from up to 90 per cent by rolling. Metallographic study indicates the voids weld together when the void surfaces are clean, but do not when foreign matter is present.

Irradiation of Triple-Dip Canned Uranium Slugs from Rods Rolled at Fernald

As of June 19, about 158,000, eight-inch slugs had been canned under provisions of a production test with a yield of 73 per cent. This yield compares favorably with

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the canning yield on slugs from Simonds rolled rods for the months November, 1952 through February, 1953. Approximately 82,000 of the acceptable canned slugs were shipped to the 100 Areas for irradiation

Samples from the March and April rolling at Fernald show mechanical properties similar to those for previous months. The grain size of samples examined was similar also except for two central bands of small grain (0.020 and 0.049 mm diameter) and one 0.20 by 1.00 mm grain surrounded by grains of normal diameter. These structures are not known to have been previously observed in rolled uranium.

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It may be possible to determine lining failure by electrical measurements. An instrument has been made and is being tested. If successful, it would not be necessary to empty the crucible for inspection.

Heating and Canning in a Vacuum

Five slugs were canned inside a metal pressure vessel by preheating the assembled dry components under vacuum, admitting a small amount of molten Al-Si, and quenching. Uniformly good results were obtained except for poor wetting at the top edge of the uranium. This difficulty was not encountered in previous tests using quartz sleeves. Experimental work will proceed.

Improved "C" Type Canning

Experimental canning of aluminum dummies by the modified "C" process, which features a brazed and welded closure, was continued. There was a successful demonstration of the procedure using thick-walled cans and small diameter slugs. The closures produced appeared to be equal to or better than those normally found on standard triple-dipped uranium slugs. Similar slugs made with thin-walled cans and standard four-inch slug caps were subject to excessive cocking of the caps and the cap inserts.

The slugs for the additional 50 kilogram "J" slug charge were ordered with a nominal diameter of 1.352", the optimum size for the modified procedure when using thick-walled cans. The necessary dies and straightening equipment were procured for drawing the third and fourth quarter rejects (marred surface and undersize diameters) to 1.352". These pieces can probably be canned using the modified procedure. This should make about 250 additional "J" slugs available for irradiation.

TESTING

Al-Si Penetration

A quartz crystal stabilized oscillator which was built to increase the frequency stability of the MIZ-1 penetration equipment has been placed in service and operates satisfactorily. Because of difficulties with the probe suspension system, no great number of slugs has been run for testing the equipment. New suspension mounts are being made up.

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Calculations of the coil impedance under varying conditions of aluminum thickness and slug eccentricity have established the reasons for ambiguities previously observed in the measurement of penetration. Under some conditions, eccentricity of the slug within the can looks to the equipment like an Al-Si penetration. It appears that for rapid, routine operation, special filters may be useful in reducing the effect of this ambiguity.

Transformation Test

Except for one gear in the drive mechanism, a complete unit of the transformation test equipment is finished and has been moved to the 313 Building. The gear is expected hourly and with its arrival, large-scale testing of Fernald heat treated slugs can begin. Some delay may be encountered in the preparation of suitable standards.

Ultrasonic Testing of Irradiated Material

Apparatus to examine irradiated material ultrasonically was installed in B Storage Basin and used to test a powdered metal slug which had been irradiated to 426 MWD/T and which had shown bumps on discharge. Measurements indicated that over three-fourths of the length of the slug had an average grain size greater than .11 mm while the remaining quarter had a grain size of .008 which is normal for powder metal.

Eddy Current Test for Bare Slugs

A second test of the MIZ-2 eddy current equipment was run on a group of 1200 slugs machined from rods on which the Uranium Quality Sub-Unit has extensive data. Readings showed the same type of pattern which was obtained with the previous run on a random lot, and efforts are now being made to correlate these readings with the crystallographic, chemical and metallographical data available on this special material.

FUEL EXAMINATION

Slug Examination

A slight amount of pitting was detected on the can and only of five slugs from a tube discharged at 414 MWD/T exposure under P.T. 105-533-A, "Local Controlled Increases in C Pile Tube Powers". This phenomenon was also observed on slugs discharged earlier from the same production test. Although this condition does not appear serious, future discharges of this production test will be carefully inspected for this effect.

No adverse effects were noted during the examination of slugs exposed to low pH alum-treated water during pile operation.

Slugs from several production tests were stripped of their jackets after pile exposure. These slugs are now undergoing inspection tests with the ultrasonic testing equipment.

The fifth and sixth ruptures at C Pile occurred on May 7, 1953, in tube 2859-C and on May 10, 1953, in tube 3159-C. Both of these four-inch regular metal slugs were split in half along the length of the slug.

Six suspected failures of C-metal slugs were found after the May 7, 1953 outage at H Pile - two in each of three tubes. All failed C-metal slugs inspected to date appear to have a similar characteristic, i.e., a raised portion of jacket, which is clearly visible. The crack in the jacket usually occurs between this raised area and the normal area. It is presently thought that water enters through a defective area in the weld bead and causes internal corrosion which in turn expands the jacket.

A prevalence of black specks and pits were discovered during pre-exposure examination of regular four-inch slugs to be used for various production tests. Investigation revealed that the jackets were made from Scoville cans that these defects were caused by exterior corrosion rather than by Al-Si penetration.

Slug Examination Facilities

The revised prototype slug handling dolly and prototype measurer, which were designed and fabricated by the General Engineering Laboratory, will be inspected by HAPO representatives near the end of June, 1953. Approval of the modified slug dolly will result in authorization for the procurement of four additional dollies for the 100-C Slug Examination Facility and in delivery to HAPO of the completed unit. The slug measurer is not entirely completed, and modifications may be requested after testing.

Equipment design by the Design Engineering Unit of HAPO was started this month. Completion of the more critical equipment design is expected by September, 1953.

Development work by Optical Instruments has resulted in considerable improvement in the stereoscopic perioscope design and completion of split camera feasibility tests.

Relatively recent information has indicated that for adequate control, it may be necessary to perform in the 100-C Basin the slug dejacketing operation which originally was expected to be done at 200 Area facilities. Tests carried out by Radio Metallurgy cost estimates, and waste disposal problems associated with the process are being evaluated.

Equipment which has been installed in the 105-B Slug Examination Facility includes the slug viewer and manipulator, air weigher, weasel, tongs, and underwater lighting. Fabrication of the optical dimensioner and the exaggerated stereoscopic viewer is continuing in the Instrument Shop.

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.

GEMcC:acj

[redacted]
Fh-11

G E McCullough
Manager, Fuel Technology
ENGINEERING DEPARTMENT

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MEDICAL DEPARTMENT

JUNE 1953

General

Personnel Changes

The roll remained constant at 254.

Visits

Dr. Sachs attended a meeting of the Western Branch of the American Public Health Association in Los Angeles and was elected Vice-President of this association. The health educator attended a technical meeting in Seattle. Two public health nurses attended a workshop on infant care in Seattle.
Miss J. Andersen, field advisor, University of Washington School of Nursing, visited in connection with the field training of nurses in Public Health.

Employee Relations

Employee attendance at 29 meetings was 185.

Industrial Medicine

Employee physical examinations increased from 1065 to 1238, while dispensary treatments decreased from 4660 to 4271. One major and no sub-major injuries were sustained by General Electric employees. Contractor employees sustained no major or sub-major injuries.
Efforts are being made to improve the industrial medical program in selection, placement and follow-up of employees from the standpoint of human relations through further training of physicians and allowing more time for counselling.
Sickness absenteeism was 1.51% as compared with 1.50% in May, while total absenteeism was 2.23% as compared with 2.16% in May.

Kadlec Hospital

The average daily census was 74.0 as compared to 82.8 for May. This represented an occupancy percentage of 68.4 on the mixed services.
It was suggested to the A.E.C. that an outside consultant be asked to give an opinion as to the need for additional beds at Kadlec.

Public Health and Welfare

There was an increase in communicable disease due primarily to the increased incidence of measles.
Dogs in Richland have been quarantined for three months due to the occurrence of several cases of rabies among dogs in this general area.
Seven families were aided in handling problems of parent-child relations by our social service counselors.

Costs - May

Medical Department costs before assessments to other departments were as follows:

	April	May	May Budget
Industrial Medicine (Oper.)	$40,073	$41,016	$41,090
Public Health (Oper.)	12,475	10,147	14,837
Kadlec Hospital (Net)	9,700	28,067	28,112
Hospital Expense Credits	4,789	4,611	3,326
Sub-total-Medical Department (Oper.)	$67,037	$83,841	$87,365
Construction Medical (Industrial and Public Health)	2,702	2,614	12,597
Total - Operations and Construction	$69,739	$86,455	$99,962

MEDICAL DEPARTMENT

JUNE 1953

Costs-May (Continued)

The net cost of operating the Medical Department before charges were assessed to other departments for services rendered was $86,455, an increase of $16,716.
The increase in Kadlec Hospital expense was due to the seasonal decrease in business of $22,212, which was much greater than the decline of $4,024 in operating gross costs.
The decrease of $2327 in Public Health expense was due largely to a change in policy effective in May whereby costs incurred in school nursing previously absorbed by Public Health will be charged to the school system. The charge in May represents a two months accumulation.
The small change in Industrial Medicine operations expense was due to transfer of one physician during the month from Construction to Operations.

MEDICAL DEPARTMENT

JUNE 1953

Industrial Medical Section

The number of medical examinations increased from 1065 to 1238 due to the change in our frequency schedule for examination of employees. General Electric employees sustained one major injury but no sub-majors. Contractor employees sustained no major or sub-major injuries during the month. Dispensary visits decreased from 4660 in April to 4271. Space was completed for a new dispensary in the 700 Area on June 30th and will be equipped and opened on July 13th. This will make dispensary services more readily available for 700 Area people and should augment injury reporting and other industrial medical services in that location.

One information meeting was held during the month for industrial physicians.

Responsibility for government driver license medical certification was begun during the month. The testing of vision and hearing requirements in conjunction with employee routine medical examinations will eliminate the transportation department's previous function in this regard.

The Chemical Hazards Committee meeting dealt with noise levels chiefly and sound reduction possibilities and personnel protection devices continue to be studied.

The Health Activities Committee met on June 18th. The topic on "summer health tips" was presented and material on this subject was prepared for distribution throughout the plant. The sickness absenteeism for June was 1.51% as compared to 1.50% for the previous month.

Gross costs for May totaled $42,162 as compared to $41,028 in April, an increase of $1,134. Following are details:

Costs-Operations	May	April	Increase (Decrease)
Salaries	$30,500	$29,884	$ 616
Continuity of Service	3,050	2,986	64
Laundry	299	390	(91)
Utilities, Transportation, Maintenance	3,944	3,913	31
Supplies and Other	4,369	3,855	514
Total Gross Costs	42,162	41,028	1,134
Less: Revenue	1,146	955	191
Expense Credits	4,900	5,296	(396)
Net Cost of Operation	$36,116	$34,777	$1,339

Actual net costs for fiscal year 1953 to date total $367,272 with a budget of $389,879 or 94.2%. The budget for the full year is $426,480.

Costs-Construction

Gross costs in May were $1,659 as compared to $1,741 during April, a decrease of $82 detailed as follows:

	May	April	Increase (Decrease)
Salaries	$1,435	$1,468	$ (33)
Continuity of Service	143	147	(4)
Utilities, Transportation, Maintenance	0	61	(61)
Supplies and Other	81	65	16
Total Gross Costs	1,659	1,741	(82)

MEDICAL DEPARTMENT

JUNE 1953

Industrial Medical Section (Continued)

Costs-Construction (Continued)

At month's end there were two medical records employees remaining on the roll. A charge for this service will continue until transferring is completed.

MEDICAL DEPARTMENT

JUNE 1953

Industrial Medical Section (Continued)	May	June	Year to Date
Physical Examinations			
Operations			
Pre-employment	82	159	505
Rehire	25	31	125
Annual	317	405	2150
Interim	192	273	1134
A.E.C.	24	57	204
Re-examination and rechecks	121	127	777
Termination	121	116	679
Sub-total	882	1168	5574
Contractors			
Annual	0	11	11
Pre-employment	0	25	690
Rehire	3	0	121
Recheck	11	9	201
Termination and Transfer	136	25	753
Interim	33	0	87
Sub-total	183	70	1888
Total Physical Examinations	1065	1238	7462
Laboratory Examinations			
Clinical Laboratory			
Government	95	255	925
Pre-employment, Termination, Transfer	2663	2986	17916
Annual	1913	2750	13458
Recheck (Area)	972	1263	6613
First Aid	0	5	40
Clinic	489	379	2644
Hospital	5068	4343	31110
Public Health	4	18	70
Total	11204	11999	72776
X-Ray			
Government	19	45	155
Pre-employment, Termination, Transfer	107	255	1527
Annual	462	685	2632
First Aid	89	76	614
Clinic	188	181	1348
Hospital	[illegible]	[illegible]	[illegible]
Public Health	3	3	35
Total	1136	1534	8566
Electrocardiographs			
Industrial	73	66	280
Clinic	0	0	15
Hospital	57	49	324
Total	130	115	619

MEDICAL DEPARTMENT

JUNE 1953

Industrial Medical Section (Continued)	May	June	Year to Date
First Aid Treatments			
Operations			
New Occupational Cases	352	372	2175
Occupational Case Retreatments	1197	1217	7546
Non-occupational Treatments	2604	2305	16091
Sub-total	4153	3894	25812
Construction			
New Occupational Cases	102	71	902
Occupational Case Retreatments	302	192	2846
Non-occupational Treatments	65	62	916
Sub-total	469	325	4664
Facility Operators	38	52	262
Total First Aid Treatments	4660	4271	30738
Major Injuries			
General Electric	0	1	5
Contractors	0	0	2
Total	0	1	7
Sub-major Injuries			
General Electric	3	0	8
Contractors	0	0	11
Total	3	0	19
Absenteeism Investigation			
Calls Made	5	3	38
Employee Personal Illness	4	2	31
No. absent due to illness in family	0	0	1
No. not at home when call was made	0	1	5

MEDICAL DEPARTMENT

JUNE 1953

Hospital Section

The average daily adult census decreased from 82.8 to 74.0, as compared to 70.0 a year ago. This represents an occupancy percentage of 67.9 broken down as follows: Mixed Service (Medical, Surgical and Pediatrics) 68.4; Obstetrical Service 65.7. The minimum and maximum daily census ranged as follows:

	Minimum	Maximum
Mixed Service	42	70
Obstetrical Service	8	20
Total Adult	61	85

The average daily newborn census increased from 10.1 to 13.2, as compared to 10.2 a year ago.

Nursing hours per patient per day:

Medical, Surgical, Pediatrics	4.13
Obstetrical	3.29
Newborn	2.74

The ratio of inpatient hospital employees to patients (excluding newborn) for the month of May was 2.09. When newborn infants are included, the ratio is 1.87.

The net expense for the operation of Kadlec Hospital for May was $28,067, as compared to $9,700 for April. Summary is as follows:

Kadlec Hospital net expense $28,067
This is an increase of approximately $18,000 due to the substantial decrease in our patient census during the month of May. Costs were reduced by approximately $4,000, but revenue dropped about $22,000.

Work on rate comparisons was completed and new rates are effective July 1st. These increases bring our rates in line with the average of Washington hospitals included in the recent survey.

The hospital held seventeen employee information meetings during the month with an attendance of one hundred and eight. In addition the usual safety meetings were held and the necessary "report" meetings to facilitate hospital operation.

MEDICAL DEPARTMENT

JUNE 1953

Hospital Section (Continued)	May	June	Year to Date
Kadlec Hospital			
Average Daily Adult Census	82.8	74.0	91.0
Medical	22.8	19.8	27.7
Surgical	36.2	29.5	34.9
Pediatrics	12.8	10.8	15.2
Mixed	71.7	60.2	77.9
Obstetrical	11.1	13.8	13.1
Average Daily Newborn Census	10.1	13.2	12.5
Maximum Daily Census:			
Mixed Services	90	70	108
Obstetrical	19	20	23
Total Adult Census	105	85	120
Minimum Daily Census:			
Mixed Services	52	42	42
Obstetrical Service	6	8	6
Total Adult Census	59	61	59
Admissions: Adults	577	527	3675
Discharges: Adults	607	519	3659
Newborn	74	88	471
Patient Days: Adult	2568	2219	16464
Newborn	314	395	2269
Total	2882	2614	18733
Average Length of Stay: Adults	4.2	4.3	4.5
Medical	4.7	4.2	4.5
Surgical	4.1	4.4	4.6
Pediatrics	3.7	4.2	4.3
Mixed	4.2	4.3	4.5
Obstetrical	4.4	4.3	4.4
Newborn	4.2	4.5	4.8
Occupancy Percentage: Adults	76.0	67.9	83.5
Medical	61.6	53.5	74.9
Surgical	113.1	92.2	109.1
Pediatrics	67.4	56.8	80.0
Mixed	81.5	68.4	88.5
Obstetrical	52.9	65.7	62.4
Newborn	38.8	50.8	48.1
(Occupancy Percentage based on 109 adult beds and 26 bassinets.)			
Avg. Nursing Hours per Patient Day:			
Medical, Surgical, Pediatrics	4.13		
Obstetrics	3.29		
Newborn	2.74		
Avg. No. Employees per Patient (excluding newborn)	2.09		
Operations: Major	105	88	598
Minor	115	78	565
E.E.N.T.	86	54	412
Dental	1	1	3

MEDICAL DEPARTMENT

JUNE 1953

Hospital Section (Continued)	May	June	Year to Date
Kadlec Hospital (Continued)			
Births: Live	69	95	476
Still	2	0	7
Deaths	5	6	29
Hospital Net Death Rate	.15%	.16%	.17%
Net Autopsy Rate	20.0	16.7	27.6
Discharged against advice	2	0	3
One Day Cases	180	134	913
Admission Sources:			
Richland	75.0	76.3	77.4
North Richland	11.1	12.1	10.0
Other	13.9	11.6	12.6
Admissions by Employment:			
General Electric	73.8	70.5	73.9
Government	2.3	2.6	2.5
Facility	3.8	4.7	3.8
Contractors	12.8	15.4	11.7
Schools	2.1	1.3	1.9
Military	.3	.6	.6
Others	4.9	4.9	5.6
Hospital Outpatients Treated	542	509	2779
Physical Therapy Treatments			
Clinic	358	235	1758
Hospital	158	104	1090
Industrial: Plant	324	254	1589
Personal	3	5	49
Total	843	598	4486
Pharmacy			
No. of Prescriptions Filled	2373	2443	17603
No. of Store Orders Filled	518	528	3237
Patient Meals			
Regulars	3543	3381	24199
Children under 8	409	309	3318
Specials	1503	1086	9235
Lights	0	0	5
Softs	1198	997	6660
Tonsils	163	90	793
Liquids	267	201	1436
Surgical Liquids	106	192	686
Total	7189	6256	46332
Cafeteria Meals			
Noon	1884	1867	11558
Night	315	291	1722
Total	2199	2158	13280

MEDICAL DEPARTMENT

JUNE 1953

Public Health Section

The communicable disease cases reported increased due primarily to red measles. There was a significant rise in the incidence of this disease as reflected throughout the state. Through the blood collection system established by the American Red Cross, sufficient immune globulin is on hand to prevent serious complications in children under three, and debilitated patients.

Miss Julia Andersen, field advisor of the University of Washington School of Nursing, visited the department in respect to the student nurse receiving field training. One student completed her work and one student started her 11-week assignment.

One teacher from the Richland School District is enrolled in the "Field Experience for Teachers" course as offered by the University of Washington through this section.

The health officer attended a meeting of the Western Branch of the American Public Health Association in Los Angeles, at which time he was elected Vice-President and appointed to the Executive Committee.

A tuberculosis clinic was held by Dr. Albert Allen for the benefit of Richland patients.

The health educator attended a technical meeting in Seattle.

Two public health nurses are attending the workshop on infant care sponsored by the University of Washington and the State Department of Health.

A quarantine was placed on dogs by the Secretary of the State Department of Agriculture due to the finding of a rabid dog in Yakima County. In his judgment, Benton County including Richland is a contiguous area and therefore is under quarantine. This means that dogs cannot be brought into or taken out of the county. The effective date is June 18th through September 18th unless otherwise changed by the Secretary of Agriculture.

One staff meeting was held at which time 18 were present, and 6 other meetings were held at which time 36 individuals were in attendance.

Regular inspections of food-handling establishments indicate all to be operating satisfactorily. Due to the warm weather, importance of proper refrigeration of perishable foods is being stressed. Two establishments are in the process of remodelling their kitchens.

1635 gallons of 5% DDT in oil was sprayed by mosquito control crew. A new fogger was mounted for use in residential areas. Mosquito control crew will work from 12:12 P.M. to 8:48 P.M. to facilitate spraying and fogging of residential areas.

Bacteriological samples indicate the swimming and wading pools to be operating satisfactorily.

Public Health Section (Continued)

Ten dog bites were investigated for rabies control. Vaccination of all dogs is being encouraged. A cat's head which was sent to the State Laboratory proved to be negative for rabies.

Milk, water and sewage samples were bacteriologically satisfactory.

Counseling was completed on 10 cases involving parent-child relations. Of this number 7 gained help in developing into useful, productive citizens. In one of these cases parents were helped to modify their handling of an adolescent who was showing symptoms of anti-social behavior that culminates in institutionalization. The remaining 3 cases were ones in which parents merely wanted "pat" answers or wanted approval for the methods and attitudes already in use. In this type of situation, the social service counselors' effectiveness is extremely limited and the case not carried.

One case of marital counseling was terminated with satisfactory results. In addition to this case where focus was on marital difficulty, many marital problems were dealt with in families focusing on children's behavior problems.

One case of individual personality problem in an adult was closed after brief contact revealed that the client had no real desire to change her way of life.

MEDICAL DEPARTMENT

JUNE 1953

Public Health Section (Continued)	May	June	Year to Date
Education			
Pamphlets distributed	9,990	12,008	41,355
News Releases	13	5	70
Staff Meetings	1	2	9
Classes	11	7	59
Attendance	127	47	508
Lectures & Talks	18	4	79
Attendance	788	101	3,273
Films Shown	34	9	136
Attendance	867	256	4,154
Community Conferences & Meetings	38	27	263
Radio Broadcasts	0	0	9
Immunizations			
Diphtheria	3	5	86
Diphtheria Booster	9	4	335
Tetanus	3	5	142
Tetanus Booster	9	5	437
Pertussis	2	5	18
Pertussis Booster	8	4	138
Smallpox	11	1	88
Smallpox Revaccination	8	2	772
Tuberculin Test	2	32	82
Immune Globulin	2	17	31
Other	50	0	50
Social Service			
Cases carried over	84	89	503
Cases admitted	17	13	85
Cases closed	12	15	76
Remaining case load	89	87	512
Activities:			
Home Visits	5	12	60
Office Interviews	326	321	1,819
Conferences	65	57	309
Meetings	10	8	44
Sanitation			
Inspections made	164	188	876
Conferences held	20	22	133
Bacteriological Laboratory			
Treated Water Samples	216	233	1,236
Milk Samples (Inc. cream & ice cream)	48	40	240
Other bacteriological tests	451	382	3,056
Total	715	655	4,532

MEDICAL DEPARTMENT

JUNE 1953

Public Health Section (Continued)	May	June	Year to Date
Communicable Diseases			
Chickenpox	78	28	217
Diphtheria	0	0	1
Erysipelas	0	0	1
Food Poisoning	0	0	29
German Measles	6	12	46
Gonorrhea	12	17	61
Impetigo	1	0	6
Influenza (U.R.I.)	0	0	4
Measles	4	33	41
Mumps	26	20	278
Pinkeye	0	1	9
Poliomyelitis	0	0	1
Ringworm	1	0	6
Roseola	0	0	1
Salmonellosis	4	0	4
Scabies	0	0	1
Scarlet Fever	17	7	54
Syphilis	1	5	13
Tuberculosis	2	1	5
Total	102	124	778
Total No. Nursing Field Visits	810	738	4,718
Total No. Nursing Office Visits	76	46	539

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RADIOLOGICAL SCIENCES DEPARTMENT

JUNE 1953

Summary

Thirteen informal radiation incidents, four Class I and one Class II were recorded. None was of major significance.

High emission rates of particles from the Redox stack were continued. Other control measurements were essentially in the normal range.

In research activities, the first attempt to detect tumor production by radioactive particles gave negative, but indecisive, results. Ruthenium particulates from the Redox stack were studied in some detail.

Basalt was found at a new low altitude below the 100-B and K areas. This modifies significantly the general geological picture of the region.

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RADIOLOGICAL SCIENCES DEPARTMENT

JUNE 1953

Organization

The month end force of 368 included 33 supervisors, 100 engineers and scientists, 18 clerical, and 217 other personnel.

Number of Employees on Payroll		
Beginning of month	-	369
End of month	-	368
Net decrease	-	1

General

The number of radiation incidents continued at an acceptable level. The sole Class II incident was of minor significance.

In the field of communications, two talks on the research and development program and one on the recent rain-out were given to the Manufacturing Department.

The rain-out talk was repeated for the engineers in the training school, which completed a session of lectures.

All offices of the Radiological Records and Standards Section except graphical index were transferred to the 300 Area to tighten the lines of communication in that section.

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

Inventor	Title
none	none

[redacted]

Radiological Sciences Department

RADIOLOGICAL ENGINEERING

Approval of ground disposal of 2 million gallons of first cycle supernatant in the West Area should lead to savings of $700,000.

Revised computations on the hazards arising from a reactor disaster were made.

An estimate of the dollar value of potential damage was made for the first time. Due to the arbitrary nature of the assumptions in such a study, considerable further development is needed before the report can be formally released.

RADIOLOGICAL RECORDS AND STANDARDS SECTION

1. Radiation Monitoring Services

General Statistics

	May	June	1953 To Date
Special Work Permits	514	503	2,912
Routine and Special Surveys	1,277	1,377	7,640
Air Samples	1,273	1,296	7,114
Skin Contamination	3	9	61

A radiation inspector was overexposed to beta and gamma radiation while performing monitoring work at the Hot Semi-Works. The exposure (620 mrep) was received over a seven day period and was mostly due to extensive contamination in the A-cell. Another incident occurred in this same cell when an employee of the Separations Section deviated from the monitored work zone. This man was not wearing personnel meters at the time, but over exposure is considered unlikely.

Rehabilitation work in the glass line hood room at the tritium separations facility (108-B) resulted in spread of tritium oxide contamination to the operating gallery.

Several cases of plutonium skin contamination were reported. In two cases, follow-up surveys were required in Richland homes. A slightly contaminated shirt was found during one of these surveys. Another case of low level plutonium skin contamination in the 300 Area required about six hours to reduce the contamination successfully.

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Radiological Sciences Department

Radiological Records and Standards Section (Contd)

2. Radiological Standards

One Class II, four Class I, and thirteen informal radiation incidents were investigated. One informal incident involving the unexpected discharge of pieces from the 105-B reactor, reported in May, was reclassified as a Class I incident. The Class II incident was the overexposure at the Hot Semi-Works, discussed above. The Class I incidents included the other incident at the Hot Semi-Works, discussed above, skin contamination and possible inhalation of plutonium by an employee at the purification building, misinterpretation of instrument reading by employee performing self-monitoring, and air contamination in Redox operating gallery following blow-back from process vessel.

3. Exposure Records

(a) Personnel Meters, and Records and Photometry

General Statistics

	May	June	1953 To Date
Gamma pencils read	219,280	219,662	1,373,544
Potential overexposures	10	13	56
Confirmed overexposures	4	1	6
Slow neutron pencils read	976	1,212	7,152
Potential overexposures	2	2	8
Confirmed overexposures	0	0	0
Beta-gamma film badges processed	37,829	40,534	232,395
Potential overexposures	42	47	268
Confirmed overexposures	4	2	17
Fast neutron badges processed	503	601	3,148
Potential overexposures	0	0	0
Confirmed overexposures	0	0	0
Lost readings (all causes)	26	33	236

(b) Bioassay

1. Plutonium Analyses	May	June	1953 To Date
Samples assayed	1,006	683	4,247
Results above detection limit	7	0	77
Resamples assayed	42	22	110
Results above detection limit	4	5	30
Maximum d/m/sample	0.98	1.44	2.25

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Radiological Sciences Department

(b) Bioassay (Continued)

2. Fission Product Analyses	May	June	1953 To Date
Samples assayed	1,008	710	3,856
Results above 10 c/m/sample	0	1*	2

* A routine sample showed 15.4 c/m. A resample is in progress.

3. Uranium Analyses

Results of 342 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	12	3	27	3	1	11
Machining	14	6	21	7	4	14
Melt Plant	18	7	34	18	8	24
Material Handling	19	8	34	13	6	25
Testing	18	4	30	22	3	27
305 Building	3	3	1	-	-	-
Coverage	4	3	5	2	2	2
Technical	6	4	4	8	4	3

	Before Job Maximum	Average	Number Samples	After Job Maximum	Average	Number Samples
Car unloading	2	1	3	2	8	3
Billet Loading	-	-	-	8	6	4

	Miscellaneous Samples Maximum	Average	No. Samples	(µg/liter)
224-U	30	3	70	

4. Tritium Analyses	2	2-20	20	Total	1953 To Date
Number of samples	211	33	0	244	550

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(c) Thyroid Checks

All thyroid checks reported were below the warning level.

(d) Hand Score Summary

There were 37,781 alpha and 62,887 beta scores reported. About 0.005% of the alpha and 0.18% of the beta scores were above the warning level. A total of 122 beta scores were the result of fall-out from the Nevada tests reported in last month's report. Decontamination of each of the reported cases above the warning level was attempted and successful.

4. Calibrations

Number of Routine Calibrations

	May	June	1953 To Date
Fixed Instruments	93	152	763
Portable Instruments	2,376	2,583	12,601
Personnel Meters	9,356	15,124	57,628
Total	11,825	17,859	70,992

BIOPHYSICS SECTION

CONTROL UNIT

Regional Survey

The general findings are summarized in the following table:

SAMPLE TYPE AND LOCATIONS	Activity Type	Average Activity Density (μc/cc)
Drinking Water		
Benton City Water Co. Well	alpha	1.6×10^{-8}
Richland, N.Richland, Benton City Wells	alpha	< 0.5 to 1.7×10^{-8}
100 Areas	beta	< 0.5 to 1.0×10^{-7}
Pasco, Kennewick, McNary Dam	beta	< 5 to 9×10^{-8}
Backwash Solids-Pasco Filter Plant	beta	7×10^{-3} μc/g
Backwash Liquids-Pasco Filter Plant	beta	1.5×10^{-7}
Sand Filter-Pasco Filter Plant	beta	1.9×10^{-5} μc/g
Anthracite Filter-Pasco Filter Plant	beta	3.4×10^{-5} μc/g

Radiological Sciences Department

Regional Survey (Continued)

SAMPLE TYPE AND LOCATIONS	Activity Type	Average Activity Density (μc/cc)
Other Waters		
300 Area Wells #1,2, 3	alpha	0.9 to 2.3×10^{-7}
300 Area Well #4	alpha	4.7×10^{-7}
Well #4 measured as uranium	U	2.7×10^{-7}
Other wells on the reservation	beta	< 5 to 9×10^{-8}
Columbia River-Hanford Ferry	beta	3.2×10^{-6}
Columbia River-Below reactors	beta	2.0 to 6.6×10^{-6}
Columbia River-Patterson to McNary	beta	3×10^{-7}
Columbia River-Shore mud	beta	0.3 to 1.0×10^{-4} μc/gm
Raw water-Operating areas	beta	< 0.5 to 2.3×10^{-7} μc/cc
Reactor effluent retention basins	beta	3.0 to 5.2×10^{-3}
Reactor effluent retention basins	alpha	$< 5 \times 10^{-9}$
I^{131} in farm wastes	I^{131}	1.5×10^{-6}
I^{131} in Columbia River-Hanford	I^{131}	$< 5 \times 10^{-8}$
Atmospheric Pollution		
Gross alpha emitters	alpha	< 0.4 to 3.7×10^{-14}
Gross dose rate-Separations areas	beta-gamma	0.8 to 4.6 mrep/day
Gross dose rate-Residential areas	beta-gamma	0.4 mrep/day
Filterable beta-Separations areas	beta	0.7 to 9.0×10^{-12}
I^{131} -Separations areas	I^{131} and I^{133}	0.1 to 2.0×10^{-12}
I^{131} -Separations stacks	I^{131}	0.85 curie/day
Active Particles -Wash.,Idaho,Ore.Mont.	-	0.04 to 0.3 ptle/m^3
Active Particles -Hanford Operation	-	0.03 to 1.1 ptles/m^3
Tritium (as oxides)-Reactor stacks	T	0.2 curie/day
		μc/g
Vegetation		
Environs of Separations areas	I^{131} and I^{133}	0.3 to 3.2×10^{-4}
Residential areas	I^{131} and I^{133}	0.2 to 1.1×10^{-4}
Eastern Washington and Oregon	I^{131} and I^{133}	< 0.003 to 4.4×10^{-3}
Non-volatile beta emitters-Wash.& Ore.	beta	0.001 to 6.1×10^{-3}
Alpha emitters-Separations areas	alpha	0.7 to 1.4×10^{-7}
Alpha emitters-300 Area	alpha	5.7×10^{-7}

Unusually high average particle concentrations in the air and high average concentrations of non-volatile beta particle emitters and iodine on the vegetation during the month were due to the fall-out of such materials on May 26 and June 3. Air concentrations comparable

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Radiological Sciences Department

Regional Survey (Continued)

to those associated with normal Hanford operations were found during the latter part of June. The activity density of non-volatile beta particle emitters on vegetation from control plots in Richland, Pasco, and Kennewick decreased from values on the order of 1×10^{-2} μc/g on May 27 after the bomb particle fall-out to values on the order of 5×10^{-5} μc/g by June 17.

An air sampling filter which represented monitoring at the outlet of the sand filter of Redox during the period from May 20 to June 8 showed that an average of 4.5×10^{5} radioactive particles per day were discharged from this facility during that period. This increase by a factor of five over previous values may be attributed to increased concentrations indicated in the inlet air rather than to decreased sand filter efficiency. Maximum daily emissions of I^{131} and Ru^{103}-Ru^{106} at Redox were 2.4 and 3.1 curies, respectively.

Air filter and vegetation samples collected near the 300 burning pit fire on May 29 showed no significant resulting contamination.

Analytical Control Laboratory

Routine analyses were carried out as follows:

	Analyses Completed	
	June	1953 To Date
Laboratory		
Type Sample		
Vegetation	1981	7384
Water	2235	11096
Solids	352	1961
Air samples	564	2073
Uranium (fluorophotometer)	578	2392
Oil fog (fluorophotometer)	22	324
Special survey samples (RMSS)	24	164
Special survey samples (RMU)	7	460
Phillips Petroleum-Tritium oxide in water samples	0	12
Total	5763	26406
Counting Room		
Beta measurements (recounts included)	7797	37671
Alpha measurements (recounts included)	2295	14911
Control points (alpha and beta)	3084	15399
Decay curve points	6310	29170
Absorption curve points	282	1894
Total	19768	99045

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Control Services

A comparison of the results from two analytical procedures for the determination of natural radium in the human body was begun for Biology Section.

The radioactive decay studies of samples of Columbia River water collected at several downstream locations were continued.

General computations were concluded summarizing the results of all special samples taken during evaluation of the particulate fall-out which occurred on May 26.

Synoptic Meteorology

Forecasts	Number made	June Percent Reliability
Production	90	82.5
24-hour	60	77.2
Special	57	77.2

The monthly average temperature, 63.0°F, was the lowest in Hanford records for June; normal for the month is 69.4°F. Precipitation totaled 0.55 inch.

RESEARCH AND DEVELOPMENT ACTIVITIES

Experimental Meteorology

Methods used in the oil-fog diffusion experiments were reviewed for possible errors and improvements. The need exists for experimental work to determine the significance of the plume widths, as compared from the photograph, in terms of concentration values. It was found that the method for calibration of the oil-fog filters had introduced an error in the computation of ground concentrations from sampler data; the error was corrected by recalibrating the flowmeter with sampling head in place. Some of the concentration values reported earlier must be increased by 20-25%.

A trajectory analysis for the path of the radioactive cloud from the May 26, 1953, nuclear detonation at the Nevada Proving Ground was prepared; it was shown that the contamination could have reached HAPO

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Radiological Sciences Department

Experimental Meteorology (Continued)

18-24 hours after the blast by traveling in the air stream below 18,000 feet.

Earth Sciences

No appreciable change was noted in the concentration or behavior of the radioactive contaminants in the ground water in the 200 Areas.

A full survey of all 200 Areas facilities discharging water to swamps was completed to provide the most reliable data possible on total and current volumes preparatory to extensive ground water calculations.

Well 107-B-2 encountered basalt at a depth of 660 feet, about 200 feet below sea level, the lowest altitude at which it has so far been found to occur. The Ringold formation is thus 1200 feet thick, instead of 1000 feet as previously believed. Water supply wells to be drilled in the western Wahluke Slope area and in the 100-B and K areas must, therefore, go deeper than formerly anticipated to obtain water from the basalt or from the artesian aquifer beneath the Ellensburg formation.

Evaluation of results of analyses for sodium in the areas of ground water contamination disclosed a satisfactory correlation between sodium, nitrate, beta-gamma emitters, and alpha emitters which will permit reduction in the frequency of sampling and analysis for nitrate ion. Samples were obtained from all wells on the project for full background information on sodium content.

The adsorption of yttrium from solution by soil, based on preliminary studies, is comparable to but more effective than that for cesium; larger amounts are removed at higher concentrations than for cesium. Moreover, 95% of the yttrium in a dilute solution was removed in three minutes, compared to the 4 hours required for 95% removal of cesium from a comparable solution. Adsorption from successive additions of dilute yttrium solution to the same soil sample also decreased at a slower rate than for cesium in similar solutions.

Adsorption of strontium from aluminum coating wastes decreased from 70% of the first increment to 33% for the tenth, at which time the soil was apparently still far from saturated by strontium. The hazards in cribbing of coating wastes are thus indicated. Adsorption of strontium ion from strongly acid RAW waste was only about 2% of the total available in the solution compared to 80-85% after neutralization with caustic to pH 10. Cesium adsorption from the neutralized waste was only 7% of the total, compared to its 70-90% removal in other wastes.

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Radiological Sciences Department

Industrial Hygiene

Data obtained by sampling Redox stack gas particulates during abnormally high discharge were analyzed. The major portion of the beta radioactivity was contributed by ruthenium. Peak ruthenium emission occurred at the termination of centrifugation. The particulates had a geometric median particle size of 0.2 μ while that for the radioactive particulates was about 0.6 μ. No apparent correlation existed between particle size and process operations. Centrifugation, slug coating removal, and dissolving when conducted simultaneously produced ammonium nitrate particles in the stack gas stream.

Design specifications were prepared for the modification of the automatic filter sampler; more flexibility in the length of sampling periods, and the removal of I^{131} from samples before counting were provided.

A nitrate method was investigated for the rapid sampling and analysis of gases for oxides of nitrogen; the method gives a satisfactorily stable and sensitive color reaction and a simple relationship of light absorption vs. concentration through the range 1-500 ppm.

Electron micrographs of fall-out samples associated with Nevada tests and collected at the Biophysics Building were studied. The incidence of spherical particles as related to total particles varied from 1 to 10%; seven peaks of over 5% occurred during the series of tests, although there was no obvious over-all correlation. During the fall-out incident in this locality on May 26, samples collected prior to, during, and immediately following the fall-out contained 0.5%, 6.5%, and 2.5% spheres, respectively. Spheres ranged from 0.05 to 2.0 μ with a median size of about 0.2 μ.

A survey was made of noise conditions in buildings treating and pumping process water in areas 100-F, 100-D, and 100-DR; some 300 measurements indicated noise levels ranging from 78-98 decibels with a median of approximately 90 decibels.

Air samples were collected where beryllium was being used experimentally in Metal Fabrication melt pots. Melts containing 0.05% Be produced, occasionally, excessive atmospheric contamination but the use of 0.005% Be reduced the contamination.

Incidental operations such as sawing Be alloy ingots before melting caused undesirable atmospheric contamination.

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Methods

Promising results were obtained with the thoron proportional flow-counter in the range of 10 to 80 μg of thorium; an efficiency of about 0.1 c/m/μg of thorium was recorded.

An analytical method for radio-cesium was studied to replace the perchloric acid and chloroplatinate methods. Silico wolframic acid was found to be an almost specific precipitant; no interference from Zr, Ru, Ca, Sr, and Y, was shown. A chemical yield of 95% is obtained. The high density precipitate was found to have two atoms of cesium per molecule.

Radioactive noble gases swept from a reactor effluent sample were fractionally distilled using carrier A, Xe, and Kr. Effective separation was obtained, the predominant activity in each fraction decaying with the characteristic half-life of Xe^{135}, Kr^{85}, and A^{41}. Very little, if any, of the longer-lived activation product A^{37} was indicated in contrast to the case of previous determinations in which the 30-40 day half-life activity was found.

Further study of the Mn^{56} procedure demonstrated that the previously reported very high carrier recoveries obtained with centrifugation and direct transfer of the MnO_2 were only 87%; difficulties occur in removing salts by the washing step. Most consistent results were obtained by filtering and thorough washing.

Yields up to 45% were obtained in the Cr^{51} electroanalysis. Most effort was concentrated on finding oxidants and optimum conditions for the oxidation to chromate.

A laboratory scale proportional flow-splitter sampler was tested for linearity and accuracy. In the range of flow rates tested, the sampler was accurate to 3% and reproducible to 1%.

Radiochemical Standards

Backscatter measurements were extended to include several additional backing materials and the isotopes Zr^{95}, Nb^{95}, Y^{91}, RaE, P^{32}, and S^{35}. A maximum backscatter of 1.80 was obtained for Y^{91} mounted on a lead plate.

The relation between point and spread source counting rates was studied

Radiological Sciences Department

Radiochemical Standards (Continued)

with particular attention to the effect of the plate rim. For soft emitters, the rim of the 1 inch dish has very little effect for first shelf counts; however, for more energetic emitters the dish rim has a marked scattering effect which is a function of both energy and shelf position; the scattering effect more than compensates for decrease in counting rates due to the lower spread source geometry.

Physics

Remeasurement was completed of the activity of a tritium water sample previously prepared to serve as a standard. The result of the new measurements, substantially more precise than the previous, was in agreement with the value deduced from measurements of the original gaseous tritium before it was burned and diluted.

The beta surface dose rate from reactor irradiated aluminum dummy slugs was estimated from measurements following low intensity fast and slow neutron irradiation with the Calibrations Po-B source. This information was obtained for use in an exposure investigation.

As a continuation of the study of the ageing of G.M. tubes, the transient behavior of the change in height of pulses from an old geiger counter with change in counting rate was studied. The change was found to depend exponentially on the time with the equivalent of the "half-life" being 10 to 50 seconds.

A simple, fairly general procedure for measuring gamma, beta, and neutron surface dose rates with ordinary survey instruments was found; the method consists of a mathematical treatment of measurements made at various distances. It was checked experimentally with beta radiation from uranium.

The age theory method of solving beta dose problems was used to study scattering effects at the edges of solid bodies and to study the point source problem which is of interest because of its connection with the dose from specks of activity.

The measurements with a proportional thimble chamber of the dose rate from a Co^{60} source in a water tank were extended and improved. The attenuation of the softer scattered radiation in the steel walls of the tank was measured. The results contribute to the problem of dose rates from tanks of active solutions.

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Radiological Sciences Department

Instrument Development

Progress was made on the development of a very low background system for the measurement of tritium in the waters underlying the plant site.

Construction of the mechanical portion of the hog thyroid monitor was completed. For background reduction, a channel equivalent to 100 Kev in width centered at 350 Kev was found to be optimum. This accepts the principal I^{131} photoelectric peak at 364 Kev, and is sufficiently wide so that anticipated shifts in amplifier gain have negligible effect on sensitivity.

