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HANFORD WORKS MONTHLY REPORT
FOR
FEBRUARY 1953

JUN 03 1992 49550

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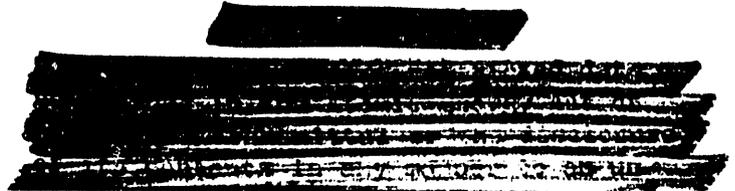
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March 18, 1953

By P.H. R...
Date 2-12-13 BR
U.S. AEC Division of Classification

HANFORD WORKS
RICHLAND, WASHINGTON

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



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J. J. Joyce

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March 18, 1953

By R.H. R...
Date 5-12-73 BR
U. S. AEC Division of Classification

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HANFORD WORKS MONTHLY REPORT
GENERAL SUMMARY

FEBRUARY 1953

Production Operations

In the Metal Preparation Section the net production for the month was 147 tons, which included 16 tons of 4-inch material and 131 tons of 8-inch material. This represents 104.2 percent of forecast. Equipment for fabrication of P-10 target slugs has been installed in Building 303-J.

The total reactor input production was 103.8 percent of forecast. Established maximum reactor operating levels were increased by a total of 95 MW during February as follows: C - 35 MW, F - 35 MW and H - 25 MW. There were four uranium jacket failures during the month, one of which was Group 9 material. The D reactor was shut down from February 3 to February 25 for installation of the Ball 3X system and other project work.

Production in the T plant was accelerated to compensate for low Redox production, and a total of 34 runs was started in the T Canyon Building representing 263 percent of forecast. The 234-5 Building produced its commitment for assemblies although handicapped by lack of feed material to the process. Continued difficulty was experienced with removal of uranium from waste storage tanks with a consequent low output from the TBP plant.

Engineering and Technology

The Hot Semiworks carried out the first tracer level runs at a nominal 4 percent of full activity levels. The Redox flowsheet was tested. Decontamination and waste losses were excellent. Two production tests have been prepared for the investigation of higher power operation at C Pile. Experimental plutonium metal forming facilities were put into operation in February.

Design on Project CA-512-R, 100-K Reactor Facilities, continued to advance with over-all design 66.8% complete. Technical management of architect engineer services in the design of the Purex Separations Plant was transferred to Project Section on February 1, 1953, at which time the scoping was approximately 98% complete. Detail design of the equipment for the silo portion of CA-535, Redox Expansion Phase II, was started upon receipt of authorized funds from the AEC. Detail design of the Recuplex installation, CG-496, is approximately 65% complete.

The work stoppage begun by plumbers on January 19, 1953, was ended on February 12.

The control activities of the Radiological Sciences Department proceeded without unusual findings, except as to unexpectedly high active particle counts in the vicinity of the Redox plant. The biophysics laboratory was occupied in full. The average annual exposure of personnel for 1952 was reported at a satisfactory level.

Personnel and Services

Work continued during February on the preparation of the FY 1955 budget and revision of the FY 1954 budget.

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Hanford Works Monthly Report
 General Summary (Contin.)

The Central Stores Warehouse was accepted on January 7, 1953 in an incomplete condition which has delayed the progress of personnel moves.

Notification was received from the National Safety Council that Hanford Works has been awarded, for the second consecutive year, the Award of Honor. This Award recognized the safety performance during the year 1952.

A large fire occurred on the evening of February 18, in the temporary warehouse of the Bauer-Day Construction Company. The resulting fire loss will exceed any previous fire loss for the community.

Industrial construction medical activities, with the exception of A & J and their sub-contractors, were transferred to Dr. C. C. Cutting of Kaiser Engineers as of February 1, 1953. There were two major injuries during February and one sub-major injury.

Turnover decreased from 1.29% in January to 1.03% in February.

The total number of housing applications pending is 729.