The dummy slug monitor was completed and installed in 105-C where its performance was satisfactory except for the slug transport system which needs improvement.

A scintillation type survey meter, in experimental arrangement, yielded a current of 10 μa per mr/hr; coupled with a transistor high voltage supply completed during the month, it appears that the system can be operated with a very small battery complement.

Tests of the transistor high voltage supply indicated performance superior to that of other available similar purpose equipment.

BIOLOGY SECTION

AQUATIC BIOLOGY UNIT

Biological Chains

No result. (Data being interpreted.)

Ecology

Survey of the Columbia River

The river level continued to rise during the first part of the month, reached a maximum on the 18th and has since rapidly receded. Limited samples of bottom organisms were obtained by dredging. Average activity densities at Hanford were as follows: plankton - 5×10^{-3} μc/g,

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Survey of the Columbia River (Continued)

about half that of May; bottom algae - 3×10^{-3} μc/g, slightly less than for May; caddis fly larvae (one sample only) - 10^{-3} μc/g, about one third of last month; and juvenile fish - 5×10^{-4} μc/g, a slight decline. Maximum values found in adult fish, 2.2×10^{-3} μc/g of liver, and 3×10^{-4} μc/g of flesh, were about the same as last month. Juvenile chinook salmon have apparently migrated downstream, but a few very small salmon, probably blueback, were taken. This species was not previously thought to be present in the main stem of the Columbia during the early life stages. Dredged samples from the McNary Dam pool indicated that bottom organisms are rapidly being smothered by silting over the former stone-clad bottom.

Effluent Monitoring

The juvenile chinook salmon, used as test animals since October, 1952, reached migrating age and were liberated on June 9. Unmodified reactor influent water caused slight retardation of growth at 5% strength and increased mortality at the 25% level; there were no survivors at 50%. Influent filtered through charcoal to remove residual chlorine slightly retarded growth at 10% strength and slightly increased mortality at the 50% level; over half of the fish survived in the undiluted, filtered influent at the end of the test. Area effluent caused increased mortality at 5% strength, and there were no survivors at 20%; adverse effects are attributed to unfavorable temperatures and chemical toxicity.

Monitoring was resumed on June 12 with domestic rainbow trout fry. Undiluted reactor influent, with a residual chlorine content of about 0.05 ppm was lethal in a few days. Slightly increased mortality has occurred at 25% strength area effluent.

Temperature studies with chinook salmon from the Puget Sound drainage were also terminated on June 9. Mortalities for the eight-month period were:

2.8°C (5°F) below river temperature	- 11%
Normal river temperature	- 14%
River temperature + 1X*	- 39%
River temperature + 2X	- 72%
River temperature + 3X	- 97%

* X = hypothetical increase in river temperature for simultaneous operations of all planned reactors (September, 1952, estimate).

Radiological Sciences Department

BIOLOGY CONTROL UNIT

Biological Monitoring

Studies in cooperation with Project Engineering were made of methods for controlling waterfowl and vegetation at the Redox swamp. Addition of naphtha solvent to the water for vegetation kill was not adequate.

Upland animals foraging near the Columbia River had P^{32} mean activity densities of 2×10^{-3} $\mu c/g$ of bone tissue and 1×10^{-4} $\mu c/g$ of soft tissues.

Rodent thyroid activity densities in the Redox and Meteorology Tower areas increased by a factor of four over the previous highs of April and May.

Clinical Laboratory

There were 962 routine blood examinations performed, plus 47 special analyses. New methods are being studied and applied to animal tissues, viz: alkaline hematin for hemoglobin, chloranilic acid for calcium, versene for serum calcium, urine calcium and phosphorus, and 17-ketosteroids in urine.

Microscopy

One hundred and forty-one histologic preparations, 42 photomicrographic prints, and 68 autoradiographs were included in the work done.

Radiochemistry

Analyses were made on 1050 samples for I^{131} or P^{32} radioactivity. There were 105 analyses made for tritium and 107 TTA extractions for plutonium content.

METABOLISM UNIT

Animal Metabolism

Little difference was found in the deposition of plutonium in ribs, vertebrae, and the bones of limbs, pelvic and pectoral girdles in rats. A lower deposition was observed in bones of the skull.

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Radiological Sciences Department

Animal Metabolism (Continued)

A few additional analyses were obtained to complete the present phase of the comparative study of deuterium and tritium incorporation and retention in the rat.

Tritium analyses were completed on tissue samples from two female rats which had been on a constant tritium oxide-labeled drinking water regimen for 4 months. Approximately 10% of the tritium present in these rats was found to be in the tissue bound state. The concentration of tritium in tissue hydrogen averaged about 20% of the tritium concentration in body water hydrogen, varying from a maximum of 28% in liver to a minimum of 8% in heart. The highest tissue bound tritium concentration on a wet weight basis was found in fat, a concentration of 0.52 μc/g compared to a body water concentration throughout the exposure of approximately 4 μc/ml.

The effect of tritium oxide on the activity of several bacterial enzymes was shown to be independent of the length of time during which the bacteria were grown in this medium, suggesting that the effect is a direct one on the production of the enzymes rather than a genetic effect.

Additional studies on the "plutolytic" agent in bacterial culture media confirm the presence of this agent in fresh media and its destruction on heating. No activity is shown by resuspended bacterial cells. Difficulty is still being encountered in obtaining reproducible assays for the substances by the "plutonium plated on platinum disc" method.

Previous work had indicated that the activities of different distillate fractions from a tritium oxide solution might vary. This variation could not be identified by counting procedures but did appear in the chemical dosimeter tests. Experiments are under way to test this further.

Final tests to evaluate quantitatively the numbers of mutations induced by metabolized P^{32} have been completed. It is apparent that the mutation rate varies in relation to the specific activity; i.e., a higher mutation rate from cultures with P^{32} of higher specific activity. Although this strongly indicates transmutation as the cause, it is not conclusive due to variations in the radiation intensity between different cultures.

Plant Nutrition

An experiment was run to determine the effect of nutrient pH on the uptake of cerium. The experiment was conducted in the climatizer under

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Radiological Sciences Department

Plant Nutrition

controlled conditions using 1.0 ppm Ce. The uptake increased significantly as the hydrogen-ion concentration increased. $\frac{\text{Leaf}}{\text{Root}}$ ratios ranged from 0.003 at pH 4 to 0.0003 at pH 7.

Initial experiments with Sr^{90} on Barley using the Neubauer technique for evaluating nutrient removal from soils were completed. Results show that Sr^{90} is still being concentrated in the plants after 18 days growth.

Plant Metabolism

The rate of incorporation of tritium into the ether soluble (lipid) fraction of rapidly growing algae was found to be 55% of the rate at which protium was incorporated. The rate of incorporation of tritium in the ether insoluble fraction was 38% of the rate of protium incorporation.

Further experiments on the effect of previous growth in tritium oxide-containing medium, on the incorporation of C^{14} into fatty acids of algae confirmed previous results and indicated a two to six-fold increase in fatty acid synthesis by these previously irradiated cells. Study of individual cells previously irradiated in tritium oxide-containing media showed that 25% of the experimental selections grow at a slower rate than the slowest growing control selections. Of the remaining experimental selections, 65% grow more slowly than the average growth rate of the control selections. These results can be interpreted to indicate that at least 25% of the cells surviving after irradiation have experienced changes in genetic factors controlling the growth rate.

TOXICOLOGY UNIT

Experimental Animal Farm (Toxicology of I^{131})

The ratios of I^{131} in the thyroid gland to I^{131} fed daily (Q/q) in June were as follows:

	30 μc/day	15 μc/day	5 μc/day	0.15 μc/day
Original ewes			1.9	2.7
1950 Offspring		0.6	0.6	2.6
1951 Offspring	1.1		1.2	2.1
1952 Offspring		(0.8 Being sacrificed)		
1953 Offspring	0.2	0.23	0.4	0.8

[redacted]

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Radiological Sciences Department

Experimental Animal Farm (Continued)

The microscopic sections of salivary glands prepared to date were reviewed without finding evidence of damage. The thyroid glands of two 15-month old 5 μc lambs showed definite damage. Damage was also observed in 15 and 30 μc animals in addition to those previously mentioned.

Seventy microcuries of I^{131} were vaporized together with 0.5 g I^{127} by heating in the presence of sulphuric acid. This mixture was forced into the nostrils of an anesthetized ewe. Maximum uptake of about 4 μc occurred at about 3 days. Studies are continuing to improve this method.

Preliminary studies are now being performed on 14 pigs (received from the State College of Washington) preparatory to feeding them I^{131}.

In partial fulfillment of special agreement G-24 with the State College of Washington, 100 μc tracer doses of I^{131} were given to 60 experimental calves belonging to the Animal Husbandry Department. Thyroid uptake of I^{131} was determined by external monitoring with an ionization chamber every four hours for 2 days with the following results:

μc in Thyroid Gland	No. of Animals
0 - 2.5	34
3 - 6	21
6 - 9	5

The low uptake percentages probably result from the large amount of stable iodine in the diet of these calves.

Physiology

Examination of the lungs for presence of tumors are now complete in the 13-month old strain A mice exposed to Separations plant operating areas for a period of eight months. The experimental group of pulmonary tumor-sensitive mice were exposed to a series of obnoxious conditions in addition to the particle contaminated atmosphere (the condition under study) causing a high mortality rate. There was no increase in tumor incidence in the experimental group when compared with the control.

Physiology (Continued)

Sedimentation techniques were successfully employed in pilot studies which ignited iron oxide for the preparation of particle suspensions of fairly uniform size. Serial classifications were carried out with specimens of each submitted to examination under the electron microscope. Separate suspensions of 0.5, 1.0, 2 μ were obtained.

A third series of experimental animals was injected with plutonium and given Ca EDTA and Zr citrate in order to extend the previous work comparing the efficacy of these two agents. A change was made, however, in the method of Ca EDTA administration; i.e., daily and twice daily doses were applied for five consecutive days. The percentage of Pu urinary excretion for the first five days was as follows:

Level of Therapeutic Agent	No. of Animals	Percent Pu Excreted in 5 days
Zirconium citrate-25 mg/kg	2	48
50 mg/kg	2	32
100 mg/kg	1	86
Ca EDTA 73.5 mg/kg daily	1	9
36.7 mg/kg twice daily	1	18
Control	1	2.6

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FINANCIAL DEPARTMENT MONTHLY REPORT
JUNE, 1953

The obligation of funds for the ensuing twelve months was accomplished by the execution on June 29 of Modification No. 24 to the Prime Contract providing for an additional $77,328,000, representing $16,652,000 for KAPL and $60,676,000 for HAPO. The total amount now obligated under Contract W-31-109-Eng.-52 from its inception to date is $877,881,000.

In accordance with a policy instituted by the Atomic Energy Commission to reduce funds in the hands of contractors, arrangements were made to obtain advances for operations on a weekly instead of a monthly basis and advances were reduced from $10,000,000 on May 31 to $4,817,984 on June 30. In addition to reducing the amount of idle funds outstanding, this policy will save the government in interest charges.

During the month the Atomic Energy Commission issued reimbursement authorizations covering changes in salary payment policies included in revised agreements executed with unions. The revised payment policies were reflected in salary payments distributed June 26, 1953, to non-exempt employees.

Retroactive adjustments of 1952 vacation payments to employees who worked extended schedules during the year ended March 31, 1952, were included in salary checks distributed to employees during the month.

The du Pont Annuity Fund, for purchasing annuities for former du Pont employees who completed 15 years of combined service, was reduced during the month by the sale and transfer of government bonds with face amount of $550,000. The reduction was possible because of terminations since 1947 by former du Pont employees for whom annuities would have been purchased if they had completed 15 years of combined service.

The physical inventorying of all Hanford Atomic Products Operation inventory materials (excluding source and fissionable materials) which began in January, 1953, was completed in June, although a substantial amount of summarizing and reporting remained to be done after the close of the month.

Members of the Reimbursement Unit conducted ten meetings with operating and staff supervisors of various departments to explain the conditions which brought about the modification of the Prime Contract under Supplemental Agreement No. 23, dated June 1, 1953, and the significance of the changes. Reimbursement Unit personnel also participated in two conferences held by others. At a meeting

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on June 9, the subject was presented to all exempt employees of the Financial Department by W. W. Smith. Additional meetings with other departments have been scheduled for the Reimbursement Unit for July.

Arrangements were made for the unitization of all completed projects in unclassified plant accounts at June 1, totaling $6,953,670. In addition, the unitization of all major projects covering facilities in service was completed except Project CA-362, Waste Metal Recovery Facilities (TBP). The largest of these projects are:

CA-431	100 C Plant	$ 63 000 000
CG-187-D	Redox Production Facilities	42 000 000
CG-413	Expansion of 234-5	6 325 000
CG-349	Hot Semi-Works	3 418 000
CG-361	Metal Conversion Facilities	2 170 000
	Total	$116 913 000

The plan to accomplish improved cost control through the development of standard costs has progressed during the past three months. Standard costs for the Metal Preparation Section of the Manufacturing Department have been developed to the point that trial reports are being made by this method, while standards for other sections of that department are proceeding according to schedule, as are also the standard costs for other departments. Standards for the Engineering Department are almost complete, the unit of measurement being man-hours of performance.

The objective of eliminating duplication of functions performed among departments has also received considerable attention in the Financial Department. Studies have been initiated to eliminate the duplication of personnel records maintained by both the various sections of the Employee and Public Relations Department and the Payroll Unit of the Financial Department, to make a single source available for the common use of all of the groups concerned. In several other instances, the revision of a Financial Department report to include data required by the using department has enabled the latter to discontinue its report on the same subject.

Recommendations for major revisions in plant accounting procedures are being prepared which will result in not only a more efficient accounting operation but will provide operating managers with a means of effectively managing plant and equipment for which they are responsible. Property Management and Plant Accounting personnel have made initial contacts with various section and unit managers, and the governing Organization and Policy Guide is now in process.

A procedure for the preparation and distribution of in-patient charges at Kadlec Hospital was established, which assures improved internal control over charges for services and materials provided by the hospital. Incidental to this new procedure were the creation of prenumbered charge slips and standardization of other forms, which have increased control and efficiency.

Statistics

A summary of cash disbursements and receipts (excluding reimbursements by the Atomic Energy Commission) for the months of June and May, 1953, is shown below:

Disbursements	June	May
Payrolls (Net)	$2 686 016	$3 133 152
Materials and Freight	1 523 315	1 355 595
Payments to Subcontractors	817 366	773 169
Payroll Taxes	630 192	708 932
United States Savings Bonds	167 714	109 223
Group Insurance Premium	126 369	126 167
Pension Plan - Employees' Portion	83 747	80 009
Other	328 459	311 843
Total	6 363 178	6 598 090
Receipts		
Funds from Liquidation of United States Treasury Bonds Held in Annuity Fund	504 175	-0-
Refund from Insurance Premium	214 178	-0-
Rents	106 228	106 750
Hospital	66 110	67 248
Electricity	64 891	54 208
Sales to Atomic Energy Commission Cost-type Contractors	55 739	58 667
Telephone	51 299	44 931
Interest Income from Administrative Fund	50 884	-0-
Refund from Administrative Fund	20 411	-0-
Sundry Accounts Receivable	15 364	70 516
Bus Fares	7 814	7 634
Refunds from Vendors	989	6 198
Other	23 080	3 864
Total	1 181 162	420 016
Net Disbursements	$5 182 016	$6 178 074

Advances as of June 30 and May 31, 1953, may be summarized as follows:

	June	May
Cash in Bank - Contract Accounts	$ 4 642 984	$ 3 646 926
Cash in Bank - Salary Accounts	50 000	50 000
Travel Advance Funds	125 000	125 000
	4 817 984	3 821 926
Disbursements not Reimbursed	-0-	6 178 074
Total	$ 4 817 984	$10 000 000

Personnel and Organization

	Current Month	Prior Month
Personnel Changes During Month		
Employees at beginning	336	342
Additions and transfers in	10	7
Removals and transfers out	(12)	(13)
Employees at end of month	334	336
Personnel by Unit at Month-End		
General	9	9
Reimbursement Unit	4	3
General Accounting Unit		
General Accounts	21	20
Inventory Accounting	6	6
Plant Accounts	29	30
Accounts Payable	35	35
Accounts Receivable	20	20
General	3	3
	114	114
General Cost Unit		
Consolidated Costs and Budgets	6	6
Plant Auxiliary Operations	15	15
Community Operations and Real Estate	10	10*
Radiological Sciences and Other	6	7
Medical	2	3
General	3	3*
	42	44
Manufacturing Cost Unit		
Costs and Budgets	33	32
General	7	7
	40	39
Engineering Cost Unit		
Project Section Costs	17	18
Design Section Costs	7	6
Technical Section Costs	10	10
General	6	6
	40	40
Payroll Unit		
Preparation and Employee Records	37	41
Confidential Payroll Records	7	7
Employee Benefit Plans and Payroll Reports	21	20
IBM Procedures	1	1
General	2	2
	68	71
Internal Audit Unit	14	14
Rotational Trainees	3	2
Total	334	336

*Corrected May figures

Section Reports

The monthly reports of the three sections of the Financial Department, as listed below, are shown on the following pages:

Accounting Section	
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-4
Appropriations Section	Ie-1
Payroll and Auditing Section	
Payroll Unit	If-1 through If-6
Internal Audit Unit	Ig-1

GENERAL ACCOUNTING UNIT
MONTHLY REPORT - JUNE, 1953

ACCOUNTS PAYABLE

All accounts payable vouchers received through July 3, 1953, which were dated in June, 1953, were booked in June in order to enter as many FY 1953 costs as possible in FY 1953.

On July 6, 1953, all receiving reports on hand were reviewed, and accrual was made to cost accounts for those materials which were received in June for which no billing had been received. The total amount accrued was $176,532. No accrual was made for charges to plant accounts or inventories.

In June a total of 4,048 vouchers, totaling $3,544,012, were booked. This represented an increase of 631 vouchers, or eighteen per cent, over the 3,417 vouchers booked in May. New purchase orders received totaled $575,851 and decreased in number from 2,083 in May to 1,424 in June.

Cash discount earned totaled $3,610. Total cash discount earned during FY 1953 was $47,789, representing a monthly average of $3,982.

Payments at June 30, 1953, to National Carbon Company for graphite under contracts G-5 and G-23 totaled $2,079,014 and $154,818, respectively. Contract G-5 provides for a price renegotiation after shipment of forty per cent of the graphite provided by the contract. This percentage was completed by shipment on June 25, and preliminary steps were taken in June to arrange for price renegotiation as provided by the contract.

ACCOUNTS RECEIVABLE

The gross accounts receivable balance at June 30, 1953, amounted to $316,059, a decrease of $48,794 from the balance at May 31, 1953. Accounts receivable balance has shown a steady decrease during the past six months, with the June 30, 1953, balance being $74,263 less than at March 31, 1953, and $125,505 less than at December 31, 1952.

Prior to June 1, 1953, dwelling houses occupied by employees of commercial facilities were leased to the facility operator. In accordance with letter issued by the Manager, Hanford Operations Office, Atomic Energy Commission, effective May 31, 1953, such leases were cancelled, and effective June 1, 1953, new leases were executed directly with the individuals occupying the premises. Considerable time was expended by Accounts Receivable personnel in revising records to comply with this change.

General Accounting Section

ACCOUNTS RECEIVABLE (CONTINUED)

During the month 100 uncollectible accounts, in the amount of $8,125, were written off and assigned to the Atomic Energy Commission. Efforts were made to have our collection agents return accounts which they felt there was little possibility of collecting, and these accounts were included in our assignments to the Atomic Energy Commission. Of the 100 accounts assigned, 55 were Kadlec Hospital accounts, totaling $7,776, and 45 were tenant service and utilities accounts, totaling $349.

Out-patient invoices issued in June at Kadlec Hospital numbered 1,720 and totaled $6,964, as compared with 1,783 in May, totaling $7,459. In-patient revenue totaled $53,270 as compared with $59,464 in May. The decrease in in-patient revenue is the result of the reduction in the adult patient day census from 82.8 in May to 74 in June.

At June 30, 1953, 111 Bauer-Day houses were occupied. This total includes 92 two-bedroom, 13 three-bedroom, and 6 four-bedroom units. Monthly billings to Bauer-Day for water consumption and other services are being made in accordance with our contracts. No Spokane Housing, Incorporated, houses are occupied yet, but billings are being made currently for water, electricity, and other services in accordance with our contracts.

At June 30, 1953, 210 General Electric employees occupied barracks or were assigned trailer space in North Richland. Effective July 1, 1953, Commonwealth, Incorporated, replaced Universal Food Service, Incorporated, as manager of the North Richland Construction Camp. Discussions were held with a representative of the new contractor relative to collection of rentals from General Electric personnel. Wage deduction authorization forms were revised, and new authorization forms will be secured from all General Electric employees who are now occupying space in North Richland and who desire to make rental payment by payroll deduction.

GENERAL ACCOUNTS

In accordance with procedures prescribed by the Controller, Atomic Energy Commission, necessary arrangements were made to obtain operating funds from the Commission on a weekly instead of a monthly basis, effective July 1, 1953. This change was requested by the Commission in order to limit funds in the hands of contractors to their current working capital needs, thereby reducing the amount of idle funds. Also, this change will save the Government money in interest expense.

Advances from the Atomic Energy Commission were reduced from $10,000,000 at the end of May to $4,817,984 at June 30, 1953. Prior to this month, the advance account consisted of cash in bank plus non-reimbursed current month

GENERAL ACCOUNTS (CONTINUED)

expenditures. This month, in view of revised procedures, we charged current month expenditures of $5,182,016 to the advance account, and the balance now consists entirely of cash in bank.

Deposit was made this month to our New York contract bank account in the amount of $575,470.21, representing:

Sale of $500,000 face amount of United States Treasury bonds from the Annuity Fund - net proceeds	$458 227.46
Transfer of $50,000 face amount of United States Treasury bonds from the Annuity Fund to the Employee Benefit Fund - net cash transferred from Employee Benefit Fund	45 947.75
Refund of excess of payments by the Atomic Energy Commission for general and administrative expenses over audited costs ($20,411); and refund of interest earned by the Administrative Fund ($50,884)	71 295.00
Total	$575 470.21

Interest earned by the Administrative Fund was transmitted to the Treasurer of the United States; the balance of the above amounts was credited to our advance account.

Considerable time was spent this month in analyzing ledger balances and determining amounts to be accrued in connection with FY 1953 closing. Close liaison was maintained with cost units in order to assure that necessary year-end entries will be made as scheduled. Final trial balance for FY 1953 is scheduled to be issued on July 15, 1953.

Special attention was given to the settlement of outstanding cash advances, and as a result a total of 409 expense accounts, amounting to $68,212, was processed, as compared with 219, amounting to $42,574, in May, 1953. Balance of outstanding cash advances was reduced from $56,452 at May 31 to $29,774 at June 30.

In connection with our work toward reducing the number of journal entries issued each month, procedures and forms were developed to be used for inter-cost unit transfers. This arrangement will provide for an efficient method of transferring costs without the necessity of issuing individual journal entries. One entry will be made at the month-end to summarize cost transfers during the month.

General Accounting Section

INVENTORY ACCOUNTING

Time was devoted during the month to reviewing and making certain revisions in detail inventory ledgers and working procedures which were used prior to May 1, 1953, the date the Inventory Accounting group was established. This review was made to determine the effectiveness of past procedures in preparing inventory reports and in inventory analysis work.

A procedure covering accountability and control of Special Materials inventory (platinum, silver, gold, beryllium, and zirconium) was issued to the Technical Section for their use and guidance in establishing custodial and control records for special materials under their responsibility.

Meetings were held during the month with Transportation Section personnel in regard to the procedure to be followed by them effective July 1, 1953, in maintaining records and processing documents for effective control of automotive parts in the outer area garages.

During June a procedure covering accounting for excess materials and equipment was prepared and will be made effective July 1, 1953. This procedure will replace present procedures relating to pricing and booking of excess property. The proposed procedure conforms with accounting policy established by the Atomic Energy Commission which provides that excess materials (expendable items) and excess equipment (capital items) be recorded in separate accounts and that excess property be valued at acquisition cost. A corresponding reserve will also be established to offset this increase in the asset accounts. However, at the June 30, 1953, closing, additional reserve will be established to fully cover all excess property on our books.

During the month a schedule was prepared defining the assigned organizational responsibilility for custody, accountability, forecasting, initiating procurement action, and establishing stock levels and bogeys for each inventory account.

In order for Inventory Accounting employees to become better acquainted with personnel with whom they are dealing and with procedures and records which are being maintained, a visit to the Central Stores Warehouse was made. This visit was made as a result of a recommendation during a round table discussion held last month with the Inventory Accounting group.

PLANT ACCOUNTS

The matter of unitization of construction projects and the addition of costs to classified plant accounts received close attention throughout the month.

As a result of meetings with appropriate parties, necessary arrangements were made for the unitization of all completed projects in unclassified plant accounts at June 1, 1953. These totaled $6,953,670. In addition, the

General Accounting Section

PLANT ACCOUNTS (CONTINUED)

unitization of all major projects covering facilities in service was completed, with the exception of Project CA-362 - Waste Metal Recovery Facilities (TBP). The largest of these projects are:

CA-431	100 C Plant	$ 63 000 000
CG-187-D	Redox Production Facilities	42 000 000
CG-413	Expansion of 234-5	6 325 000
CG-349	Hot Semi-Works	3 418 000
CG-361	Metal Conversion Facilities	2 170 000
	Total	$116 913 000

Work will continue on project unitization until the closing of June ledgers around July 10, 1953. By that time a number of other projects will have been added to classified plant accounts, and by far the large majority of completed facilities will be entered in plant accounts.

Decision was reached this month to completely amortize the 186-D Water Treatment Plant. This plant has not been used since 1945. The unamortized cost of the building of $1,941,674 was charged to Extraordinary Depreciation and Obsolescence. The equipment in this plant had been previously completely amortized.

A number of special requests for information were received from other organizations this month and required a substantial number of man days to handle. These included:

1. An analysis of the assets and depreciation allocable to the fabrication process furnished to Manufacturing Cost Unit.

2. A priced listing of primary and secondary pumps segregated by Area in buildings 190-B, D, DR, F, and H, was furnished the Design Section.

3. A priced listing of major and shop equipment was furnished Minor Construction Management Unit.

4. A priced listing of shop equipment and small tools (exclusive of those included in 3 above) was furnished Engineering Cost Unit.

General Accounting Unit

	June	May
Accounts Payable		
Balance at Beginning of Month	$ 390 372	$ 482 770
Vouchers Entered	3 544 012	3 257 119
Cash Disbursements	3 509 448 DR	3 355 715 DR
Cash Receipts	989	6 198
Other	176 532 -1)	-0-
Balance at End of Month	$ 602 457	$ 390 372
Number of Vouchers Entered	4 048	3 417
Number of Checks Issued	2 151	2 071
Number of Freight Bills Paid	1 319	1 281
Amount of Freight Bills Paid	$ 327 748	$ 292 756
Number of Purchase Orders Received	1 424	2 083
Value of Purchase Orders Received	$ 575 851	$1 538 002
Cash Disbursements		
Payrolls (Net)	$2 686 016	$3 133 152
Material and Freight	1 523 315	1 355 595
Lump Sum and Unit Price Subcontracts	817 366	773 169
Payroll Taxes	630 192	708 932
United States Savings Bonds	167 714	109 223
Group Insurance Premium	126 369	126 167
Pension Plan - Employees' Portion	83 747	80 009
All Other	328 459	311 843
Total	$6 363 178	$6 598 090

(1- Value of material received through June 30, 1953, for which no invoices have been received.

General Accounting Unit

	June	May
Cash Receipts		
Prior Month's Expenditures Reimbursed by Atomic Energy Commission	$6 178 074	$5 888 964
Funds from Liquidation of United States Treasury Bonds held in Annuity Fund	504 175	-0-
Refund of Insurance Premium	214 178	-0-
Rents	106 228	106 750
Interest Income from Administrative Fund	50 884	-0-
Hospital	66 110	67 248
Electricity	64 891	54 208
Sales to Atomic Energy Commission Cost-type Contractors	55 739	58 667
Telephones	51 299	44 931
Refund from Administrative Fund	20 411	-0-
Sundry Accounts Receivable	15 364	70 516
Bus Fares	7 814	7 634
Refunds from Vendors	989	6 198
Advances to General Electric	-0-	500 000
Other	23 080	3 864
Total	$7 359 236	$6 808 980

Bank Balances at End of Month		
Chemical Bank and Trust Company - New York Contract Account	$1 955 632	$ 684 494
Seattle-First National Bank - Richland Contract Account	2 020 178	2 120 153
United States Savings Bonds Account	156 566	188 482
Salary Account No. 1	20 000	20 000
Salary Account No. 2	30 000	30 000
Travel Advance Account	95 226	48 665
National Bank of Commerce - Richland Contract Account	667 174	842 279
Total	$4 944 776	$3 934 073

General Accounting Unit

	June	May
Accounts Receivable		
Hospital	$ 126 220	$ 143 808
Sundry	67 370	52 817
Atomic Energy Commission Cost-type Contractors	37 329	64 070
Equipment Sales to Facilities	29 665	36 908
Telephones	23 667	25 694
Electricity	17 823	29 409
Rents	12 422	9 984
Safety Shoes	1 347	1 935
Loans to Employees	216	228
Subtotal	316 059	364 853
Reserve for Bad Debts	29 504 CR	37 744 CR
General Ledger Balance	$ 286 555	$ 327 109
Hospital		
Number Out-patient Invoices Issued	1 720	1 783
Charges During the Month	$ 60 234	$ 66 923
Collections - Cash	66 110	67 248
- Payroll Deductions	4 894	4 499
Sundry		
Number Invoices Issued	306	428
Amount of Invoices Issued	$ 31 745	$ 53 922
Cash Received	15 364	70 516
Atomic Energy Commission Cost-type Contractors		
Number Invoices Issued	30	58
Amount of Invoices Issued	$ 28 998	$ 22 341
Cash Received	55 739	58 667
Telephones		
Working Telephones (excludes official telephones)	6 053	6 024
Telephone Work Orders Processed	245	335
Charges During the Month	$ 50 294	$ 51 889
Cash Received	51 299	44 931
Electricity		
Number of Bills Issued	6 215	6 197
Amount of Bills Issued	$ 53 601	$ 63 724
Cash Received	64 891	54 208

General Accounting Unit

	June	May
Accounts Receivable		
Rents		
Houses		
Number Houses Occupied	6 044	6 040
New Leases and Lease Modifications	263	76
Lease Cancellations	254	68
Charges During the Month	$ 245 548	$ 245 873
Collections - Cash	44 790	40 834
- Payroll Deductions	202 942	204 099
Dormitories		
Number Rooms Occupied	1 005	1 030
New Assignments	86	82
Removals	111	80
Charges During the Month	$ 15 557	$ 15 952
Collections - Cash	4 299	3 747
- Payroll Deductions	12 083	12 593
Facilities		
Number Facility Leases	146	142
Revenue	$ 57 139	$ 62 169

	Number	Amount
Uncollectible Accounts (Total to Date)		
Accounts Forwarded to Collection Agencies	508	$ 43 535
Accounts Returned as Uncollectible	179	23 625
Collections	177 -1)	7 039 -2)
Balance at Collection Agencies June 30, 1953	173	$ 12 871

(1- Includes 156 accounts collected in full and 21 accounts partially collected.

(2- Represents total collections, half of which is remitted to General Electric.

General Accounting Unit

	June	May
Travel Advances and Expense Accounts		
Cash Advances - Beginning of Month	$ 56 452	$ 55 483
Advances During the Month	57 330	53 658
Expense Accounts Submitted	67 339 CR	42 436 CR
Cash Refunded	16 669 CR	10 253 CR
Cash Advances - End of Month	$ 29 774	$ 56 452
Outstanding Cash Advances		
Current	$ 25 189	$ 40 880
Over 30 Days	4 585	15 572
Total	$ 29 774	$ 56 452
Travel and Living Expenses		
Paid Employees	$ 65 645	$ 41 192
Billed to Government	62 039	39 964
Balance in Variation Account at End of Month	23 489 DR	19 883 DR

GENERAL COST UNIT
MONTHLY REPORT
JUNE, 1953

Considerable effort was expended in planning for year-end accruals and reports that would be required.

Management Information Conferences were held in June for all personnel in the unit for discussion of policies in line with established plant program of improving flow of information to employees.

Work Order system in Community Operations and Real Estate Department was revised to reduce number of codes necessary and to greatly reduce the number of work orders required to perform maintenance work.

Consolidated Costs and Budgets

A "bogey" for FY 1954 Production and Research and Development Costs is being prepared for issuance early in July. Forecasted expenditures are being analyzed, as received from departments, to insure accurate comparisons with FY 1954 Revised Budget. Revised personnel requirements for FY 1954 based on current forecasts will also be prepared.

Graphs have been prepared reflecting actual personnel at specific dates as compared to previous estimates provided by departments in various budget submissions and personnel forecasts given to the Atomic Energy Commission.

Plant Auxiliary Operations

In order to comply with a recently established procedure for accepting and processing work orders received from the Atomic Energy Commission, an instruction letter, outlining correct method of handling these work orders performed by Plant Auxiliary Operations Department, was written and forwarded to sections concerned. Also, a review was made of all active AEC orders on file. As a result, AEC will be required to submit new authorizations, where necessary, on active orders.

A procedure has been formulated for handling costs of Automotive Parts Sub-Unit which is to be established in Purchasing and Stores Section, effective July 1, 1953. A 40% overhead will be applied to all disbursements from the automotive parts inventory.

Bogey manpower ceilings and General Overhead applicable to production cost were developed for the Plant Auxiliary Operations Department and submitted, after review with the Department Manager, to Consolidated Cost.

A Management Information Conference was held on June 22, 1953, during which matters of mutual interest were discussed and questions generated by the various members of the unit were answered.

Community

Preliminary work on the revised cost system was completed and meetings held with the Community Operations Section and the Real Estate Section. Notices of code changes were sent out to all Plant Departments interested.

Considerable assistance was provided to the Internal Audit group regarding the Community Operations and Real Estate Department inventories that was taken June 25, 26 and 27.

As a special assignment to this group, all facility leases were examined to obtain the data necessary to accumulate all lease information for ready reference. Upon completion, it will be the responsibility of the Reports and Records Group to maintain this on a current basis. In conjunction with this study, colored maps will be made covering each area in which facilities are established.

Much time was spent in coordinating and checking data to be used as basis for a letter to Congressman Phillips concerning misleading statements relative to our Community costs which were included in the Congressional Record during hearings by the House Subcommittee.

Medical

A unit cost study of Industrial Medical Operations was completed, in accordance with Organization and Policy Guide 14.3, segregated into the four types of programs, namely: Preventive Medicine, Curative Medicine, Constructive Medicine and Educational Medicine.

A proposed revision of Kadlec Hospital fee schedule was made during the month to become effective on July 1. This would place Kadlec Hospital on a more comparable basis with fees charged by other hospitals throughout the state.

Staff Departments

The bogey estimate of FY 1954 operating costs was submitted on June 30, 1953 with a segregation by quarters and brief explanations of variations from the Revised FY 1954 Budget.

A study of the amounts necessary to accrue into FY 1953 operations to cover anticipated FY 1953 litigation expense was completed with the assistance of Mr. G. C. Butler and Miss Lucille Lomen.

Work was completed on the necessary revisions to the Uniform Cost Codes to conform to the reorganization of Radiological Sciences Department effective July 1, 1953. Revised listings of work identification codes were prepared and issued to interested supervision in the Radiological Sciences Department.

MANUFACTURING COST UNIT
JUNE, 1953

PRODUCT COST ACCOUNTING

A comparison of Production Inventories as of July 1, 1952 and April 30, 1953 was prepared for the Manufacturing Department manager. All increase and decreases in dollar amounts since July 1, 1952 were clarified into price and quantity changes to provide explanations for inventory fluctuations.

Considerable work was done on product cost computations, using feed material, conversion and depreciation on a current basis. Unit Costs for Fiscal Years 1951, 1952, 1953 by quarters and the Budget for Fiscal Year 1954 were computed. The six month forecast was also converted to unit cost on a current basis using depreciation and feed material.

Forecasts of personnel, cost and production for the Manufacturing Department for Fiscal Year 1954 are being consolidated for submission in early July.

BUDGETS

The revisions of the Operating Budget for Fiscal Year 1954 was completed and issued during the month. The breakdown by months of the first quarter was completed.

REPORTS AND RECORDS

As requested by Manufacturing General staff personnel, Consolidated Operating Reports for each function of Manufacturing Department were made for May. These included Power, Maintenance, Radiation Monitoring, Process, Analytical and Plant Engineering.

An additional Cost Report for Separations Section was issued this month for 231 Building.

METAL PREPARATION SECTION ACCOUNTING

A Manufacturing Cost Bogey and Personnel Estimate for FY 1954 was prepared for the Metal Preparation Section based on the goal production established on June 10, 1953 and presented in Document HW-28313. The report includes total cost, Unit Cost for the preparation of slugs, production estimate and personnel requirements for the section with an explanation stating the assumption used in the preparation of the estimate.

The process codes for Operations Sub-Section were revised to better identify and segregate cost for analysis and comparison of actual cost with standard cost. The revision was necessary because of organizational changes and reassignment of responsibilities resulting from the discontinuance of the following processes: Chip recovery, machining, melt plant and oxide burning.

METAL PREPARATION SECTION ACCOUNTING (Cont'd)

The Standards Program has developed to the point that a monthly report will be issued showing a comparison of actual cost with standard cost for the preparation of slugs. This report will be broken down to direct material, direct labor, indirect labor, within department services, equipment Maintenance and other services.

A revised study for the distribution of water, steam and electricity in 300 area is nearing completion. What effect the revised distribution will have on rental rates has not been determined.

SEPARATIONS SECTION ACCOUNTING

Monthly variance reports covering those portions of Separations Section Costs under the Standards Program were prepared. These reports covered labor and material for the 221-T, 224-T, 231, 202-S, 224-U, 222-S and 234-5 Buildings.

Unit Cost explanations for May and a forecast covering the period June through November for $BiPo_4$, Redox, 234-5, TBP and UO_3 were prepared and submitted at the monthly cost meeting held June 19, 1953 in the 200-W Area.

A standard rate per hour was developed for the distribution of Separations, Plant Engineering Sub-Section. Distribution of cost using the standard rate per hour will become effective July 1, 1953. These costs were previously accumulated and distributed by the use of routine work orders.

Estimated monthly expenditures for processing low G/T uranium at the T Plant was prepared for the Operations Sub-Section at the request of the Production Superintendent.

Cost and Production Bogey estimates, by months, for FY-1954 along with a manpower forecast and basic assumptions used in preparing these bogies were prepared and submitted to the Manager, Manufacturing Administration Sub-Section on June 26, 1953.

REACTOR SECTION ACCOUNTING

The responsibility for coordinating the preparation of Reactor Section cost forecasts was assigned to this office. The transfer of this function, from the Reactor Section Plant Engineering Sub-Section, to the Financial Department is another step toward the handling of Reactor Section financial matters by the Financial Department.

A realistic bogey for FY 1954 was prepared based upon the goal production forecast established June 10, 1953. The bogey included total cost, unit cost and production by months; an estimate of personnel requirements for each quarter ending date and an explanation stating the assumptions used.

ENGINEERING COST UNIT
MONTHLY REPORT - JUNE, 1953

DESIGN COST

Second class invoices to Kaiser decreased due to consolidation of Journal Entries. Total value increased mainly in Services due to the year to date adjustment made at the close of the fiscal year.

	Number of Invoices		Total Cost Billed	
	To Kaiser	From Kaiser	To Kaiser	From Kaiser
June	41	21	$161 658.46	$170 487.85
May	58	16	$109 482.51	$ 89 690.00

Cost Transfers to Kaiser Engineers from General Electric:

	June	May
Major Construction Program Equipment - Net Book Value	$ 64 227.31	$ 37 824.70
Returned Major Construction Program Equipment Billings		10 663.23
Services - Clerical, Patrol, Fire, Electricity, Telephone	63 369.30	41 844.79
Work Order Costs	21 427.51	6 637.64
Railroad Car Handling	8 960.00	5 883.04
Excess Material Withdrawals	6 992.96	6 5[illegible]6.83
Charge of Major Equipment Repair	3 510.26	
Stores Issues Other than Excess	2 856.45	15 288.91
Reproduction	1 140.03	1 091.47
Other	477.69	615.52
Major Equipment Overhaul and Repair - Monthly Accrual	(11 303.05)	(11 559.63)
Kaiser Engineers Inventory Declared Excess		(5 343.99)
	$161 658.46	$109 482.51

Cost Transfers from Kaiser Engineers to General Electric:

	June	May
Graphite Fabrication	$ 62 641.12	$ 20 298.58
Stores Issues	60 626.94	36 331.99
Transfer of Major Construction Program Equipment	34 532.90	10 765.90
Work Order Costs	10 630.86	19 435.74
Other	1 040.91	
White Bluffs Utilities and Service Costs	1 015.12	2 857.79
	$170 487.85	$ 89 690.00

Engineering Cost Unit

DESIGN COST (Continued)

	Number of Invoices		Total Cost Billed -	
	To Blaw-Knox	From Blaw-Knox	To Blaw-Knox	From Blaw-Knox
June	28	5	$ 81 535.95	$ 2 443.80
May	26	1	32 746.57	7 683.60

Cost Transfers to Blaw-Knox from General Electric:

	June	May
Stores Issues - Other than Excess	$ 28 317.59	$ 9 026.02
Excess Material Withdrawals	27 311.89	13 695.73
Major Construction Program Equipment - Net Book Value	14 772.51	6 673.56
Utility Services - Telephone, Water	5 665.42	1 081.49
Services - Clerical, Patrol	2 495.63	928.53
Railroad Car Handling	1 440.00	640.00
Reproduction	997.86	686.90
Work Order Costs	529.03	14.34
Other	6.00	
	$ 81 535.93	$ 32 746.57

Cost Transfers from Blaw-Knox to General Electric:

	June	May
Major Construction Program Equipment - Net Book Value	$ 2 011.80	$ 7 683.60
Other	432.00	
	$ 2 443.80	$ 7 683.60

Design Section cost statements for May were issued on June 5, 1953. Recast of the Budget for FY 1955 and Revision for FY 1954 was begun during the period in order to reflect reductions in budgeted funds and personnel. It is anticipated that this recast will be completed by August 1, 1953. Considerable analysis work was expended in preparing Fiscal Year closing entries particularly on accruals. The cost statement for the week ending June 28, 1953 was not issued on schedule in order to include actual cost billings received in July applicable to June cost. June statements include year end adjustments of cost accruals accumulated during the past year.

TECHNICAL COST

May operating cost reports were issued to the managers in Technical Section and Engineering Administration Sub-Section on June 9, 1953. Research and Development detailed reports were issued on June 12, 1953, just after the monthly cost analysis letter of June 11, 1953.

TECHNICAL COST (Continued)

During June efforts were directed toward a complete review of Technical Costs in order that year end accruals could be made where necessary. Also, a very close control on equipment purchases was maintained during the month in an attempt to avoid an overrun or underrun of the equipment budget.

All attempts to complete a recast of the Budget for FY 1955 and Revision for FY 1954 were stymied in June due to the fact that Engineering Department management has been unable, as yet, to establish firm total amounts for the Research and Development Studies and Programs. The difficulties encountered stem from uncertainty as to the amount of funds to be appropriated by the Atomic Energy Commission for FY 1954 Research and Development.

During June the Laboratory Engineering and Facilities Unit of Technical Section was dissolved, the dissolution to be effective July 1, 1953. The essential parts of this organization were absorbed by Fuel Technology and Separations Technology Sub-Sections. This major change gave rise to several revisions in cost codes and coding instructions. These revisions were issued June 29, 1953 and became effective July 1, 1953.

PROJECT COST

Standard Journal Entries were placed in effect with June business. During the month 42 Journal Entries were issued. Action is being initiated which should reduce Journal Entries in July to approximately 30.

Bogey budget of manpower by quarters for Fiscal Year 1954 was completed together with GMPR-11, Personnel by End Functions for Fiscal Year 1954. Work continued on the recasting of the Budget for FY 1955 and Revision for FY 1954 to reflect increased personnel and organizational changes.

Expense statements covering May costs were issued to managers on June 5, 1953. Construction Work in Progress - Engineering report for the month of May was furnished the Atomic Energy Commission on June 8, 1953. All other financial statements were also issued on June 8, 1953.

During the month the following projects were closed to Plant Accounts on a preliminary final basis:

CG-187-D	Redox Production Facilities
CG-349	Hot Semi-Works
CG-361	Metal Conversion Facilities
CA-362	Waste Metal Removal and Recovery Facilities
CG-413	Expansion 234-5 Capacity
CA-431-A	100-C Production Facilities - Water Plant
CA-431-B	100-C Production Facilities - Reactor
CG-442	X-Ray Machine - Building 3745-A
CG-454	Spectrometer Shielding
CG-530	Revision of 314 Building for Canning Development

Engineering Cost Unit

PROJECT COST (Continued)

Management of Project AEC-125, Utilities for Sixth Housing Program, was transferred from Engineering Department to Community Operations and Real Estate; therefore, costs were transferred from Construction Work in Progress - Engineering to Construction Work in Progress - Community Operations and Real Estate.

System for segregating design costs into three phases, namely, Scope Design, Detail Design and Design Liaison was established and will be placed into effect July 1, 1953.

Financial Closing Statements covering the following projects were issued during the month:

CA-451	Extension 300 Area Underground Electrical Power Distribution System
CA-473	100-B Area Automatic Dial Telephone Exchange
CA-491	Metallurgy Laboratory - 300 Area
CG-492	Experimental One-Tube Ink Facility
CA-500	Installation of Lubrication Pits in 1716-D and F Garages
CG-526	Activated Silica Test Facilities for 100-D
CG-540	Lime Free Water Facility for 105-D Flow Laboratory
IR-101	Retention Basin Sumps, 100-B and F Areas
IR-146	Extension of Telephone Cable System for Central Stores Warehouse

APPROPRIATIONS SECTION
MONTHLY REPORT - JUNE, 1953

The following projects were approved by the Appropriations and Budget Committee in June:

CA-187-D-III	Redox Production Facilities, Part III - Waste Water Disposal Basin	Approved in amount of $180,000
CG-495, Rev. 3	Outlet Tube Temperature Monitoring Thermocouples Replacement 105-B, D, F and DR	Reduction of funds from $645,000 to $387,000
CA-513, Rev. 1	Expansion of 200 Area Facilities	Change of scope
CA-539	Additional Waste Storage Facilities for Redox	Withdrawn because the lump sum bid which was subsequently received indicated a substantial reduction in cost of project

Project proposals and informal requests approved by the Appropriations Sub-Committee amounted to $119,000, equipment $63,579, for a total of $182,579.

Recommendations were submitted to W. K. MacCready and W. W. Smith regarding termination of the Appropriations Sub-Committee.

MONTHLY REPORT
PAYROLL UNIT
JUNE 1953

During June the duPont Annuity Fund, representing the amount advanced by the Commission in 1947 ($2,750,000) to be used for purchasing annuities for former duPont employees who completed 15 years of combined service, was reduced by the sale of government bonds with face amount of $500,000 and the transfer to the Employee Benefit Fund (at market value) of government bonds with face amount of $50,000. The proceeds of $504,175 from the sale and transfer of the bonds, which cost $566,500, were deposited in the Contract bank account in lieu of advances which otherwise would have been made by the Commission. The reduction was possible because of terminations since 1947 by former duPont employees for whom annuities would have been purchased if they had completed 15 years of combined service.

Retroactive 1952 vacation adjustments, to employees who worked extended schedules during the year ended March 31, 1952, were included in salary checks distributed to weekly-paid employees June 26 and to monthly-paid employees June 30, 1953. An estimated 3 300 man hours, including 1 600 overtime hours, were worked during the period April 7, 1953 to June 17, 1953 in calculating the payments, which aggregated $37,296.

During June the Atomic Energy Commission issued Reimbursement Authorizations No. 203, No. 204, and No. 205, covering changes in salary payment policies with respect to all non-exempt employees. The changes were those reflected in agreements executed with unions, effective May 16, 1953.

The revised payment practices negotiated with unions were reflected in salary payments distributed June 26, 1953. Retroactive payments will be included in salary checks distributed July 3, 1953. Approximately 90 man hours were required to calculate the retroactive payments.

Payments aggregating $5,891 were made June 12, 1953, to 21 non-exempt employees of the Technical Section, for lunch periods worked during the period June 13, 1951 through May 31, 1953. Approximately 80 man hours were required to calculate these payments.

A report to the Board of Directors of the Good Neighbor Fund, showing contributions collected by payroll deductions, was initiated in June. Amounts collected from employees who designated certain agencies to whom their contributions should be allocated are shown separately by agencies in the report. The report also indicates the numbers of employees participating at the beginning and end of the month, and changes during the month.

Determination of bonds to be purchased for employees who are buying U. S. Savings Bonds by payroll deductions was made by IBM equipment in June. This determination had formerly been made on a manual basis. An estimated annual saving of $3 900 will be accomplished by the change.

An estimate of the effect on the aggregate annual rate of payroll of a recently announced general salary increase to be effective June 10, 1953, was furnished to the General Cost Unit for budget purposes. The estimate indicated an increase of approximately $1,700,000 based on payroll at May 31, 1953.

Five Payroll employees were loaned to the Internal Audit Unit, to assist with physical inventory work, during a portion of the month of June. These employees worked a total of 146.4 hours on this assignment.

Payroll Unit (continued)

STATISTICS

NUMBER OF EMPLOYEES	Total	Monthly Payroll	Weekly Payroll
Changes During Month			
Employees on Payroll at beginning of month	8 633	2 292	6 341
Additions and transfers in	179	11	168
Removals and transfers out	(122)	(15)	(107)
Transfers from weekly to monthly payroll		8	(8)
Transfers from monthly to weekly payroll		(2)	2
Employees on payroll at end of month	8 690	2 294	6 396

Number at month-end - by Payroll classifications	June	May
Bargaining group - HAMTC	3 453	3 446
- Building Services	68	70
- Two Platoon Firemen	45	46
- Hanford Guards	471	478
Other weekly - non-bargaining	2 404	2 347
Executive, administrative and operating	1 770	1 759
Professional	479	486
Other Monthly	-	1
Total	8 690	8 633

Number at month-end - by departments		
Engineering	1 560	1 541
Manufacturing	3 306	3 300
Plant Auxiliary Operations	2 155	2 152
Community Operations and Real Estate	448	436
Financial	334	336
Employee & Public Relations		
Technical Personnel	105	82
Other	114	114
Radiological Sciences	368	369
Medical	254	254
General	16	18
Law	5	5
Accountability	22	22
Property Management and Control	3	4
Total	8 690	8 633

OVERTIME PAYMENTS DURING MONTH		
Weekly Paid Employees	$64 220 (a)	$ 88 769 (b)
Monthly Paid Employees	27 680 (c)	31 054 (d)
Total	$91 900	$119 823

NUMBER OF CHANGES IN SALARY RATES AND JOB CLASSIFICATIONS		
	2 049	1 248

(a) Includes 4 weeks ended 6-21-53.
(b) Includes 5 weeks ended 5-24-53.
(c) Overtime worked during period May 1 through May 31, 1953.
(d) Overtime worked during period April 1 through April 30, 1953.

Payroll Unit (continued)

GROSS PAYROLL PAID DURING MONTH	June	May
Engineering	$ 774 196	$ 810 862
Manufacturing	1 538 387	1 791 767
Plant Auxiliary Operations	829 686	1 015 344
Community Operations & Real Estate	177 856	199 913
Other	490 978	568 882
Total	$3 811 103 (a)	$4 386 768 (b)

ANNUAL GOING RATE OF PAYROLL		
Base Plus Overriding Adjustment	$43 714 209	$43 423 758
Overtime	1 301 093	1 038 994
Isolation Pay and Area Differential	1 905 543	1 891 742
Shift Differential	547 455	435 744
Other	876	33 460
Total	$47 469 176	$46 823 698

AVERAGE HOURLY BASE RATES (Includes overriding adjustment)		
Bargaining group - HAMTC	$2.272	$2.270
- Building Services	1.731	1.737
- Two Platoon Firemen	2.187	2.186
- Hanford Guards	1.974	1.974
Other Weekly - non-bargaining	1.931	1.932
Executive, administrative and operating	3.192	3.182
Professional	3.479	3.472
Other Monthly	-	2.550
Total	$2.411	$2.411

AVERAGE EARNINGS RATE PER HOUR	June (c)			May (c)		
	Weekly	Monthly	Total	Weekly	Monthly	Total
Engineering	$2.062	$3.335	$2.764	$2.065	$3.329	$2.763
Manufacturing	2.511	3.376	2.678	2.499	3.360	2.668
Plant Auxiliary Operations	2.159	3.107	2.290	2.150	3.105	2.283
Community Operations & Real Estate	2.153	2.822	2.369	2.194	2.816	2.403
Other	1.968	3.539	2.361	1.960	3.529	2.364
Total	$2.269	$3.311	$2.538	$2.261	$3.302	$2.533

(a) Includes payments for four-week period ended June 21, 1953, in the case of weekly paid employees.

(b) Includes payments for five-week period ended May 24, 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.

Payroll Unit (continued)

EMPLOYEE BENEFIT PLANS Participation in Benefit Plans at Month End	Number Eligible June	Number Participation June	Percent Participation June	Percent Participation May
Pension Plan	7 984	7 614	95.4%	95.3%
Insurance Plan				
Personal Coverage	8 683	8 582	98.8	98.8
Dependent Coverage	-	5 763	-	-
U. S. Savings Bonds				
Stock Bonus Plan	8 684	3 833	44.1	44.3
Savings Plan	8 684	977	11.2	11.2
Both Plans	8 684	4 386	50.1	50.6

Pension Plan	June	Total to Date
Number Retired	2	274 (a)
Aggregate Annual Pensions Including Supplemental Payments	$ 421	$62 994 (b)
Amount contributed by employees retired	1 052	80 793

(a) Includes 14 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.

	June	May
Number who became eligible for participation	157	58
Number who applied for participation	145	54
Number who elected not to participate	6	2
Replies not received	6	2

	June	Year to Date
Normal Retirement Pension Applications	1	12
Optional Retirement Pension Applications	1	6

Insurance Plan Claims - Death Benefits (a)	June	Total to Date
Number	-	122
Amount	-	$743 513

Claim Payments - Accident & Health Insurance	June	May
Number of Checks	1 639	1 033
Number of Claims	1 068	761
Amount of Benefits	$ 86 249	$ 62 016
Total benefits paid since December 1, 1950 to date	$1 968 043	$1 881 794

(a) Total to date includes all claims under the old and new Insurance Plans and 10 deaths on which accidental death benefits were paid.

U. S. Savings Bonds Annual Going Rate of Deductions	June	May
G. E. Employees Savings and Stock Bonus Plan	$1 703 289	$1 676 161
G. E. Savings Plan	491 592	396.198
Total	$2 194 881	$2 072 359

Payroll Unit (continued)

Employees Who Have Entered Military Service

	Total to Date				
	Called to Duty	Volunteered for Duty	Number Reactivated	Number Resigned(a)	Net
Reserve Officers	40	5	(6)	(1)	38
Enlisted Reserve	56	6	(23)	(2)	37
National Guard	6	-	(4)	-	2
Selective Service	81	-	(27)	(1)	53
Voluntary Enlistments	-	117	(4)	(4)	109
Total	183	128	(64)	(8)	239

(a) Employees who were removed from the roll to enter Military Service and subsequently had their continuous service broken.

Annuity Certificates (for duPont Service)	June	Total to Date
Number Issued	-	96

Suggestion Awards		
Number of awards	3	2 113
Total amount of awards	$260	$42 845

Patent Award Payments	June	Year to Date
Number of award	-	3
Amount	-	$75.00

PREFERENTIAL RATES	June
Number Eliminated	-
Number Currently in Effect	69C

Military Allowance Payments	June	Total to Date
Number	2	61
Amount	$714.59	$22 180.79

INTERNAL AUDIT UNIT
MONTHLY REPORT
JUNE 1953

The physical inventorying of all Hanford Atomic Products Operation inventory materials (excluding source and fissionable materials), which began in January, 1953, was completed in June, although a substantial amount of summarizing and reporting remained to be done after the close of the month. The principal activities during the month were:

1. Excess materials in the custody of Stores Unit, stored principally at the excess storage yard in North Richland, were inventoried as of June 10, 1953. The physical count of approximately 19,500 items was accomplished in two days; 36 Financial Department and 77 Stores Unit employees were required to count the materials and process the inventory tags. The completion of the physical count, record posting and rechecking by Saturday night, June 13, required overtime work by some of the inventory personnel on Thursday night, June 11, and on Saturday, June 13.

2. General maintenance materials, in the custody of Community Operations and Real Estate Department and the Administrative Unit of Plant Auxiliary Operations Department, were inventoried as of June 25, 1953. These inventories, representing approximately 2,500 line items, were stored in eight warehouse locations and 33 service trucks. Thirteen Financial Department employees, 37 Community Operations and Real Estate Department employees and 25 Plant Auxiliary Operations Department employees were required (some for only a few hours) to make the physical count and process the inventory tags. Custody of these materials, except those on trucks, was transferred to Stores Unit following the physical inventory.

3. Railroad materials in the custody of Transportation Section were inventoried as of June 30, 1953. These materials, representing approximately 215 line items, consisted principally of track materials such as rails, ties, spikes and plates, stored at the Hanford Rail Yard, Hanford Depot, and in six section houses located along the plant railroad right-of-way. Four Financial Department employees and twelve Transportation Section employees were employed in making the physical count and posting the records.

PLANT PROTECTION SECTION

MONTHLY REPORT - JUNE 1953

ORGANIZATION AND PERSONNEL

Number of employees on payroll:

	Beginning of Month	End of Month	Increase	Decrease
Staff	2	2		
Administration Area Maintenance	60	61	1 (a)	
Security and Patrol	533	526		7 (b)
Safety and Fire Protection	153	151		2 (c)
Office Unit (Laundry and Building Services, Clerical and Records Control)	317	323	6 (d)	
TOTALS	1,065	1,063	7	9

NET DECREASE: 2

(a) - Administration Area Maintenance

1 - Transferred in

(b) - Security and Patrol

2 - Reactivated
2 - Transferred out
1 - Deactivated
6 - Terminations

(c) - Safety and Fire Protection

1 - New Hire
1 - Deactivated
2 - Terminations

(d) - Laundry and Building Services

1 - New Hire
2 - Reactivated
4 - Deactivated
3 - Transferred out
1 - Termination

Clerical Services

28 - New Hires
1 - Reactivated
13 - Transferred out
3 - Deactivated
2 - Terminations

SAFETY AND FIRE PROTECTION UNIT

Injury Statistics

	MAY	JUNE	YEAR TO DATE	COMPARATIVE PERIOD, 1952
Major Injuries	0	1	7	7
Sub-Major Injuries	3	0	8	14
Minor Injuries	326	357	2,075	2,300
Exposure Hours	1,458,912	1,404,671	8,686,077	8,877,120
Major Injury F/R	0.00	0.71	0.80	0.79
Major Injury S/R	0.00	0.02	0.034	0.029
Penalty Days	0	0	75	75
Actual Days Lost	0	30	250	185
Minor Injury F/R	2.23	2.54	2.38	2.59
Estimated Medical Treatment Time Required	1,328 hours	1,428 hours	8,364 hours	9,312 hours

Industrial Fires

Department	Area	No. of Fires	Causes	Loss
Manufacturing Department				
Separations	200-W	1	Spontaneous Ignition	Nil
Separations	200-W	1	Flammable liquids & gases	Nil
Separations	200-W	1	Electric	Nil
Separations	200-W	1	Smoking or matches	Nil
Metal Preparation	300	1	Process	Nil
Engineering Department				
Technical	300	1	Electric (Possible)	$1,300.00
Plant Aux. Operations				
Transportation	White Bluffs	1	Burning & Welding	Nil

Safety Activities

One major injury occurred in the railroad maintenance crew during June.

There were 357 minor injuries for the month, which shows the injury trend still a little above normal.

Additional interest in good housekeeping is being promoted for the purpose of maintaining a high level of housekeeping throughout the industrial areas.

The presentation of the Supervisors' Safety Training Program in the 100 Areas has been completed; 240 members of supervision attended.

Unsafe conditions and poor housekeeping are being practiced by subcontractors in the industrial areas. The Safety Engineers are following these items and requesting various building supervisors to correct the unsafe conditions.

The final preparations for S Day in the 300 Area have been completed and the limerick contest winners were given their award.

The recommendations covering periodic "To The Safety Showers" practice drills is being emphasized throughout the industrial areas.

A near-serious accident of a major nature occurred in the 221-U Tank Farm. The recommendations by the investigating committee were to publicize the incident. No other corrective action was recommended.

Fire Protection Activities

The fire loss for the month was $1300. This loss was from one fire in the 314 Building in the 300 Area. The probable cause was the breakdown of an electrical cable. The high loss was due to expensive tools being damaged. Six other fires occurred at various places throughout the Plant, but no appreciable damage was done by them.

Fire Protection surveys were completed on Buildings 1717-H and 222-U.

The study of the solvent fire hazard in the TBP Plant is continuing.

The sample fire-proof CWS filter from MSA was put into service in the 231-2 Building. It performed satisfactorily and an order has now been placed for a number of the filters.

The contract has been let to install fire hydrants around the spare parts warehouse in 200-West Area.

The sprinkler systems in the Riverland Round House, 321 Tank Farm and the 276-S Building were tested.

A practice fire evacuation was held in the new 329 Building.

Additional fire detectors have been installed in the 3703 Building to give more complete coverage.

Plans for Transportation Consolidation Facility were reviewed.

OFFICE UNIT

Laundry and Building Services

200-West Laundry	May	June
Pounds Delivered	225,667	220,978
Pounds Rewashed	4,708	4,761
Total Dry Weight	230,375	225,739
Monitoring Group		
Poppy Check - Pieces	159,622	195,513
Scaler Check - Pieces	286,012	204,235
Total Pieces	445,634	399,748
Rewash Pieces	4,490	4,693

700 Area Laundry	May	June
Flatwork - Pounds	39,896	34,764
Rough Dry - Pounds	21,709	26,405
Finished - Pounds	3,133	2,609
Total Weight	64,738	63,778
Estimated Pieces	84,807	83,549

Clerical Services

A discussion of Duplicating, Printing and Reproduction costs and methods was given to 30 members of A.E.C. Administrative Staff by Clerical Services Supervisors on June 23, 1953. The training film on office Duplicating was also shown at this meeting.

Central Mail

The postal mail, both outgoing and incoming, increased in volume over last month. Interoffice mail remained normal, but more badly addressed mail was received and more research required on the mail than during any period in many months. A possible reason could be vacation relief personnel addressing the correspondence. Approximately 12,000 pieces of mail required special handling, look-up and telephone calls. A possible solution would be a special request to all supervision for more complete addresses and accurate name spelling with full initials.

Delays of inter-office correspondence between Kaiser Engineers, Blaw Knox, A.E.C. and General Electric, resulted in a meeting with A.E.C. personnel and interested parties from GE. The discussion centered around the mail schedules. Mail between the contractors, A.E.C. and GE was being delivered by the contractors to A.E.C. Contract Section in the 760 Building for distribution, resulting in delays, inquiries and criticism of the Central and Area mail system. Schedules were furnished and the agreement reached whereby the existing schedules will be used where possible to eliminate the delay of redistribution.

A study of the outer area mail schedules is in progress and revisions will be released in the near future.

Types and Pieces of Mail Handled	June	May
Internal	1,671,043	1,573,371
Postal	75,002	72,240
Special	2,386	2,019
Total mail handled	1,748,431	1,647,630

	June	May
Total Postage Used	$3,150.68	$2,610.00
Total Teletypes Handled	3,015	3,177
Total Store Orders Handled	407	429

Addressograph

One new file, the "Management Information Group" was set up for Employee Relations Section.

	JUNE		MAY	
Type of List	Number Of Runs	Total Copies	Number Of Runs	Total Copies
Plant Name List	102	145,226	114	198,463
Housing List	16	69,642	16	31,565
Payroll list	11	30,846	9	38,753
Total New Plates	4,623		5,320	
Total Corrected Plates	967		862	
	5,590		6,182	

Office Equipment

Furniture

All requisitions have been placed on Purchase Orders for office furniture and machines requested on FY 53 appropriation requests.

Material purchased and committed to Projects C-381 and C-385 was delivered to 300 Area. Project material for C-406 is scheduled for delivery during the last two weeks of July. This project will release approximately 40 percent of furniture being held in storage and allocated to 300 Area projects. The remaining material is scheduled for October.

Office Machine Repair

The Instrument Maintenance shop will be located in the southwest end of Building 722-C. The installation of a dividing partition and electrical outlets has been completed. The physical move of check out panels, shop equipment etc. is scheduled to be moved during the month of July. When this move is complete, the hutment where the instrument shop is presently located, will be released to 700 Area landlord for reassignment.

Arrangements were made to establish an office machine repair shop in the 100-K Area. This move was made per agreement with A.E.C. and Kaiser Engineer representatives to expedite the repairs of machines requiring minor and so-called nuisance adjustments. Kaiser Engineers agreed to furnish shop space, telephone, clerical service etc. at no cost to GE. A few pieces of shop loan equipment will be supplied by GE. Present plans call for assignment of only one mechanic to this location.

The inventory of Office Machines in service has been completed with the exception of Kaiser Engineers which is scheduled to begin on July 6. The inventory cards have been used to establish IBM cards for proper cost coding of machines in service by Departments and Units.

The monthly maintenance charges are scheduled to start on July 1. This system will be used to liquidate shop operation costs in lieu of labor plus parts.

Office Machine Repair	June	May
Office machines repaired in shop	197	160
Office machine service calls	676	556
Machines picked up by survey	31	32
Total	904	748

Central Printing

The volume of printing orders received this month was up 9% over the previous month. Many of these orders were for large quantity press runs. These long runs accounted for 75,000 more copies printed during this month than last.

The Manufacturing Department Yearbook was completed and delivered. All phases of operation except typesetting on this book was accomplished at an actual cost of $752.00 which covered printing forty (40) pages and cover with black and one colored ink on each press spread.

Work Completed	June	May
Orders Received	421	384
Orders Completed	382	391
Back Log	118	85
Copies Printed	1,563,329	1,488,020
Negatives Masked	762	873
Negatives Processed	999	1,465
Photo-Copy Prepared	240	248
Litho Plates Processed	743	960

Stenographic Services

Productive work in the office, as well as loan assignments, was heavier than for some months past. Work performed was charged against forty-nine cost codes and a total of twenty-nine loan assignments were made to six of the nine departments.

Twenty new employees were assigned to Stenographic Services during the month, sixteen of whom are 1953 high school graduates. Since the majority of these employees are minors, they will not be available for transfer to the areas until they become eighteen years old.

The training program was accelerated to allow giving these new employees the maximum amount of background possible in a shorter period of time than is normally allowed.

Breakdown of Hours	June	May
Machine Transcription	6	38
Dictation & Transcription	0	2
Letters	40	26.5
Rough Drafts	53.5	42.5
Duplimats, Xerography	244	112.5
Miscellaneous	433.5	492
Training Time	260.5	322.5
Meeting Time	3.5	7.5
Unassigned Time	167	32
Absenteeism	56	46
Vacation Time	40	0
	1,304	1,121.5
Employees loaned to other Depts.	1,372	1,144.5
Total Hours Available	2,676	2,266

Area Mail & Duplicating Services

The total pieces of mail handled again showed an increase over the figure reported for the previous month. 189,116 pieces of internal mail were handled this month and 2,976 more pieces of registered delivery mail were handled.

Work loads in the various duplicating offices remained light during this month. This resulted in a reduction of orders on hand.

Among several large duplicating orders handled this month, was a job completed by the 2704-Z duplicating office involving 443 originals and 5,759 copies. Xerox masters were made on each original, and the job completed without reducing the service on short run, priority work.

On June 10, 1953, the mail room located in Hanford High School was moved to 1704-F Building, 100-F Area. The move will provide more prompt mail deliveries within 100-F Area and should permit the elimination of one employee when 101 and Hanford High School Buildings are vacated.

The operation of a stationery supply room in 101 Building, 3000 Area was discontinued during June, resulting in the reduction of one clerical employee and eliminating the need for one standard office. This will amount to an annual cost reduction of approximately $5,000.00 per year.

A significant fact noted in the General Cost Unit's report on duplicating indicates the average cost per copy is currently .015; this figure is lower than at any time during the fiscal year of 1953.

Duplicating & Mail Statistics	June	May
Orders Received	3,233	3,154
Orders Completed	3,232	3,097
Orders on Hand	57	102
Offset plates	17,685	17,689
Offset copies	917,672	1,221,727
Stencils	855	54
Stencil Copies	15,865	1,275
Ditto Masters	702	494
Ditto Copies	19,144	11,375
Zerox Plates	1,725	1,457
Total Internal Mail	673,606	481,514

Records Control

Quantity of records received, processed and stored:

Engineering Department	2	Standard Storage Cartons
Financial Department	195	" " "
Manufacturing Department	83	" " "
Medical Department	91	" " "
Plant Auxiliary Operations Department	24	" " "
Radiological Sciences Department	4	" " "
Subcontractors - Guy F. Atkinson & J. A. Jones Company	376	" " "
TOTAL	775	Standard Storage Cartons

Persons provided records service:	1,005
Cartons of records destroyed:	311
Records cartons issued:	399

Percentage of Records Service Center Vault occupied by records is 100% plus excluding Civilian Defense portion.

Twenty-eight requests for file cabinets were received, 26 requests were filled, 12 requests were cancelled and 25 requests for file cabinets are pending. Six fireproof combination locked cabinets were picked up in exchange for key locked cabinets resulting in a savings of $900.00 ($225.00 cost of combination cabinet minus $75.00 cost of key locked cabinet equals $150.00 savings per cabinet exchanged.)

Uniform filing was established in four offices during the month, a total of 425 offices have installed the uniform filing system to date. Eleven rechecks were made on established files.

Twenty-eight Evaluations of Records for disposal were developed and submitted for internal departmental approval. Five requests for Authorization for Records Disposal were approved by the Atomic Energy Commission.

Arrangements were completed with the Guy F. Atkinson & J. A. Jones Company for the transfer of records created by the Guy F. Atkinson & J. A. Jones Company and its subcontractors to the General Electric Company. One thousand thirteen cartons have been transferred and stored in the General Electric Records Service Center to date.

A survey of Yellow File copy coverage was made with the various department managers.

ADMINISTRATION AREA MAINTENANCE UNIT

CA-504 Lighting Improvements - 700 Area Buildings: Contract awarded by AEC.

-- New Administration Building: Contact with AEC indicates no decision has yet been made regarding plans for new building.

CA-525 Conversion of Basement, 5th Wing, 703 Building to Civil Defense Auxiliary Program: AEC contract has been awarded.

AEC-114 New Transportation Facilities (AEC): AEC has awarded contract for Phase I, Shops Building and Dispatcher's office.

-- Alterations 713 Building: Project Proposal is being prepared to cover remodeling of south side of building for IBM and Statistical and Computing operations.

AEC-111 Central Stores Warehouse: Order issued to Minor Construction to install portion of Hauserman partitioning in Receiving Area, from remainder of allocated construction funds.

IR-147: Partitioning, 761 and 762 Buildings: Approval to proceed has been granted by AEC. Plans are underway to have this work done by plant forces during July and August.

The 700 Area parking lots have been resealed. Parking lanes will be restriped as soon as surface is compacted and excess gravel can be removed.

Space in 713 Building was prepared for occupancy by 700 Area First Aid Station.

Hutments 712-B and 715-A have been transferred to outer areas.

Warehouse Hutments 1125-3-4 and Building 1125-2 have been transferred to Community Property Unit for leasing to business operators.

Hutment 722-X and two small 700 Area buildings formerly used for emergency fire equipment were transferred to AEC for disposition.

Offices in 712-A have been vacated. Other office moves during the month included transfer of Administration Area Maintenance offices from 703 to 704 Building.

Steps are being taken to consolidate Engineering personnel in front wing of 760 Building, and to provide additional space required for AEC Engineering employees.

General Maintenance

Inventory of 700 Area Maintenance supplies and equipment was completed and foremen's inventories, with exception of shop supplies, were transferred to Stores.

The 700 Area fire alarm systems were inspected.

Electrical work included installation of five floor receptacles in 703 Building, repair of heat lamp bank at 706 laboratory, repairs to drier on photostat machine, and grounding of solvent barrels at Central Stores Warehouse.

Master lock system was changed on 30 doors in 100-K. Combinations were changed on two locks in 200-W Area, and two 300 Area safes were repaired, in addition to numerous miscellaneous small lock and key jobs.

Hauserman partitioning was rearranged and installed in portions of Buildings 703, 704,713 and 722.

Flooring was repaired and replaced in Warehouse 15; roofing was replaced on Warehouse 13; platforms were extended and safety rails installed on Warehouses 54 and 57, Stores Yard No. 2.

Fencing and bumper logs in 1131 Parking Lot were repaired and relocated.

Program of repairing, painting and reattaching 700 Area screens was completed.

Paint work including striping of parking stalls and cross walks, road striping, touching up offices in 700 Area and Hospital, and miscellaneous minor paint jobs. Sign work was delayed as a result of sign painter's three-weeks illness.

Saw filing equipment was moved from 722-X to 729 Building.

Considerable work was done for the hospital, including replacement of linoleum in lobby and three first aid rooms, replacement of sink drain valves and sixty feet of fire line pipe to OB wing, and rearrangement of water line to reduce consumption of soft water.

Fans in 784 boilers 1, 3 and 4 were repaired. Overhaul of 3 and 4 boilers was completed.

Noisy power transformer was replaced at Central Stores covered storage building.

Steam Operation

Numbers 1 and 2 boilers were in operation at the beginning of the month. No. 1 was taken out of service on June 12 and is now undergoing annual overhaul. Last year, single boiler operation was achieved on May 13.

Due to unseasonably cool weather, the quantity of steam generated for the period May 27 to June 25 was 35.9% greater than that for the calendar month of June, 1952.

On June 10 and 11 the revised soft water piping to Kadlec Hospital was placed in service, reducing considerably the number of locations served with soft water. Average soft water usage at the hospital was reduced from 44,600 gallons per day for the two-week period preceding the changeover to 5,400 gallons per day for the two-week period following the changeover.

Coal Consumed:

Steam generated	11,744.4 M/lbs
Steam leaving plant	9,982.7 M/lbs
Steam delivered	8,038.7 M/lbs
Total water softened	2,224,000 gallons
Total soft water sent to Kadlec Hospital	718,720 gallons
Total soft water sent to 784 Heating Plant	1,584,570 gallons
Soft water served to Kadlec Hospital:	691.7 hours

SECURITY AND PATROL UNIT

Document Report

Number of classified documents unaccounted for as of June 1: 350
(154 of the above 350 documents are chargeable to E. I. du Pont de Nemours & Co.)

Number of classified documents reported as unaccounted for during June: 21

Number of classified documents recovered during the month of June: 0

Number of classified documents remaining unaccounted for as of July 1: 371
(154 of the above 371 documents are chargeable to E. I. du Pont de Nemours & Co.)

The Non-Technical Document Review Board held three meetings during the month of June, 1953, and reviewed a total of 144 classified documents. Of this number

13 were downgraded to "Restricted"
4 were downgraded to "Official Use Only"
52 had their classification retained
69 were declassified and
6 were not within the scope of the Board.

Security Education

Five security items appeared in the Works NEWS during the month.

There were 326 security meetings held and attended by 4,685 employees of the General Electric Company. A representative of the Security and Patrol Unit showed one of the security films at some of these meetings as shown below:

"Signal 99" was shown at 14 meetings, each with an average attendance of 22 people.

"The Defense Rests" was shown at one meeting with 17 people present.

"The Case of the Smokeless Chimney" was shown at two meetings, each with an average attendance of eighteen people present, or a total attendance of 36 employees.

"The Man on the Left" was shown at five meetings, each with an average attendance of 13 employees.

"Sabotage" was shown at one meeting with 36 people present.

GE Security Bulletin No. 76 entitled "Communism in Industry" was distributed on June 26.

The security A-B-C pamphlet was distributed June 4, with the slogan "Changed Your Safe Combination Lately?"

The poster with the slogan "Security is Everybody's Business" which was received from the Munitions Board, Department of Defense, Washington, D. C., was posted throughout the areas during the month.

Statistical Report of Security Patrol Activities

	100-B	100-D	100-F	100-H	200-E	200-W	300
Pat Searches	96	90	56	90	0	186	2
Escorts	15	3	8	28	23	75	66
Ambulance Runs	1	1	4	0	1	4	2
Passes issued:							
One day temporary	118	18	4	3	9	44	23
Travel	16	0	0	0	0	0	22
Red Tag	176	150	62	43	111	337	143
Telephonic	11	2	0	1	0	0	19
Supervisors' Post Contacts	598	366	557	324	550	663	776

Other Security Patrol Activities (computed by hours):							300 & 700
Security File Check	132	258	153.5	356	106	340	1,380
Security Building Check	183.5	47			109	299	720

Other Security Patrol Activities:

Buildings and Doors Opened	282
Railroad Gates Opened	230
Master System Keys Issued	35
Operation Gas Pumps	159

Arrest Report

Violation	Number of Violations	Cont. Cases From May	Cases Cleared	Pending	Fined
Speeding	1	0	0	1	0
Improper Passing and Speeding	0	1	1	0	1
Public Intoxication	1	0	1	0	1
Passing in "No Passing" Zone	1	0	1	0	0
Operating Motor Vehicle under influence of intoxicating liquor	1	0	0	1	0
	4	1	3	2	2

Citation Tickets Issued: 4

Patrol Training Activities

Patrolmen attending firearms training during the month: 123
Patrolmen receiving classroom instruction during the month: 124

Training courses received were:

Safety Class	1/2 hour
Security Class	1/2 hour
Operations Class	1 hour
Firing of .38 cal. revolver	1/2 hour

Field Inspection Activities

Contacts made to locate unaccounted for documents: 31
Searches conducted to locate unaccounted for documents: 11
File combinations changed: 12

General

The 712-B Hutment, located south of the 703 Building, was moved out of the 700 Area to the 200-E Area on June 9. As a result of the hutment being moved, the remaining hutment became part of the perimeter fence of the 700 Area, with the concurrence of the Atomic Energy Commission Security Office.

The chief interest at the 101 Building in Hanford regarding security was terminated on June 25, and as a result Security Patrol coverage and fire protection are being eliminated. Occasional checks are continuing to be made until such time as they are no longer considered necessary.

During the latter part of this month, preliminary work was begun on the permanent Civil Defense Center which is to be located in the basement of the new wing, 703 Building.

With the exception of fourteen people who are either on vacation or on leave of absence, employees of the Hanford Atomic Products Operation and its subcontractors had completed the supplemental Personnel Security Questionnaire forms required by the Atomic Energy Commission on June 30, 1953.

Fifty employees of the General Electric Company received a "Q" security orientation talk from either a representative of Security or an Area Patrol Captain during the month of June, 1953.

Security Administration

Daily Badge Log Entries	2,020 additions and 224 withdrawals
"Q" Clearances issued	94
Formal "P" clearances issued	41
"P" approval Clearances issued	75
Category Access Granted	45
Category Access Withdrawn	49

As of the close of this reporting period in the rephotographing project, the following photographs have been processed by the Security Office:

"A" type area badges	441
"B" type area badges	2,137
"Q" Photo Identification Passes	417

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DECLASSIFIED

HANFORD ATOMIC PRODUCTS OPERATION
General Electric Company
Richland, Washington

REPORT OF VISITORS FOR PERIOD ENDING JUNE 30, 1953

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
ENGINEERING DEPARTMENT - TECHNOLOGY SECTION							
I. Visitors to this Works							
E. E. Baldwin Knolls Atomic Power Laboratory Schenectady, New York	Supervise, test and installation of B_4C Engineering Irradiation equipment on KAPL-114 in "C" pile	J. A. Berberet	6-2-53	6-29-53	X		100-B 105-B, 105-C 100-D 105, 189 100-F 105 100-H 105 300 XXX; 700
W. E. Crandall California Research & Dev. Co. Livermore, California	Consultation on experiments on large volume liquid ascintllation counters	R. L. Dickeman	6-2-53	6-3-53	X		100-B 105-C 100-D 105-DR 100-H 105 300 303
W. E. Drummond California Research & Dev. Co. Livermore, California	Discuss shielding problems	R. L. Dickeman	6-8-53	6-9-53	X		100-B 105-B, 105-C 100-D 105 300 XXX
M. R. Fenske Standard Oil Development State College, Pennsylvania	Consultation on continuous calcination processes relative to 200 Area operations	V. R. Cooper	6-24-53	6-26-53	X		100-B XXX 200-E 201-C 200-W Redox, 221-U 300 XXX
C. W. George General Engineering Lab. Schenectady, New York	Determine functional performance of Remote Mechanical Line	V. R. Cooper	6-23-53	6-24-53	X		200-W 234, 235 300 XXX
G. B. Grable Battelle Memorial Institute Cincinnati, Ohio	Discuss welding problems	E. A. Eschbach W. Schalliol	6-25-53	6-25-53	X		100-B 105-B, 105-C 300 303

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DECLASSIFIED

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Restricted Data Areas
H. G. Hicks California Research & Dev. Co. Livermore, California	Consultation on radio chemical techniques	F. J. Leitz O. F. Hill F. W. Albaugh	6-29-53	7-1-53	X	300	XXX
D. H. Imhoff California Research & Dev. Co. Livermore, California	Discuss lattice test reactor and exponential experiments	G. M. Roy F. W. Albaugh W. E. Horning	6-22-53	6-23-53	X	100-D 300	189 XXX
J. Ise Radiation Laboratory University of California Berkeley, California	Consultation on non-classified experiments	R. L. Dickeman R. Paul	6-2-53	6-4-53	X	100-B 100-D 100-H 300	105-C 105 105 303
R. J. Isler Brookhaven National Lab. Upton, Long Island, New York	Discuss waste concentration	V. R. Cooper	6-23-53	6-24-53	X	200-E 200-W 300	201-C Redox, 221-U XXX
K. H. Kingdon Knolls Atomic Power Laboratory Schenectady, New York	Review uranium coating program and theories of slug corrosion	A. B. Greninger	6-8-53	6-10-53	X	100-B 100-D 200-E 300	105-B, 105-C 105, 189 221-B 303
C. E. Lacy Knolls Atomic Power Laboratory Schenectady, New York	Discuss fuel element development program	E. A. Eschbach J. A. Ayres	6-22-53	6-23-53	X	200-E 200-W 300-L	221-B XXX XXX; 700
S. L. Lawroski Argonne National Laboratory Chicago, Illinois	Consultation on continuous calcination processes relative to 200 Area operations and discuss "Bluenose" experiment	V. R. Cooper R. L. Dickeman P. F. Gast W. K. Woods	6-25-53	6-26-53	X	100-B 100-D 200-E 200-W 300	XXX 105 201-C Redox, 221-U XXX
D. McLachlan, Jr. University of Utah Salt Lake City, Utah	Consultation on Consultant Agreement #103	F. W. Albaugh	6-17-53	6-19-53	X	100-B 100-D 100-F 200-W 300	105-B, 105-C, 108 105, 189 105, 108 221-T, 231, Redox, 221-U 303

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Restricted Data Areas
N. P. Pinto Sylvania Electric Products Bayway, New Jersey	Investigation and collection of information on Sylvania "S" powder metallurgy slugs	E. A. Eschbach	6-29-53	6-30-53	X	100-B 300	105-B, 105-C 303; 700
W. L. Robb Knolls Atomic Power Laboratory Schenectady, New York	Consultation on fuel element development program	E.A. Eschbach J.A. Ayers	6-22-53	6-23-53	X	200-E 200-W 300	221-B XXX XXX; 700
R. W. Samsel General Engineering Laboratory Schenectady, New York	Discuss Hanford problems on fuel technology, applications of ultrasonics, flaw detection and decontamination	O. H. Greager R. W. Benoliel G. E. McCullough V. R. Cooper A. E. Smith	6-22-53	6-26-53	X	100-B 200-W 300-L	105-B, 105-C, 108 XXX 303
F. W. Schumacher Standard Oil Development Co. Bayway, New Jersey	Consultation on continuous calcination processes relative to 200 Area operation	V. R. Cooper F. W. Woodfield	6-29-53	6-29-53	X	100-B 200-E 200-W 300	XXX 201-C Redox, 221-U XXX
L. Smiley Sylvania Electric Products Bayway, New Jersey	Investigation and collection of information on Sylvania "S" powder metallurgy slugs	E. A. Eschbach	6-29-53	6-30-53	X	100-B 300	105-B, 105-C 303; 700
R. P. Sopher Battelle Memorial Institute Cincinnati, Ohio	Discuss welding problems	E. A. Eschbach W. Schalliol	6-24-53	6-25-53	X	100-B 300	105-B, 105-C 303
T. E. Usher General Engineering Lab. Schenectady, New York	Discuss mass spectrometer and related problems	R. J. Brouns G. J. Alkire	6-22-53	6-30-53	X	100-B 300	108 XXX
G. W. Watt University of Texas Austin, Texas	Consultation on separations problems and Redox	F. W. Albaugh	6-15-53	6-20-53	X	300-L 100-B 100-D 100-F 100-H 200-E 200-W	XXX; 300-303 105-B, 105-C, 108 105, 189 105, 108 105 221-B, 201-C 221-T, 231, 234, 235, Redox, 221-U