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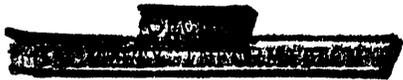


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STAFF

General Manager	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, Utilities and General Services	H. D. Middel
Manager, Community Real Estate and Services	L. F. Huck

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NUCLEONICS DIVISION
NUMBER OF EMPLOYEES
FEBRUARY 1953

<u>DEPARTMENT</u>	<u>EXEMPT</u>		<u>OTHERS</u>		<u>TOTAL</u>	
	<u>2-28-53</u>	<u>1-31-53</u>	<u>2-28-53</u>	<u>1-31-53</u>	<u>2-28-53</u>	<u>1-31-53</u>
<u>Engineering Department</u>						
General	5	5	5	5	10	10
Design	162	166	43	44	205	210
Project	209	202	277	275	486	477
<u>Technical Section</u>						
Administrative	9	9	5	5	14	14
Applied Research	147	144	84	81	231	225
Pile Technology	161	158	115	111	276	269
Separations Technology	104	106	26	25	130	131
Technical Services	35	35	114	115	149	150
<u>Manufacturing Department</u>						
General	17	19	7	7	24	26
Reactor	236	231	1 010	1 001	1 246	1 232
Separations	332	333	1 205	1 209	1 537	1 542
Metal Preparations	82	81	424	422	506	503
<u>Utilities & General Services Dept.</u>						
General	1	1	1	1	2	2
Electrical Distribution & Telephone	35	35	152	149	187	184
Transportation	46	47	480	480	526	527
Purchasing & Stores	56	57	257	262	313	319
<u>Plant Security & Services</u>						
Patrol & Security	62	62	522	525	584	587
Safety & Fire	44	43	109	109	153	152
Office Services	29	32	312	326	341	358
Administration Main. Service	11	9	52	52	63	61
Statistical & Computing	34	34	54	52	88	86
<u>Community Real Estate & Services Dept.</u>	102	102	314	313	416	420
<u>Financial Department</u>						
General	4	4	7	8	11	12
Accounting	42	42	198	201	240	243
Payroll & Internal Audit	27	28	65	68	92	96
<u>Employee & Public Relations Dept.</u>	51	51	177	189	228	240
<u>Radiological Sciences Department</u>						
General	4	4	3	3	7	7
Records & Standards	24	24	149	145	173	169
Biophysics	58	57	57	56	115	113
Biology	42	43	38	39	80	82
<u>Medical Department</u>	45	45	216	219	261	264
<u>Law</u>	3	3	2	2	5	5
<u>General</u>	14	14	24	25	38	39
<u>TOTAL</u>	<u>2 233</u>	<u>2 226</u>	<u>6 504</u>	<u>6 529</u>	<u>8 737</u>	<u>8 755</u>

PERSONNEL DISTRIBUTION BY AREA - FEBRUARY 1953

Department	100-B	100-D	100-F	100-H	101	100-K	200-E	200-W	300	700-1100-3000	Total
	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area and Plant General	
Engineering Department											
Exempt	55	65	2	11	31	12	24	78	244	310	832
Other	22	36	5	57	12	12	8	23	145	349	669
Total	<u>77</u>	<u>101</u>	<u>7</u>	<u>68</u>	<u>43</u>	<u>24</u>	<u>32</u>	<u>101</u>	<u>389</u>	<u>659</u>	<u>1 501</u>
Manufacturing Department											
Exempt	59	50	49	56	-	2	7	319	96	29	667
Other	233	291	362	152	-	-	114	1 089	383	22	2 646
Total	<u>292</u>	<u>341</u>	<u>411</u>	<u>208</u>	<u>-</u>	<u>2</u>	<u>121</u>	<u>1 408</u>	<u>479</u>	<u>51</u>	<u>3 313</u>
Utilities & General Services Department											
Exempt	25	10	7	9	9	1	22	19	14	202	318
Other	98	67	113	59	19	-	102	211	110	1 160	1 939
Total	<u>123</u>	<u>77</u>	<u>120</u>	<u>68</u>	<u>28</u>	<u>1</u>	<u>124</u>	<u>230</u>	<u>124</u>	<u>1 362</u>	<u>2 257</u>
Community & Real Estate Department											
Exempt	-	-	-	-	-	-	-	-	-	102	102
Other	-	-	-	-	-	-	-	-	1	313	314
Total	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>1</u>	<u>415</u>	<u>416</u>
Financial Department											
Exempt	-	-	-	-	-	-	-	1	-	72	73
Other	-	-	2	1	-	-	2	1	-	264	270
Total	<u>-</u>	<u>-</u>	<u>2</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>2</u>	<u>2</u>	<u>-</u>	<u>336</u>	<u>343</u>
Employee & Public Relations Department											
Exempt	-	-	-	-	1	-	-	-	-	50	51
Other	5	7	5	3	9	-	7	2	40	99	177
Total	<u>5</u>	<u>7</u>	<u>5</u>	<u>3</u>	<u>10</u>	<u>-</u>	<u>7</u>	<u>2</u>	<u>40</u>	<u>149</u>	<u>228</u>
Radiological Sciences Department											
Exempt	1	-	42	-	-	-	6	32	35	12	128
Other	9	-	41	-	-	-	10	10	155	22	247
Total	<u>10</u>	<u>-</u>	<u>83</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>16</u>	<u>42</u>	<u>190</u>	<u>34</u>	<u>375</u>
Medical Department											
Exempt	-	-	-	-	-	-	-	-	-	45	45
Other	1	5	3	1	-	-	1	6	2	197	216
Total	<u>1</u>	<u>5</u>	<u>3</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>1</u>	<u>6</u>	<u>2</u>	<u>242</u>	<u>261</u>