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Restricted Data Areas
J. L. Zambrow Sylvania Electric Products Bayway, New Jersey	Investigation and collection of information on Sylvania "S" powder metallurgy slugs	E.A. Eschbach	6-29-53	6-30-53	X		100-B 105-B, 105-C 300 303, 700
II. Visits to other Installations							
F. W. Albaugh to: American Cyanamid Co. Arco, Idaho	Discuss MTR facilities and programs of irradiations	C. M. Slansky	6-11-53	6-12-53	X		
F. W. Albaugh to: Phillips Petroleum Co. Arco, Idaho	Discuss MTR facilities and programs of irradiations	B. Lewis	6-11-53	6-12-53	X		
G. B. Barton to: Knolls Atomic Power Lab. Schenectady, New York	Discuss separations and analytical chemistry	J. F. Flagg	6-17-53	6-18-53	X		
R. W. Benoliel to: General Engineering Lab. Schenectady, New York	Consultation on fuel element development program	C. W. George	6-26-53	7-3-53	X		
R. W. Benoliel to: Battelle Memorial Inst. Cincinnati, Ohio	Consultation on fuel element development program	H. R. Nelson	6-26-53	7-3-53	X		
J. A. Berberet to: Argonne National Lab. Chicago, Illinois	Discuss special irradiations	L. W. Fromm	6-8-53	6-9-53	X		
J. A. Berberet to: Knolls Atomic Power Lab. Schenectady, New York	Discuss special irradiations	L. F. Wardell J. R. Low	6-10-53	6-11-53	X		
J. A. Berberet to: General Engineering Lab. Schenectady, New York	Discuss special irradiations	W. H. Pains W. Primak	6-10-53	6-11-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
J. A. Berberet to: Brookhaven National Lab. Upton, Long Island, New York	Discuss special irradiations	W. Rubinoff M. Fox	6-12-53	6-12-53	X		
J. A. Berberet to: Westinghouse Atomic Power Pittsburgh, Pennsylvania	Discuss special irradiations	L. S. Castleman H. Glick D. Wroughton	6-15-53	6-16-53	X		
J. A. Berberet to: Oak Ridge National Lab. Oak Ridge, Tennessee	Discuss special irradiations	J. H. Gillette	6-17-53	6-18-53	X		
T. K. Bierlein to: Argonne National Lab. Chicago, Illinois	Consultation on single crystal studies, electron microscopy and diffraction	H. H. Chiswik	6-22-53	6-22-53	X		
T. K. Bierlein to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on single crystal studies, electron microscopy and diffraction	T. F. Fisher	6-23-53	6-23-53	X		
T. K. Bierlein to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on single crystal studies, electron microscopy and diffraction	T. F. Fisher	6-24-53	6-25-53	X		
L. P. Bupp Columbus, Ohio to: Phillips Petroleum Co. Arco, Idaho	Technical discussion on Material Testing Reactor, Submarine Reactor and Breeder Reactor	H. Pennington	6-17-53	6-18-53	X		
A. H. Bushey to: Knolls Atomic Power Lab. Schenectady, New York	Discuss separations and analytical chemistry	J. F. Flagg	6-16-53	6-18-53	X		
A. H. Bushey to: Oak Ridge National Lab. Oak Ridge, Tennessee	Discuss separations and analytical chemistry	F. W. Bruce F. W. Hurd	6-22-53	6-24-53	X		
G. B. Barton to: Oak Ridge National Lab. Oak Ridge, Tennessee	Discuss separations and analytical chemistry	F. W. Bruce F. W. Hurd	6-22-53	6-24-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
J. J. Cadwell to: American Cyanamid Co. Arco, Idaho	Discuss Material Test Reactor, Submarine Test Reactor and Breeder Reactor	C. M. Slansky	6-11-53	6-12-53	X		
J. J. Cadwell to: Phillips Petroleum Co. Arco, Idaho	Discuss Material Test Reactor, Submarine Test Reactor and Breeder Reactor	B. Lewis	6-11-53	6-12-53	X		
A. Chetham-Strode to: Knolls Atomic Power Lab. Schenectady, New York	Discuss separations and analytical chemistry	J. F. Flagg	6-17-53	6-18-53	X		
E. D. Clayton to: Dynamo Project Mass. Institute of Tech. Cambridge, Massachusetts	Discuss latticing constants and exponential measurements	Dr. Spinrad	6-15-53	6-15-53	X		
E. D. Clayton to: Brookhaven National Lab. Upton, Long Island, New York	Discuss exponential measurements	J. Chernik	6-17-53	6-22-53	X		
E. D. Clayton to: Argonne National Lab. Chicago, Illinois	Discuss exponential measurements	J. West	6-17-53	6-22-53	X		
J. L. Daniel to: Mallinckrodt Chemical Wks. St. Louis, Missouri	Attend information meeting on analysis for impurities in uranium	S. M. Tuthill	6-2-53	6-3-53	X		
D. E. Davenport to: Dynamo Project Mass. Institute of Tech. Cambridge, Massachusetts	Discuss lattice constants and exponential measurements	Dr. Spinrad	6-15-53	6-15-53	X		
D. E. Davenport to: Argonne National Lab. Chicago, Illinois	Discuss exponential measurements	J. West	6-22-53	6-23-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
R. L. Dickeman to: Oak Ridge National Lab. Oak Ridge, Tennessee	Attend Reactor Safeguard Committee Meeting	D. Cowan	6-15-53	6-18-53	X		
R. L. Dickeman to: Argonne National Lab. Chicago, Illinois	Attend consultation on Reactor Physics	J. M. West	6-18-53	6-19-53	X		
R. L. Dillon to: American Cyanamid Arco, Idaho	Consultation concerning problems on the salting out of Uranyl Nitrate into organic streams	C. M. Slansky	6-12-53	6-12-53	X		
E. A. Eschbach to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on fuel element development program	J. E. Burke C. E. Lacy D. W. White	4-1-53	10-1-53	X		
E. A. Eschbach to: Battelle Memorial Inst. Cincinnati, Ohio	Consultation on fuel element development program	H. R. Nelson	4-1-53	10-1-53	X		
E. A. Eschbach to: Ames Laboratory Ames, Iowa	Consultation on fuel element development program	F. H. Spedding	4-1-53	10-1-53	X		
E. A. Eschbach to: Sylvania Electric Products Bayway, New Jersey	Consultation on fuel element development program	H. H. Hausner	4-1-53	10-1-53	X		
T. W. Evans to: Phillips Petroleum Co. Arco, Idaho	Discussion on Material Test Reactor facilities and program of irradiations	B. Lewis	6-11-53	6-12-53	X		
T. W. Evans to: American Cyanamid Arco, Idaho	Discussion on Material Test Reactor facilities and program of irradiations, Submarine Test Reactor and Breeder Reactor	C. M. Slansky	6-11-53	6-12-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
H. R. Gardner to: Feed Material Production Center Fernald, Ohio	Observe processing of uranium	J. M. Ciborski	5-18-53	6-9-53	X		
P. F. Gast to: Brookhaven National Lab. Upton, Long Island, New York	Attend Reactor Planning Committee Meeting	C. Williams	6-8-53	6-9-53	X		
P. F. Gast to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on reactor development	T. M. Snyder	6-10-53	6-12-53	X		
P. F. Gast to: Argonne National Lab. Chicago, Illinois	Reactor evaluation meeting	J. M. West	6-22-53	6-23-53	X		
J. F. Gifford to: U.S. Naval Rad. Defense Lab. San Francisco, California	Review facilities for disposal of radioactive waste and equipment for handling radioactive materials	E. Compton	6-3-53	6-5-53	X		
J. F. Gifford to: Radiation Laboratory University of California Berkeley, California	Review facilities for disposal of radioactive waste and equipment for handling radioactive materials	N. B. Garden	6-3-53	6-5-53	X		
C. Groot to: Knolls Atomic Power Lab. Schenectady, New York	Discussion on corrosion problems	K. H. Kingdon	6-15-53	6-19-53	X		
C. Groot to: Argonne National Lab. Chicago, Illinois	Discussion on corrosion problems	J. E. Draley	6-22-53	6-23-53	X		
W. T. Kattner to: Simonds Saw & Steel Lockport, New York	Observe metal fabrication	A. D. Potts C. H. Emery	6-18-52	6-30-53	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: 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: Aircraft Nuclear Propulsion Project Lockland, Ohio	Metallurgical consultation	J. S. Parker	10-7-52	6-30-53	X		
W. T. Kattner to: Mallinckrodt Chemical Wks. St. Louis, Missouri	Discuss and observe uranium quality and fabrication	C. H. Harrington	5-10-53	12-31-53	X		
E. M. Kinderman to: Brookhaven National Lab. Upton, Long Island, New York	Attend "bluenose" conference	- -	6-11-53	6-13-53	X		
E. M. Kinderman to: Radiation Laboratory University of California Berkeley, California	Consult on chemistry and equipment for handling of special irradiation samples.	S. Thompson	6-3-53	6-10-53	X		
B. R. Leonard to: Knolls Atomic Power Lab. Schenectady, New York	Discuss cross section experiments	F. A. White	6-22-53	6-23-53	X		
E. T. Merrill to: Argonne National Lab. Chicago, Illinois	Attend symposium on nitric acid and organic material reactions	S. A. Lawroski	6-9-53	6-13-53	X		
L. F. Miller to: U.S. Naval Rad. Defense Lab. San Francisco, California	Review facilities for disposal of radioactive waste and equipment for handling radioactive materials	E. Compton	6-3-63	6-5-53	X		
L. F. Miller to: Radiation Laboratory University of California Berkeley, California	Review facilities for disposal of radioactive waste and equipment for handling radioactive materials	N. B. Garden [redacted]	6-3-53	6-5-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
W. J. Czeroff to: Brookhaven National Lab. Upton, Long Island, New York	Attend "bluenose" meeting	W. Rubinson	6-12-53	6-12-53	X		
P. J. Pankaskie to: U. S. Atomic Energy Comm. Pittsburgh, Pennsylvania	Consultation on zirconium fabrication	H. T. Sharpe	6-10-53	6-11-53	X		
R. L. Reynolds to: General Engineering Lab. Schenectady, New York	Consultation on underwater examination equipment	C. W. George	6-29-53	7-2-53	X		
W. E. Roake to: Knolls Atomic Power Lab. Schenectady, New York	Discuss radiometallurgy equipment design and separations problems	C. E. Lacy R. C. Feber	6-29-53	7-2-53	X		
M. J. Sanderson to: Phillips Petroleum Co. Arco, Idaho	Discuss Material Test Reactor facilities and iraddiation programs	B. Lewis	6-11-53	6-12-53	X		
M. J. Sanderson to: American Cyanamid Arco, Idaho	Discuss Material Test Reactor, Submarine Test Reactor, Breeder Reactor	C. M. Slansky	6-11-53	6-12-53	X		
M. J. Sanderson to: Feed Materials Production Center Fernald, Ohio	Attend joint US-Canadian Committee Meeting on dimensional instability	S. A Stoney	6-15-53	6-16-53	X		
M. J. Sanderson to: Knolls Atomic Power Lab. Schenectady, New York	Discuss irradiation effects	C. W. Tucker	6-17-53	6-17-53	X		
M. J. Sanderson to: Argonne National Lab. Chicago, Illinois	Consultation on metallurgy program regarding Material Test Reactor exposure	H. Paine H. Kittle	6-18-53	6-19-53	X		
J. R. Triplett to: Oak Ridge National Lab. Oak Ridge, Tennessee	Consultation on current Development Program	A. M. Weinberg	6-22-53	6-23-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
J. R. Triplett to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on current Development Program	R. Ehrlich	6-24-53	6-24-53	X		
J. R. Triplett to: Walter Kidde Nuclear Lab. Garden City, New York	Consultation on current Development Program	K. Cohen	6-25-53	6-26-53	X		
R. M. Wagner to: Argonne National Lab. Chicago, Illinois	Present paper at Organic Symposium	V. R. Munnecke	6-10-53	6-12-53	X		
R. Ward to: Feed Materials Production Center Fernald, Ohio	AEC-Canadian Joint Meeting on instability of uranium fuel elements	S. A. Stoney	6-15-53	6-16-53	X		
A. T. Whatley to: Phillips Petroleum Co. Arco, Idaho	Technical discussion on Material Test Reactor, Submarine Reactor and Breeder Reactor	H. Pennington	6-17-53	6-19-53	X		
W. K. Woods to: Argonne National Lab. Chicago, Illinois	Attend reactor evaluation meeting	J. M. West	6-22-53	6-23-53	X		
E D. Clayton to: U. S. Atomic Energy Comm. New York, New York	Discussion on exponential measurements	M. Kell	6-16-53	6-16-53	X		
D. E. Davenport to: U. S. Atomic Energy Comm. New York, New York	Discussion on exponential measurements	M. Kell	6-16-53	6-16-53	X		
G. B. Barton to: General Engineering Lab. Schenectady, New York	Separations and analytical chemistry	H. A. Liebhafsky	6-18-53	6-18-53	X		
A. H. Bushey to: General Engineering Lab. Schenectady, New York	Separations and analytical chemistry	H. A. Liebhafsky	6-18-53	6-18-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
A. Chetham-Strode to: General Engineering Lab. Schenectady, New York	Separations and analytical chemistry	H. A. Liebhafsky	6-18-53	6-18-53	X		
ENGINEERING DEPARTMENT - DESIGN SECTION							
I. Visits to other Installations							
W. P. Ingalls to: Rocky Flats Laboratory Dow Chemical Company Denver, Colorado	Consultation of existing equipment in preparation for design work at Hanford on new facilities	F. H. Langell I. B. Venable	6-21-53	6-26-53	X		
W. P. Ingalls to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Consultation of existing equipment in preparation for design work at Hanford	R. D. Baker	6-21-53	6-26-53	X		
T. W. Jeffs to: Rocky Flats Laboratory Dow Chemical Company Denver, Colorado	Inspect electrical portion of existing facilities in preparing for electrical design at Hanford of new facilities	F. H. Langell I. B. Venable	6-21-53	6-27-53	X		
T. W. Jeffs to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Inspect electrical portion of existing facilities in preparing for electrical design at Hanford of new facilities	R. D. Baker	6-21-53	6-27-53	X		
E. W. Swain to: Rocky Flats Laboratory Dow Chemical Company Denver, Colorado	Consultation on existing equipment in preparation for design work at Hanford on new facilities	F. H. Langell	6-21-53	6-26-53	X		
E. O. Swain to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Consultation of existing equipment in preparation for design work at Hanford of new facilities	R. D. Baker	6-21-53	6-26-53	X		
ENGINEERING DEPARTMENT - PROJECT SECTION							
I. Visits to other Installations							

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
R. C. Mann to: Vitro Corporation of America New York, New York	Design consultation and information expediting	T.G. Watkins	6-22-53	7-3-53	X		
M. G. Patrick to: General Engineering Lab. Schenectady, New York	Perform design liaison and witness testing of new equipment	C. W. George J. L. Matrone E. S. Baker	6-29-53	7-2-53	X		

ENGINEERING DEPARTMENT - ADMINISTRATION SECTION

I. Visits to other Installations

R. R. Barber to: Toronto, Canada	Attend annual convention of Special Libraries Association	- -	6-22-53	6-25-53		X	

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PROJECT SECTION (cont'd)

C. E. Love to: Puget Sound Navy Shipyard Bremerton, Washington	Design conference on Project CA-512-R	S. L. Allison	6-2-53 6-22-53	6-4-53 6-23-53	X X		
C. W. Harrison to: Puget Sound Navy Shipyard Bremerton, Washington	Design conference on on Project CA-512-R	S. L. Allison	6-10-53	6-11-53	X		
F. C. Fisher to: Puget Sound Navy Shipyard Bremerton, Washington	Design conference on on Project CA-512-R	S. L. Allison	6-10-53	6-11-53	X		
J. R. Kelly to: Puget Sound Navy Shipyard Bremerton, Washington	Design conference on on Project CA-512-R	S. L. Allison	6-22-53	6-23-53	X		
J. W. Brands to: Puget Sound Navy Shipyard Bremerton, Washington	Design conference on on Project CA-512-R	S. L. Allison	6-22-53	6-23-53	X		

EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

I. Visits to other Installations

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
D. W. McLenegan to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Technical personnel discussion	R. C. Mark J. S. Parker M. C. Leverett	6-15-53	6-15-53	X		
D. W. McLenegan to: Knolls Atomic Power Lab. Schenectady, New York	Technical personnel discussion	L. L. German K. H. Kingdon	6-17-53	6-18-53	X		
H. A. Root to: KnollsAtomic Power Lab. Schenectady, New York	Conference on placement of personnel	H. E. Scott	6-8-53	6-9-53		X	
GENERAL							
I. Visits to other Installations							
W. P. McCue to: Knolls Atomic Power Lab. Schenectady, New York	Discuss salary administration matters	I. H. Dearnley	6-25-53	6-26-53		X	
II. Visitors to this Works							
H. W. Huntley General Electric Company Schenectady, New York	Consultation on Hanford assistance	W. K. MacCready	6-15-53	6-18-53	X		200-E 201-C 200-W Redox, 221-U
FINANCIAL DEPARTMENT - MANUFACTURING COST							
I. Visitors to this Works							
L. M. Joshel Rocky Flats Laboratory Dow Chemical Company Denver, Colorado	Budget, appropriation and cost accounting procedures	W. W. Smith C. E. Reed G. H. Temple	6-9-53	6-13-53	X		100-B 105-B, 105-C, 108 100-D 105, 189 100-F 105, 108 100-H 105 200-E 201-C, 221-B 200-W 221-T, 231, 221-U Redox, 234, 235 300 303

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
E. F. Smith Rocky Flats Laboratory Dow Chemical Company Denver, Colorado	Budget, appropriation and cost accounting procedures	W. W. Smith C. E. Reed G. H. Temple	6-9-53	6-13-53	X		100-B 105-B, 105-C, 108 100-D 105, 189 100-F 105, 108 100-H 105 200-E 201-C, 221-B 200-W 221-T, 231, 221-U, 234, 235, Redox 300 303
M. E. Tageson Rocky Flats Laboratory Dow Chemical Company Denver, Colorado	Budget, appropriation and cost accounting procedures	W. W. Smith C. E. Reed G. H. Temple	6-9-53	6-13-53	X		100-B 105-B, 105-C, 108 100-D 105, 189 100-F 105, 108 100-H 105 200-E 201-C, 221-B 200-W 221-T, 231, 221-U, Redox, 234, 235 300 303

MANUFACTURING DEPARTMENT

I. Visits to other Installations

L. T. Hagie to: E. I. du Pont de Nemours & Co. Savannah River Plant Augusta, Georgia	Discuss quality control problems	P. Deans	6-1-53	6-5-53	X		
S. G. Smolen to: Rocky Flats Laboratory Dow Chemical Company Denver, Colorado	Consultation and inspection of equipment	F. H. Langell I. B. Venable	6-22-53	6-26-53	X		
S. G. Smolen to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Consultation and inspection of equipment	R. D. Baker	6-22-53	6-26-53	X		

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
II. Visitors to this Works							
W. J. Martin Carbide and Carbon Oak Ridge National Lab. Oak Ridge, Tennessee	Consultation on radio isotopes	W. G. Browne W. N. Mobley	6-11-53	6-12-53	X		200-W 221-T
G. W. Parker Carbide and Carbon Oak Ridge National Lab. Oak Ridge, Tennessee	Consultation on radio isotopes	W. G. Browne W. N. Mobley	6-11-53	6-12-53	X		200-W 221-T
RADIOLOGICAL SCIENCES DEPARTMENT							
I. Visitors to this Works							
C. B. Bell, Jr. Harvard University Cambridge, Massachusetts	Consultation on radiation hazards and fall-out techniques and environmental sanitation	H. M. Parker P. L. Eisenacher H. J. Paas, D. W. Pearce	6-22-53	6-23-53	X		100-F 108 300 XXX
L. R. Donaldson, University of Washington Seattle, Washington	Consultation on current investigations and deliver talk of fish to Hanford Lab.	R. F. Foster	6-23-53	6-24-53	X		100-F 108
II. Visits to other Installations							
B. Shorr to: Cml C Chemical & Rad. Lab. Army Chemical Center, Maryland	Attend aerosol symposium	- -	6-22-53	6-23-53		X	
D. Weinberger to: General Electric Company Milwaukee, Wisconsin	Technical discussion of laboratory facilities and radiochemistry	M. A. Edwards	6-2-53	6-5-53	X		
PLANT AUXILIARY OPERATIONS DEPARTMENT — PLANT PROTECTION SECTION							
I. Visitors to this Works							
C. R. DeReamer General Electric Company New York, New York	Attend safety conference	F. J. McKinnon	6-1-53	6-5-53	X 300 303		100-F 105, 108 100-H 105 200-E [illegible]-B, 201-C 200-W [illegible]-T, 231,

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data Class.	Restricted Data Unclass.	Areas
R. H. Nebeker Shell Chemical Corp. San Francisco, California	Consultation on solvent handling in Redox	F. J. McKinnon	6-10-53	6-11-53		X	200-W Redox
C. R. Wintersteen Radiation Laboratory University of California Berkeley, California	Determinations on safety and medical programs	F. J. McKinnon	6-3-53	6-4-53	X		100-F 105 300 303 700

PLANT AUXILIARY OPERATIONS DEPARTMENT - STATISTICAL AND COMPUTING SERVICES SECTION

I. Visits to other Installations

C. A. Bennett to: Brookhaven National Lab. Upton, Long Island, New York	Attend project "blue-nose" meeting	W. Rubinson	6-11-53	6-14-53	X		

ENGINEERING DEPARTMENT - DESIGN SECTION (cont'd)

I. Visits to other Installations

E. Hollister to: Puget Sound Navy Shipyard Bremerton, Washington	Inspection of canning machine and fabrication work	S. L. Allison	6-12-53 6-19-53	6-12-53 6-19-53	X X		

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PURCHASING AND STORES SECTION
PLANT AUXILIARY OPERATIONS DEPARTMENT
SUMMARY - JUNE 1953

Discussion with West Coast Airlines representatives resulted in a change in West Coast's evening flight schedule from Pendleton, Oregon, to Pasco, Washington, which enables employees to make direct connections to Pasco. This will reduce the need for Project cars to meet incoming employees at Pendleton and should save about $300 per month.

Effective June 1, the Interstate Commerce Commission dropped the suspension of Second Revised Service Order No. 856 until August 31, 1953. This has the effect of including Saturdays in the computation of demurrage.

The supply of cars and cans for the 300 Area line is now satisfactory. Arrangements have been made with the Aluminum Company of America to stockpile shipments to take advantage of full truckload rates. This will reduce freight costs and maintain our inventory on hand at approximately three months' supply.

U. S. Gypsum Company has advised that their Evans, Washington, plant has been permanently closed. Arrangements are being made to obtain our lime supply from alternate sources.

Revision of A.E.C. Bulletin HA-S&S-12, Small Business, requires us to submit an additional monthly report to the Commission showing value of procurement actions placed for shelf and manufactured items with vendors in the states of Washington, Oregon, Idaho, and others.

Financial approval on the 234-5 Task II and Task III Expansion Program was obtained and 17 of the 18 purchase requisitions received were placed.

Physical inventory of Surplus Materials (Account 10.10) was completed.

Pricing of excess materials is now on an acquisition cost basis in contrast to the fair value basis previously used. Thus, the inventory will be valued at full price, less established reserve, which is the method employed by all other contractors to the Commission.

The storeroom in 722-A Building began operation June 25 after physical inventory of material previously held by Community.

West Coast scrap dealers are still suffering from drastic declines in scrap iron prices. Our accumulation of scrap has slowed considerably as the Kaiser Engineers' scrap in White Bluffs has been sold and the scrap left by Atkinson-Jones and other subcontractors is practically cleaned up.

Material and equipment disbursed from inventories included the following:

General Supplies ----------	(Account 10.2)	$ 255,742
Standby ----------	(Account 10.1)	70,011
Spare Equipment Held in Storage	(Account 29)	26,204
	Total --------	$ 351,957

The disbursement figure shown for General Supplies is believed to be the highest on record for that inventory account.

Organization and Personnel

	5-31-53	6-30-53	Change
Employees on Roll	296	288	-8

PURCHASING AND STORES SECTION
AUDIT, PRIORITIES & CLERICAL UNIT

Revision of AEC Bulletin HA S&S#12, Small Business, requires us to submit an additional monthly report to the Commission showing value of procurement actions placed for shelf and manufactured items with vendors in the States of Washington, Oregon, Idaho and Other. By modifying the IBM card currently being used for the Summary of Procurement Action Report, the information required in the new report will be readily available.

Seven vendors' representatives were brought in to deliver, inspect and supervise 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.:

June 1953	VENDOR TYPE			
Cost Category	Government Agency	Small Business	Big Business	Educational and other
$0 - $ 9.99	$	$ 829.68	$ 397.86	$ 25.50
$10 - $ 499.99	422.70	90,418.36	55,954.34	272.50
$500 - $9,999.99		147,581.96	182,632.03	
$10,000 - Up		69,733.80	434,316.02	
	$ 422.70	$308,563.80	$673,300.25	$ 298.00
Number of Actions	7	1144	739	13
Requisitions on hand 6-1-53		G	D	Total
Operations Procurement		763	0	763
Construction Procurement		0	90	90
A.E.C. Procurement		133	21	154
Total		896	111	1007
Requisitions Assigned during June				
Operations Procurement		1901	0	1901
Construction Procurement		0	303	303
A.E.C. Procurement		219	25	244
Total		2120	328	2448
Requisitions Placed during June				
Operations Procurement		1820	0	1820
Construction Procurement		0	271	271
A.E.C. Procurement		269	35	304
Total		2089	306	2395
Requisitions on hand 6-30-53				
Operations Procurement		844	0	844
Construction Procurement		0	122	122
A.E.C. Procurement		83	11	94
Total		927	133	1060

PURCHASING AND STORES SECTION
AUDIT, PRIORITIES & CLERICAL UNIT

Purchase Orders Placed	HW	HWC
Operations Procurement	1478	
Essential Materials	40	
Construction Procurement		216
Local Purchases	9	
Total	1527	216

Value of Purchase Orders Placed		
Operations Procurement	467,179.47	
Essential Materials	392,007.41	
Construction Procurement		101,067.58
Local Purchases	48.35	
Total	859,235.23	101,067.58

Alterations Issued	Increase	Decrease	No Change	Total
HW Operations	62	43	8	113
Essential Materials	3	4	3	10
HWC Construction	18	16	3	37
Total	83	63	14	160

Value of Alterations Issued	Increase	Decrease	Total
HW Operations	$ 11,651.88	$ 5,898.48	$ 17,550.36
Essential Materials	88.05	6,118.05	6,206.10
HWC Construction	34,780.49	12,221.95	47,002.44
Total	$ 46,520.42	$ 24,238.48	$ 70,758.90

Government Transfers	OR	ORC
	0	0

Vendor Contacts	199
Claims Processed	2
Damage Reports Processed	18
Over & Short Reports Processed	3
Accounts Payable Requests Handled	350
Difference Slips Processes	51
Clearance Slips & Purchase Order Change Approvals	255
Material Exception Reports	287
Return Orders Issued	149

Shown below is a summary of the net value of procurement actions placed with vendors for manufactured or shelf items in the states of Washington, Oregon, Idaho and Other Areas.

State	Manufactured	Shelf	Total
Washington	$ 316,658.40	$ 229,666.84	$ 546,325.24
Oregon	75,181.65	48,986.39	124,168.04
Idaho		68.48	68.48
Other	162,575.85	137,684.79	300,260.64
Total	$ 554,415.90	$ 416,406.50	$ 970,822.40

Organization and Personnel	5-31-53	6-30-53	Change
Employees on Roll	30	31	+ 1

PURCHASING AND STORES SECTION
CONSTRUCTION PROCUREMENT UNIT
JUNE, 1953

The month of June was unusually active in all respects. The average number of requisitions assigned to the Construction Unit during June increased approximately 64% over the number of requisitions assigned during the month of May.

Financial approval on the 234-5 Task II and Task III Expansion Program was obtained, and 17 of the 18 purchase requisitions received were placed during the month.

In order to cope with the anticipated work load from construction, an effort is being made to have all vacations completed by the end of August. At the present time almost everyone will have completed their vacation by the end of July, with only two extending into August.

Organization and Personnel

	5-31-53	6-30-53	Change
Employees on Roll	15	12	-3

H. A. Hauser, Purchasing Agent, terminated June 1, with J. F. Spease being appointed to that position.

One Buyer and one Expediter terminated, and one General Clerk transferred.

PURCHASING AND STORES SECTION
OPERATIONS PROCUREMENT UNIT
JUNE - - 1953

Statistical and General

The supply of caps and cans for the 300 Area line is now satisfactory. We have arranged with the Aluminum Company of America to stockpile shipments to take advantage of full truckload rates. This will result in savings in freight and will maintain our number of months' supply on hand at three months or better.

We have been informed by U. S. Gypsum that their Evans, Washington plant, which had been strike-bound for several months, has been permanently closed. Arrangements are being made to obtain our Lime supply from alternate sources.

The usage of Nitric Acid has been very heavy and every effort is being made to improve the turn-around time of our tank cars in service between the Hanford Works and DuPont, Washington. The carriers and the vendor are cooperating in this matter and improvements will be forthcoming.

Changes in our purchasing procedures, made necessary by the recent decisions of top-level management, are being accomplished as rapidly as possible. It is presently apparent that the output per buyer under the new system will be substantially lower than under previous procedures, due to the necessity for the reconciliation of terms and conditions now required which previously were of no concern in small orders. This may improve as we gain experience.

Essential Materials contracts in process are as follows:

(1) Rock Salt -- contract negotiated and ready for Commission approval.

(2) Sodium Carbonate -- contract negotiated and ready for Commission approval.

(3) Tributyl Phosphate -- contract negotiated and ready for Commission approval.

(4) Ferrous Ammonium Sulphate -- contract modification for increased quantity has been received from vendor for G. E. approval and signature.

(5) Liquid Carbon Dioxide -- record of purchase approved--contract being negotiated with Cascade Fire and Equipment Corporation.

(6) Methyl Isobutyl Ketone -- request for quotation in hands of vendors; bids due July 3.

(7) Steam Coal -- bids received; informal discussions with the A.E.C. under way to settle minor points in connection with the possible awards.

Organization and Personnel

	5-31-53	6-30-53	Change
Employees on roll	33	33	-0-

PURCHASING AND STORES SECTION
STORES UNIT
JUNE 1953

Statistical and General

Physical inventory of surplus materials was completed during June 10, 11 and 12 as scheduled. Preparatory work and planning was generally good, so that the physical count was completed early on June 11, leaving June 12 for rechecking and posting work. Although this was expected to be the most difficult phase, experience gained through previous inventories was very valuable and results obtained were highly satisfactory.

The backlog of excess materials held by General Electric and Kaiser Engineers is being received and processed steadily. Pricing is on an acquisition cost basis in contrast with the fair value basis previously used. Thus, our inventory will be valued in the future at full price, less established reserve, which is the same method employed by all other contractors to the Commission.

The storeroom in 722-A Shops began operation on June 25 after physical inventory. Two employees have been assigned to this function. It appears that disbursements will be sufficient to prove the wisdom of establishing this activity; however, after the usual stock adjustments a test period will determine how our cost of operation compares with the service rendered.

Our goal is to maintain the General Supplies inventory at 3.5 months' supply on hand which corresponds to a turnover rate of 3.43. During the first five months, our supply has increased from 3.2 to 3.9 months and the figure for June, as yet unreported, is expected to exceed 4.0 months.

One cause of this increase is the large stocks which have been turned in to Stores as a result of the General Manager's drive to record all inventories on the plant. This condition is being studied and our analytical and control methods are expected to bring the months' supply figure closer to the optimum.

A request by the Commission that sale lots of surplus materials be held small enough so as not to warrant receiving over $2,000 is causing extra work as some lists have to be broken down into as many as a dozen lots.

West coast scrap dealers are still suffering from drastic declines in scrap iron prices. Some dealers and collection agencies have gone out of business. Our accumulation of scrap has slowed considerably as the Kaiser Engineers scrap in White Bluffs has been sold and the scrap left by Atkinson-Jones and other subcontractors is practically cleaned up.

Materials and equipment disbursed from inventories included the following:

General Supplies ----------	(Account 10.2)	$255,741.60
Standby Materials ----------	(Account 10.1)	70,011.45
Spare Equipment Held in Storage	(Account 29)	26,203.98
	Total ---------	$351,957.03

The disbursement figure shown for General Supplies is believed to be the highest on record for that inventory account.

PURCHASING AND STORES SECTION
STORES UNIT
JUNE 1953

In surplus materials, the following items are reported. These reflect by their low volume the effect of the physical inventory which precluded the processing of billings after June 10, 1953:

Disbursements by Store Order ----------	$50,234.18
Disbursements by Transfer ----------	2,535.88
Offsite Shipments Billed ----------	1,011.97
Property Disposal Report ----------	26,292.67
Receipts of Surplus Materials ---------	1,516.35

Organization and Personnel

	5-31-53	6-30-53	Change
Employees on Roll	207	201	-6

During the month, final preparations were made for the transfer of the automotive parts inventory control and warehousing functions to Stores from the Transportation Section.

PURCHASING & STORES SECTION

TRAFFIC UNIT

June, 1953

STATISTICAL AND GENERAL

As a result of discussion between the Traffic Unit and West Coast Airlines representatives, a change in West Coast's evening flight schedule from Pendleton to Pasco enables employees to make direct connections to Pasco. This will greatly reduce the need for Project cars to meet incoming employees at Pendleton, and will result in a savings of approximately $300.00 per month.

Effective June 1st, the Interstate Commerce Commission dropped the suspension of Second Revised Service Order No. 856 until August 31, 1953. This has the effect of including Saturdays in the computation of demurrage.

As a result of rate reductions obtained from the carriers, there was a total savings in freight charges for the month of June amounting to $1,656.42. This makes a total savings from September 1, 1946 to date of $1,745,111.84.

Savings Report

1. Rate reductions obtained from carriers:

Commodity	Origin	Savings for June, 1953	Savings from 9-1-46 thru May, 1953	Savings from 9-1-46 to date
Extrusions, Aluminum	Phoenix, Ariz.	$ 37.16		
Limestone	Delle, Utah	320.00		
Silicate of Soda	Tacoma, Wash.	1,107.34		
Sodium Sulphate	San Francisco, Calif.	191.92		
		$1,656.42	$1,743,455.42	$1,745,111.84
2. Freight Bill Audit		1,622.37	109,818.42	111,440.79
3. Loss & Damage & Overcharge claims		1,079.85	125,972.50	127,052.35

PURCHASING & STORES SECTION
TRAFFIC UNIT
June, 1953

Savings Report (cont.)

4. Ticket Refund Claims	$ 635.10	$ 31,197.12	$ 31,832.22
5. Household Goods Claims	62.28	17,195.95	17,258.23
	$5,056.02	$2,027,639.41	$2,032,695.43

Work Volume Report

Reservations Made	Rail	53
	Air	289
	Hotel	219
Expense Accounts Checked		238
Household Goods & Automobiles	Movements Arranged Inbound	5
	Movements Arranged Outbound	3
	Insurance Riders Issued	3
	Insurance Bills Approved	10
	Claims Collected - Number	1
	Claims Collected - Amount	$62.28
Ticket Refund Claims	Filed	13
	Collected - Number	13
	Collected - Amount	$635.10
Freight Claims	Filed	11
	Collected - Number	14
	Collected - Amount	$1,079.85
	Over and Shorts Processed	9
	Damage Reports Processed	8
Freight Bill Audit Savings		$1,622.37
Freight Shipments Traced		41
Quotations	Freight Rates	192
	Routes	211
Bills Approved	Air Express	20
	Boat	3
	Carloading	93
	Express	149
	Rail	842
	Truck	249
Carload Shipments	Inbound	909
	Outbound	16

PURCHASING & STORES SECTION
TRAFFIC UNIT
June, 1953

Reports of Carloads Received

Commodity	CMSTP&P	NP	UP	TOTAL
Acetic Acid		1		1
Aluminum Ingots			2	2
Aluminum Sulphate	5		2	7
Asphalt	4	5	1	10
Bathtubs			1	1
Cabinets			1	1
Caustic Potash	1			1
Caustic Soda	14	14	15	43
Chlorine	1	1	1	3
Coal	163		612	775
Ferric Sulphate	1	1	2	4
Furnace Liners		2	12	14
Lime	1		2	3
Nitric Acid		6	6	12
Oxalic Acid		1		1
Paint			1	1
Permanganate of Potash			1	1
Salt	1	1	1	3
Silicate of Soda	2	3	3	8
Soda Ash			1	1
Sodium Nitrate			1	1
Sodium Sulphate		1		1
Steel Containers			2	2
Steel Pipe			1	1
Sulphuric Acid		1	1	2
Tributyl Phosphate		1		1
Wrought Pipe	1			1
Merchandise		8		8
Total	194	46	669	909

Organization & Personnel	5-31-53	6-30-53	Change
Employees on Roll	11	11	0

55-406

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 10, 1955.

Hanford Document No. [illegible] G. E. Document No. HW-28576-L

Doc. Date 7-17-53 Original Classification Restricted

Title or Subject: Transportation Section Monthly Report - June 1953

Author(s) or Originator M. F. Rice

Pages [illegible]-1 thru [illegible]-7 (X) Downgraded to Official Use Only

( ) Classification Cancelled

According to our records you have copy(ies) 9 of 12 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 action applies only to the "Transportation Monthly Section" portion of doc. No. L-28576 and does not effect the classification of any other parts of the report.

This document was transmitted to you 7-24-53
from Hanford on
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Lee E. Spreer

LEE E. SPEER, Chief
Classified Document Control

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By authority of THE GENERAL ELECTRIC COMPANY, NON-TECHNICAL DOCUMENT REVIEW BOARD. ROY E. JAYNES, Secretary.

Date

TRANSPORTATION SECTION
MONTHLY REPORT
June 1953

GENERAL

Transportation Section personnel forces increased from 522 to 525 by 7 new hires 4 transfers in, 3 reactivations - personal illness, 3 terminations, 4 transfers out and 4 deactivations - personal illness.

Satisfactory progress continued on the New Consolidated Transportation Facilities as layout and basic structural plans were agreed upon by the Atomic Energy Commission, General Electric Company and the Architect-Engineer. The contract for site grading, building foundations and erection of steel framework was awarded to the Sound Construction and Engineering Company of Seattle, Washington on June 30 for $473,523 whereas the fair cost estimate for this initial phase of construction was $544,000.

Bogey personnel estimates were completed on June 3 for FY 1954 on all budget units of the Transportation Section. These estimates reflected an average decrease of 10 employees over the FY 1954 Budget.

An agreement was reached on June 4 to transfer the 10.2-11 and 10.1-84 Inventories of automotive and heavy equipment repair parts back to the Stores Unit effective July 1. This functional transfer will involve ordering, disbursing, warehousing, and inventory control of a repair parts stock currently valued at approximately $115,000. Preliminary work relative to the transfer of personnel, equipment, budgeted funds, etc. is in progress.

Reviewed the FY 1954 Equipment Budget to determine what items could possibly be procured during FY 1953 if funds were made available.

A Trackman experienced a Major Injury on June 3 when he was struck by a slow moving outbound Union Pacific train on the main line parallel to Cooke Siding south of Duane Avenue. Injured sustained several lacerations and a simple fracture, left lower 1/3 of fibula.

RAILROAD ACTIVITIES

Commercial cars handled during June increased 21% over May as receipts of construction materials, coal and other essential materials were substantially higher. The following recapitulation indicates the distribution of commercial cars handled:

Carload Movements -	Loads In	Empties In	Loads Out	Empties Out
General Electric Company	933	38	33	954
Blaw Knox	14	-	-	24
Browne Morse Co.	-	-	-	1
Kaiser Engineers	190	-	-	218
A. R. Nieman Co.	2	-	-	2
Sound Construction Co.	1	-	-	1
Steel Construction Co.	33	1	1	33
U. S. Army	21	2	2	21
A.E.C. - Kaiser Eng.	94	-	-	108
	1,288	41	36	1,362

Transportation Section

Process service continued on an upward trend and actual cars handled increased 12% over May.

Special service included the shuttling of cars between the 101 Building Hanford and the 2101 Building, 200-East Area; handling of 27 cars of ballast for the Atomic Energy Commission in the vicinity of the 200-East Area.

The activity increase in railroad operations necessitated 224 man-hours of overtime of which 189 were required for process service.

Total car movements including process service totaled 3,275 in June compared to 2,617 in May; 2,278 in April; 2,314 in March; 2,691 in February and 2,730 in January.

A serious derailment occurred on June 2 at 1:00 P.M. between the 200-East and 200-West Areas at the turnout from the main 200-East lead and the Central Mix Plant spur. Four cement hopper cars and considerable railroad trackage were damaged as a result of conctruction contractor personnel not properly controlling the movement of cars at the Central Mix Plant site while unloading operations were in progress. The Atomic Energy Commission conducted a formal investigation of this incident and found the Henley Construction Company responsible for the derailment.

Received and installed rail flange lubricators on locomotives 39-3729, 39-3731 and 39-3732 thus completing the equipping of all road-switcher locomotives.

Completed an annual inspection on hopper car 10C-4608.

Three routine inspections and repairs to a steam line which had been damaged while in transit were performed on the U. S. Army car operated off-plant by the Atomic Energy Commission.

Traction motor repairs on locomotive 39-3731 involving broken brushes on three separate instances during May have been resolved with the cause being faulty material.

Completed the installation of locking devices on all outside storages for fuels, lubricants, parts and tools in the Riverland Area as recommended following a physical inventory by the Internal Audit Unit.

Railroad track maintenance personnel were engaged throughout the month in assembling, rearranging, excessing, and other related preparatory work in connection with the physical inventory of track maintenance materials which was conducted on June 30 by representatives of the Internal Audit Unit and the Transportation Section.

Transportation Section personnel and Milwaukee Railroad officials jointly inspected 14 box cars of which 6 were acceptable and placed in Plant service on a lease basis.

Routine railroad track maintenance activities included lining, surfacing and dressing of trackage requiring 4,118 man-hours; installation of ties, rail

and other track materials requiring 299 man-hours; distribution and handling of track materials requiring 1,761 man-hours; and special work orders for the Atomic Energy Commission requiring 772 man-hours.

AUTOMOTIVE ACTIVITIES

The Plant Bus System transported 8% more passengers in June than in May. The following statistics indicate the magnitude of service rendered:

Passenger volume	141,127
Revenue - bus fares	$ 7,056.37
Earnings - transit advertising (May)	$ 245.95
Bus trips	6,416
Bus miles - passenger carrying	190,843
Passenger miles	4,709,565

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
Passenger buses - 100-K	3
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

A private vehicle struck the rear end of a Plant bus at the Stevens Drive railroad crossing, North Richland, on June 19 at 1:00 P.M. The accident occurred when the bus made the normal stop at the railroad crossing and the private vehicle was apparently following at a high rate of speed thus being unable to stop or turn into the left hand lane. The driver of the private vehicle received severe lacerations to the head and portions of the body. The bus driver was not injured; however, he was given a thorough medical examination including X-rays. Damages to the bus approximated $250 and the private vehicle, a 1951 Hudson, was considered a total loss.

The Richland Bus System transported 24% fewer passengers in June than in May. The marked decrease was due to the completion of the public school term. The following statistics indicate the volume of service rendered:

Total passengers including transfers	9,888
Revenue - bus fares	$ 741.72
Earnings - transit advertising (May)	$ 12.15
Bus trips	1,188
Bus miles - passenger carrying	6,296
Passenger miles	26,730

Transportation Section

A private vehicle struck the rear end of a Richland Local Bus at the intersection of Swift and Goethals on June 12 at 4:45 P.M. resulting in approximately $300 damage to the private vehicle and $50 to the bus. The private vehicle driver was found negligent.

The invitation for proposals by private operators for the operation of the Richland Bus System was closed on June 30 with no bids being offered.

Off-Plant chauffeured automobile trips (Company business and/or official visitors) totaled 126 which were rendered to the following locations as indicated:

Benton City, Washington	6
Hinkle, Oregon	12
Kennewick, Washington	5
Othello, Washington	1
Pasco, Washington	61
Pendleton, Oregon	26
Prosser, Washington	1
Ritzville, Washington	1
Sunnyside, Washington	5
Yakima, Washington	8

The following tabulation indicates the volume of Drivers Test Service rendered:

Applicants:	Male	60	Number tests given	68
	Female	8	Number rejected	0

Permits issued:	Limited to driving with glasses	17
	Unlimited	51

Permits reissued: Routine 21

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	45,130	24,920	18,900	1,294	210
Received during month	113,910	26,611	24,400	1,681	0
Dispensed during month	105,930	27,241	25,900	1,745	13
Stock at end of month	53,110	24,290	17,400	1,230	197

The following tabulation indicates the volume of inspection and maintenance service rendered to Hanford Atomic Products Operations automotive and heavy equipment by Equipment Maintenance personnel:

Motor overhauls	32
Class A Inspections and Repairs	98
Class B Inspections and Lubrications	1032
Bi-weekly Inspections - buses	177
Other routine maintenance repairs and service calls	1757
Accident repairs and paint jobs	31
Tire repairs	527
Wash jobs	433
Total	4,087

The following tabulation indicates the Plantwide usage of automotive equipment:

Code	Type	No. of Units	Total Mileage
1A	Sedans	338	526,242
1B	Buses	99	196,773
1C	Pickup, Trucks	458	267,027
1D	Panel, Carryall, Sta. Wagon	128	130,286
1E	Armored Cars	2	259
1G	Jeeps	2	1,286
68 Series	Trucks	206	72,623
		1,233	1,194,496

Major heavy equipment repairs were made to three cranes, one loader, one scoop-mobile, one lift truck, one tractor and one rock crusher.

Installed new track rollers on crane 17-10657 thus completing the reconditioning of this unit which was acquired by government transfer from Arco, Idaho in November 1952 on appropriation No. 53S-3 at an estimated cost of $32,197 for the Separations Section to be used at the 241 Tank Farm.

Effective June 1 the maintenance of Dodge power wagons was assigned to the 1131 Garage from the 716 Garage to more equitably distribute the work load for these two locations in relation to the manpower and facilities available.

Effective June 15 the routine storing of white gasoline and kerosene at the Area garages for dispensing to other organizations was discontinued. All customer personnel were advised in advance of the change in handling and the proper procedure for obtaining these materials in the future.

The operating supply of glass, new tires and tubes, and upholstery materials in the 716 and 1131 Garages has been assigned to the 10.2-11 Account for inventory control.

The stock of repair parts in the Area garages has been changed from expense to asset status and transferred to Sub-Accounts 931 and 932. Inventory control for the respective accounts is being handled through 100-H and Riverland where stock record cards are being maintained: store orders written for cost purposes; and material transfers prepared for stock replacements.

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Transportation Section

Thirteen additional DC light equipment vehicles have been assigned to the 700 Area Motor Pool for utilization by Construction personnel thus increasing the availability of HO automotive vehicles for Operations personnel. Transportation Section is now maintaining a total of 21 DC units.

Prepared an informational summary on the procurement, storage and dispensing of fuels and lubricants by the Transportation Section. This report also recommended the retention of the 10.13 Fuel and Lubricants Inventory by the Equipment Maintenance Unit without change.

Prepared a report on the future coal requirements of the Equipment Maintenance Unit for heating purposes and explained the impracticability of the Transportation Section assuming inventory responsibility for the 101 Building coal stock pile.

Completed arrangements for the relocation of the 300 Area Motor Pool from within the 300 Area proper to the outside parking lot south of the Badge House. This will permit the Technical Library Sub-Pool to be combined with the regular 300 Area Motor Pool.

Effective June 15 the Richland Outer Area Parking Lot Motor Pool, located within the 1131 Area, was placed under clock card control. Primary attention has been devoted to procedure instructions for equipment users so the Pool can be operating efficiently by July 1.

LABOR ACTIVITIES

The following tabulation indicates in gallons the volume of road asphalt material handled by Road Maintenance personnel:

	MC 1	MC 3	MC 4	MC 5
Stock at start of month	0	11,520	0	9,334
Received during month	0	9,381	0	74,836
Used during month	0	10,829	0	42,537
Stock at end of month	0	10,072	0	41,633

The following tabulation indicates the volume of road aggregate materials handled by Road Maintenance personnel:

	3/4" to 0 Pre-mix Tons	½" to 0 Pre-mix Tons	5/8" Chips Cu.Yd.	1/4" Chips Cu.Yd.	3/4" Crushed Rock Cu.Yd.
Stock at start of month	141	126	2,011	7,077	3,556
Made during month	50	0	1,089	542	0
Used during month	183.5	70	1,367	208	228
Stock at end of month	7.5	56	1,733	7,411	3,328

Transportation Section

Completed the seal coating of 13.4 miles (based on 20' roadway) of streets and roads primarily for the Community of Richland requiring 692 cubic yards of 3/4" crushed rock, 252 cubic yards of ¼" chips, 1,772 cubic yards 5/8" chips, 4,170 gallons of MC 3 oil, 49,720 gallons of MC 5 oil and 1,693 man-hours.

Completed a light seal coat application to approximately 20,000 sq.yds. of Administration Area parking lots at the request of the landlord requiring 208 cubic yards of ¼" chips, 4,820 gallons of MC 5 oil and 214 man-hours.

Completed the removal of approximately 56,000 sq.ft. of Kimsul insulation from underneath Kadlec Hospital requiring 259 man-hours. This work was deemed necessary when it was discovered that the material was inflammable and a fire hazard.

The reporting headquarters for the Road Maintenance Crew was changed on June 30 from the Hanford High School Annex to a former Engineering Office Building in White Bluffs. This move was necessitated by the closure of the Hanford High School Building for office purposes. The new headquarters location is only temporary until the New Consolidated Transportation Facilities are available for occupancy.

Completed work at the old Richland swimming pool for the Community requiring 366 man-hours.

Administration Area maintenance services required 559 man-hours; ice handling 56 man-hours; hauling for Electrical Distribution 246 man-hours; mosquito control 279 man-hours.

Handling of materials and equipment for the Stores Unit included 24 carloads, 72 truckloads and required 2,696 man-hours.

The daily trucking service between Richland and the Manufacturing Areas handled 369 cases of acid, 1,697 cylinders of compressed gas and 833 tons of operational supplies requiring 1,962 man-hours.

The handling of office furniture, equipment and records involved 301 moving jobs requiring 1,228 man-hours.

Miscellaneous labor and equipment services for 300 Area required 613 man-hours.

Movement of equipment and material, and other miscellaneous labor services for the 100 and 200 Areas required 1,205 man-hours.

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HW-28576

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July 6, 1953

ELECTRICAL DISTRIBUTION AND TELEPHONE SECTION

MONTHLY REPORT

JUNE 1953

GENERAL

The Section work backlog, as of June 30, totaled 2892 man-days distributed as follows:

	Days Per Craftsman	Total Man-Days	Net Change Man-Days
Line Maintenance	38	875	26 increase
Substation Maintenance	23	292	49 decrease
Telephone Unit	40	1725	43 decrease

Section total work force was one hundred and seventy-three (173) as of June 30, a reduction of one from the previous month.

Process load power peak demand for June:

Date	Demand KW	May Comparative KW Demand
6-22-53 (10:30 AM-11:00 AM)	108280	106840

Seven Electrical Distribution Unit employees left work early without permission on June 5, 1953. They were paid seven and seven-tenths hours and formal written contacts were filed on the individuals. These contacts were removed from their personnel folders as the result of a Union Relations Section decision, following a Step II level grievance. The decision does not solve the problem and an urgent need exists for a formal Company policy covering permissible times for leaving the various work areas.

[redacted]

ELECTRICAL DISTRIBUTION UNIT

Maintenance and Operation

A scheduled 100-F Area shutdown was utilized to perform several major maintenance and inspection items at Substation 151-F. A complete inspection was performed of the 13.8-kv bus, and 230-kv circuit breaker No. A-362 was given a complete overhaul.

Difficulty was experienced in restoring service on the 66-kv line supplying White Bluffs and the 100-K Area following an outage scheduled for replacement of defective insulators on June 6. The outage was extended three and one-half hours until a defective bushing was located on a grounding transformer bank at White Bluffs. The bank was isolated and bushing repair was completed June 13.

Trouble developed on the Chehalis-Longview 230-kv line at 11:52 AM, June 15 causing a fifteen minute disturbance on the BPA system. Hanford 230-kv system voltage dropped momentarily to 200-kv, with frequency to 59.58 cycles, with no loss of plant production.

A differential relay operation occurred on the "R" transformer bank during routine switching operations at Substation 151-F on June 17. Area production was not affected as switching was for restoration of service following a critical power condition Grade "S". Cause of relay operation was not determined and further investigation will be made using Doble Engineering Company testing equipment.

System Expansion and Planning

A contract was awarded to the General Electric Company to provide totalizing demand metering equipment (B-1718). Delivery has been promised for September 21, 1953.

Relocation was completed June 10 of aerial cable and open conductor feeders in the vicinity of Building No. 313 to permit its expansion.

Automatic switching arrangements, including motorized disconnecting switches, were completed by BPA on the Benton Switching Station-Richland 115-kv line. This equipment will isolate faults for maintenance of service to the 300 Area and was placed in service June 13, 1953.

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TELEPHONE UNIT

Maintenance and Operation

A summary of telephone service is as follows:

	Subscriber Stations In Service		Lines Available For Service	Sides Available For Service	Exchange Lines In Service
	Res. and Misc.	Official			
Richland	5883	982	58	274	3915
N.Richland	332	299	94	38	506
Process Areas	22	1530	442	--	1490
Total	6237	2811	594	312	5911

Richland Exchange four-party service:

	June 30, 1953	May 31, 1953
Number of lines, complete fill	160	147
Partial fills with three subscribers	57	59
Subscribers	889	849

Ninety requests were received for residential telephone service leaving a backlog of two hundred and thirteen (213). Thirty-two subscribers were temporarily disconnected for non-payment of bills.

System Expansion and Planning

Bids for a two year contract for publication of the Richland telephone directory were opened June 26. Extreme bids were made by the W. J. Hunt Company, Pasco, Washington and the General Telephone Directory Company, Los Angeles, California. The W. J. Hunt Company offered a payment of $1000.00 for the privilege of publication, with no charge for delivery. The latter Company quoted a payment of $20,620.00 for publication and a charge of $736.00 for delivery.

A one hundred and fifty-two (152) pair cable in the 200-E Area was tested and tied into the operating system. This will provide temporary service to the Blaw-Knox Company and permanent service to the Purex Plant. A two position PBX board is scheduled to be in service for the Blaw-Knox Company on July 6.

R B Britton

ELECTRICAL DISTRIBUTION
AND TELEPHONE SECTION

RB Britton:HAR:ag

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HW-28576

POWER STATISTICS
ELECTRICAL DISTRIBUTION AND TELEPHONE SECTION
FOR MONTH ENDING JUNE 31, 1953

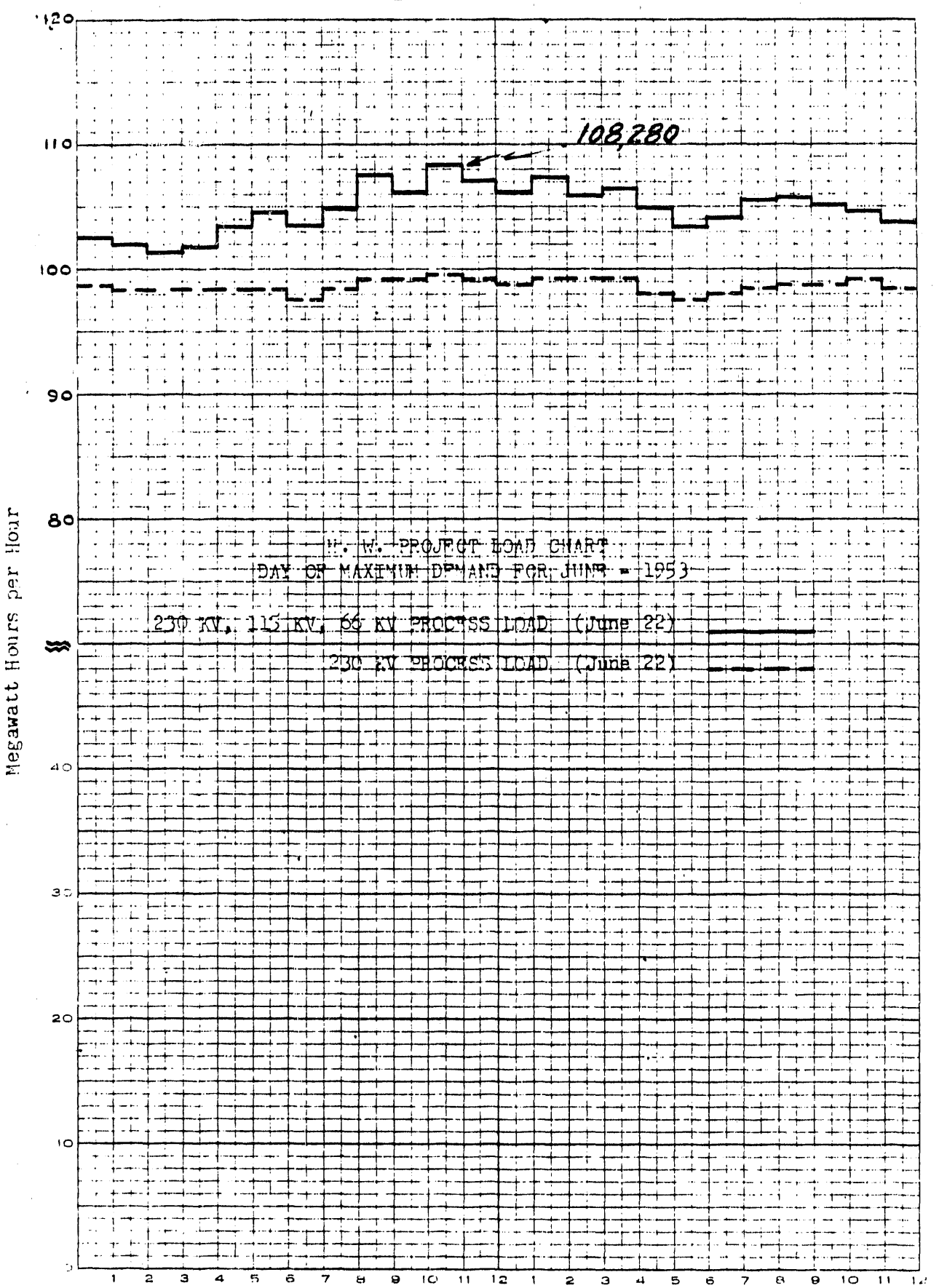
720 Hours

	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)	27990	28050	44200	43500	85.1	89.6
A-4 Out (100-D)	15530	15560	23300	23100	89.6	93.6
A-5 Out (100-H)	7668	9216	14500	14400	71.1	88.9
A-6 Out (100-F)	8060	5295	12000	11500	90.3	63.9
A-8 Out (200 Area)	5544	5544	10080	9360	73.9	82.3
TOTAL OUT	64792	63665	104080**	101860**	83.7	86.8
MIDWAY IN	65443	64192	99600 *	99600 *	88.3	89.5
Transm. Loss						
Per Cent Loss						
115 KV System						
B1-S4 Out (N. Rich.)	1723	1550	3456	3053	67.0	70.5
B1-S5	94	94	432	432	29.2	30.2
Richland	7870	6946	17280 *	13760 *	61.2	70.1
BB3-S4 Out (300 Area)	1296	1240	2800	2720	62.2	63.3
TOTAL OUT	10983	9830	23968**	19965**	61.6	68.4
BENTON IN	10980	9980	30000 *	26800 *	49.2	51.7
SO. RICHLAND IN	280	100	20000 *	16800 *	1.9	.8
TOTAL IN	11260	10080	50000**	43600**	30.3	32.1
Transm. Loss						
Per Cent Loss						
66 KV System						
B9-S11 Out (100-K)	498	558	1280	1480	52.3	52.4
B7-S10 Out (W. Bluffs)	363	333	1125	1046	43.4	44.2
HANFORD OUT	167	124	400**	400**	56.0	43.0
TOTAL OUT	1028	1015	2805**	2926**	49.2	48.2
HANFORD IN	1025	1005	2500 *	2400 *	55.1	58.2
Transm. Loss						
Per Cent Loss						
Project Total						
230 KV Out	64792	63665	104080**	101860**	83.7	86.8
115 KV Out	10983	9830	23968**	19965**	61.6	68.4
66 KV Out	1028	1015	2805**	2926**	49.2	48.2
TOTAL OUT	76803	74510	110853**	124751**	93.1	82.9
230 KV In	65443	64192	99600 *	99600 *	88.3	89.5
115 KV In	11260	10080	50000**	43600**	30.3	32.1
66 KV In	1025	1005	2500**	2400**	55.1	58.2
TOTAL IN	77728	75277	152100	145600	68.9	71.8
Transm. Loss						
Per Cent Loss						

* Denotes Coincidental Demand
** Denotes Non-Coincidental Demand

Average Power Factor-230 KV System 90.9
Average Power Factor-115 KV System 88.8
Average Power Factor- 66 KV System 89.9

[redacted]



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PLANT AUXILIARY OPERATIONS DEPARTMENT
STATISTICAL AND COMPUTING SECTION

MONTHLY REPORT - ~~JULY~~ JUNE, 1953

Personnel Statistics

Following is the month end summary of personnel:

Statistical and Computing Section

Unit	As of 5-31-53			As of 6-30-53			Net Change		
	Ex	Non-Ex	Total	Ex	Non-Ex	Total	Ex	Non-Ex	Total
General	1	1	2	1	1	2	0	0	0
Statistics	7	3	10	8	4	12	+1	+1	+2
Computing	20	42	62	20	44	64	0	+2	+2
Graphics	1	7	8	1	9	10	0	+2	+2
Procedures	8	4	12	8	5	13	0	+1	+1
TOTAL	37	57	94	38	63	101	+1	+6	+7

Statistics Unit

	As of 5-31-53			As of 6-30-53			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	3	0	3	3	0	3	0	0	0
Precision & Quality Control	1	2	3	1	2	3	0	0	0
Technical Statistics	2	0	2	3	1	4	+1	+1	+2
TOTAL	7	3	10	8	4	12	+1	+1	+2

John L. Jaech was added to the Unit on June 15, 1953 as a Technical Graduate (permanent assignment) and David W. Gaylor was added on June 22, 1953 as a Junior Engineer.

C. A. Bennett attended a Project Bluenose information meeting at Brookhaven National Laboratory on June 12.

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Computing Unit

	As of 5-31-53			As of 6-30-53			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	11	5	16	11	5	16	0	0	0
Operation	7	34	41	7	35	42	0	+1	+1
Rot. Training	0	1	1	0	2	2	0	+1	+1
TOTAL	20	42	62	20	44	64	0	+2	+2

One key punch operator was hired effective 6-16-53 and one key punch operator was transferred from the Manufacturing Department effective 6-29-53. A technical graduate on the rotational training program was assigned to the unit as of 6-15-53. One key punch operator terminated effective 6-12-53.

Graphics Unit

	As of 5-31-53			As of 6-30-53			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	7	7	0	+2	+2
Graphic Designer	0	1	1	0	1	1	0	0	0
TOTAL	1	7	8	1	9	10	0	+2	+2

Two graphic illustrators were transferred to the Unit during the month, one from Plant Auxiliary Operations Department, Office Services, and the other from the Engineering Department, Technical General Section on 6-15-53 and 6-29-53 respectively.

Procedures Unit

	As of 5-31-53			As of 6-30-53			Net Change		
	Ex	Non-Ex	Total	Ex	Non-Ex	Total	Ex	Non-Ex	Total
Staff	1	1	2	1	1	2	0	0	0
Clerical	0	3	3	0	3	3	0	0	0
Engineering Assistant	0	0	0	0	1	1	0	+1	+1
Procedure Analyst	7	0	7	7	0	7	0	0	0
TOTAL	8	4	12	8	5	13	0	+1	+1

One engineering assistant was hired effective 6-17-53.

FOR THE MANUFACTURING DEPARTMENT

An extensive pilot computation has been completed pertaining to the problem of limiting pile power on the basis of maximum tube temperature rise. At present, D-Reactor is operating on a single tube temperature limit, i.e., a temperature limit determined by the maximum allowable temperature rise in that tube exhibiting the greatest degree of film buildup. Thus, the total power output is limited by the film condition in the worst tube. In order to increase the power output, an effort is being made to apply individual tube temperature limits in such a manner that the total power will then be limited by the various degrees of film in all tubes. To this end, calculations based on temperature and panel-lit pressure maps were made to yield individual tube powers, tube, cone screen, and header screen plugging indices, and temperature limits on the individual tubes. The results were made available in time for a recent shutdown at D to assist the operating personnel in making appropriate instrumentation changes The work will be done on a routine basis for D-Reactor and eventually, if the method is successful, for all areas.

The Statistics Unit is keeping abreast of the results of the reactivity testing of P-10 lithium-aluminum alloy slugs. This study, conducted for the Process Unit of the Manufacturing Department, is nearing conclusion.

The routine monthly report on 300 Area production for the month of May (HW-28386, "Statistical Quality Report - 300 Area", to W. W. Windsheimer from the Statistics Unit) was issued.

A study (HW-28330, "Statistically Determined H-7 Precisions and Range Limits", from N. D. Peterson to P. B. Fisk June 9, 1953) was made of the random errors in H-7 plutonium analyses in order to provide the Process Unit of the Separations Section with the precisions of these analyses. The magnitudes of error were quoted for the various sources of error and for various measurement procedures. The small differences in error among the latter emphasize the fact that the main reason for duplicate determinations is often not to improve precision, but rather to permit the detection of gross errors. In the report, comparison of the precisions with the results of previous studies was also made. Range limits were provided for the detection of gross errors.

Two sets of unit cost relationships have been determined for the Manufacturing Department staff. A report was issued on the study begun last month on the principle products of the Manufacturing sections (Top Secret Rough Draft: "Unit Cost Curves", from L. W. Smith to G. R. Moore) and an additional study of certain Reactor Section unit cost relationships was completed (Top Secret Rough Draft: "Reactor Cost Curves", from L. W. Smith to G. R. Moore).

Graphics work for the Manufacturing Department included posting of May data to the Monthly Control Charts; completion of a number of varied charts and graphs; and completion of nine large visual aids to be used in a lecture to Technical Graduates in July.

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Forty-four hours were spent on forms design for the Manufacturing Department.

FOR THE ENGINEERING DEPARTMENT

A study of data obtained from graphite reactivity testing in the 305 Test Pile has been completed. This study, which was done for the Engineering Department, was for the purpose of devising a sampling plan satisfactory in both number of samples taken and amount and reliability of information obtainable from the data. Detailed study of the complete testing of heat number 252, and also the results obtained under the old sampling plan (the one previously used in "C" pile graphite testing) has furnished much valuable information on the heats tested to date. A new sampling plan was proposed which will save considerable test pile operating time, thus making it possible to do more testing on extremely poor lots to determine the extent and cause of inferior quality. Control limits will be provided for the data obtained from testing under this new sampling plan. A conference was held with members of the Pile Engineering Unit where results of the analysis were orally presented. A formal report is being prepared.

Statistical analysis continued on the spectroscopic data to determine which carriers for different levels of current and concentration give the optimum emission for various impurities in uranium. At present the problem of grouping the impurities by their volatility is under consideration.

An analyses was made of two different sets of data relating minimum residual can wall thickness to temperature of canning bath in the 300 Area slug fabrication operation. Questions as to maximum "safe" bath temperatures for almost certain assurance that at least a given percentage of cans had a residual wall greater than ten mils were resolved by probabilistic considerations. (Restricted letters: "Minimum Residual Can Wall Thickness", from F. H. Tingey to J. W. Goffard, June 10, 1953 and "Minimum Residual Can Wall Thickness", from F. H. Tingey to J. W. Goffard, June 25, 1953.)

The results of a new cleaning process (PT-16-M) for the 300 Area canning line, which is safer and less expensive than that now in use, were compared with previous canning data. Comparisons were made as to percent frost test rejects, percent brazed line rejects, and residual can wall thickness under the new and old processes. (Letter: "Comparison of Canning Results of PT-16-M Test with Previous Production Results", from Virginia Clark to E. A. Weakley, June 9, 1953.)

Several equations of the form $R_t = R_o(1 + \alpha t)$ were fitted relating resistance in ohms x 10^{-4} to centigrade temperature for uranium production test samples. Corresponding limits were also computed. (Letter: "Equations of Temperature Versus Resistance for Eight Uranium Production Test Samples", from Virginia Clark to R. S. Kemper, June 16, 1953.)

[redacted]

Work has been initiated on the investigation of the statistical properties of a set of data collected from an x-ray diffraction counting mechanism, in order to determine certain operating procedures for the mechanism which will achieve a suitable accuracy of counts with a minimum amount of operation.

An exponential curve was fitted to data relating the corrosion rate of 2-S aluminum to integrated flux. Confidence limits for the parameters involved in this relationship were also determined. (Letter: "Corrosion Rate of 2-S Aluminum Versus Integrated Flux", from J. L. Jaech to S. Goldsmith, June 30, 1953.)

A factorial experiment was designed for the Metallurgy Unit to study the effect on the corrosion rate of several types of stainless steel of the concentration of nitric acid in the solution to which the metals are to be exposed, the concentration of UNH in the solution, the temperature of the solution, and the concentration of chloride ion in the solution. This design was somewhat different from the usual factorial design inasmuch as the number of individual experiments actually to be performed was reduced from 1,024 to 128 with little loss in information resulting from the subsequent analysis of the results. Certain restrictions imposed by the operating conditions under which the experiment could be performed further complicated the problem. This experiment serves as an excellent example of the many advantages resulting from a designed experiment. (Secret Rough Draft: "Proposed Factorial Design for Static Corrosion Tests, C-172", from C. A. Bennett to N. Endow, June 25, 1953.)

An equation of the linear type was fitted to data on corrosion rate versus slug position, and of the exponential type of data relating corrosion rate to slug surface temperature. Tests of significance were conducted as to the plausibility of the existence of these relationships. (Restricted Letter: "Corrosion Rate Versus Slug Positon and Slug Surface Temperature", from J. L. Jaech to R. H. Purcell, June 25, 1953.)

A statistical analysis was made of tube wall thickness data to determine if there is a significant difference in wall thickness between approximately nine-inch sections along the length of the tube. This study was pertinent to the slug rupture program. (Letter: "Analysis of Tube Wall Thickness Along One Tube", from Virginia Clark to K. L. Senborn, June 2, 1953.)

The heat flow from a hollow slug was evaluated to determine the fraction of the total power generated in the slug that went into the center hole. 256 variations in slug and center hole dimensions were treated.

The steam table data required in the study of pressure drop in pile process tubes have been fit by mathematical equations. These equations are relatively simple and can be readily evaluated by hand or machine. Specific volume and enthalpy of saturated liquid and of evaporation (saturated vapor minus saturated liquid) were fit over the pressure range 50 to 500 pounds per square inch. The steam table equations will be used in the solution of non-linear

differential equations. The differential equations must be solved numerically and since the resulting machine programming will be used for an extended period of time, an investigation of several alternative methods is being made in order to find the best combination of economy and accuracy.

A calculation was made to determine the buckling of a hot pile. From data taken at H-Reactor in October, 1952, individual tube powers were calculated. These powers were then corrected to minimize the effect of poison transients, and the corrected powers mapped to outline the flat zone of the pile. A frequence distribution by power of tubes in the unflattened region was then made, and the results used to fit a curve in which the unknown buckling appears as a parameter. The resulting transcendental equation was solved by trial and error on the card-programmed-calculator.

Additional calculations on the Monte Carlo neutron diffusion problem were completed during June on the IBM New York Service Bureau Electronic Data Processing machine. About four hours of machine time were required to trace 10,000 neutron histories, involving over a million logarithms and the usual arithmetic and logical detail. The results have been partially analyzed in conference with the sponsors (June 10, G. E. Duvall, W. A. Henning, D. D. McCracken, and W. C. McGee, and June 18, G. M. Muller and D. D. McCracken). A formal report will be issued soon.

The preliminary scoping of data processing and storage incidental to the proposed 105-C test basin program was completed. The services that the Statistical and Computing Section could offer in this program were outlined and recommendations made. (Restricted Letter: "Preliminary Report on Data Processing and Storing - 105-C Test Basin", from R. Goodlin, N. Wright, and F. H. Tingey to R. L. Reynolds, June 23, 1953.)

A statistical analysis of yttrium decay data was completed to determine its half-life. Results of this study were combined with those obtained in previous analyses to determine the best overall estimate. (Letter: "Half-Life of Yttrium", from Virginia Clark to E. M. Kinderman, June 25, 1953.)

Radioactivity decay tables are being prepared for the following isotopes: gold 198, phosphorus 32, and indium 116. These tables present in convenient form the exponential terms relating to the time of exposure of the isotopes to neutron flux and the decay time after exposure. The tables greatly simplify field calculations required in measuring neutron flux values by the foil method. In addition, a set of tables of the positive and negative exponentials were prepared covering the range of 10^{-10} to 10 of the argument.

An extensive statistical study is being made to establish critical operating variables in the TBP process. Factors affecting yield of uranium and decontamination of the waste stream are being determined for a more critical examination.

Further extensions were made and graphs prepared with regard to the critical counter differences associated with plutonium contamination detection. An abstract of the technique used and the method of calibration was made for inclusion in the final report to be compiled by the Laboratory Engineering and Facilities Unit. (Letter: "Critical Counter Differences", from F. H. Tingey to J. F. Gifford, June 4, 1953.)

An experiment was designed to determine the effect of pressure and filter media on the retention of $CaCO_3$ particles. The results of this study will indicate approximate "optimum" pressure and filter media for future study of the filtering of plutonium oxalate in the 234-5 process.

An experiment was designed to assess the effect of recycling and crucible type on the magnesium buildup in task I of the 234-5 process.

Equations were determined relating MWD/t to neutron/gram/second for different model male and female core pieces in the 234-5 fabrication line. Tests were made of the significance of observed differences in the equations for the different models and for the different type pieces. (Secret Rough Draft: "Equations of MWD/t Versus n/g/s Values for 110, 130, and 090 Models", from Virginia Clark to R. Isaacson, June 24, 1953.)

Statistical analyses were performed on neutron/gram/second differences between Rockly Flats and Hanford Atomic Products Operation core pieces and male and female core pieces at both locations. (Secret Rough Draft: "Analyses of Neutrons/Gram/Second Differences Between Rocky Flats and Hanford Atomic Products Operation and Between Male and Female Pieces", from Virginia Clark to R. Isaacson, June 24, 1953.)

Routine computational work for the Engineering Department consisted of curve fitting to three sets of P-12 data, calculation of slug temperatures for two cases, processing of 34 temperature maps in the C-Reactor hot spot study, Group Nine Metal Studies calculations, Special Request Exposure calculations for about 40 tubes in all piles, and lattice conductance calculations for D-Reactor. All areas are presently using the same standards for transcribing data on the lattice conductance problem. Hence, it is now possible to process all of this data by procedures which are identical except for numerical constants characteristic of the different reactors.

Classified documents originated by Vitro Corporation under sub-contract G-148 are to be audited by the Hanford Atomic Products Operation Technical Information Unit. The audit is being conducted to obtain a reliable estimate of the number of errors in the Vitro classified document files. In the interest of speed and economy, a sampling plan was designed rather than examine all copies of the documents. (Letter: "Sampling Classified Documents Originated by Vitro Corporation", from L. G. Waters to C. G. Stevenson.)

Consideration was given to the feasibility of the use of IBM techniques to the problems of records and inventory control on classified files.

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An analysis was completed for the Classified Files of the distribution of documents created since 1946. The analysis indicates the possibility that in the neighborhood of 280,000 copies of classified documents may be destroyed. It is obvious that other work may be accomplished at the same time these copies are handled for destruction. Among the problems considered for recommendation are:

1. An audit balance of file holdings.
2. A punched-card procedure for routing and its effect upon inventory, issues, mail handling and filing.
3. A mass review for declassification or down grading of file holdings.
4. A possible application of microfilm to the record file holdings.

For the Technical Library initial contacts have been made to expedite the receiving and redistribution of publications.

Material has been submitted to the Graphics Unit to be developed into lecture aids for the Board of Director meeting in October. Sketches are being prepared from this material and will be submitted for review before final work is started.

Approval was given this month, for the Graphics Unit to construct a scale model of the 105-K Process Unit. (1/2 inch = 1 ft.) Arrangements were made to use bargaining unit craft personnel on fabrication of work requiring use of wood working machinery. Final assembly will be accomplished in a secured room in the 713 Building. Security procedures to be followed were approved by General Electric and A.E.C. officials. Work has started in preparation of preliminary sketches, material take-offs, and working drawings. Actual construction will start on July 6, 1953.

The Graphics Unit completed a number of visual training aids to be used in teaching operators on P-10 Process Console use. These aids included large mechanically operated process flow charts, cut-a-way and exploded view drawings of valves and related equipment.

Graphics work continued in the preparation of material for Technical reports. Considerable effort was made to complete back-log work and finished plates for twelve reports were completed this month.

Forty-nine and 3/4 hours were spent on forms design for the Engineering Department.

FOR THE PLANT AUXILIARY OPERATIONS DEPARTMENT

The injury control charts requested by the Safety and Fire Protection Unit for certain departments and sections (twenty-two separate groups) have been put into final form by the Graphics Unit. These charts show the average value and the limits of the expected variation of each month's injury rate for the particular group of employees considered. The position of the group's

actual monthly injury rates in relation to its average and control limits indicates when an increase in the number of injuries warrants investigation. All of the charts and an accompanying letter of explanation have been sent to the Safety and Fire Protection Unit for subsequent distribution to the department and section managers. (Letter: "Injury Control Charts", from Joan Cannon to F. J. McKinnon.)

Three additional statistical studies were made from data obtained from the Computing Unit key punching control (reference report: "Card Punching and Verification Studies", from L. G. Waters to H. Tellier). The analyses showed essentially the same results as were reported in the May Monthly Report-that is, that the average error rate was between three and four punches per 10,000 punches, indication that the error control should be discontinued, for the cost of the control would be more than the benefit derived from it. Some other conclusions were arrived at and reported upon. (Letters: "Key Punch Studies - Motorized Equipment Work Order", "Key Punch Studies - Work Order Distribution", and "Key Punch Studies - Small Work Orders Combined", from L. G. Waters to P. M. Thompson.)

A preliminary draft of a revised edition of a pamphlet on learning curves has been issued. Some sections of the original work were clarified and rewritten and new material has been added. Preliminary draft: "Learning Curves", by E. K. Yost, 1947; revised by L. W. Smith, 1953.) A study has begun for the Computing Unit to determine how learning curves might be used to measure the ability and aptitude of new key punch operators. This is one of a number of manual and clerical operations that provides fruitful application of learning curves. Other applications are being considered.

At the request of the Computing Unit, an analysis was made to determine the probability distribution of the number of zeros preceding the first non-zero digit when subtracting an eight digit number from a nine digit number such that the first digit in the nine digit number is not zero. This study was pertinent to the design and construction of a floating decimal addition and subtraction IBM board. (Letter: "Analysis of the Number of Zeros Preceding the First Non-Zero Digit When Subtracting an 8 Digit Number from a 9 Digit Number Such That the First Digit in the 9 Digit Number is Not 0", from J. L. Jaech to W. C. McGee, June 29, 1953.)

A procedural study has been agreed upon by the Purchasing and Stores Section on the possibilities of an IBM controlled inventory system. This study will be coordinated with another study being made of the function of Purchasing.

The procedure for preparation of a monthly analysis of purchase orders issued is being revised. This revision is being made to provide information regarding the geographic location of the vendor and the type of material purchased.

From the inventory conducted by the Office Unit of the Plant Protection Section of Office Machines used by General Electric, each machine has been classified and coded for IBM and a punched card prepared. These cards will become the basic record for the maintenance billing and inventory procedures being established.

As part of the 200-W laundry study it has been determined that the cost of monitoring coveralls and laboratory coats can be reduced substantially by a mechanical monitoring device.

Routine transportation and stores procurement actions reports were prepared.

Layout and inking of twenty-four "Injury Control Charts" were completed this month for the Safety and Fire Protection Unit.

Twenty-four and 1/4 hours were spent on forms design for the Plant Auxiliary Operations Department.

FOR THE COMMUNITY OPERATIONS & REAL ESTATE DEPARTMENT

For the Richland Electrical Unit some 300 accounts were changed for facility housing to the names of individual tenants. Service change notices have increased considerably due to the connection of many new dwellings and a resultant increase in moves within established housing.

Eleven hours were spent on forms design for the Community Operations and Real Estate Department.

Routine bills and reports were prepared for electrical billing.

FOR THE RADIOLOGICAL SCIENCES DEPARTMENT

Further analyses were made on the gravimetric results on the amount of plankton in the Columbia River at 100-B Area, Hanford, Richland, and McNary Dam. The data were grouped into seasons since it was thought that changes occurred in the River bed between the various seasons. Comparisons were made between amounts of plankton at 100-B Area, Hanford, Richland, and McNary for comparable dates. (Letter: "Further Analysis of the Amount of Plankton in the Columbia River", from Virginia Clark to R. W. Coopey.)

Statistical analyses were performed on data pertinent to the deposition of plutonium in the various body tissues of rats injected with equal amounts of plutonium and then subjected to four different treatments. Comparisons were made as to the effectiveness of the various treatments with regard to reducing the Pu deposition. Confidence intervals were computed for the mean deposition in each tissue for each of the treatments. (Letters: "Statistical Analyses of the Effects of EDTA and Zirconium Citrate on the Deposition of Plutonium in the Various Body Tissues of Rats", from F. H. Tingey to J. Katz, June 22, 1953, and "Confidence Intervals for Average Deposition in Rat Tissue Subjected to Various Treatments", from F. H. Tingey to J. Katz, June 30, 1953.)

Comparisons of tritium and deuterium content in algae were made on the basis of percentage of the theoretical value recovered. Such comparisons were made for whole cells, methanol insolubles, ether solubles, and ether insolubles. (Letter: "Comparison Between Tritium and Deuterium Content in Algae", from J. L. Jaech to J. W. Porter, June 24, 1953.)

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A special study of wind direction and speeds for the spring months of 1952 and 1953 was furnished. These data are to be used in connection with the 2, 4-D wheat spray problem.

Routine calculations for the Radiological Sciences Department consisted of Meteorological Study calculations for May, Station Wind Study calculations for April, Sheep Thyroid and Radioanalysis calculations, Aquatic Biology calculations.

Work was started on the development of a display for the Aquatic Biology Unit. Graphics work includes application of modeling clay, texturing, painting, plotting and painting in roads, towns and other specified details to a model of the Hanford Area. In addition to the model, a display of Aquatic Biology Studies will be prepared.

Eighteen and 1/2 hours were spent on forms design for the Radiological Sciences Department.

FOR THE MEDICAL DEPARTMENT

A hearing loss study was conducted for the Medical Department to determine if a grievance group of male employees had significantly poorer hearing than a randomly selected group of plant male employees. The grievance group in question alleges that the noise in the pump rooms has affected the hearing of certain operators. (Letter: "Hearing Loss Study", from L. G. Waters to P. A. Fuqua, M. D.)

Data collection has been completed on a sampling study for the Medical Department of the use of first aid facilities by Hanford Atomic Products Operation General Electric Company employees. This study will cover both personal and occupational visits over a period of several years. Analyses of the data will be made after tabulations are completed on the IBM machines.

The absenteeism control charts prepared by the Statistics Unit last month have been completed by the Graphics Unit. These charts were forwarded to the managers of the departments and sections represented, along with a letter to each explaining the use and interpretation of the control. With the completion of these nine charts, all departments and sections of sufficient size and for which data is available have been supplied with absenteeism control charts. Several of the sub-sections and units are large enough to warrant separate control charts. To date, charts have been prepared for a few of these groups. Additional charts will be prepared on a request basis.

Routine public health activities reports were prepared.

Nineteen and 1/4 hours were spent on forms design for the Medical Department.

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FOR THE EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

The study to evaluate the effectiveness of judging some prospective employees by means of various tests, and to set up a formula for predicting future performance of these employees through the use of these tests was completed. The results, which were for the most part negative, were reported to Personnel Practices.

A special study was made for the Salary Administration Section in conjunction with the 1953 salary survey. Two companies submitted data for particular professions by years since first degree, giving the number of employees and the maximum, minimum, and average salary in each case. From these data it was necessary to reconstruct the distributions and assign individual numerical values in order to make the data suitable for use in the survey. Work has continued on other phases of the survey.

The study of employee separations is almost completed, the report being presently in rough draft form. The results are based on all employee separations during the year of 1952 at the Hanford Atomic Products Operation. The purpose of this study is to ascertain which types of employees are contributing disproportionately to the amount of employee separations, both within departments and on the plant as a whole. Significant differences between the separations rates of various types of employees were found, as well as between the various kinds of separations; namely, terminations, deactivations, and preventable separations. A final report will be issued shortly.

As requested by the Technical Personnel Section, some statistical analyses of data obtained from the Rotational Trainee Survey were made and reported upon. This survey was conducted to determine the effectiveness of the program on the entire plant and within individual groups. The percentage breakdowns for each response on each question by departments (and total) were calculated, and the differences between the response patterns of individual departments and the total were examined statistically. (Letter: "Rotational Trainee Survey", from Joan Cannon to R. E. Curtis.)

A survey was designed for Training and Development to determine the readability and effectiveness of the "Sage" publication.

Routine salary administration reports were prepared.

An alphabetical listing of employees was prepared from a new IBM file which contains for each employee certain data including his occupational qualifications. A special listing was prepared of stenographers, steno-typists and secretaries. A special listing was prepared of personnel within a replacement category by department. A special report on average wage rates was prepared for the Wage Rates Unit. The last IBM report was prepared on the Separations Survey.

Three employee suggestions were evaluated. Two received favorable evaluations.

[redacted]

A study is continuing on the coordination of personnel data now in various IBM card files and the value of securing additional data for IBM processing.

Two hours were spent on forms design for the Employee and Public Relations Department.

FOR THE FINANCIAL DEPARTMENT

A new procedure was installed for the cost distribution of exempt salaries. This is the first phase of the conversion of the exempt payroll to an IBM operation.

The method of calculating the non-exempt payroll was revised effective week-ending June 21, increasing swing shift differential from 10 cents to 15 cents per hour.

Retroactive payment of increased swing shift differential for the period of May 16 through June 14 was calculated for payment in non-exempt checks for week ending June 28.

Adjustments to 1952 vacation payments were made in the non-exempt checks for week ending June 21.

Operating procedures for preparation of the non-exempt vacation payroll were revised to apply good neighbor deductions to vacation payments.

A report was prepared for the Payroll Unit of the sum of base rates and preferential rates, by department, of employees paid a preferential rate for the week ending June 14.

A listing was prepared for the Payroll Unit of employees, by department, who were paid a retroactive adjustment to 1952 vacation payments.

A meeting was held with Financial representatives on the problem of converting the exempt payroll to an IBM application.

A formalized IBM procedure was prepared for the monthly report of Pension Eligibility on non-exempt personnel.

Listings were prepared of good neighbor deduction authorizations by weekly, monthly and annual deductions on the non-exempt payroll; and monthly and annual deductions on the exempt payroll.

Weekly payroll procedures were revised to provide a listing each week of non-exempt employees going on vacation and if they are receiving vacation payment.

A procedure was developed for preparing the six month's salary analysis listing for exempt employees.

A procedure is being developed for the clerical operations necessary for maintenance of savings bonds files.

An IBM procedure was prepared for the processing of vacation payments. This procedure provides for the cost distribution of vacation payments during the week for which payment was made rather than the week during when payment was made.

An IBM procedure was prepared for the preparation of the semi-annual wage list for the Employee Benefits Unit. From this report insurance amounts and deductions are adjusted.

The routine quarterly weighted average salary report was prepared.

Assistance was given to Employee Benefit Plans in the preparation and balancing of the June savings bond reports.

A sample cost distribution report on accounts payable was prepared. Accounts payable distribution is scheduled to become an IBM application during July.

For the first time an area location report, including the exempt roll, was prepared for the Payroll Reports and for the cost units.

Consideration was given to the possibility of revising cost distribution type-of-entry codes in such a manner that the codes will actually perform the function of a source code.

Study has been given to the possibilities of consolidation of certain records and files on non-exempt employees maintained by the Payroll Unit and various units of the Employee and Public Relations Department. A report on this study is forthcoming.

Routine reports were prepared on preparation of weekly payroll, bank reconciliation, payroll statistics, motorized equipment billing, weekly salary distribution, exempt salary distribution, and work order distribution.

Eighteen and 1/2 hours were spent on forms design for the Financial Department.

FOR THE ADMINISTRATIVE STAFF

A study was made for Accountability concerning stored material remaining as slag and crucibles after the fabrication of plutonium buttons in Building 234-5. Estimates were made of the sample sizes that would be necesary if the total material were to be estimated by an off-site measurement of a sample of this material (HW-28301, "Statistical Estimates of Sample Sizes Needed in the Measurement of Material Remaining as Slag and Crucibles", from N. D. Peterson to C. J. Shortess, Jr., June 5, 1953). Among the more outstanding results are (1) the desirability of logarithmic treatment of any such measurements, and (2) the possibility that the large variability in the material may necessitate satisfaction with a quite sizable imprecision unless a very large sample is used.

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An investigation was made for Accountability of the close relationship between specific gravity and uranium concentration measurements on the contents of tanks 15-1 and 15-6 in Building 221-U (restricted memorandum, "Statistical Study of Uranium -Specific Gravity Relationships of RCU and Their Bearing on Computational Estimation" from N. D. Peterson to C. B. McKee, June 29, 1953). This study was made in response to the suggestion that it might be possible to estimate one of the measurements computationally from the other. Formulas for use in such a computation were determined and reported, along with the precisions resulting from their use.