	100-B	100-D	100-F	100-H	101	100-K	200-E	200-W	300	700-1100-3000	Total
	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area and Plant General	Total
General Department	-	-	-	-	-	-	-	-	2	15	17
Exempt	-	-	-	-	-	-	-	-	13	13	26
Other	-	-	-	-	-	-	-	-	15	28	43
Total	140	125	100	76	41	15	59	449	391	837	2 233
Total Exempt	368	406	531	273	40	12	244	1 342	849	2 439	6 504
Total Other	508	531	631	349	81	27	303	1 791	1 240	3 276	8 737
GRAND TOTAL											

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MANUFACTURING DEPARTMENT

FEBRUARY, 1953

Richland, Washington
March 11, 1953

METAL PREPARATION SECTION

The net production for the month was 147 tons, which included 16 tons of 4-inch material and 131 tons of 8-inch material. This represents 104.2 percent of forecast. The machining yield was 83.0 percent for 4-inch and 82.6 percent for 8-inch material. The machining output was 76 percent of forecast because of lack of material.

The canning yield was 64.7 percent for 4-inch material and 68.4 percent for 8-inch material. The combined canning yield decreased largely because of the non-seat rejection rate increasing to six percent for 4-inch and four percent for 8-inch material. Equipment for fabrication of P-10 target slugs has been installed in Building 303-J.

The melt plant produced 66 tons of billets with a yield of 84.9 percent and a solid yield of 95.7 percent.

There was one autoclave failure. This was an 8-inch piece and was caused by a defective cap.

REACTOR SECTION

The total reactor input production was 103.8 percent of forecast. Major factors that affected the month's production were: the scheduled D reactor Ball 3X outage, an outage of 82 hours at B reactor for the recovery of the 3X system balls, which dropped into the VSR channels because of a relay failure, and four outages for removal of ruptured slugs. Reactor output production for the month was 13.6 percent less than the forecast due to the discharge of metal, scheduled for February, during unscheduled outages late in January. To date output production amounts to 99.6 percent of forecast.

Established maximum reactor operating levels were increased by a total of 95 MW during February as follows: C - 35 MW, F - 35 MW and H - 25 MW. The maximum levels attained include 8 MW and 13 MW attributable to "C" metal burnout at C and H reactors, respectively.

There were four uranium jacket failures during the month. Three of the failures were of Group 8 and one of Group 9 material. Outage time for the removal of these slugs was 77.2 hours.

The D reactor was shut down from February 3 to February 25 for installation of the Ball 3X system and other project work. A total outage time of 471.8 hours was re-

REACTOR SECTION (Continued)

quired for this work. An additional outage of 61 hours was necessitated by panellit difficulties encountered in connection with the revision of the reactor orifice pattern.

SEPARATIONS SECTION

The combined plutonium separation production was 65 percent of forecast due to unanticipated difficulties.

At the Redox plant, the production was 54 percent of the forecast. Several factors contributed to the shutdown of the operation for the first ten days of the month. The most noteworthy items causing this loss of production were the replacement of the D-12 waste concentrator pot and the decontamination work following a violent chemical reaction involving hexone and nitric acid.

A total of 34 runs was started in the T Canyon Building representing 263 percent of forecast. The T plant production was accelerated to compensate for the low Redox production.

The TBP plant produced 111.6 tons of uranium as UNH which was 59 percent of forecast. Primary cause of the low production was the low rate of metal removal at the tank farms. There were two Nagle pump failures during the month. The plugging of the East-West pipeline continued intermittently but was resolved each time by using water under pressure.

The UO_3 plant produced 257.2 tons of uranium as UO_3 or 91 percent of forecast. Contributing cause of low production was insufficient feed from both Redox and TBP.

The 234-5 Building produced its commitment for assemblies although handicapped by lack of feed material to the process.

GENERALPersonnel

Total on Roll February 1, 1953	3302
Accessions	35*
Separations	23*
Total on Roll February 28, 1953	3314

*Does not include intra-department transfers.