A study is near completion for Accountability on systematic and random errors in the sampling of UO_3 powder to determine uranium concentration. This investigation is being made in response to a suspicion that there might be a systematic bias in the mechanical sampling ordinarily used.

Preliminary work was continued on the problem of the volume of paper work. This problem, by reason of its magnitude, will be treated as a group of individual problems which to date are:

1. Classification of forms as to subject.
2. Survey of supervisors to determine what particular kinds of paper work they feel to be unnecessary.
3. A procedural study on the procurement of material and supplies for stores.
4. A procedural study on the stores problem which will cover all the various types of paper used for procurement, receipt and issuance of material.
5. A procedural study of classified files.

FOR THE ATOMIC ENERGY COMMISSION

Work is continuing on a long term study of metal quality. Data on all metal received from Mallinckrodt Chemical Corporation since January, 1952 is being processed to determine the variance of chemical impurities (iron, magnesium, nickel, carbon, silica) and density by several different breakdowns. Work is 80% completed.

Routine Project Bluenose reports were continued.

Fifteen and 1/4 hours were spent on forms design for the Atomic Energy Commission.

SUMMARY

During the month of June 169 statistical, procedural, computational and graphical problems were completed, and as of June 30 a backlog of 216 problems were on hand.

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Department Serviced	Percent of Services Rendered				
	Units				Statistical & Computing Section
	Statistics	Procedures	Computing	Graphics	
Manufacturing	15	3	4	6	5
Engineering	29	17	23	48	26
Plant Auxiliary Operations	5	34	1	16	7
Community Operations & Real Estate	0	7	3	1	3
Radiological Sciences	12	1	3	18	5
Medical	2	1	0	0	0
Employee and Public Relations	15	6	0	1	2
Financial	0	22	62	7	46
Administrative Staff	13	8	0	0	2
Atomic Energy Commission	9	1	4	3	4
TOTAL	100	100	100	100	100

EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

SUMMARY -- JUNE, 1953

The number of applicants interviewed in June was 1,722, as compared with 1,169 for May. In addition, 110 new applicants applied by mail. Open, nonexempt, nontechnical requisitions increased from 227 at the beginning of the month to 273 at month end. One hundred and seventy-nine employees were added to the roll and 119 removed during the month. Separation rate increased from 1.25% in May to 1.57% in June. During June, 44 new requests for transfer to other type work were received by Employment and 54 transfers were effected. Attendance recognition awards were distributed to 143 employees in June, including 33 employees who qualified for three-year awards.

Four employees retired during the month. One hundred and fifty visits were made to employees confined to Kadlec Hospital and 67 checks were delivered to employees confined at the Hospital or at home. At month end, participation in the Pension Plan was 95.4%, in the Insurance Plan 98.8%, and the Employee Savings and Stock Bonus Plan 44.1%. At month end there were 829 registered under Selective Service and 767 military reservists were on the roll. Since August 1, 1950, 288 employees have terminated to enter military service, of which 68 have returned, 6 have not claimed reemployment rights, leaving 214 still in military-leave status.

Orientation of new employees was presented daily throughout the month. A total of 159 employees attended this program. Of this number, 97.4% have signed up to participate in the Pension Plan, 100% in the Insurance Plan, and 77.9% in the Good Neighbor Fund.

Forty-five adopted suggestions were approved by the Suggestion Committee for awards during the month totaling $615.

The Employment Supervisor together with a representative of the Project Section recruited in Morgantown, West Virginia, June 24 and 25. Two vendor inspectors, 4 machinists, and 2 stenographers are being given active consideration.

Four of the ANP personnel affected by their cut back have been extended offers of transfer to HAPO as vendor inspectors.

Advertisements for a nurse anesthetist were placed in four issues of the "Journal of the American Medical Association" and one issue of the "Journal of the American Association of Nurse Anesthetists."

A total of 20 temporary summer jobs have been filled with sons of GE employees home from college.

Arrangements have been completed for the training of 14 KAPL people at HAPO beginning July 13.

Employee and Public Relations
Summary

The color sound-slide film produced by the New York Office outlining the benefits of the GE Security Program was used for the first time June 3 in conjunction with the orientation program.

A four-hour program designed as an aid to the development of stenographic and secretarial personnel was offered to 17 women for the first time June 25.

A film entitled "Retire to Life" was shown to a small group of HAPO employees approaching retirement for the first time during June.

Establishment of a weekly "Buy, Sell and Swap" column in the GE NEWS, starting with July 3 issue was announced during the month. Prior to announcing the new column, legal opinion was sought, and Public Relations contacted local newspapers to determine that the column would not elicit unfavorable reactions and editorial comments.

GE people's part in the June Civil Defense exercises and that of Hanford radio "hams" in the National Field League were reported in a full-page GE NEWS feature article in the June 26 issue.

Winning of $500 GE scholarships by three children of Hanford employees, and the awarding of $250 loans to two HAPO employees, were given prominent news treatment in two GE NEWS issues during the month.

Production of a 16-page, two-color booklet describing the new Radiometallurgy Building was completed. 1050 copies were produced for distribution to selected HAPO exempt employees, and outside distribution. The booklet was written, developed and produced by Special Programs at the request of Technical Section.

Schedules of employee information meetings held by all HAPO Departments were reviewed and letters requesting confirmation were sent to the various departments. Schedules indicated that at least 94 information meetings have been held since the first of the year.

Three Management NEWS Bulletins were written and distributed during the month by Employee Communications. The June 17 issue carried details of the new wage increase offered voluntarily by the Company. Distribution was timed so that copies started on their way to exempt employees moments after the Union Relations meeting with union representatives for making the offer got underway.

Purchase requisition covering 100 Employee Relations posters per week for 52 weeks from the Elliot Service Company was issued.

Employee and Public Relations
Summary

GE NEWS recognition of safety in the 200-W Area, where employees have worked eight and one-half years without a major injury, was given through a full-page photo feature.

Recreational facilities available to employees at the recently completed Columbia play field were brought to employee attention through a GE NEWS photo feature.

The July safety topic, "Accidents By Permission," and the July health bulletin, "Some Hot Tips," were prepared and produced.

"Good Supervisors," eighth in a series of messages on a 9-Point Job Program was developed and published in the June 15 GE NEWS issue.

The GE film, "A is For Atom," was made available for showings to employee groups throughout the plant. Following publicity on the film late in June, 11 requests were received by the end of the month.

Management Orientation was presented on Monday, June 1, with 8 new exempt personnel present. Special Supervisory Considerations was presented on Wednesday, June 3, with 12 new supervisors attending. Basic Economics was presented on Tuesday and Wednesday, June 23 and 24, and 15 HAPO supervisors attended. Policy Panel Seminar, scheduled at Hanford High School for June 8-12, was cancelled due to insufficient enrollment. Principles and Methods of Supervision was presented to two additional groups of supervisors during the two-week period June 8-19. The group at Richland (#50) had 18 members enrolled and the Hanford group (#51) had 17. Conference Leading was conducted on Thursday, June 4, with 12 supervisors participating. Due to heavy vacation scheduling, no Development programs have been scheduled for the months of June, July or August. SAGE was distributed to all HAPO supervisors on June 3 and June 19. HOBSO II will be presented to HAPO personnel beginning in September, 1953. Informative Discussion Meetings - Training and Development has prepared a folio of planning, outlines and techniques which should enable the supervisor to conduct successful discussion meetings. This information is available upon request. In line with this purpose, the Separations Section has requested a special session on Conference Leading to be conducted early in July for 20 of their supervisors.

A total of 65 releases were distributed during the month. Of these, 24 were sent to the "local" list and radio stations. Seven were sent to media throughout the Northwest, 4 to hometown papers, two to college papers and 28 received special distribution.

A request was filled for pictures to illustrate the Plant Nutrition story. This brings the total number of magazines to six that have sent for pictures to illustrate this story and who have indicated they will run it. Total circulation of magazines that have so far accepted the story is well over 1,000,000.

Employee and Public Relations
Summary

A representative of Public Relations attended a tour of community facilities along with the Richland Community Council. The tour was devoted to new facilities added to the community property during the last year.

Two representatives from the Seattle POST INTELLIGENCER were in Richland on June 24. They requested and were given pictures and our article on the Sheep Farm. They intend to use this material to put together their own feature story on the Sheep Farm for the P.I.

The News Bureau filled a request from QUALIFIED CONTRACTOR magazine for information concerning the electrical set-up at the new Bio-Physics Laboratory building. They indicated in their letter that they are planning an article on the laboratory in the near future. Included in the material sent were ten blueprints and a copy of the section of the specifications dealing with the electric system and our earlier news releases and fact sheets about the laboratory.

The MONOGRAM editor asked us by telegram for verification of the facts in an article by L. F. Davies in the New York TIMES' June 23 issue. An analysis was prepared, incorporating ideas expressed by Dr. A. B. Greninger, Manager of Engineering, to enable the MONOGRAM to use the Davies article as a vehicle for presenting facts about GE's achievements at Hanford.

Bob Jackson, General Electric Public Relations representative in San Francisco, after reading the Tri-City HERALD's criticism of off-the-record Community Council meetings, suggested that reporters be admitted to council meetings to receive background information only. He was informed that General Electric does not decide who attends Council meetings and that the intensely competitive newspaper situation in the Tri-City area would prohibit adopting his suggestions.

Public Relations drew extensively upon its files and records this month to supply P. D. Lee with information for use in a report on Hanford's contribution to defense which will be used by the Company in the East in negotiations with the Government about the Company's defense contracts.

WESTERN INDUSTRY magazine requested an article and photographs on the recent Instrument Show sponsored by the Instrument Society of America. These were provided to the magazine with the help of the chairman of this year's show.

An interview with W. E. Johnson on the subject of the future of the commercial use of atomic energy was arranged for Wally Knief of the Tri-City HERALD.

The Community leaders mailing list was revised, and a letter was prepared for use in advising new addressees that their names have been added to the list. This form letter is to accompany copies of Hanford's NEWSLETTERS and the GE NEWS to persons who are added to the Community leaders' list. Names and addresses will be individually typed on the letters after they are prepared on Employment's automatic typing machine.

Employee and Public Relations
Summary

General Electric's Public Relations was host to a working party of the AEC's Advisory Committee on Industrial Information at Hanford from June 8 through 11. Information requested by the working party was mailed to each member of the group after they left Richland. This included two technical papers, a list of people they contacted at Hanford, newspaper clippings concerning their visit, and an explanation of the method used to get higher filtering rates in the water treatment plants.

The June issue of the Community NEWSLETTER and News DIGEST were distributed to Community leaders in Pasco, Kennewick and Richland.

A special effort was made to inform radio stations that the Civil Defense sirens would be sounded during the state-wide test held on June 20. This fact was emphasized in a news release for local newspapers and in a special release for the three radio stations. The latter was taken to each station and its significance was explained.

A total of 199 photography assignments were covered during the month of June. A total of 20,391 prints were produced, of which 18,175 were "A" and "B" badge prints. A total of 2,216 were area and news work.

Some excellent motion picture footage was made of the members of the Atomic Energy Commission Advisory Committee on Industrial Information when they inspected construction activities at the 100-K area during their visit to Hanford this month. This footage will serve as interest theme in the motion pictures being produced by Public Relations Section for the Design Section and the Atomic Energy Commission.

The first anniversary of the Hanford SCIENCE FORUM was marked by a dinner given on June 22 for the people who have produced the program during the past year. Guests included panel members, officials of Radio Station KWIE, which has broadcast the program as a public service during the year, members of the News Bureau, who were responsible for publicity on the program, the Section Manager, the Supervisor of Radio and Special Events Unit, and others who were responsible for organizing and producing the program. The Hanford SCIENCE FORUM is currently off the air during the summer months but will begin the 1953-54 series this fall.

During June the Salary Administration Section's main efforts were directed toward processing data which has been received from the Annual Salary Surveys and preparing it for analysis. Final analysis will show the relationship between Hanford exempt salaries and those of outstanding companies throughout the nation. In addition, preliminary steps were taken toward relating exempt salaries at Hanford to overall Company salary grades and to equivalent positions elsewhere in the General Electric Company. This identifying of positions within Company structure should result in numerous advantages for Hanford exempt personnel.

At month end, the task of assembling and evaluating current position descriptions for all exempt salary positions at Hanford, as of July 1, 1953, was practically completed.

Employee and Public Relations
Summary

The execution of the new HAMTC-GE Agreement by members of the Council Negotiating Committee was accomplished on June 1. Reimbursement authorizations approving the money items in the new contracts between the Company and the HAMTC, BSEIU, and HGU were received from the AEC, covering both bargaining unit and nonunit employees. Settlement of the HAMTC's demand for arbitration of fifteen Instrument grievances was accomplished at a meeting on May 29. A representative of this office attended a meeting in Denver, Colorado, on June 8, jointly scheduled by the FMCS and the AEC to discuss procedures under which the new Labor-Management Relations Panel would operate. A wage offer increasing the "adder factor" from 10.53 per cent to 12 per cent, plus an additional adjustment of 1 to 8 cents per hour in the base rate of certain classifications, was made to the HAMTC, HGU and BSEIU on June 17. A meeting was held on June 16 with representatives of Reactor, Industrial Medical and Safety Section to further discuss and consider action to reduce the noise problem in Reactor Section pump rooms. Two jurisdictional settlements were received from the HAMTC awarding to the Electricians and Plumbers certain work that had heretofore been performed by the Instrument Guild.

Effective June 1, J. A. Jones took over the Minor Construction contract from Atkinson-Jones. No further action has been taken relative to the allegations of the Pasco-Kennewick Building Trades Council that Cisco Construction Company is in violation of the Davis-Bacon Act. Commonwealth, Inc., has been awarded a 1½-year contract for the operation of the North Richland Camp. AEC approval was given to GE to perform maintenance work on the well pumps at the well field located near the powerhouse in North Richland. Approximately twenty-seven Plumbers walked off the job in protest of the discharge of five foremen by Blaw-Knox. From June 9 to June 23, the union refused to dispatch Carpenters to the Project because of a dispute over the interpretation of the contract clause on travel pay.

EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

JUNE, 1953

ORGANIZATION AND PERSONNEL

General

There were no organizational changes during June.

Employee Relations

Effective June 5, Marilyn Hultman, General Clerk B, removed from Employment due to illness.

Effective June 10, Margaret M. Tucker, Typist, added to Investigations and Personnel Records.

Effective June 16, Inez McElroy, General Clerk C, added to Suggestion System.

Effective June 19, Ruby Cherry, General Clerk C, terminated voluntarily from Suggestion System.

Public Relations

There were no organizational changes during June.

Technical Personnel

Effective June 15, 1953, T. G. Marshall transferred to Fuel Technology Section of Engineering.

Effective June 15, 1953, D. A. Snyder transferred to Metal Preparation Section of Manufacturing.

Trainees - Beginning of Month 66 - End of Month 77

Net Change:	Placements in departments	0
	Resignations (military)	1
	New Hires	12

Salary Administration

There were no organizational changes during June.

Union Relations

Effective June 5, 1953, Marjorie A. Stocker, General Clerk B, removed from Wage Rates; temporary assignment completed.

Number of Employees on Roll	June, 1953
Beginning of Month	196
End of Month	204
Net Change	8

Employee and Public Relations

EMPLOYEE RELATIONS

Personnel Practices

Employment

	May, 1953	June, 1953
Applicants interviewed	1,169	1,722

584 of the applicants interviewed during June were individuals who applied for employment with the Company for the first time. In addition, 110 applications were received through the mail.

Open Requisitions	May, 1953	June, 1953
Exempt	5	6
Nonexempt	227	273

Of the 227 open, nonexempt, nontechnical requisitions at the beginning of the month, 136 were covered by interim commitments. Of the 273 open, nonexempt, nontechnical requisitions at month end, 126 were covered by interim commitments. During June, 113 new requisitions were received requesting the employment of 225 nonexempt, nontechnical employees.

	May, 1953	June, 1953
Employees added to the rolls	86	179
Employees removed from the rolls	124	119
NET GAIN OR LOSS	-38	+60

Of the 119 removed from the rolls, 2 were removed due to lack of work, neither of which were in Bargaining Units.

Separation:

	Fiscal Month May, 1953		Fiscal Month June, 1953	
	Male	Female	Male	Female
Including employees who were laid off for lack of work	.83%	3.02%	1.00%	4.00%
Excluding employees who were laid off for lack of work	.83%	3.02%	.97%	4.00%

Employee and Public Relations

EMPLOYEE RELATIONS

Over-all Separation:

	Fiscal Month May, 1953	Fiscal Month June, 1953
Including employees who were laid off for lack of work	1.25%	1.57%
Excluding employees who were laid off for lack of work	1.25%	1.55%

During June, 23 employees left voluntarily to accept other employment, 5 left to enter military service, and 6 left to enter business for self.

Transfer Data

Accumulative total of requests for transfer received since 1-1-53	296
Number of requests for transfer received during June	44
Number interviewed in June, including promotional transfers	49
Transfers effected in June, including promotional transfers	54
Transfers effected since 1-1-53, including promotional transfers	256
Transfers effected in June for employees being laid off	0
Number of stenographers transferred out of steno pool in June	12
Transfer requests active at month end	296

ADDITIONS TO THE ROLLS

	Exempt	Nonexempt	Community Firemen	Total
New Hires	10	143	---	153
Re-engaged	---	---	---	---
Reactivations	1	25	---	26
Transfers	---	---	---	---
TOTAL ADDITIONS	11	168	---	179

TERMINATIONS FROM THE ROLLS

	Exempt	Nonexempt	Community Firemen	Total
Actual Terminations	11	72	---	83
Removals from rolls (deactivations)	1	33	---	34
Transfers	1	1	---	2
TOTAL TERMINATIONS	13	106	---	119

Employee and Public Relations

EMPLOYEE RELATIONS

GENERAL

	5-1953	6-1953
Photographs taken	402	410
Fingerprint impressions	112	244

PERSONNEL SECURITY QUESTIONNAIRES PROCESSED

	5-1953	6-1953
General Electric cases	87	110
Facility cases	25	26
TOTAL	112	136

INVESTIGATION STATISTICS

	5-1953	6-1953
Cases received during the month	164	181
Cases closed	122	165
Cases found satisfactory for employment	119	120
Cases found unsatisfactory for employment	5	4
Cases closed before investigation completed	12	33
Special investigations conducted	5	16

PERFECT ATTENDANCE RECOGNITION AWARDS

Total one-year awards to date since January 1, 1950	5970
One-year awards made in June for those qualifying in May	45
Total two-year awards to date since January 1, 1950	1563
Two-year awards made in June for those qualifying in May	65
Total three-year awards to date	431
Three-year awards made in June for those qualifying in May	33

During June, 16 people whose continuity of service was broken while in an inactive status were so informed by letter.

The Employment Supervisor together with a representative of the Project Section recruited in Morgantown, West Virginia, June 24 and 25. Two vendor inspectors, 4 machinists, and 2 stenographers are being given active consideration. These employees were available through a force reduction of the U. S. Department of the Interior, Bureau of Mines, and the lead on them came through the AEC.

Four of the ANP personnel affected by their cut back have been extended offers of transfer to HAPO as vendor inspectors.

Employee and Public Relations

EMPLOYEE RELATIONS

The search for an anesthetist to be assigned to Kadlec Hospital continues, and in addition to listing our need with medical placement bureaus, and contacting about 90 schools and hospitals offering anesthetic training, advertisements were placed in four issues of the "Journal of the American Medical Association" and one issue of the "Journal of the American Association of Nurse Anesthetists."

A total of 20 temporary summer jobs have been filled with sons of GE employees home from college.

A four-hour program designed as an aid to the development of stenographic and secretarial personnel was offered to 17 women for the first time June 25. It is planned to offer this program to all HAPO stenographers and secretaries. A set of five booklets developed by the New York Office entitled "For Women Only" and designed to assist secretaries in their desire to get ahead will be given to each of our stenographers and secretaries during this training program.

Employee Benefits

The following visits were made with employees during the month:

Employee contacts made at Kadlec Hospital	150
Salary checks delivered to employees at Kadlec Hospital	50
Salary checks delivered to employees at home	17

At month end participation in Benefit Plans was as follows:

	May	June
Pension Plan	95.3%	95.4%
Insurance Plan	98.8%	98.8%
Employee Savings and Stock Bonus Plan	44.3%	44.1%

Eighteen letters were written to deceased employees' families during June, concerning payment of monies due them from the Company, and also to answer their questions.

Since September 1, 1946, 122* life insurance claims have been paid totaling $743,513.

* Adjusted figure.

Four employees retired during June, namely:

Theodor Schneider	W-5814-616	Normal Retirement
Archibald Curror	W-16614-936	Normal Retirement
Mamie B. Curl	W-8497-944	Optional Retirement
Thomas C. Carney	W-12109-912	Optional Retirement

Employee and Public Relations

EMPLOYEE RELATIONS

During June, 22 letters were written to retired employees providing them with information of general interest. To date 257 employees have retired at Hanford, of which 135 are continuing their residence in the vicinity.

Orientation of new employees was presented daily throughout the month. A total of 159 employees attended this program. Of this number, 97.4% have signed up to participate in the Pension Plan, 100% in the Insurance Plan, and 77.9% in the Good Neighbor Fund.

A very dramatic movie entitled "Retire to Life" produced for the University of Oklahoma was shown to a small group of HAPO employees approaching retirement for the first time during June. This film vividly depicts the pitfalls of not planning for retirement as well as the gains to be achieved through planning for retirement. Initial reaction was quite favorable. This film will be used in conjunction with the initial contact with small groups of employees approaching optional retirement age.

A color sound-slide film produced by the New York office outlining the benefits of the GE Security Program was used for the first time June 3 in conjunction with the orientation program.

The son of a former employee and the son and daughter of two GE employees were granted GE scholarships this year.

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		767
Number of reservists classified in Category A	123	
Number of reservists classified in Category B	64	
Number of reservists classified in Category C	77	
Number of reservists classified in Category D	503	
Number who returned to active duty to date		127
Number who returned to active duty in June		2
Number of reservists for which delays have been requested		46
Number of reservists classified in Category B	4	
Number of reservists classified in Category C	3	
Number of reservists classified in Category D	39	
Delays requested (including renewals)		114
Delays granted		106
Delays pending		0
Delays denied		5
Delay requests recalled		3

Employee and Public Relations

EMPLOYEE RELATIONS

The statistics with respect to employees registered under Selective Service are as follows:

Employees registered		829
Employees registered who are veterans		275
Employees registered who are non-veterans		554
Deferments requested to date (including renewals)		1037
Deferments granted		775
Number of employees for which deferments have been requested		225
Number of employees classified in Category B	0	
Number of employees classified in Category C	2	
Number of employees classified in Category D	223	
Deferments denied and appealed at state levels		17
Deferments denied and appealed at local levels		0
Deferments denied and held pending appeal at national level		0
Deferments denied by local board and not appealed		5
Deferments denied by state board and not appealed		23
Deferments denied at national level (by Gen. Hershey's office)		2
Deferments denied at national level (by President)		5
Deferments requested, employees later reclassified		83
Deferments requested, later withdrawn		74
Deferments pending		53

Military terminations since 8-1-1950 are as follows:

Reservists recalled	127
Selective Service	156
Women employees enlisted	5
TOTAL	288

Employees returned from military service:

Reservists	53
Selective Service	15
TOTAL	68

Known number not claiming reemployment rights	6
Number of employees still in military-leave status	214

Employee and Public Relations

EMPLOYEE RELATIONS

Suggestion System, Workmen's Compensation and Liability Insurance

	May	June	Total Since 7-15-47
Suggestions Received	181	177	11767
Acknowledgements to Suggesters	202	157	
Suggestions Pending Acknowledgement	17	38	
Suggestions Referred to Departments for Investigation	202	157	
Suggestions Pending Referral to Departments	17	38	
Investigations Completed & Suggestions Closed	184	274	
Suggestions Adopted - No Award	1	4	
Adopted Suggestions Approved by Committee for Award	77	45	
Total Net Cash Savings	$10,917.48	$5,729.80	
Total Cash Awards	$ 1,345	$ 615	

As of month end there were 601 suggestions out for investigations.

The highest award of $100 was made to an employee in the Safety and Fire Protection Unit for his suggestion pertaining to including firemen on the 100-H Patrol bus, thus eliminating two round trips from Richland a day. This suggestion resulted in considerable savings in reduction of "wheelage cost."

An employee in the Reactor Section received the second highest award in the amount of $75 for his suggestion regarding changing temperature monitor and thermocouple leads on the Brown temperature monitor junction board resulting in reduction in maintenance cost.

Workmen's Compensation

James D. Browning, 8001070 -- Date of Injury: 3-19-52; Employer: General Electric Company; Nature of Injury: Head Injury.

Mr. Browning, an employee of the Separations Section, sustained a severe blow to the head when he slipped and fell while taking a shower. After surgery and extended treatment the Department closed his claim with a permanent partial disability award of 50% of the maximum allowed for an unspecified disability. On June 22, 1953 Mr. Browning's attorney, Dean W. Loney of Kennewick, filed a notice of appeal to the Board alleging that the claimant still required medical treatment and anticipated time loss in the future. The notice also stated that the claimant was of the opinion that he had sustained in excess of 75% disability as a result of his injury. The Board will consider the application and advise all parties concerned of the action to be taken.

Employee and Public Relations

EMPLOYEE RELATIONS

Liability Insurance

Max Rees vs. General Electric Company, B-6835580

The above action arose out of damage to property and personal injuries when a bus operated by a General Electric Company employee smashed into the Rees residence. The case was tried on March 4, 5, and 6 resulting in a judgement of $14,904 for the plaintiffs. Our motion for judgement notwithstanding the verdict or in the alternative for a new trial was denied and we have since appealed the matter to the U. S. Circuit Court of Appeals.

Life Insurance

Code information which is known only to Home Office Life Underwriters Association has been furnished 52 insurance companies and investigation agencies during the month of June, 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

	May, 1953	
	Long Forms	Short Forms
Claims reported to Department of Labor and Industries	35	412

	June, 1953	
	Long Forms	Short Forms
	35	382

Total since September, 1946 - 16,227

	May, 1953	June, 1953
Claims reported to Travelers Insurance Company	9	*7

* Of the claims reported to Travelers Insurance Company during the month, two were bodily injury, four were property damage claims, and one was both bodily injury and property damage.

Total since September, 1946 - 735

Training Program - Collateral Contractors

Arrangements have been completed for the training of 14 KAPL people at HAPO beginning July 13.

Employee & Public Relations

EMPLOYEE RELATIONS

EMPLOYEE COMMUNICATIONS

Recruitment advertisements for Nurse Anesthetists were placed in four issues of "The Journal of the American Medical Association" and in one issue of the "American Association of Nurse Anesthetists"; and for a Dietitian in four issues of "The American Medical Association Journal"--at the request of Employment.

Orders were placed for the production of 6000 copies of the new GE-HAMTC Agreement booklets, as a service to Union Relations. This involved preparation, layout, correcting proofs and processing through Purchasing.

Five copies of the Kadlec Hospital Open House promotion report were prepared. Two copies were sent to the Administrator, Kadlec Hospital; one each to the managers of Public Relations and Employee Relations.

Two hundred and fifty copies of a leaflet containing presentations made by the supervisor, Records Control, to an AEC Records meeting in Chicago were produced and delivered to Public Relations for distribution.

As a service to Training, the PMS certificate was revised and copies prepared with the General Manager's signature imprinted thereon.

With the concurrence of Safety, copy submitted to the GE NEWS lifeline page was edited with a view to improving employee reception of this material.

The safety topic for the month of July, "Accidents by Permission," and the health bulletin for July, "Some Hot Tips," were prepared and produced.

The Community Operations annual report is still in the preparation stage. All Unit Heads have been interviewed and all photographs taken. In addition, envelopes have been ordered for mailing this report to residents when completed.

"Good Supervisors," the eighth in a series of messages on the 9-Point Job Program was published in the GE NEWS issues of June 15.

An order was placed with the Elliot Service Company for the purchase of 100 employee relations posters per week for the ensuing year.

Two letterheads were prepared at the request of Safety. One is to be used to post house rules. Unfortunately, the other form, which was to be used in the Safety Bulletin booklet, will not be used since Safety in the meantime reproduced an additional form for this purpose.

At the request of Kadlec Hospital, a wallet-size card was prepared to certify reappointment to the Medical Staff.

Production of 1050 copies of "Hanford's Radiometallurgy Building" was completed. This 16-page, two-color booklet describes this newest facility in the Laboratory Area. Unfortunately, due to an unsatisfactory folding and cutting job, it was necessary to request reprinting of 500 corrected copies.

EMPLOYEE RELATIONS

EMPLOYEE COMMUNICATIONS

A work order has been placed for the construction of three new public information racks, designed by Employee Communications commercial artist, at the request of Public Relations. The racks will replace existing and obsolete racks in 703, 705 and 760 Buildings.

To encourage showings to employee groups of the GE film "A Is For Atom," an announcement of the availability of the film was inserted in the GE NEWS issue of June 26, and an item prepared for the Management NEWS Bulletin of June 30. By the end of the month 11 request for showings had been received.

At the request of the Supervisor, Benefit Plans, a letter was prepared to accompany statistical information comparing the relative merits of the GE Pension Plan and a typical private annuity. These are to be sent to technical employees not participating in the Pension Plan.

Posters distributed during the month included 90 Photo New Service posters; three sets (66 posters each) of Suggestion System poster; 25 health posters on Rabies; and the regular weekly Sheldon-Claire posters. In addition, the Fourth of July holiday notice was posted throughout the plant.

Scholarships awarded by the Company to three children of Hanford employees was publicized in a front page GE NEWS story, with pictures of each recipient. Background material on the three was obtained to localize a syndicated story from New York on scholarships. Loans granted to two Hanford students by the Company also were publicized.

Suggestion system received promotion through a feature story and pictures of the award winners in one GE NEWS issue.

Recognition was given via GE NEWS to 200-W Area people who have worked eight and one-half years without a major injury. A full-page photo feature was devoted to showing various safety activities in the Area. A front page lead-in picutre gave recognition to an employee who had had no injuries for the full eight and one-half years.

Highlights of new Company Agreements with Hanford unions were reviewed in the GE NEWS.

Recreational facilities available to Hanford people at the Columbia playfield were publicized through a GE NEWS photo feature. As a result, many people are now enjoying the facilities, according to word received from Recreation and Civic Affairs Unit.

GE Purchase Plan changes making purchase of major appliances easier for Hanford people were announced. A list of all area Purchase Plan representatives and their work location also was published.

GE graduate school of engineering was given publicity through articles published on six Hanford people who completed work in the school toward their master's degree.

EMPLOYEE RELATIONS

EMPLOYEE COMMUNICATIONS

Water festival sponsored by the Richland Yacht Club was publicized, including details of the program, and a follow-up was run on some of the highlights.

Nucleonics Good Neighbor Fund was brought again to the attention of employees through a picture showing $1000 being presented to the Heart Association.

Hobbies of Hanford people on the job were brought out through a GE NEWS feature story, and follow-up with pictures, on the valuable work being performed by radio amateurs in Civil Defense efforts. The follow-up story depicted highlights of the June CD test and the parts many Hanford people played in it.

Company policies on tardiness and on GE Armed Forces benefits were reviewed in two GE NEWS issues.

A new column in the GE NEWS, a "Buy, Sell and Swap" column, was announced, to start in the July 3 issue. Rules governing use of the column were explained in the announcement and in a follow-up story, and listings were requested.

Hanford photos used in the booklet, "Safety is Part of Your Job," produced by Special Programs, were submitted to the New York Office by request.

To develop a report on employee information meetings held at Hanford during the first half of 1953 at the request of the General Manager, letters to Department Managers inquiring as to the number of such meetings held in the individual Departments, were written for the signature of the Manager, Employee Relations.

Three Management NEWS Bulletin were written and distributed during the month by Employee Communications. Major portions of these bulletins were devoted to the recent wage increase offered voluntarily by the Company.

A letter to all employees from the General Manager, which will accompany distribution of the booklet "A Scrapbook History of GE," was written and approved. Receipt of the booklets, prepared in the East, is expected early in July. They will be mailed to employees homes.

At the request of Public Relations, plans were made for developing two newspaper advertisements and the front cover for a GE Anniversary edition of the Tri-city HERALD.

Preparation of a special brochure for distribution to members of GE's Board of Directors during their Hanford visit next October was initiated at the request of the Manager, Plant Auxiliary Operations Department.

An opinion survey form which will be sent to employee-purchasers of major appliances was edited at the request of Employee Benefits.

Art work prepared for the GE NEWS by the Employee Communications commercial artist, who was on two weeks vacation during the month, included: one editorial cartoon, two photo layouts for GE NEWS feature stories, and preliminary layout for a full-page GE NEWS message on the 9-Point Job Program.

EMPLOYEE RELATIONS

EMPLOYEE COMMUNICATIONS

Layout and final art work for a Kadlec Hospital certificate of Staff membership were prepared; art work for the employee news letterhead was brought up to date with priper organizational nomenclature.

Two cover layouts were developed for the forthcoming GE Nuclear School of Engineering directory of fall courses; and three rough layouts of a recruiting booklet for the Technical Personnel Office were developed.

Safety promotion art work included: layout and special lettering for a "Jay Walker" poster to be placed in the community; design and final art work of a safety letterhead, and a Safety Handbook page.

A new public information rack was designed, a mock-up prepared and blue print drawing developed.

Employee and Public Relations
Employee Relations

TRAINING AND DEVELOPMENT

Training and Development programs and activities for June 1953 were as follows:

MANAGEMENT AIDS:

MANAGEMENT ORIENTATION, scheduled the early part of each month, has as its primary purpose the welcoming of new exempt personnel to the management team. The program was presented on Monday, June 1, with 8 new exempt personnel present. An informal luncheon is a feature of this program and Mr. H. D. Middell, Manager of Plant Auxiliary Operations, represented senior management as guest.

SPECIAL SUPERVISORY CONSIDERATIONS, covering many items of particular significance to this operation, was presented on Wednesday, June 3, with 12 new supervisors attending.

BASIC ECONOMICS is a two-day program intended as an introduction to economics in industry and to bring out the advantages and accomplishments under the free enterprise system. This program was presented on Tuesday and Wednesday, June 23 and 24, and 15 HAPO supervisors attended.

POLICY PANEL SEMINAR, scheduled at Hanford High School for June 8-12 (half days), was cancelled due to insufficient enrollment. This comes about because of increased area activity and because of vacation schedules absorbing available personnel.

MANAGEMENT SKILLS:

PRINCIPLES AND METHODS OF SUPERVISION was presented to two additional groups of supervisors during the two-week period June 8-19. The group at Richland (#50) had 18 members enrolled and the Hanford group (#51) had 17. These two groups, along with groups #48 and #49 who completed the methods last month, had their completion dinner-meeting at the Desert Inn on Wednesday evening, June 24. Several HAPO managers were present as guests and Mr. W. E. Johnson, General Manager, was the speaker of the evening.

CONFERENCE LEADING, a skill valuable in directing group thinking by actual practice, was conducted on Thursday, June 4, with 12 supervisors participating.

MANAGEMENT DEVELOPMENT:

Due to heavy vacation scheduling, no development programs have been scheduled for the months of June, July or August.

Employee and Public Relations
Employee Relations

OTHER TRAINING ACTIVITIES:

SUPERVISOR'S HANDBOOK: Following is a summary of handbook distribution to date:

Number issued prior to June	- 1338
Number issued during June	- 4
Number returned during June	- 6
Number issued end of June	- 1336
Number on hand end of June	- 164
Total number of handbooks	- 1500

Of the 164 handbooks on hand, 47 are not usable as they lack too many pages, while 117 are ready for issuance.

SAGE - This one-page communication was distributed to all HAPO supervisors on June 3 and June 19. A survey is being conducted among recipients of this information media to determine its acceptance and effectiveness. Questionnaires were distributed to random personnel on O&PG Lists 1, 2 and 3 on Friday, June 26, and results will be reported at a later date.

STENOGRAPHIC-SECRETARIAL PROGRAM, a 4-hour program created especially for new office personnel, accents the many qualifications that industry looks for and demands, and also aids in building a constructive attitude. This program was presented for the first time to 20 secretaries and stenographers on Thursday morning, June 25.

HOBSO II - This advanced presentation of How Our Business System Operates will be presented to HAPO personnel beginning in September 1953. Manuals and kits have been received from New York and Training and Development will conduct its own seminar for leaders the week of June 29-July 3.

INFORMATIVE DISCUSSION MEETINGS.- Training and Development has prepared a folio of planning, outlines and techniques which should enable the supervisor to conduct successful discussion meetings. This information is available upon request. In line with this purpose, the Separations Section has requested a special session on Conference Leading to be conducted early in July for 20 of their supervisors.

REQUESTS FOR MATERIAL - During the month there were 33 requests for transcripts of program attendance, 15 requests for Objectives for 1953, 4 copies of the G.E. 1952 Annual Report, and 6 copies of recent Richardson, Bellows, Henry and Company attitude survey.

PUBLIC RELATIONS

During the month of June, the News Bureau issued 65 releases. The breakdown by category, distribution, and content was as follows:

Plant or Company	
Adm. and Law	5
Plant Services	7
Pay and Benefits	9
Employee Services	6
Union Relations	2
Health and Sanitation	1
Education	1
Technology & Science	20
Military and Civil Def.	1
Richland & Other Communities	9
Good will stories	4

Distribution	
Local	24
Daily	7
Hometown papers	4
College papers	2
Other special	28

Content	
Information	1
Pictures with captions	3
Short news stories	47
Long news stories	12
Feature stories	2

A letter, a 750-word write up, and our Hanford and Richland fact sheets were sent to a newspaper man in Seattle for his use in a story on atomic energy in the state.

A letter was sent to a student in Los Angeles in answer to an inquiry about the "A-Bombs". A copy of the comic book "Adventures Inside the Atom", fact sheets on Hanford and Richland, and a copy of Dr. Winton I. Patnode's article on "Advancement of a Profession", which appeared in the February, 1953 issue of the GE MONOGRAM were sent in response to this request.

The MONOGRAM Editor asked us by telegram for verification of the facts in an article by L. F. Davies in the New York TIMES' June 23 issue. An analysis was prepared, incorporating ideas expressed by Dr. A. B. Greninger, Manager of Engineering, to enable the MONOGRAM to use the Davies article as a vehicle for presenting facts about G.E.'s achievements at Hanford.

Approximately a year ago, John Crowder, Engineering, wrote a letter to the News Bureau in answer to our plant-wide request for help in supplying material to the MONOGRAM. His letter described the start-up of the first Hanford reactor, and at the time MONOGRAM didn't consider it the type of thing they wanted. Now, however, a book is being prepared that will be a compilation of material that has been written and published about atomic energy installations. So the MONOGRAM again will consider publishing Crowder write-up so that it can be lifted for the book. The News Bureau edited the Crowder write-up slightly, wrote an introduction for it, and had pictures of Crowder made.

Suggested topics for seven stories and three photographs were sent to the GE MONOGRAM for possible inclusion in the July issue.

An interview with W. E. Johnson on the subject of the future of the commercial use of atomic energy was arranged for Wally Knief of the Tri-City HERALD.

Two representatives from the Seattle POST INTELLIGENCER were in Richland on June 24. They requested and were given pictures and our article on the Sheep Farm. They intend to use this material to put together their own feature story on the Sheep Farm for the P.I.

The News Bureau filled a request from QUALIFIED CONTRACTOR magazine for information concerning the electrical set-up at the new Bio-Physics Laboratory building. They indicated in their letter that they are planning an article on the laboratory in the near future. Included in the material sent were ten blue prints and a copy of the section of the specifications dealing with the electric system and our earlier news release and fact sheets about the laboratory.

Assistance was furnished to the publicity man for the local chapter of the AIChE which is proposing W. K. Woods to be a National Director of the organization. We furnished him with some biographical information.

Bob Jackson, General Electric Public Relations representative in San Francisco, after reading the Tri-City HERALD's criticism of off-the-record Community Council meetings, suggested that reporters be admitted to council meetings to receive background information only. He was informed that General Electric does not decide who attends Council meetings and that the intensely competitive newspaper situation in the Tri-City area would prohibit adopting his suggestions.

WESTERN INDUSTRY magazine requested an article and photographs on the recent Instrument Show sponsored by the Instrument Society of America. These were provided to the magazine with the help of the chairman of this year's show.

The Korfund Company Incorporated asked permission to use the photograph of a bank of fans at Hanford in a forthcoming advertisement in the HEATING, PIPING AND AIR CONDITIONING magazine. Korfund was provided with prints of a photograph, and a release from an employee appearing in the photograph, and were notified that copy and layout of the advertisement must be submitted for final approval before the picture is published.

General Electric's Public Relations was host to a working party for the AEC's Advisory Committee on Industrial Information at Hanford from June 8 through 11. Information requested by the working party was mailed to each member of the group after they left Richland. This included two technical papers, a list of people they contacted at Hanford, newspaper clippings concerning their visit, and an explanation of the method used to get higher filtering rates in the water treatment plants.

A photograph showing bean plants at Hanford in a "Climatizer" was sent to Schenectady for possible use as one of the Company's Photo News Service releases. These are sent regularly to high schools throughout the country for posting on bulletin boards.

In response to an offer made in "30 for the Month," four persons requested a copy of "How to Prepare an Article for the GE REVIEW". Three of these persons have definite articles in mind and they have been asked to prepare an abstract to be sent to the REVIEW before the complete articles are written.

A request was filled for pictures to illustrate the Plant Nutrition story. This brings the total number of magazines to six that have sent for pictures to illustrate this story and who have indicated they will run it. Total circulation of magazines that have so far accepted the story now is well over 1,000,000.

The June issue of the Community NEWSLETTER and NEWS DIGEST were distributed to Community leaders in Pasco, Kennewick and Richland.

The Community leaders mailing list was revised, and a letter was prepared for use in advising new addressees that their names have been added to the list. This form letter is to accompany copies of Hanford's NEWSLETTERS and the GE NEWS to persons who are added to the Community leaders' list. Names and addresses will be individually typed on the letters after they are prepared on Employment's automatic typing machine.

A representative of Public Relations attended a tour of community facilities along with the Richland Community Council. The tour was devoted to new facilities added to the community property during the last year.

A request was received from the Tri-City HERALD's reporter from Richland for an interview concerning the general community telephone situation. An interview was arranged with A. W. Kelly of the Electrical Distribution and Telephone Section.

A special effort was made to inform radio stations that the Civil Defense sirens would be sounded during the state-wide test held on Saturday, June 20. This fact was emphasized in a news release for local newspapers and in a special release for the three radio stations. The latter was taken to each station and its significance was explained.

A list of speeches and papers by Hanford authors was sent to CHEMICAL PROCESSING magazine. It is hoped that they will request articles on some of the subjects included in the list.

Twelve papers were received, reviewed and cleared for presentation or publication, during the month. They are as follows:

"A High-Pressure Cloud-Chamber Investigation of Protons Scattered by 300-Mev. Neutrons," by John Pangher, for presentation at the American Physical Society Meeting, Albuquerque, New Mexico, September 2-5, 1953.

"The Analytical Chemistry of Americium and Curium," by A. Chetham-Strode, Jr., for presentation at the Summer Symposium of the Analytical

Division of the American Chemical Society at Troy, New York, June 19 and 20, 1953.

"Organo-Phosphorus Derivatives as Solvents" by L. L. Burger, B. R. Jones and R. M. Wagner, for presentation at the Regional Meeting of the American Chemical Society, Pullman, Washington, June 12 and 13, 1953.

"The Less Familiar Elements in the Atomic Energy Program," by A. H. Bushey, for presentation at the Summer Symposium of the Analytical Division of the American Chemical Society, Troy, New York, June 19 and 20, 1953.

"An Atomospheric Pressure Hydrogen-Filled Counter," by P. L. Koehmstedt, L. C. Schwendiman and J. W. Healy, for presentation at the Regional Meeting of the American Chemical Society, Pullman, Washington, June 12, and 13, 1953.

"A Fluorometric Method for Oil Fog Determination," by W. B. Silker, for presentation at the Regional Meeting of the American Chemical Society, Pullman, Washington, June 12 and 13, 1953.

"Maintenance Problems with Reactor Auxiliaries and Instruments" by C. B. Wagner, for presentation at the Summer General Meeting of the American Institute of Electrical Engineers, Atlantic City, N. J., June 17, 1953.

"Techniques in the Determination of the RU^{103} to RU^{106} Activity Ratio in Fission Products," by Charles M. Thomas and Donald L. Reid, for presentation at the American Chemical Society Regional Meeting, Pullman, Washington, June 12 and 13, 1953.

"Principles and Philosophy of Reactor Control Circuits" by Ivan M. A. Garcia, for presentation at the 1953 Conference on Nuclear Engineering, University of California, September 9-11, 1953.

"The Reaction Between Hydrogen Peroxide and Ruthenium Tetroxide in Acid Solutions" by A. S. Wilson for presentation at the American Chemical Society Regional Meeting, Pullman, Washington, June 12 and 13, 1953.

"Geology of the Columbia Basin," by R. E. Brown, for presentation at the Fourth Annual Regional Fertilizer Conference at Pullman, Washington, June 30-July 1 and 2, 1953.

"Desirable Basic Design Criteria for Chemical Production Facilities Processing Radioactive Materials," by O. C. Schroeder, for a paper to be presented at the 1953 Conference on Nuclear Engineering, at the University of California, Berkley, September, 1953.

A total of 199 photography assignments were covered during the month of June. A total of 20,391 prints were produced, of which 18,175 were "A" and "B" badge prints. A total of 2,216 prints were area and news work.

Motion Picture film exposed during the month on three individual motion pictures is as follows: 600 feet (B&W), 16mm for 100-K Construction; 1200 feet (B&W), 16mm for Minor Construction and 900 feet (B&W), 16mm for 100-C Construction.

Projection equipment loans during the month included the 35mm Golde projector and screen, three times; the 3¼" x 4" lantern slide projector and screen, one time; and one screen, two times.

Approximately 45 hours of one employee's time was spent this month on editing of the Minor Construction motion picture film.

Fourteen 8" x 10" prints were produced from four feet of 16mm reversal positive film.

The Supervisor of the Photography Unit extended a San Francisco film processing trip to include Hollywood, where he inspected a new type of motion picture film processing machine to determine whether or not a savings could be effected by the purchase of such a machine. Upon inspection of the machine and receipt of information from reliable sources concerning it, it was determined that quality loss against money saved made it inadvisable to purchase it.

Fifteen script conferences and film editing sessions were held this month with officials of the Design Section preparatory to final production phases of the 100-C Graphite Stacking classified motion picture. Nine hundred feet of additional footage were taken of reactor charts, models and physical features for explanatory and introductory parts of the film. Final production functions at the off-site film studios were begun the week of June 29 in order to provide release prints on the scheduled date of July 15. Other departments besides Engineering are interested in obtaining prints for use in their training programs.

Final photography and script preparation for the motion picture being produced for Minor Construction has been completed and final phases of production at the off-site film studios will be completed the first week of July. The Project Section Manager has expressed satisfaction with the final story and feels that the film will satisfactorily serve their purposes for training.

Several hundred feet of color film has been "shot" and processed for the color motion picture being produced for Employee Relations Section on Orientation.

Some excellent motion picture footage was made of the members of the Atomic Energy Commission Advisory Committee on Industrial Information when they inspected construction activities at the 100-K Area during their visit to Hanford this month. This footage will serve as interest theme in the motion pictures being produced by Public Relations Section for the Design Section and the Atomic Energy Commission.

Revised estimates on Directive HW-306 requested by the Atomic Energy Commission were compiled and discussed at a special conference attended by the Section Manager; Radio and Special Events Supervisor; P. D. Lee, Appropriations Section Manager, and Atomic Energy Commission Reports and Records Personnel. This Directive concerns the motion picture footage for the current Expansion Program and estimates used by the Atomic Energy Commission were not in accord with those compiled by our motion picture people for production of the length footage requested by the Commission. The decision was made to have a proposal submitted to the Manager, Hanford Operations Office for a revised directive.

The General Electric Slidefilm, "Program for Security" has been revised, script prepared and records made for automatic projection. The assignment was completed for Employee Services Unit of Employee Relations Section this week and accepted with approval of work done.

The first anniversary of the Hanford SCIENCE FORUM was marked by a dinner given on June 22 for the people who have produced the program during the past year. Guests included panel members, officials of Radio Station KWIE, which has broadcast the program as a public service during the year, members of the News Bureau, who were responsible for publicity on the program, the Section Manager, the Supervisor of Radio and Special Events Unit, and others who were responsible for organizing and producing the program. The Hanford SCIENCE FORUM is currently off the air during the summer months but will begin the 1953-54 series this fall.

Three graduates of the Journalism School at the University of Washington were interviewed by the Supervisor of Radio and Special Events. These students are prospective candidates for the position of Publicity Writer recently vacated. Selection of a replacement, for which two local candidates are also being considered, is expected to be made shortly.

Thirteen motion pictures were obtained from General Electric and other approved sources for showing at training and instructional meetings within the plant during the month.

Arrangements were made for Public Relations and Employee Relations sponsorship of showings throughout the plant of the new General Electric color motion picture "A is for Atom." This program will be conducted during July and August and appropriate publicity will be prepared for the GE NEWS, Management News Letter, "30 for the Month" and poster distribution.

Arrangements were made by Public Relations Section for public address system equipment that was provided at both entrances of the 300 Area for that Area's Safety Celebration, June 26. The idea originated with members of this Section who wrote scripts and handled all the details with W. H. Roos, Safety Engineer at the 300 Area. Prize winning slogans were selected and announced on the P.A. system during shift changes and lunch hours throughout the day.

See attached statistical report for Hanford Photography Unit work during June.

HANFORD PHOTOGRAPHY UNIT
MONTHS OF JUNE, 1953

	2" X 2"	2" X 4"	5" X 7"	8" X 10"	4" X 5"	N E G.	35mm Color Slides	3¼" X 4" (B&W) Slides	4" X 5" Ekta-chrome	11" X 14"	16mm M.P. Film
COMMUNITY OPERATIONS & REAL ESTATE DEPT.											
Parks & Recreation			6	16		7					
Police		45	66	4	26	119				2	
Public Library				3		1					
Community Engineering				8		2					
EMPLOYMENT & PUBLIC RELATIONS											
Employment	1,275		5	3		230					
News Bureau		36	28	38	30	34					
Special Programs				79		3					
Radio & Special Events			8	21		7					
Training				7		6					
Work News		94	46	143	24	149					
ENGINEERING DEPT.											
Design & Construction			22	41		21		10			
Process				183		3					
Technical			60		269				13		
Rotational Training		85				34					
Pile Technology				45	2	27					
Project				16							4'
MEDICAL DEPT.			10			30	33	22			
MANUFACTURING DEPT.											
Plant Engineers				16	429	8					
Metal Preparation Section				18		23		5			
Separations Section				29		15					
Process Sub Section				24							
RADIOLOGICAL SCIENCES DEPT.											
Records & Standards				21		9					
Survey			3	9		3		10			
Biophysics								5			
PLANT AUXILIARY OPERATIONS DEPT.											
Security	7,832	8,923				504					
Fire & Safety					70	69					
MISCELLANIOUS											
F. B. I.		4				2					
A.E.C. Security	145					29					
A.E.C. Safety				120		36					
Richland Electrical Unit				2							
TOTAL:	8,252	9,187	254	846	850	1,371	33	52	13	2	4'

	APRIL	MAY	JUNE
Total assignments	189	179	199
Total Negatives	1,459	1,424	1,371
Total Prints	17,358	21,982	20,391

K-28

Employee and Public Relations
Technical Personnel Section

TECHNICAL RECRUITING

For M.S. and B.S. Candidates

The Technical Personnel Services Department in Schenectady is establishing regional coordinators of college recruiting. The way these men function will affect our freedom in college recruiting. We are trying to keep fully posted on developments although the recruiting re-organization in Schenectady is still incomplete.

We have recommended to the Wage Rate Office the adoption of adders for military and other related experience, following the pattern already adopted in Schenectady. This will be important in any further hiring, much of which will involve veterans with military service which should be recognized in the starting rate. In discussions with the Salary Administration Group in New York, and with the concurrence of the Salary and Wage Rate Groups at Richland, we are endeavoring to maintain our salary progression for technical graduates. This is considered necessary to meet our competition which is principally in the chemical industry.

The printed material used in college recruiting is being re-examined to see whether more extensive booklets, etc., are needed.

Experienced Engineers

During June one experienced procedures analyst, one graduate of the GE Advanced Engineering Program, one experienced technical librarian, and one meteorologist have been hired to meet special needs.

TECHNICAL PERSONNEL TRANSFERS AND LOSSES

Resignations	9
Transfers to other Divisions	1
Transfers within HAPO	8

Substantial numbers of employees are inquiring about transfers, some at the suggestion of their supervisors. Through contacts with other GE Divisions, professional magazines, and other sources we are trying to be well posted regarding opportunities, and be prepared to advise these employees how to look for other jobs if this should be needed. Also, as needs develop within the plant we are making every effort to fill them by internal transfer.

EDUCATION

The School of Nuclear Engineering finished its second semester courses during June. Over eighty percent of those who paid tuition completed their studies in good standing -- the highest percentage we have had in any semester to date.

Employee and Public Relations
Technical Personnel Section

ROTATIONAL TRAINING PROGRAM

For the new graduates, most of whom have now arrived, a two day orientation program has been planned. It has been possible to plan security clearance and initial duties of these new employees so that the four or six weeks introductory programs of earlier years are not needed.

MISCELLANEOUS

With the help of the McBee Personnel File we are now able to resume monthly reports listing all college trained personnel by fields of study and also by departments or sections in which they are employed. This monthly summary will be convenient for knowing the general proportions of our technical employment as well as changes.

At the request of KAPL, an invention report has been filed on a scheme proposed some time ago for measuring pressures in liquid metal circuits.

Employee and Public Relations

SALARY ADMINISTRATION

GENERAL

Emphasis for June in Salary Administration was directed toward getting data from Annual Salary Surveys ready for analysis and preparation of new survey reports and studies to indicate Hanford's relationship to outside exempt salaries. Work continued on getting current descriptions on all positions as of July 1.

W.P. McCue spent the week of June 22 with Salary Administration Services personnel in New York and Schenectady, reviewing progress made in other parts of the Company and studying means of identifying positions at Hanford against the proposed salary levels and equivalent positions for overall Company salary administration.

ANNUAL SALARY SURVEYS - NATIONAL AND WEST COAST

All of the salary data has been received and is being processed through IBM prior to detailed analysis and reproduction. It is anticipated that the survey reports will be ready for publication about August 1.

POSITION EVALUATION

The majority of the evaluation work was completed at month end. A few specific positions and small groups of positions remain to be finished in order to have current descriptions on all positions for the date of July 1, 1953.

REVIEWING OF POSITION CONTENT

The Salary Administration Section, at month end, has well established the routine program of making field reviews of both new and established positions, making certain that positions cannot remain obsolete over long periods. Periodic reviews have been completed in about one-third of the sections.

ORGANIZATION ANALYSIS

In organization analysis work emphasis shifted during the month from current problems to initial groundwork for development of long-range organization plans. Current short-range studies will be continued with assistance and consultation being rendered as needed. However, from this time on, long-range organizational study and planning will be given principal attention. Obviously, no results can be reported at this time due to the involved nature of these studies.

Specific problems of current impact were studied in June. They centered largely in Manufacturing (Plant Engineering); Plant Auxiliary Operations (Plant Protection); and Technical (Laboratory Engineering and Facilities). Some progress in modifying and improving spans of control or numbers of levels of supervision was achieved through recommendations accepted and made effective.

Employee and Public Relations

Union Relations

UNION RELATIONS - OPERATIONS PERSONNEL

The execution of the new HAMTC-GE Agreement by members of the Council Negotiating Committee was accomplished on June 1. Limited distribution of copies of the Agreement was made to the field, with additional copies available on reproduction orders. Both the HAMTC and HGU Agreements are in the hands of the printer and are expected to be available for distribution on or about July 1. Reimbursement authorizations approving the money items in the new contracts were received from the AEC covering both bargaining unit and nonunit employees. June 26 checks reflected the increased benefits on a current basis, with the retroactivity involved expected to be included on checks of July 3.

Settlement of the HAMTC's demand for arbitration of fifteen Instrument grievances was accomplished at a meeting on May 29. The terms of settlement involved nothing in the way of compromise on the part of the Company. Although three individuals will receive additional credit for past experience when they progress to the next higher classification, two were employees rehired at the starting rate following their resignations who would have received the above credit irrespective of this case, and the third was an individual not included in the group of 40 men allegedly bypassed who, by virtue of past experience and job performance, was obviously qualified for an adjustment. The settlement was subject to the approval of the Guild membership and such approval was obtained on June 3.

A representative of this office attended a meeting in Denver, Colorado, on June 8, jointly scheduled by the Federal Mediation and Conciliation Service and the Atomic Energy Commission to discuss procedures under which the new Labor-Management Relations Panel would operate. Our attendance at the Denver meeting was in the role of observer, with the official Company position reserved for discussion at the Washington, D. C. meeting on June 16. This position was made clear to the FMCS and the AEC, both orally and in writing, and it was likewise made known that our failure to interpose objections at Denver in no way constituted concurrence with the procedures under discussion. The meeting was confined to operating contractors of AEC in the Western States. The discussions consisted primarily of exploring contractor reaction to several preconceived ideas of acceptable Panel procedures. Undoubtedly as a result of criticism leveled at the manner in which the Davis Panel functioned, two significant changes were proposed:

1. That no pledge should be sought from the contractors or the unions regarding strikes, lockouts, or the status quo arrangement that was attempted by the Davis Panel.

2. That the services of the Panel should not be easily accessible. It was proposed that the Panel take jurisdiction over a dispute only upon request of FMCS, and then only after AEC has determined that the affected operation is "vital" to the over-all program.

The above, if carried out in toto, which is improbable, represents some improvement in Panel procedures but obviously does not remove our basic objections to special boards, panels or like agencies.

Employee and Public Relations

A wage offer increasing the "adder factor" from 10.53 per cent to 12 per cent, plus an additional adjustment of 1 to 8 cents per hour in the base rate of certain classifications, was made to the HAMTC, HGU and BSEIU on June 17. The offer was made subject to reaching agreement on an extension of the terms of the present contracts for a period of one year from the date of acceptance (probably June 10), with a modification foreclosing the right to negotiate on wages under the 30-day reopener clause during this period. By letter of June 26, the Council accepted our wage offer subject to ratification by affiliated local unions. The letter further advises that the ratification aspects should be completed on or before July 9. Both the HGU and BSEIU have likewise accepted, and ratification has been obtained subject to the formal action taken by the HAMTC. Definitive contracts setting forth terms of the wage agreement are in the final stages of being drafted.

On two occasions recently it has seemed desirable to transmit information to the field via the emergency telephone procedure. Our reports regarding the effectiveness of this method of communication have been very favorable.

A meeting was held on June 16 with representatives of Reactor, Industrial Medical and Safety Sections to further discuss and consider action to reduce the noise problem in Reactor Section pump rooms. It was determined that Medical and Safety Sections would procure and test samples of personal protective devices, particularly of the earmuff type. The Reactor Section will review the facilities to determine what improvement may be made from an engineering standpoint.

Retroactive payments resulting from the November 28, 1952, Agreement revising the formula for computing vacation benefits for employees working extended schedules appeared on weekly salary checks of June 26, and on monthly salary checks of June 30.

Two jurisdictional settlements were received from the Council awarding to the Electricians and Plumbers certain work that had heretofore been performed by the Instrument Guild. Although the work involved was of a relatively minor nature, it appears that this is an opening wedge in a dispute that may reach significant proportions before it is resolved. Instrument Guild members and representatives have been quite aggressive in endeavoring to get the Company to step into the fray in their behalf. This, of course, is the type of dispute in which the Company remains entirely neutral, consistent with a continuation of the timely and economical progress of the work.

Certain Instrument Craftsmen contend that when they work alone on a shift they do not receive a prescribed lunch period during which they are relieved of all responsibility. They have submitted a grievance requesting retroactive pay, plus recognition of this alleged condition when making future payments. They indicate their condition is similar to that of certain Technical Section employees who are receiving an adjustment for having worked without a proper lunch period. Preliminary investigation does not reveal the Instrument Craftsmen's claim to be justified; however, the matter is being carefully reviewed. It appears that other crafts are planning to make similar claims.

Employee and Public Relations

The Cisco Construction Company (nonunion contractor) has been awarded a $172,000 contract to construct underground piping, pumping houses and transformer stations, in addition to installing pumping equipment and pumping lines in the North Richland well field area. The contract includes the tying in to existing facilities and there should be no overlap of work between GE and Construction personnel. In view of the reluctance on the part of GE Plumbers to perform tie-ins on a recent Cisco job, discussions have been had with the Council business representative and the chief steward of the Plumbers, at which time they were informed that the Company would countenance no refusal to perform work associated with this job and that any such refusal would be met with disciplinary action. We received assurances that every effort would be made to avoid such an incident.

Grievance Statistics:

Two meetings were held during the month for the purpose of processing grievances at the Step II level.

Status of Grievances

	1953	
	Unit	Nonunit
Received this month	33	2
Received this year	170	19
Settled at Step I this month	12	3
Settled at Step I this year	60	14
Pending settlement at Step I at end of month	2	1
Settled at Step II this month	9	2
Settled at Step II this year	77	3
Pending settlement at Step II at end of month	220*	1
Brought to arbitration during the month	0	0
Pending settlement by arbitration	9**	0
Total number pending settlement	226	2

*Includes 169 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 the 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	12	1
Separations Section	12	1
Metal Preparations Section	1	0
Total for Department	25	2
Plant Auxiliary Operations Department		
Plant Protection Section	2	0
Transportation Section	3	0
Electrical Distribution & Telephone Section	2	0
Total for Department	7	0
Community Operations & Real Estate Department		
Community Real Estate Section	1	0
Total for Department	1	0
Engineering Department	0	0
Financial Department	0	0
Radiological Sciences Department	0	0
Medical Department	0	0
Legal Department	0	0
Employee and Public Relations Department	0	0
GRAND TOTAL	33	2

Subjects Covered by Grievances

Unit		Nonunit	
Jurisdiction	16	Continuity of Service	1
Health-Safety-Sanitation	5	Overtime Rates	1
Wage Rates	4		
Subjects not covered by Contract	4		
Grievance Procedure	1		
Hours of Work	2		
Sick Leave	1		
Total	33	Total	2

CONSTRUCTION LIAISON

Effective June 1, J. A. Jones took over the Minor Construction contract from Atkinson-Jones. L. E. McReynolds will continue as Project Manager (nonreimbursable). Pacific Electric and Urban Engineering are the electrical and mechanical subcontractors respectively.

Forty-six of the 63 Millwright employees of Kaiser in the 2101 Building who had been on strike since May 28, returned to work on June 5 on the basis of a temporary work assignment providing for a duplication of work on an inspection function. A member of the special Federal Mediation and Conciliation Service Panel, which submitted recommendations for settlement of the jurisdictional dispute between the Machinists and Millwrights on May 11, was in Richland on June 20 and 21 at the request of the parties to interpret the original Panel recommendation. His findings were given to the parties orally and in mimeographed form, subject to the concurrence of the other two Panel members.

No further action has been taken relative to the allegations of the Pasco-Kennewick Building Trades Council that Cisco Construction Company is in violation of the Davis-Bacon Act. It appears that the Commission is waiting for the Department of Labor to initiate any action that may be deemed necessary.

Commonwealth, Incorporated, has been awarded a 1½-year contract for the operation of the North Richland Camp which, for the past year, has been operated by Universal Foods. Commonwealth is also the management group responsible for the renting and minor maintenance of the Bauer-Day housing addition.

Construction Fitters have historically performed maintenance work on the well pumps at the well field located near the powerhouse in North Richland. Our Community people feel that this maintenance reponsibility should be theirs in order to assure the proper control over the water system, and for many months have endeavored to get AEC concurrence to this effect. By letter of June 25, the Commission notified the Company that "...insofar as the maintenance work on water producing facilities in the North Richland well field, including the one million gallon reservoir and adjacent pump house, is concerned that this maintenance can be more economically and efficiently done by General Electric forces than by a combination of General Electric and construction forces.

"Approval is hereby given to place General Electric personnel on this maintenance work since such work is directly connected with the maintenance and operation of the Richland water system and does not involve construction."

On June 5, Blaw-Knox discharged four foremen and one general foreman who refused to instruct their men to handle certain piping material that had been hauled to the site of the work without an expeditor on the truck. All but three of approximately thirty Plumbers on the job walked out in protest over the action and the local union has consistently refused to furnish Fitters to the Blaw-Knox job. Blaw-Knox operates under a national agreement and has been in almost daily contact with the international office, endeavoring without success to get men dispatched to the job.

Employee and Public Relations

From June 9 to June 23, the union refused to dispatch Carpenters to the Project because of a dispute over the interpretation of the contract clause on travel pay. The Carpenters contend that the dollar-a-day travel allowance should apply on the day a new employee processes through Employment. The parties have agreed to arbitrate the dispute and are in the process of selecting an impartial arbitrator.

WAGE RATES

Reimbursement Authorization No. 203 was received from the Atomic Energy Commission covering the establishment of four new classifications, the retitling of one classification and a change in the automatic progression schedule for another classification, together with approval of the Metal Preparation "Changeover Procedure". The four new classifications are "Metal Operator" (Grade 20), "Metal Fabricator" (Grade 17), "Metal Handler" (Grade 11), and "Separations Utility Operator" (Grade 17). The title of "Separations Process Operator" was substituted for the classification of "Chemical Process Operator". The new automatic progression schedule for the classification of "Utility Operator (Reactor Section)" involves a forty-five month automatic progression schedule.

Reimbursement Authorization No. 204 was received from AEC for revisions made necessary as a result of recently negotiated agreements between the Company and the Hanford Atomic Metal Trades Council, the Building Service Employees International Union, Local 201, and the Hanford Guards Union, Local 21. The reimbursement authorization was effective May 16, 1953.

Reimbursement Authorization No. 205 covering nonbargaining unit employees was received from AEC for revisions necessary to maintain the existing relationships between the bargaining and nonbargaining unit employees.

A reimbursement authorization request, covering the application of the current wage increase to all nonexempt employees and Community Firemen, was submitted to the AEC. Upon approval of the Commission, the increase shall be placed into effect for all nonbargaining unit employees. Bargaining unit employees shall receive the increase when the Company is notified of the acceptance of the offer by the unions.

Five meetings were held in June, during which discussion was held on a revised classification program for semi-technical employees. It was determined that a survey of the classification setup of other chemical plants should be made.

A review of the cost jobs throughout the project was completed.

In a continuing series of meetings with representatives of the different union locals, five discussions were held during the month on wage and classification problems.

Employee and Public Relations

Two hundred ninety-three (293) automatic increases and eleven (11) merit increases were processed during June. Requisitions for one hundred eighty-one (181) prospective employees and Additions to the Payroll for one hundred thirty-six (136) new employees were approved. Review for proper classification, rate, etc., was made for twenty-four (24) reactivations, three hundred twenty-two reclassifications, one hundred twenty (120) temporary reclassifications, eighty-six (86) transfers and one (1) transfer from the exempt roll.

COMMUNITY OPERATIONS AND
REAL ESTATE DEPARTMENT
MONTHLY REPORT SUMMARY
JUNE, 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	340	4	3
Engineering	341	9	9
* Public Works General & Utilities	342	76	30
- Public Works Labor Crews	343		57
Recreation & Civic Affairs	344	5 1/2	5 1/2
Library	345	10	10
Fire	346	68	67
Police	347	51	51
Electrical System	348	18	20
Sub-Totals		241 1/2	252 1/2
Community Real Estate Section			
Administration	350	3	3
Housing Rental	351	23	23
Maintenance	353	148	151
Commercial Property	357	11	12
Sub-Totals		185	189
Civil Defense Program	360	1	1
GRAND TOTALS		432 1/2	447 1/2

* Previously Public Works was carried under one total and one suffix, in the future - it will be segregated as above.

There was an increase of fifteen employees in the Department during the month of June, 1953, due primarily to the necessity of increasing lawn maintenance.

GENERAL

The Richland Community Council was conducted on its third annual tour of Community facilities on June 25. Emphasis was placed on those facilities and services which had been added to the Section since the previous tour. A luncheon was held at the Desert Inn and attended by the Community Council and the staff of the Community Operations Section.

The hot weather increased domestic water consumption to a point that the supply of water could not adequately meet the demand. It was apparent that regulatory measures would be required until added production facilities were available, therefore the Odd-Even watering plan was inaugurated on July 3 and suitable publicity was distributed.

Priorities for the certification of applicants for Wherry Act Housing were relaxed to include all full-time employees in Richland, except those female employees whose husbands work off of the Project.

Total housing applications pending - 659.

HARoot/jak
7/10/53

COMMUNITY OPERATIONS SECTION

SUMMARY

JUNE 1953

ORGANIZATION & PERSONNEL:

	BEGINNING OF MONTH		END OF MONTH	
	Exempt	Non-Exempt	Exempt	Non-Exempt
ELECTRICAL	4	14	4	16
PUBLIC WORKS	13	63	13	74
RECREATION & CIVIC AFFAIRS	3	2 1/2	3	2 1/2
LIBRARY	4	6	4	6
POLICE	18	33	18	33
FIRE	68	0	67	0
ENGINEERING	6	3	6	3
	116	121 1/2	115	134 1/2

The Richland Community Council was conducted on its third annual tour of Community facilities on June 25, 1953. Emphasis was placed on those facilities and services which have been added to the Section since the previous tour. A luncheon was held at the Desert Inn and attended by the Community Council and the staff of the Community Operations Section. The entire tour was well received.

The hot weather beginning in June increased domestic water consumption to a point where the supply of water could not adequately meet the demand. It was apparent that regulatory measures were required until added production facilities were available, therefore the Odd-Even Watering Plan was inaugurated on July 3 and suitable publicity was distributed.

RICHLAND ELECTRICAL UNIT
MONTHLY REPORT
JUNE 1953

ORGANIZATION AND PERSONNEL	Exempt	Non-Exempt
Employees beginning of month	4	14
Transfers in	0	2
Transfers out	0	0
Terminations	0	0
Total end of month	4	16

SYSTEM MAINTENANCE AND OPERATION

Outside Lines

Poles set and transferred	17
Anchors set and guys installed	1
Street lights repaired and steel mast arms installed	9
Street lights relamped - Mercury Vapor	4
Street lights relamped - 6000L and 4000L, 1100 Area	92
Street lights relamped - 6000L and 4000L, 700 Area	8
Flood lights relamped, 1100 Area	12
Flood lights relamped, 700 Area	2
Stack lights relamped, 700 Area	2
Primary line footage added	150
Primary line footage removed	0
Transformer KVA added	1328
Transformer KVA removed	3
Net transformer KVA installed	1325
New services installed - residential	238
New services installed - commercial	13
Temporary services installed and removed	1
Scheduled outages - primary	2
Scheduled outages - secondary	1
Unscheduled outages - primary	0
Unscheduled outages - secondary	0
Standby and escort	5
High voltage tree trimming	79
Low voltage tree trimming	20

TRAFFIC SIGNALS

Relamping	226
Operational failures	4
Installations	0
Removals	0
Routine maintenance checks	38
Routine check RR signal at Van Giesen	3
Total signals in operation - automatic	17
Total signals in operation - manual	2

RICHLAND ELECTRICAL UNIT

PUBLIC WORKS ELECTRICAL MAINTENANCE

Electrical motors checked and serviced - irrigation	18
Electrical motors checked and serviced - water	38
Electrical motors checked and serviced - sewage	46

FIRE DEPARTMENT TEST AND MAINTENANCE

Inside circuit and equipment checks	4
Outside circuit checks	4
Inside faults repaired	3
Outside faults repaired	1
New circuits placed in operation	0
New boxes placed in operation	1

SUBSTATIONS

Main feeder and tie breaker checks - BB1S1	4
" " " " " " - BB1S2	4
Secondary and pad located stations - Checked jumpers, cutouts, grounds and general condition	16

METERING - OPERATION, MAINTENANCE, CONSUMPTION AND REVENUE

Voltage and load checks	5
Meters tested - customers' requests	3
New meters shop tested	1
Faulty meters replaced	2
Damaged meters and covers	1
Residential read-ins	156
Residential read-outs	99
Residential disconnects	1
Residential reconnects	68

Note: Consumption and revenue reports, under IBM operation, are not available until the 18th of following month. May 1953

	No. of Meters	KWH	Revenue
Consumption and revenue:			
Schedule 1 - residential -	6,090	4,455,353	$47,087.57
Schedule 2 - commercial -			
Class 1 (in lease)	76	802,454	7,306.86
Class 2 (metered)	125	496,586	5,821.22
Class 3 (Plant Adm.) Comm. Rate			
1131 Bus Lot	6	70,800	635.40
Kadlec Hospital		55,980	458.90
Stores Excess and Salvage		46,500	432.50
Central Stores		58,560	567.80
Public Health		2,493	29.20
700 Area		374,400	2,278.20
.005 Rate	4		
Army Dike Pump 1 and 2		3,680	18.40
Medical-Dental Building		8,880	44.40

RICHLAND ELECTRICAL UNIT

	No. of Meters	KWH	Revenue
Public Library		5,720	28.60
Central Fire Station		5,640	28.20
.005 Rate (Unmetered Est.)			
1125 Warehouse		10,000	50.00
AEC Airport		15,000	75.00
Comm. Administration		724,774	3,623.87
TOTAL	6,301	7,136,800	$68,486.12

CALL OUT - No call-out's for the month of June.

COMMENTS

Rearranged secondary wiring and metered outlets for public use at John Dam Park.
Discontinued service to unused warehouses in 1125 Area.
Accepted N1 Area on Gribble Street for operation. Energized primary lines and proceeded to serve houses as completed.
Accepted and energized three remaining primary laterals to M1 Area south of Duportail and proceeded to energize houses as completed.
Approved a portion of K1 Area, 6th housing area, for providing contractor with construction power to expedite his work. AEC approved his request which obligates him for maintenance and operation of that section, as well as responsibility for damage until accepted.
Additional power station of 225 KVA was installed in Uptown Commercial Area to provide power for new loads and balance existing loads.
Planned outage to that Area was necessary June 17, 1953, 4:00 A.M. to 7:48 A.M. to permit extending to new station and preventive maintenance to existing stations and lines.
Replacement of rotted poles and maintenance rearrangement of lines is being continued along Benham Street from George Washington Way to Duane.
Replaced all control batteries to RR signal on Van Giesen at Bypass.
Replaced defective 200 amp. switch to Columbia Playfield.
Connected and placed in service, new fire alarm system at school maintenance shop on Thayer at Kuhn Street.
Replaced defective parts furnished by General Electric to six GE traffic controllers.
Installed lightning arresters and fuses for cable protection for ten circuits at Swift between George Washington Way and Goethals.
Replaced wiring in 220 3-phase circuits in boiler room in two condulets at Central Fire Station where fire from furnace heat damaged wiring. This was installed by contract.
Connected new fence grounding to three substations in 700 Area.
Replaced #3 domestic water pump motor in 1182 Building.
Planned outage was necessary to 12X57 to transfer to new poles on Abbot - 1:30 to 3:30 P.M.

COMMUNITY OPERATIONS AND REAL ESTATE
PUBLIC WORKS UNIT
June 30, 1953

ORGANIZATION AND PERSONNEL

	Exempt	Non-Exempt
Employees Beginning of Month	13	63
Transfers Out	0	5
Transfers In	--	6
New Employees	--	11
Terminations (Deactivated)	--	1
Total End of Month	13	74

SANITATION

Total weight of waste material collected and disposed of during June was 1313 tons. Servicing of trash trailers on Saturdays was discontinued on 6-27-53, and Saturday collection of garbage from commercial facilities will be discontinued effective 7-4-53.

ROADS AND STREETS

The 1953 Seal-Coat program, comprising 10 miles of streets, was completed during June. The second and final course of a light bituminous surface was laid on Kadlec Road from Van Giesen to McMurray; McMurray, from Jadwin to Stevens; and the boat launch ramp on Bradley Road extended. The first course has been lain on Mansfield Street from Stevens to Columbia Playfield Parking Lot, and on the parking lot south of the old Masonic Hall location. The application of the second course at these latter two locations will be done in July, and this will complete the oil program for the present year.

The contractor that performed the improvement work on Thayer Drive last year applied a Seal-Coat to the entire surface of the new pavement during June. This Seal-Coat is intended to improve the appearance of the surface where it had been necessary to replace some faulty paving material. An excessive amount of oil on the south end of the street caused some pick-up of rock and oil shortly after application, but the contractor took corrective steps and the final job was satisfactory.

Community Operations - Public Works Unit

ROADS AND STREETS (Continued)

Seasonal routine maintenance of streets, street signs, drainage systems, municipal parking lots and sidewalks was continued.

PARKS AND PUBLIC GROUNDS

Irrigation of the major part of lawn area assigned to this group has been carried out on the graveyard shift since 6-15-53.

Final inspection of the southwest shelterbelt was held on 6-30-53 and this planting will be accepted for maintenance in July.

The Richland Yacht Club Regatta was held on 6-20 and 21-53, and the sponsor group did a very fine job of clean-up on the Park area following the event.

Routine seasonal maintenance was continued in shelterbelts, parks, public grounds, and other lawn areas assigned to this group.

DOMESTIC WATER

Average daily consumption during June was 16.28 million gallons. Peak usage for the month was on 6-25-53 when 20.58 million gallons were consumed.

Well 3000-B developed excessive vibration toward the end of the month, and the pump was pulled for inspection and repair. Necessary work included replacement of top motor bearing, and pump shaft bearings, and overhaul of the turbine.

All work on the Water Development Project, as contracted for to date, which included the drilling of five wells; roofing of the 1182 reservoirs; laying of feeder mains; and construction of a 5 million gallon reservoir; is now complete with exception of calibrating and placing in operation of the new reservoir level indicator. The altitude valve at the new reservoir was installed as specified, but is not operating satisfactorily, and alteration or relocation of this valve will be necessary in order for it to function as intended This matter is now under study by the design engineer and valve manufacturer.

Bid opening for equipping of 5 new wells, installations of a well header and 2 sand traps which is the final phase of the Water Development Project, was held on 6-3-53 but due to legal technicalities the contract had not been awarded by the end of the month. This delay in award of contract will postpone the availability of these much needed water producing facilities beyond the critical consumption period and the inadequacy of the existing wells to meet the demands of an increased population causes serious concern.

Jurisdiction of maintenance work on all water system facilities located in North Richland was transferred from Construction to General Electric Operations personnel on 6-29-53.

DOMESTIC WATER (Continued)

Production and consumption records for June are as follow:

DOMESTIC WATER

	Well Production Million Gallons	Av. Daily Production	Total Consumption Million Gallons	Av. Daily Consumption
Richland	177.8156	5.9272	394.6751	13.1558
North Richland	184.7720	6.1591	55.1955	1.8399
Columbia Field	124.3326	4.1444		
300 Area			38.6505	1.2884
Total	486.9202	16.2307	488.5211	16.2841

SEWERAGE

Approximately 90 million gallons of sludge were pumped from digestor to drying beds during the month.

Normal operation and maintenance were continued, and flow meter readings at the treatment plant for June were 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	32.800	1.093	759
Plant No. 2	69.678	2.323	1613
Total	102.478	3.416	2372

IRRIGATION SYSTEM

Normal operation and maintenance of irrigation pump houses and lines were continued.

The main canal from the fish screens to Weedles Spill and from the Penstock to Yakima Spill was treated with aquatic weed killer during the latter part of June. Even though the canal was thoroughly flushed, a small amount of chemical apparently carried through the canals and percolation basins and caused a slight "coal-tar taste" in the domestic water on 6-25 and 26-53.

An experimental program for control of weeds in the 3000 Area canal through continuous injection of chlorine into the penstock flume, is now in progress. Indications to date are that the results are very satisfactory. Introduction of chlorine at this point also performs the function of sterilizing the supply of water to the North Richland percolation basin, and has eliminated the need for chlorinating the canal at the North Richland Chlorine House location.

RECREATION AND CIVIC AFFAIRS UNIT

MONTHLY REPORT

JUNE, 1953

ORGANIZATION AND PERSONNEL

	Exempt	Non-Exempt
Beginning of Month	3	2-1/2
New Hires	0	0
Terminations	0	0
Transfers - IN	0	0
- OUT	0	0
	3	2-1/2

SCHOOLS

The following is a tabulation of full-time paid School District #400 personnel as of June 30, 1953:-

Administration	5
Principals & Supervisors	14
Clerical	22
Teachers	286
Health Audiometer	1
Cooks	39
Nursery School & Extended Day Care	0
Bus Drivers	1
Maintenance	21
Operations	40
	429

CLUBS AND ORGANIZATIONS

As of June 30, 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
Campfire Girls	1
Hi Spot Club	2
Girl Scouts	2
Justice of the Peace	1
Y.W.C.A.	2
Chamber of Commerce	1
	11

Recreation and Civic Affairs Unit Monthly Report (Continued)

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

The regular monthly meeting of the Parks and Recreation Board was held on June 3, 1953. The Board was asked to reconsider their approval of a recommendation made by the Community Operations Section that a service charge of $125.00 be made against groups sponsoring major community events at Riverside Park and instead to approve a recommendation whereby groups would be charged for actual electricity used and would perform their own clean up. The Board followed this recommendation and approved it. The next regular meeting of the Board is scheduled for July 1, 1953.

The Summer Playground Program started on Monday, June 8 at Riverside Park and Columbia Playfield.

The first session of the Summer Craft Program was held at the Community House on Monday, June 8.

The first special event, a Baseball Pitch Contest, was held on June 24, at Riverside Park.

On Wednesday, June 24, the first Band Concert of the Summer was held at Riverside Park.

The Play-For-Fun League started play on Monday, June 15 at Columbia Playfield.

On June 20 and 21 the Richland Yacht Club sponsored a Yacht Regatta in Richland.

Recreation and Civic Affairs Unit Monthly Report (Continued)

ATTENDANCE - OTHER THAN COMMUNITY HOUSE

	Children	Adults	Total
Sponsored Programs	6,945	2,602	9,547
Special Events	38	15	53
Permit Groups	3,901	2,270	6,171
Totals For Month	10,884	4,887	15,771
Fiscal Year Totals To Date	68,114	55,465	123,579

ATTENDANCE - COMMUNITY HOUSE

Sponsored Programs	4,810	1,303	6,113
Special Events	--	--	--
Permit Groups	193	1,068	1,261
Totals For Month	5,003	2,371	7,374
Fiscal Year Totals To Date	68,701	40,021	108,722

GRAND TOTALS		This Month	Cumulative-To-Date
I.	Outside Total	15,771	123,579
II.	Community House	7,374	108,722
III.	Grand Total	23,145	232,301

RICHLAND PUBLIC LIBRARY

JUNE 1953

ORGANIZATION AND PERSONNEL	Exempt	Non-Exempt
Employees - Beginning of Month	4	6
Transfers In	0	0
Transfers Out	0	0
New Hires	0	0
Terminations	0	0
End of Month	4	6

GENERAL

Circulation

Books	15,590 (Adult - 8,080; Juvenile - 7,510)
Magazines	381
Pamphlets	67
Records	1,054
Interlibrary Loan	27
Grand Total	17,119

Current Book Stock

Books added this month	184
Books withdrawn this month	6
Grand Total	25,785
Phonograph Records added	62
Phonograph Records withdrawn	3

Registration

Adult	187
Juvenile	158
Total	345
Total Registered Borrowers	13,329

Children's Story Hour Attendance	151 (Park Story Hours since June 9, 1953--includes 4 story hours as 3 were not held due to inclement weather.)

The activities in North Hall this month have included thirteen meetings and exhibits of Junior and Senior High School art.

Four hundred and sixty children have registered for the children's World Flight Summer Reading Club. Of those registered, one hundred and forty-one have made book reports and four have completed the required reading of ten books during the summer.

The Librarian attended the annual conference of the American Library Association, held in Los Angeles, California, June 21 through June 27, 1953.

RICHLAND POLICE DEPARTMENT

JUNE 1953

ORGANIZATION	Exempt	Non-Exempt
Employees - Beginning of Month	18	33
Transfers In	0	0
Transfers Out	0	0
New Hires	0	0
Terminations	0	0
Total - End of Month	18	33

GENERAL

Chief H. W. Strock and Capt. C. F. Klepper attended the joint conference of the Washington Chiefs of Police Association and the Washington Police Officers' Association held in Longview, Washington, on June 26 and 27.

We were notified the first of this month that Richland won a third place tie among cities of 10,000 to 25,000 population in the 1952 National Pedestrian Protection Contest sponsored by the American Automobile Association.

We were advised that Richland received "Honorable Mention" for Outstanding Performances in Traffic Law Enforcement for 1952 in the International Association of Chiefs of Police Traffic Law Enforcement Contest. Richland was given "Honorable Mention" along with nine other cities of the 10,000 to 25,000 population class. First place award for this group of cities went to Ventura, California.

The Richland Community Council was escorted through Richland Police Headquarters on June 25, on the occasion of their annual tour of Community facilities.

TRAFFIC

Richland	1953 May	1953 June	1952 May	1952 June	1953 Total to Date	1952 Total Same Period
Reportable accidents	18	23	17	19	133	150
Property damage accidents	12	19	15	17	114	129
Injury accidents	6	4	2	2	19	20
Total persons injured	12	5	4	2	26	26
Fatal accidents	0	0	0	0	1	1
Accidents - Daylight hours	14	20	9	12	89	90
Darkness	4	3	8	7	44	59
Accidents - Business district	6	8	6	6	51	47
Residential "	7	9	11	8	62	85
Other "	5	6	0	5	20	18
Accidents investigated	13	16	12	13	87	105
Criminal complaints filed	12	13	10	9	70	80
Violations contributing to accidents:						
Negligent driving	3	2	2	6	19	25
Fail. to yield r.o.w.	5	9	7	6	48	43
Following too closely	2	4	1	1	21	17
Drunk driving	0	2	1	0	3	2
Pedestrian violation	1	0	0	0	3	0
Inattention to driving	0	0	0	1	1	8
Reckless driving	1	0	0	1	4	7
Speeding	0	1	0	1	1	1
Unsafe speed	2	2	3	0	7	32
Improper backing	3	1	2	1	10	10
Disregard. stop sign	1	0	0	2	5	3
Hit and run	0	0	1	0	1	1
Improper passing	0	0	0	0	2	4
Improper turn	0	2	0	0	2	2
Failure to signal	0	0	0	0	0	1
Wide right turn	0	0	1	0	0	1
Traffic safety meetings	17	8	5	4	44	75
Attendance, traffic films	590	345	205	165	3565	4740
North Richland:						
Reportable accidents	8	13			55	
Property damage	4	11			45	
Injury accidents	4	2			10	

Richland	1953 May	1953 June	1953 Ave. Per Accid. May	1953 Ave. Per Accid. June	1952 Ave. Per Accid. May	1952 Ave. Per Accid. June
Accident property damage	$6,227.55	$5,065.00	$345.98	$220.22	$328.82	$277.20

TRAINING

There was no range activity by members of the Richland Police Department during the month of June.