C. N. GROSS, MANAGER

MANUFACTURING DEPARTMENT

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MANUFACTURING DEPARTMENT

PATENT REPORT SUMMARY
FOR
MONTH OF FEBRUARY, 1953

Richland, Washington
March 10, 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.

<u>INVENTOR</u>		<u>TITLE</u>
Thomas B. Correy) Charles E. Frantz)	Metal Preparation Section	"Inspection Fluoroscope Head"
Thomas B. Correy) Mynard H. Taylor)	Metal Preparation Section	"Marking Fluoroscope Head"
Arthur W. HildeBrandt,	Separations Section	"Hi-Lo Alarm on Control for use in Instruments Having a Mechanical Pen Drive"
Arthur W. HildeBrandt,	Separations Section	"A Counting Rate Meter Circuit"


C. N. GROSS, MANAGER

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Section 10 verified by *V. D. Donhee*
V. D. Donhee
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Richland, Washington
March 10, 1953

MANUFACTURING DEPARTMENT
METAL PREPARATION SECTION
FEBRUARY, 1953

I. RESPONSIBILITY

There were no changes in responsibility during the month.

II. ACHIEVEMENT

A. Operating Experience

1. Statistics

	<u>February</u>	<u>January</u>	<u>Year To Date</u>
Bare Pieces Machined (4")(Tons)	18	2	20
Machining Yield (4")(%)	83.0	68.2	81.3
Bare Pieces Machined (8")(Tons)	93	148	241
Machining Yield (8")(%)	82.6	82.3	82.1
Total Pieces Machined (Tons)	111	150	261
Acceptable Pieces Canned (4")(Tons) Gross	17	43	60
Acceptable Pieces Canned (4")(Tons) Net	16	43	59
Canning Yield (4")(%)	64.7	71.6	69.6
Acceptable Pieces Canned (8")(Tons) Gross	133	110	243
Acceptable Pieces Canned (8")(Tons) Net	131	109	240
Canning Yield (8")(%)	68.4	72.6	70.3
Total Acceptable Pieces Canned (Tons)Gross	150	153	303
Total Acceptable Pieces Canned (Tons)Net	147	151	298
Acceptable Pieces Canned (4" and 8") (% of forecast)	104	101	102

1. Statistics (Continued)

	<u>February</u>	<u>January</u>	<u>Year To Date</u>
Autoclave Frequency (4") (No./M)	.00	.04	.03
Autoclave Frequency (8") (No./M)	.03	.00	.02
Briquettes Produced (Tons)	25	19	44
Chip Recovery Yield (%)	86.0	86.3	86.1
Billets Produced (Tons)	66	92	158
Melt Plant Billet Yield (%)	84.9	84.8	84.8
Melt Plant Solid Yield (%)	95.7	95.5	95.6
Oxide Burned (Weight Out Tons)	7	11	18
Poison Canned (Number Pieces)	0	4450	4450
Chemical 68-56 Canned (Number Pieces)	0	0	0
Chemical 10-66 Canned (Number Pieces)	0	1449	1449
"C" Slugs Canned (Number Pieces)	0	0	0
Special Requests (Man Hours)	1268	1778	3046
305 Routine Tests (Man Hours)	181	122	303
305 Special Tests (Man Hours)	523	606	1129
Average Steam Generated (M lbs/hr)	32.5	31.3	
Maximum Steam Generated (M lbs/hr)	44.0	40.5	
Total Steam Generated (M lb.)	21,900	23,600	
Coal Consumed (Tons)	1342	1491	
Sanitary Water from 3000 Area (Million gals.)	34	37	
Total Water Average Rate (gpm)	854	837	
Chlorine Residual (ppm)	.45	.42	

2. Activities

The material machined consisted of 60% Hanford cast billets and 40% virgin metal. The machining operation has changed over to 4-inch slug production to help alleviate the shortage of 8-inch bare slug pallets which has resulted from the receipts of 200 tons of bare slugs (mostly 8-inch) from Fernald since January 30, 1953.

The net production of acceptable slugs was 147 tons, of which 89% were 8-inch slugs. The combined canning yield decreased largely because of the non-seat rejection rate increasing to 6% for 4-inch and 4% for 8-inch material. Definite isolation of reject factors was not accomplished. Rejects from braze width inspection, which was initiated on February 1, 1953 amounted to 0.3% for 4-inch and 1.6% for 8-inch slugs. Other types of rejects remained essentially as in January.

The melt plant changed from three shift to two shift operation on February 9, 1953 as a result of the large decrease in the solid scrap now on hand. Melt plant solid and billet yields continue at a high level.

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2. Activities (Continued)

One 8-inch slug failure in autoclave was believed to have been caused by a defective cap.