ACTIVITIES AND SERVICES

	May		June	
	Richland	No.Richland	Richland	No.Richland
Bank escorts and details	1	4	4	4
Bicycles impounded	0	0	5	0
Bicycle violations, other	1	0	2	0
Bicycles registered	542	0	68	0
Children lost or found	20	4	25	2
Complaints inv.(no enf.action)	21	2	33	2
Deaths reported	0	0	0	0
Dog, Cat, loose stock complaints	3	2	2	0
Dogs, Cats reported lost or fd.	7	0	7	0
Doors, windows fd.open in facil.	35	59	38	52
Emergency messages delivered	12	83	12	92
Fires investigated	3	4	9	7
Guns registered	1	0	16	0
Law enforcement agencies assist.	4	0	5	0
Letters of inquiry	69	0	74	0
Miscellaneous escorts	7	3	13	10
Persons injured by dogs	2	0	2	1
Plant departments assisted	6	0	10	1
Prisoners proc.through Jail	16	14	27	11
Private individuals assisted	17	2	33	4
Property lost or found	13	0	25	0
Records inquiries	92	0	85	0
Reports proc.through Records	204	122	295	125
Street lights out rep.to Elec.	87	45	100	40
Total	1163	344	890	351

MONTHLY REPORT
RICHLAND POLICE DEPARTMENT
(RICHLAND - NO. RICHLAND)
JUNE 1953

OFFENSES	KNOWN Rich.	KNOWN No. Rich.	UNFOUNDED Rich.	UNFOUNDED No. Rich.	CLEARED OTHER* Rich.	CLEARED OTHER* No. Rich.	CLEARED ARREST Rich.	CLEARED ARREST No. Rich.
PART I								
1. Murder								
2. Rape								
3. Robbery								
4. Aggravated Assault								
5. Burg.-Break.& Entry	1	1	-	-	-	-	1	-
6. Larceny Over $50.00	8	2	-	1	-	-	3	1
Under $50.00	16	6	1	1	1	2	6	-
7. Auto Theft	3	4	1	-	-	2	2	2
TOTAL PART I CASES	28	13	2	2	1	4	12	3
PART II								
8. Other Assaults	3	2	-	-	1	2	2	-
9. Forgery & Counterfeit	-	-	-	-	-	-	-	-
10. Embezzlement & Fraud	2	-	1	-	-	-	1	-
11. Stolen Prop:Buy:Rec.	-	-	-	-	-	-	-	-
12. Weapons:Carry:Poss.	-	-	-	-	-	-	-	-
13. Prostitution	-	-	-	-	-	-	-	-
14. Sex Offenses	-	-	-	-	-	-	-	-
15. Offenses Ag.Fam.&Child	-	-	-	-	-	-	-	-
16. Narcotics-Drug Laws	-	-	-	-	-	-	-	-
17. Liquor Laws	1	-	-	-	-	-	1	-
18. Drunkenness	6	4	-	-	-	-	6-	4
19. Disorderly Conduct	-	-	-	-	-	-	-	-
20. Vagrancy	-	-	-	-	-	-	-	-
21. Gambling	-	-	-	-	-	-	-	-
22. Driving While Intox.	15	3	-	-	-	-	15	3
23. Viol. Rd. & Dr. Laws								
Fail. to Stop & Identify	3	3	-	-	-	-	1	-
Speeding	24	11	-	-	1	1	23	10
Stop Sign	10	14	-	-	-	-	10	14
Reckless Driving	7	1	-	-	-	-	7	1
Right of Way	1	2	-	-	-	-	1	2
Negligent Driving	18	5	-	-	-	-	18	5
Defective Equipment	4	2	-	-	2	1	2	1
Illegal Passing	2	-	-	-	-	-	2	-
Following Too Close	1	-	-	-	-	-	1	-
24. Parking	47	41	-	-	7	21	40	20
25. All Other Traff. Violations	9	6	-	-	-	-	9	6
26. All Other Offenses:								
Malicious Mischief	8	-	-	-	3	-	1	-
Vandalism	15	2	-	-	1	1	11*	-
Disturbance	1	2	-	-	1	2	-	-
Bike Violations	4	-	-	-	4	-	-	-
Dest. of Govt. Prop.	1	1	-	-	1	-	-	-
Molesting	1	-	-	-	-	-	-	-
Investigation	4	1	-	-	3	1	1	-
Family Disturbance	1	3	-	-	1	3	-	-
TOTALS	188	103	1	-	25	32	152	66

Carried forward to page LF-5

	OFFENSES	KNOWN Rich.	KNOWN No. Rich.	UNFOUNDED Rich.	UNFOUNDED No. Rich.	CLEARED OTHER* Rich.	CLEARED OTHER* No. Rich.	CLEARED ARREST Rich.	CLEARED ARREST No. Rich.
	Totals brought forward from page LF-4	188	103	1	-	25	32	152	66
26.	All other Offenses:								
	Public Nuisance	5	6	-	-	-	-	5	6
	Prowler	3	1	-	-	2	-	-	-
	Neighborhood Trouble	3	1	-	-	2	1	-	-
	Illeg. Use of Guns	2	2	-	-	2	2	-	-
	Viol. of Dog Ordinance	1	-	-	-	1	-	-	-
	Pickup for Outside Agency	2	1	-	-	-	1	2	-
	Cruelty to Animals	1	-	-	-	-	-	1	-
	False Fire Alarm	1	-	-	-	1	-	-	-
	Viol. of Fireworks Ord.	1	-	-	-	1	-	-	-
27.	Suspicion	1	1	-	-	-	-	-	-
	TOTAL PART II	208	115	1	-	34	36	160	72
PART III									
28.	Missing Persons	10	-	-	-	10	-	-	-
	Lost Persons	15	3	-	-	15	3	-	-
	Lost Animals	6	-	-	-	1	-	-	-
	Lost Property	20	2	-	-	13	-	-	-
29.	Found Persons	3	-	-	-	3	-	-	-
	Found Animals	1	-	-	-	-	-	-	-
	Found Property	11	-	-	-	7	-	-	-
	TOTAL PART III	66	5	-	-	49	3	-	-
PART IV									
30.	Fat.M.V.Tr.Acc.								
31.	Pers.Inj.M.V.Tra.Acc.	4	2						
32.	Prop.Dam.M.V.Acc.	19	11						
33.	Other Traffic Acc.								
34.	Public Accident)								
35.	Home Accidents)	No Accurate Statistics Kept							
36.	Occupational Acc.)								
37.	Firearms Accidents								
38.	Dog Bites	2	1						
39.	Suicides								
40.	Suicide Attempts	1							
41.	Sud.Death.&Bod. Found								
42.	Sick Cared For								
43.	Mental Cases	1							
	TOTAL PART IV	27	14						
	COMPOSITE TOTALS PART I,II,III,IV CASES	329	147	3	2	84	43	172	75

*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. ** Three of eleven vandalisms were cleared for previous month.

Property reported stolen	Richland	$6,566.50
Property Reported stolen	No. Rich.	$8,955.60
Property recovered	Richland	$5,712.50
Property recovered	No. Rich.	$8,926.50

MONTHLY REPORT — RICHLAND POLICE DEPARTMENT — JUVENILES INVOLVED — JUNE 1953

OFFENSE	NO. CASES	JUVENILES	SEX	5	6	9	10	11	12	13	14	15	16	17
RICHLAND														
Juvenile Disturbance	1	2	M									1	1	
Destruction of Property	1	1	M									1		
Illeg. Possession of Liquor	1	2	M 1-F									1	1	
Fire	1	1	M					1						
Larceny	6	9	M 1-F						1	3	2	2	1	
Public Nuisance	1	1	M											1
Malicious Mischief	3	8	M			3	2	2			1			
Cruelty to Animals	1	1	M									1		
Vandalism	2	6	M							2	2	2		
Prowlers	2	5	M			1			3	1				
Third Degree Assault	1	1	F										1	
Viol. of Fireworks Ord.	1	3	M								1	1	1	
TOTALS	21	40				4	2	3	4	6	6	9	5	1
NORTH RICHLAND														
Illegal Shooting	2	2	M		1					1				
Neighborhood Disturbance	1	3	M			1		1	1					
Larceny	1	2	M			1		1						
TOTALS	4	7			1	2		2	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 March	1953 April
Murder	.405	.067	-	-	-
Robbery	10.850	1.808	-	-	-
Agg. Assault	8.500	1.416	-	-	-
Burglary	67.975	11.329	8	3	1
Larceny	210.800	35.131	163	16	24
Auto Theft	34.475	5.745	4	-	3

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 March	1953 April
Murder	.355	.059	-	-	-
Robbery	10.000	1.666	-	-	-
Agg. Assault	2.650	.441	-	-	-
Burglary	62.575	10.429	8	3	1
Larceny	209.125	34.854	163	16	24
Auto Theft	31.650	5.275	4	-	3

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 March	1953 April
Robbery	55.1	-	-	-
Burglary	60.2	38%	33 1/3%	-
Larceny	43.4	12%	25%	25%
Auto Theft	69.4	75%	-	100%

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."

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 March	1953 April
Murder	.162	.027	-	-	-
Robbery	4.34	.723	-	-	-
Agg. Assault	3.40	.566	-	-	-
Burglary	27.19	4.531	1	1	1
Larceny	84.32	14.053	45	12	8
Auto Theft	13.79	2.298	2	-	4

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 March	1953 April
Murder	.142	.023	-	-	-
Robbery	4.01	.668	-	-	-
Agg. Assault	1.06	.176	-	-	-
Burglary	25.03	4.171	1	1	1
Larceny	83.65	13.941	45	12	8
Auto Theft	12.66	2.111	2	-	4

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 March	No. Richland 1953 April
Robbery	55.1	-	-	-
Burglary	60.2	-	-	-
Larceny	43.4	-	8%	25%
Auto Theft	69.4	-	-	50%

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.

RICHLAND POLICE DEPARTMENT
RICHLAND JUSTICE COURT CASES
JUNE 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.
												$	$	$
AID & ABET.DRKN DR.	1	1					1		1					
DEFECTIVE EQUIPMENT	5	2		2	1					2	1		12.50	
DRIVERS LICENSE	25	7	9	8	1					5	18	15.00	15.00	7.50
DRUNKEN DRIVING	14	8		6			2		8				382.50	
F.T. KEEP TO RIGHT	1		1							1		7.50		
F.T.S. & I.	2				2					1				
ILLEGAL PARKING	34	5	23	6						1		82.00	24.00	24.00
ILLEGAL PASSING	2		2									15.00		
IMPROPER PLATES	5	3	1	1							3	7.50		
NEGLIGENT DRIVING	32	18	4	9	1		2		2	7		100.00	275.00	35.00
NO REGISTRATION	6		1	4	1					2	7			
DRVG W/OUT FURNISHING PROOF OF FINANCIAL RESPONSIBILITY AFTER REV. OF DR. LIC.	1	1					1							
RECKLESS DRIVING	3	2		1					2				72.50	
SPEEDING	32	12	14	6						3		147.50	117.50	10.00
STOP SIGN	15	3	10	1	1					1	2	60.00	20.00	7.50
ABANDONMENT & NON-SUPPORT	2				2					2				
ARSON	1				1					1				
AUTO THEFT	1			1										
DOG ORDINANCE	1				1									
INDECENT LIBERTIES	1			1										
INJURY TO PROPERTY	2	2					2				2			
LARCENY BY CHECK	1	1											25.00	25.00
MALICIOUS MISCHIEF	2	2					2							
PETIT LARCENY	4	2		2			2			1				
POSS. OF STLN PROP.	1	1								1			25.00	25.00
PUBLIC INTOXICATION	7	2	4	1								60.00	25.00	25.00
PUBLIC NUISANCE	4	4											70.00	40.00
RESISTING AN OFFICER	1			1										
THIRD DEG. ASSAULT	2			2						1				
THROW OR DROP OBJECTS FRM A MOVING VEH.	1		1									15.00		
TOTAL	209	76	70	52	11		12		13	29	33	$509.50	$1064.00	$199.00

TWO RECKLESS DRIVING CASES AMENDED TO NEGLIGENT DRIVING.

RICHLAND POLICE DEPARTMENT
NORTH RICHLAND JUSTICE COURT CASES
JUNE 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	2		1	1							1	$ 10.00	$	$
DRIVERS LICENSE	5	1	4								4	7.50		
DRUNKEN DRIVING	3			3						2				
F.T. DIM LIGHTS	1		1									7.50		
F.T.Y.R.O.W.	3	1	2									30.00	15.00	
ILLEGAL PARKING	36	7	16	13						1		57.50	26.00	10.50
IMPROPER SIGNAL	1	1								1			10.00	10.00
NEGLIGENT DRIVING	4	1	1	2						1		15.00	75.00	
RECKLESS DRIVING	4	1	1	2					2			50.00	100.00	
SPEEDING	12	3	7	2			1					66.50	17.50	
STOP SIGN	14	4	8	2							1	40.00	25.00	10.00
AUTO THEFT	2			2										
INJURY TO PROPERTY	1	1											25.00	25.00
POSS. OF STLN PROP.	2				2					1				
PUBLIC INTOXICATION	3	1	2				1					25.00		
PUBLIC NUISANCE	6	2	4				1					67.50	17.50	
THIRD DEG. ASSAULT	1	1											50.00	
TOTAL	100	24	47	27	2		3		2	6	6	$376.50	$361.00	$55.50

ONE DRUNKEN DRIVING CASE AMENDED TO RECKLESS DRIVING.
ONE DRUNKEN DRIVING CASE AMENDED TO NEGLIGENT DRIVING.

LF-10

POLICE DIVISION - TRAFFIC CONTROL STATISTICS
JUNE, 1953

MOTOR VEHICLE ACCIDENTS REPORTABLE:

	Total Number		Fatilities		Major Injuries		Minor Injuries	
	May	June	May	June	May	June	May	June
Richland	18	23	0	0	1	1	5	3
North Richland	8	13	0	0	0	0	4	2

ACCIDENT CAUSES:

	Negligent Driving		Failure to Yield Right of Way		Reckless & Drunken Driving		Other Cases	
	May	June	May	June	May	June	May	June
Richland	3	2	5	9	1	2	9	10
North Richland	1	1	2	1	0	1	5	10

PLANT WARNING TRAFFIC TICKETS ISSUED:

	Speeding		Stop Sign		Parking		Imp. License		Def. Equipment		Other V.		Totals	
	May	June	May	June	May	June	May	June	May	June	May	June	May	June
Richland	1	1	0	0	8	7	0	0	2	2	0	0	11	10
North Richland	0	1	0	0	38	21	4	0	3	1	1	0	46	23

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	
	May	June	May	June	May	June	May	June	May	June	May	June	May	June	May	June	May	June
Richland	35	29	18	14	4	14	6	4	6	0	16	24	23	33	39	37	147	155
Nc.Richland	4	12	7	14	6	2	0	3	3	3	3	2	15	35	8	8	46	79

TRAFFIC VOLUME: Average 24-Hour Traffic Volume Count for week ending June 29, 1953, Yakima Bridge South Bound - 9,578 cars.

NOTE: TRAFFIC CONTROL STATISTICS SHOW ORIGINAL CHARGES ONLY.

COMMUNITY OPERATIONS

RICHLAND FIRE DEPARTMENT

JUNE 1953

Organization and Personnel	Exempt	Non-Exempt
Employees - Beginning of Month	68	0
Transfers In	0	0
Transfers Out	1	0
New Hires	0	0
End of Month	67	0

Fire Protection		Richland	North Richland
Fire Loss (Estimated):	Government	$154.70	0.00
	Private	605.47	0.00
	June Total	759.17	0.00
	1953 Total	$184,026.82 *	$2,677.15

* Includes $410.00 Government loss and $173,623 private loss on the February 18th Bauer warehouse fire.

Response To Fire Alarms	17	26
Investigation of Minor Fires & Incidents	5	0
Ambulance Responses	42	
Inside Schools or Drills	27	8
Outside Drills	16	7
Safety Meetings	8	3
Security Meetings	4	2
Fire Alarm Boxes Tested	180	104

A total of 13,350 feet of 2½ inch and 1,700 feet of 1½ inch fire hose received its semi-annual pressure-test during June.

On June 3rd, 21 children and two adults from the Janos Corner Nursery made a tour of the North Richland Fire Station and on June 5th twenty five employees of Engineering made a tour of the Central Fire Station.

The Fire Department participated in the June 20th practice Civil Defense alert by dispersing companies to outlying areas.

On Sunday, June 22nd, approximately 65 members of the Central Washington Firemen's Association were guests of the Richland Fire Department for their quarterly meeting. Events included a tour of the Central Fire Station, a banquet meeting at the Desert Inn and witnessing the speedboat races.

Fire Prevention

Two hundred seventy five Richland and 36 North Richland building inspections were made during June, resulting in 19 hazard reports. Two hundred seventy one fire extinguishers were inspected, 26 installed, 17 refilled, 39 removed and one relocated. Thirty five fire hose standpipes and 13 gas masks were inspected. Four fire doors were tested.

Planned use of the old Community House kitchen for storage of stage props and costumes resulted in a recommendation that the room be equipped with automatic fire detection equipment.

Prior to school vacation, literature on the dangers of blasting caps was provided the schools and instruction recommended on this hazard.

Arrangements were completed for having the fire alarm equipment in the new School Maintenance Shops connected to the Richland fire alarm system.

Assistance was given Community Engineering on the acceptance inspection of the new Linn Motors Building.

Recommendations were made to Housing that all CTC fire extinguishers be removed from tract houses and that approved type fire extinguishers be acquired for tract houses over 400 feet from fire hydrants.

On June 9th a fire extinguisher demonstration was given for 35 employees of the Reproduction Section.

On June 10th, 38 employees of the Telephone Section were addressed on vacation period fire hazards.

Boat Club docks were inspected prior to the June 21st Regatta and two fire extinguishers loaned for use at the refueling dock.

Recommended removal of fireworks storage from the American Legion Hall. This storage was promptly moved to an isolated location.

Plans were reviewed for alterations to Desert Inn heating and cooling system.

Vandalism in the 1125 Warehouse area was reported to AEC Property Section with recommendations that broken doors and windows be repaired or boarded up. Hazardous weed conditions were also reported in this area.

School Maintenance was asked to replace three missing standpipe fire hoses and to refill empty fire extinguishers at Columbia High School.

A fire prevention talk was given to 10 employees of the Bio-Assay Lab.

COMMUNITY OPERATIONS AND REAL ESTATE DEPARTMENT
ENGINEERING UNIT

JUNE - 1953

PERSONNEL	Exempt	Non-Exempt*	Total
Employees - Beginning of Month	6	3	9
Employees - End of Month	6	3	9

* One employee on permanent loan

The Status of Active Projects is as Follows:

C-488 - Additional Erosion Control and Development, Public Areas, F.Y. 1952 - Bids opened on Jason Lee Playground. Work to begin about July 15, 1953.

K-749 - Installation of Radio Equipment, North Richland Fire Station - Awaiting delivery of equipment.

K-753 - Flow Control Valve, Sewage Treatment Wet Well - Awaiting delivery of equipment.

K-756 - Installation Traffic Light, Symons & George Washington Way - Fully scoped. Design 10% complete.

L-728 - Installation of Insulated Fire Alarm Wire - 65% complete. To be completed as Fire Department furnishes locations.

-821 - Fencing Electrical Equipment Yard - Fully scoped.

S-760 - Knight Street Sanitary Sewer - Work progressing. 90% complete.

The Status of Active ESR's:

571-M - Free Methodist Church - No progress this month. 99% complete.

572-M - First Baptist Church - Progressing very slowly. 77% complete.

574-M - Assembly of God Church - Progressing very slowly. 60% complete.

581-RC - "As Built" Plans for LDS Church - Plans received. Deferred for other work.

588-RC - Alteration Permits - An open active file.

591-M - Preparation of Advice Pamphlet for Contractors - 100% complete.

612-RC - "As Built" Plans for Richland Thrifty Drug - Plans received. 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 - An open active file. No work done this month.

ENGINEERING UNIT

633-M - "As Built" Plans for Streets - 100% complete, finished this month.

634-M - Engineer Liaison, Richland Water Expansion - Following construction closely by inspections and furnishing data as requested.

663-M - Plan Checking, Richland Development Co., Block 5, North Commercial Area - 99% complete. Final inspection to be made.

674-RC - Uptown Parking Lot Study - Study not started. AEC planner is at present studying same problem.

676-M - Sidewalks, Aprons, Drives in the Vicinity of Swimming Pool & Bathhouse - Awaiting decision of AEC. Original plans used by AEC for project proposal.

686-RC - Utility Lines, Vacant Commercial Sites - An open active file.

689-RC - "As Built" Plans, CD Joseph Building #2 - Plans checked and transmitted to Blueprint file. 100% complete.

706-RC - Plans, Specifications, and Inspections, Medical Dental Properties, Inc. - 99% complete. Wating change in one suite before completion.

711-PW - Study and Estimate, Sewer Main, Swift Boulevard - 100% complete. AEC has proposed the sewer replacement work be done with Fifth Housing Addition funds.

712-M - Survey of Richland, Washington, Liaison and Assistance. - Allocated funds expended, so ESR closed.

715-M - Television Antennae - An open active file. No permits issued this month because of lack of ordinance.

722-M - Erosion Control & Development of Public Areas, F.Y. 1953 - Project proposal being prepared for Jefferson School irrigation development.

726-M - Plans, Specifications, and Inspections, CD Joseph Bldg. #4, Richland Realty Co. - Construction progressing. 99% complete.

727-M - Preparatory Engineering, 1953 Street Development. - 100% complete. Funds for design of McMurray Street requested transferred to ESR-830. Remainder of expense requested liquidated to operations.

729-M - Plans, Specifications, and Inspections, Grace Bacon Bldg. - Construction started. Footings poured as per approved footing plan. Other building plans not yet received for checking, so owner has been requested not to proceed until they are.

730-M - Plans, Specifications, and Inspections, Richland Realty Co., Symons & Jadwin - 15% complete. Awaiting delivery of structural steel for framing. Abnormal delays in delivery of steel were encountered.

747-M - Preparatory Engineering - Float Control Valve at Sewage Lift Station - Design and estimate 100% complete. Project was cancelled by originator after completion of design, etc..

ENGINEERING UNIT

755-M - Preparatory Engineering, Tie-in Richland & North Richland Fire Alarm Systems - Given to Engineering Department for completion with other work.

759-RC - "As Builts" Richland Investment Company - Plans received. Deferred for other work.

765-RC - "As Builts" All Saints Episcopal Church - Plans received. Deferred for other work.

767-M - Plans, Specifications, and Inspections, Joseph-Cannon Bldg., Lee & George Washington Way - Work progressing. 99% complete. Building open for business.

768-M - Plans, Specifications, and Inspections, Carl Peterson Bldg. Lee & Gillespie - Work progressing. 99% complete. Construction exceptions to be cleared after officially opened for business.

770-M - Latter Day Saints Storehouse, West Jadwin Street - Work progressing slowly. 40% complete.

772-M - Alterations to Diettrich's Grocery - 100% complete. Final inspection to be made. Addition open for use.

774-M - Rennovation of Structures Below Flood Elevations, Riverside Park & Vicinity - Additional work did not develop, so ESR closed.

775-RC - Legal Description, Randolph Insurance - 90% complete.

777-RC - Revised Legal Description, Kennell-Ellis Site - 100% complete.

779-M - Plans, Specifications, and Inspections, Richland Labor Temple - Work progressing. 40% complete.

783-M - Plans, Specifications, and Inspections, American Legion Building - Work progressing. 70% complete.

785-RC - "As Builts" McVicker Bldg. #4 - Plans received. Deferred for other work.

789-RC - Extend Water Service to Richland Labor Temple - 100% complete. Water service connected.

790-M - "As Builts" General - Work progressing steadily, rate of progress depending on availability of personnel.

792-RC - Legal Description, Block 2, Uptown Business District - 100% complete.

794-RC - Legal Description, Plot rear of Kennell-Ellis Building - 90% complete.

796-RC - Legal Description, Plot east of Washington State Liquor Store - 50% complete.

797-RC - Legal Description, Plot between Tastee Freez and Grace Bacon Roller Rink - 100% complete.

798-RC - Legal Description, Plot south of Tri-City Herald Bldg. - 80% complete.

ENGINEERING UNIT

799-RC - Legal Description, Plot of land known as the Binyon Bldg. - 90% complete.

800-RC - Legal Description, Plot Northeast Corner Duportail and Hartford - 90% complete.

801-RC - Legal Descriptinn, Plot adjacent to By's Drive-In and Standard Station - 75% complete.

802-RC - Legal Description, Veterinary Hospital Site - 25% complete. Present work consisting of bringing a line from a permanent tie to the vicinity of the plot. Specific plot location to be controlled by revised Master Plan when issued.

803-M - Profile grade, 300 Block on Craighill - 90% complete.

804-RC - Study, Roof Richland Lutheran Church Building - Given to Engineering Department for study and report. They have started study, and this office is cooperating in the work.

805-RC - Plans, Specifications, and Inspections, Cannon-Joseph Bldg., West of Kennell-Ellis - Plans received and reviewed. Construction 10% complete.

806-RC - Plans, Specifications, and Inspections, Richland Development Co., Block #2, Uptown Business District - Plans received and reviewed. Lessee is proceeding with construction without an officially signed lease, or a building permit.

807-M - Preliminary Engineering, Walks, Grading, Planting, Hospital Grounds - Plans reviewed with Hospital administration. Details being completed for construction.

809-RC - Plans, Specifications, and Inspections, Parcell Bldg. Duportail and Hartford - Plans received for review. Lessee uncertain if submitted plans to be used.

810-RC - Extend water service, Site rear of Kennell-Ellis - Work order written.

811-RC - Extend water & sewer - Site Duportail and Hartford - Design progressing, but delayed pending decision by others.

812-RC - Bring up-to-date, Occupancy Map H-11-1383 - 100% complete.

813-RC - Legal Description, Coordinates of Plot, Richland Heights Baptist Church - 90% complete.

814-RC - Legal Description, Henry Weber Site - 90% complete.

815-RC - Plans, Specifications, and Inspections, Veterinary Hospital - Plans not yet submitted. Discussions have been held with Lessee.

816-RC - Plans, Specifications, and Inspections, Richland Transfer & Storage (H. W. Weber)- Plans not yet submitted. Discussions have been held with Lessee.

817-RC - Plans, Specifications, and Inspections, Diana Langevin Building - Plans checked and returned for corrections.

818-RC - Plans, Specifications, and Inspections, McVickor Bldg(East of Liquor Store) - Plans not received. No word received from lessee to date.

ENGINEERING UNIT

819-RC - Plans, Specifications, and Inspections, Safeway Store - Plans not received. Lessee indicates plans to be submitted within a week.

820-M - Landscape Design for 300 Area - Work progressing in cooperation with other forces.

821-M - Cyclone Fence Installation at Richland Electrical Storage Yard - ESR closed into Project L-821.

822-RC - Plans, Specifications, and Inspections EH Kidwell Bldg. - Plans not received. No work yet received from lessee.

823-RC - Legal Description, EH Kidwell Site, Across street from By's Burgers - 75% complete.

824-PW - Design & Estimate, Water Metering - Preparing estimate. Waiting decision of Public Works Unit on revisions.

825-M - Community Fireplace at Columbia Playfield - Fully scoped.

826-M - Drainage, Marshall Avenue and Van Giesen Street Intersection - 50% complete.

827-RC - Plans, Specifications, and Inspections, Paul R. Lewis Building - Plans not received. Discussions have been held with lessee.

828-RC - Plans, Specifications, and Inspections, Paul R. Lewis Building #2 - Plans not received. Discussions have been held with lessee.

829-M - Design, Plans, and Specifications, Storm Drain, Geo. Wash. Way - Design 50% complete.

830-M - Design, Plans, & Specifications, McMurray Street Improvement - Plans 90% complete.

REAL ESTATE SECTION

SUMMARY

JUNE 1953

ORGANIZATION AND PERSONNEL:

	BEGINNING OF MONTH		END OF MONTH	
	Exempt	Nonexempt	Exempt	Nonexempt
Real Estate Section				
350	2	1	2	1
Housing & Maintenance Unit				
351	5	18	5	18
353	13	135	12	139
Commercial Property Unit				
357	6	5	6	6
	26	159	25	164

Increase in number of employees 4

HOUSING AUTHORITY [illegible]

June, 1953

ORGANIZATION AND PERSONNEL

Number of employees on payroll:

Beginning of month:	18 exempt	
	153 nonexempt	
	171	171
End of month:	17 exempt	
	157 nonexempt	
	174	174

RICHLAND HOUSING

HOUSING UTILIZATION AS OF MONTH ENDING June 30, 1953

Houses occupied by family groups:

	Conventional	A&J	T	Precut	Ranch	Prefab	Dorm Apts	A&J Apts	2BR Apt	Fourth Housing	Tract	Total
G.E.Employees	2208	256	9	376	807	1176	10	51	59	195	35	5182
Commercial Facilities	108	15	1	36	83	54		5	4	9	3	318
Community Activities	9			1	7	4					1	22
Medical Facilities	4	19			3	1				3		30
Post Office	6				2	12				1	3	24
AEC	83	26		23	59	16		5	3	16	3	234
Other Government	6	2			4	2					1	15
Schools	53			6	10	57		1	1	2		130
Chas. T. Main	2			3	5	9				2		21
Kaiser Engineers	6	8			6				1			21
J.A.Jones	2	1		1	3	1						8
Vitro Corporation	1	3			1			1				6
P.S.Lord	1				2					1		4
Minor Contractors					1	3						4
Vernita Orchards											5	5
Atkinson & Jones		1			1							2
Newberry Neon	1	1										2
Blaw-Knox		1		1								2
Universal Foods						1						1
Total	2490	333	10	447	994	1336	10	63	68	229	51	6031
Leases signed	1				2				1			4
Houses assigned leases not written	9			3	4	5		1	1	1		24
	2500	333	10	450	1000	1331	10	64	70	230	51	6059

	Begin Month	Moved In	Moved Out	End of Month	Diff
Conventional Type	2492	29	31	2490	-2
A&J Houses	333	2	2	333	
"T" Type	10			10	
Precut Houses	450	9	12	447	-3
Ranch Houses	997	17	20	994	-3
Prefabs	1328	36	27	1337	+9
Dorm Apts	10	2	2	10	
A&J Apartments	63	1	2	62	-1
2BR Apts	70	2	4	68	-2
Fourth Housing	230	6	7	229	-1
Tract Houses	51			51	
Total	6034	104	107	6031	-3

June 1953

DORMITORY REPORT

Dormitories:

	Beds Available	Vacant Beds	Occupied Beds
Men	616	5	611
Women	481	81	400*
Total	1097	86	1011*

* Includes 2 beds used for Dormitory office space

Waiting Lists

	Single Rooms	Double Rooms
Men	40	0
Women	67	0

HOUSING
CANCELLATIONS AND ALLOCATIONS

STRAIGHT CANCELLATIONS

Voluntary terminations	40
R. O. F.	1
Discharge	1
Transfers	7
Retirement divorce-misc.	0
Move off project	16
Deaths	1
Wherry housing	2
Total	68

ALLOCATIONS

Houses allocated to new tenants	68
Exchanged houses	27
Moves	14
Turnovers	2
Total leases signed	111
Total cancellations	111
Houses assigned "As Is"	49
Houses sent renovation	27
Applications pending	659

TENANT RELATIONS PROGRESS REPORT

	Orders Incomplete as of May 31	Orders Issued 5-31 to 6-30	Total Orders Incomplete as of June 30, 1953
Service orders	198	1561	279
Work orders	856	263	873
Service charges		303	

Principal work order loads	Incomplete as of May 31, 1953	Incomplete as of June 30, 1953
Laundry tub replacement	6	0
Bathroom renovations (tub, tile, lino.)	96	31
Tileboard - bathroom	3	0
Kitchen floor linoleum	174	137
Kitchen cabinet linoleum	181	82
Shower stall	7	6

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96 alteration permits were issued, as compared to 79 permits issued during May

Install back door	3	Install 110V wiring	2
Furnace conversion	9	Install basement partitions	4
Install automatic washer	15	Construct storage shed	4
Install fence	13	Install TV antenna	1
Install water softener	3	Install dishwasher	1
Remove laundry trays	3	Basement excavation	4
Install patio	6	Reverse range and refer	1
Install automatic dryer	7	Glaze sun porch	1
Install sink, dishwasher, disposal	1	Sand floors	1
Install driveway	2	Replace front door	1
Install air conditioner	14		

---

784 inspections were made, as compared to 1043 made during May.

Alteration permits	23	Shades	4
Tileboard	2	Shower stalls	12
Drainage	1	Sidewalks	56
Laundry trays	4	Sinks	7
Top soil	8	Toilet Seats	13
Leaking basement	2	Shows (new tenants)	74
Linoleum	2	Dorms	125
Paint	8	Renovations	93
Porch & steps	31	Miscellaneous	317
Screen doors	2		

REAL ESTATE MAINTENANCE PROGRESS REPORT
JUNE, 1953

WORK SUMMARY

JOB TYPE	ISSUE DATE	BACKLOG	JOBS COMPLETED	COMPLETED TO DATE F. Y. 1953
BATHTUBS	3-17-53	33	14	325
KITCHEN FLOOR TILE	1-28-53	139	24	334
BATHROOM TILE	4-16-53	1	2	65
KITCHEN SINK TOP	3-13-53	86	20	655
SHOWER STALLS	5-21-53	6	5	212
LAUNDRY TUBS	NONE		14	280
MAJOR SEWER STOPPAGES	7-2-53	3	4	278
ROOF COATING	11-13-52	4	0	
REMOVE TREES	3-5-53	30	6	140
Renovation	6-15-53	11	11	271
WATER HEATERS	NONE		5	218
REBUILD PORCHES	On Routine			
ASPHALT SERVICE WALKS	4-15-53	9	20	114
ASPHALT STEPS	6-12-53	3	2	158

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	202	3	134	68
B	360	0	166	194
C	0	0	0	0
D	4	0	1	3
E	33	0	14	19
F	103	0	38	65
G	3	0	1	2
H	74	1	36	38
K	0	0	0	0
L	3	0	2	1
M	16	0	15	1
Q	110	0	106	4
R	124	2	122	2
S	12	0	12	0
T	6	0	0	6
U	17	0	14	3
V	103	0	90	13
Y	778	32	652	126
Z	42	2	33	9
1 BR.	4	0	2	2
2 BR.	9	0	9	0
3 BR.	4	0	3	1
TRACT	7	1	5	2
1 BR. APT	35	0	35	0
2 BR. APT				
TOTAL	*2049	41	1490	559

Scheduled Hours: 2,322
Actual Hours: 2,122

BOQ DORMS COMPLETED EXTERIOR
450 Precuts " "
4 Apts 1 BR " "

PLUMBING SHOP (7 Employees)

JOB DESCRIPTION	NUMBER COMPLETED
Replacements - Major Fixtures:	
Bathtubs	34
Laundry Tubs	2
Electric Water Heaters	17
Shower Stalls	8
Routine Plumbing Repairs	24
Plumbing for floor tile replacements	29
Cleared major sewer stoppages caused by tree roots	28
Steam work orders	7
Replacement of steam heated hot water tank in Dorm	1
Steam inspection once a week on Dormitories and Government-owned Commercial Buildings	

SERVICE ORDER CREW (11 Employees)

The following is a status report on Service Orders:

A. On hand at the beginning of the Month	92
B. Received during the Month	1525
C. Completed during the Month	1550
D. On hand at the end of the Month	67
E. A total of 269 man-hours were spent on work Orders	

RENOVATION & LABOR CREW (15 Employees)

JOB DESCRIPTION	NUMBER COMPLETED
Housing Units Renovated	29

Performed miscellaneous work including assisting the Plumbing Shop in sewer repairs. Also, routine work in repairing sidewalks, removing trees, constructing steps, repairing compound, picking up drain oil from service stations, etc.

CARPENTRY (22 Employees)
R. M. MARTIN

JOB DESCRIPTION	NUMBER COMPLETED
Replace bath wall tile	35
Replace bath floor tile	39
Repair bath floor tile	2
Replace kitchen floor linoleum	3
Replace kitchen sink top linoleum	42
Repair kitchen sink top linoleum	16
Replace work bench linoleum	14
Repair floor tile - Medical-Dental Building	2
Repair bedroom linoleum	1
Repair laundry room linoleum	1
Replace kitchen sink	5
Repair window sill	1
Repair roof	31
Re-shingle roof	1
Apply roof coating	10
Replace flooring - Dorm W-2	1
Repair floor linoleum, laundry room - Dorm W-5	1
Replace floor - Western Union	1
Repair front porch	22
Raise slab	1
Repair threshold	1
Repair siding	2
Repair sidewalk O concrete	3
Replace bath wall tile	35
Replace bath floor tile	39
Repair bath floor tile	33
Repair kitchen floor linoleum	1
Replace kitchen sink top linoleum	43
Repair kitchen sink top linoleum	7
Replace work bench linoleum	5
Repair Cabinet doors	1
Repair basement wall	4
Replace bins on linoleum truck	1
Install plate glass window - Pennywise Drug Store	1

CARPENTRY - continued
June 1953

JOB DESCRIPTION	NUMBER COMPLETED
Chempoint - Routine Order	133
Chempoint - Work Orders	84
Replace kitchen sink	6
Replace Floor base - Western Union	1
Replace floor tile - Medical-Dental Building	1
Replace bedroom floor linoleum	5
Replace living room floor linoleum	1
Replace dining room floor linoleum	1
Repair window	2
Repair sash	2
Repair window screens	44
Repair roof	8
Apply roof coating	11
Re-shingle roof	1
Repair porch	14
Repair siding	2
Raise slab	1
Jack & Shim	4
Repair laundry room wall	1
Repair bath room wall	2
Repair basement wall	3
Repair basement post	1
Replace shelves under sink	2
Repair transom - Dorm M-7	1
Repair fire door - Dorm M-13	1
Install air conditioner	1
Repair kitchen ceiling	1
Repair loading ramp - Diamond Store	1
Repair front eve	11
Repair fire damage	2
Repair to exterior - Tract House K-777, 78 Park Rd	1
Repair laundry trays	14
Chempoint - Routine Order	84
Chempoint - Work Orders	48
Paint Touch-ups completed	84
Paint Work Orders completed in shop	13
Interior Carpentry Repair for Paint (Housing Units)	2

CARPENTRY - continued
June 1953

JOB DESCRIPTION	NUMBER COMPLETED
Exterior Carpentry Repair for Paint - Ranch Houses (Exterior Carpentry Repair Progress)	456
Ranch House Screen Doors repaired (Exterior Carpentry Repair Progress)	404
Ranch House Screen Doors Replaced - New (Exterior Carpentry Repair Progress)	10
Exterior Main Doors Repaired - Shop	4
Cabinet Doors Repaired - Shop	2
Cabinet Drawers Repaired - Shop	5
Precut Screen Doors Repaired	14
Time Spent Repairing Dorm Furniture	6.5 M.H
Time Spent on Miscellaneous Work Orders	31.5 M.H

MECHANICAL SHOP (6 Employees)

A. Millwright Crew: (4 Employees)

JOB DESCRIPTION	NUMBER COMPLETED
Furnace Service Orders	39
Routine Furnace Inspection	465

GENERAL:
The blower wheels on oil burners in the A&J Houses have been removed, cleaned, and reinstalled

B. Sheetmetal Crew: (2 Employees)

JOB DESCRIPTION	NUMBER COMPLETED
Replacement of Shower Stalls	14
Replacement of gutters	17
Flashing coal hatches (Ranch House)	13
Installed Air Conditioners	3

COMMERCIAL PROPERTY - REAL ESTATE SECTION
June, 1953

PERSONNEL - COMMERCIAL PROPERTY:

	June
Beginning of Month	11
End of Month	12
Net Change	+1

PERSONNEL - COMMERCIAL AND NONCOMMERCIAL FACILITIES:

	Commercial		Noncommercial		Total	
	Richland	North Richland	Richland	North Richland	Richland	North Richland
May	1,519	196	121	1	1,640	197
June	1,527	193	121	1	1,648	194
Net change	+8	-3	0	0	+8	-3

SUMMARY OR ROUTINE ITEMS PROCESSED:

	Commercial						
	Richland	North Richland	Richland	North Richland	Richland	North Richland	Total
Work Orders	45	14	5	0	50	14	64
Back Charges	3	0	0	0	3	0	3
FY Work Order Total	555	261	56	0	611	261	872
FY Back Charge Total	44	0	15	0	59	0	59

CONTRACTS AND NEGOTIATIONS:

A. Commercial:

1. Leases:

a. Grace M. Bacon - a ground lease covering the construction and operation of a roller skating rink and "funland" for children in the Light Industrial Area.

b. Hugh S. Cannon and Chalmer D. Joseph - a ground lease covering the construction and operation of a commercial building in the Downtown Area.

c. Dr. L. B. Harville - a lease of space in the Medical Dental Building for the practice of medicine.

d. Dr. W. A. Gilmore - a lease of space in the Medical Dental Building for the practice of dentistry.

e. Dr. D. M. Chalmers - a lease of space in the Medical Dental Building for the practice of medicine.

2. Supplemental Agreements:

a. Diettrich's Market - covering the construction of a building addition and adjustment of payments for utilities and services.

b. Anderson Motors - covering the lease of additional land to be used for parking space and adjustment of fixed minimum rental payment.

c. Dr. Frances M. Love - covering the lease of additional space in the Medical Dental Building and adjustment of rental.

d. Dr. E. B. Payne - covering the lease of additional space in the Medical Dental Building and adjustment of rental.

e. Pauls, Inc. - providing for subleasing of space for the continued operation of the repair shop.

f. Dr. C. E. Liddington - covering the lease of additional space in the Medical Dental Building and adjustment of rental.

3. Lease Awards:

a. E. H. Kidwell - for the construction and operation of a service station in the Light Industrial Area.

b. Paul R. Lewis - for the construction and operation of a service station and allied services in the Light Industrial Area.

c. Paul R. Lewis - for the construction and operation of a service station in the Light Industrial Area.

4. Lease Assignments:

a. Chalmer D. Joseph Company sold its commercial building located at 1356-1364 Jadwin Avenue and assigned the Commercial Facility Lease, Serial No. 52-18, dated December 21, 1951, to Uptown Investment Company.

B. Noncommercial:

1. Leases:

a. Richland Baptist Church - a ground lease covering the construction and operation of a church.

b. Church of Jesus Christ of Latter Day Saints (Re-organized) - a ground lease covering the construction and operation of a church.

COMMERCIAL PROPERTY - REAL ESTATE SECTION June, 1953

GENERAL:

A. Commercial:

1. Ellis Floral Shop opened for business in Cannon & Joseph Building #1.

2. Careful Cleaners opened for business in Cannon & Joseph Building #1.

3. Klopfenstein's opened for business in Automatic Laundry Company Building, Uptown Business District.

4. Benson's Dress Shop opened for business in Cannon & Joseph Building #1.

B. Commercial (North Richland):

1. Arrangements were made with Naimy's Barber Shop and Dres-Well Laundry and Dry Cleaning to provide their own janitorial services in the service corridor and rest rooms.

2. Janitorial services will be furnished by the AEC in North Richland to the Post Office and Branch Bank. This work will be performed per our work order request.

C. Noncommercial:

1. Two pasture permits were issued.

COMMERCIAL PROSPECTS:

Inquiries were received during the month concerning the establishment of the following types of commercial enterprises:

Richland	North Richland
Drive-in Restaurant	Physicians Office
Super Service Station	Drive-in Restaurant
Children's Nursery	Malt Shop
Attorney	
Golf Course	

SUMMARY OF OCCUPANCY AND EXPANSION STATUS

A. COMMERCIAL

	MAY			JUNE		
	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	39	9	48	39	9	48
b. Number of Sublessee Businesses	18	0	18	18	0	18
c. Total Businesses in Government-owned Buildings	57	9	66	57	9	66
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	6	45	39	6	45
b. Number of Businesses operated by Sublessees	72	2	74	76	2	78
c. Total Businesses in Privately-owned Buildings	111	8	119	115	8	123
4. Privately-owned Buildings Under Construction	11	0	11	11	0	11
5. Total Number of Businesses in Operation	168	17	185	172	17	189

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	6		6	6		6
Total	16	1	17	16	1	17
3. Pasture Land Permits	93		93	95		95

END

DATE FILMED

6/25/92