Bailing schedules and procedures were developed to produce most economic utilization of the AlSi canning bath consistent with control of tin content. Training meetings were conducted to aid operating personnel in establishing proper techniques.

A program to evaluate the recovery of tin by the selective precipitation of copper from molten tin through the use of aluminum, is being investigated. This method shows promise since it permits the tin to be recovered at operating temperatures, and thus reduces the recovery time considerably. The present method requires that the furnace slowly cool to almost the freezing point of tin before recovery is complete.

During the month an active program was started in re-determination of SF accountability factors for process materials. These materials included copper-tin crystals, AlSi, tin dross, bronze, sludge, slug pickle, canning losses and burned oxides. Work will continue on these projects during March.

3. Special Operations

Two crews were assigned to the J-2 canning program and training courses using simulated J-2 aluminum dummies were completed, anticipating the arrival of J-2 slugs on March 2, 1953. The Savannah River Works is preparing to extrude rods to our dimensions for target slugs, the first week in March. Preliminary samples of these extrusions were received and are being studied at the end of this month.

Eight thousand small diameter slugs for the P-12 program (exponential pile) were degreased and transferred to Technical. One hundred seven of these were canned by the dry canning method.

4. Schedule Variance

Machining production was 24% below forecast as a result of insufficient rod receipts.

Canning production was 104% of forecast because of an additional operating day gained by the change in month-end cut off date.

B. Equipment Experience

1. Operating Continuity

The total amount of production time lost as a result of mechanical failures to the canning equipment remained at about 5%. The largest single source of trouble was attributed to the air switch operating the pneumatic canning jacks.

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1. Operating Continuity (Continued)

A program to standardize the tops and equipment for all bronze furnaces has been completed, and it is expected that this will improve the continuity of operation by reducing the time required to change operations from one bronze furnace to another.

C. Improvement Experience

1. Production Tests

PT-313-105-3M and PT-313-105-7M were completed early in the month.

2. Process Tests and Revisions

Since the beginning of the month, all slugs exhibiting a layer of AlSi between the can wall and cap in excess of 0.040" after facing have been rejected as "Braze Line Rejects". This category comprised about 1.3% of the canning rejects during February. The imposition of this inspection assures full cap size and a minimum of AlSi in the weld.

The procedure for removing second run copper-tin crystals has been modified to increase the tin recovery yields. Test runs have shown that approximately one third of the second run crystals can be recovered as useable tin, which will save an estimated \$25,000 per year.

3. Inventions and Discoveries

Personnel in the Metal Preparation Section engaged in work which might be expected to result in inventions or discoveries advise that to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during the period covered by this report, except those described in Reports of Inventions as "Inspection Fluoroscope Head" and "Marking Fluoroscope Head".

D. Events Influencing Costs

1. Labor Variance

Direct labor costs decreased slightly as a result of changing the production cut-off date, giving two additional production days this month. For this reason the production for the month exceeded official forecasts by approximately 6 tons. Transfers of manpower from other operations to slug fabrication partially offset the decrease in unit cost realized from additional production.

2. Material Variance

No significant change.

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D. Events Influencing Costs (Continued)

3. Other

Other costs decreased slightly because of the change in production cut-off dates.

E. Plant Development and Expansion

1. Project Status

Project CA-394 - Outside Facilities and Utilities for Laboratory Area. Construction work is 97% complete with only minor items remaining which are essentially dependent upon completion of the Works Laboratory Area.

Project CA-433 - Power House Addition. The physical completion notice was issued February 12, 1953 with two minor exceptions.

Project CG-481 - Equipment for 8" Slug Manufacture. Fabrication of loading and unloading equipment for installation in metal shipping vans was continued during the month. Installation will be started early in March.

Project CA-514 - Expansion of 300 Area Facilities. Formal approval of this project by the Atomic Energy Commission is being delayed until the source of funds to cover all necessary facilities can be established. Detailed design of the Operations Change House was completed by General Electric Design forces, and the drawings have been submitted to the A.E.C. for preparing and negotiating a contract for construction.

A study completed by Project Engineering determined that it was more economical to close the original badge house and direct all personnel through the laboratory badge house (3701-L). Several changes to the badge house and parking area are necessary before this can be accomplished. The location of the proposed administration building will also be affected by this change.

Equipment layout for the 313 building was completed and approved. A.E.C. is negotiating for an architectural engineering firm to proceed with the detailed design of the structure.

IR-135 - Low Frequency Induction Furnace for Canning Assembly Operation. Confirmation has been received from the vendor indicating the furnace, lining materials and molds were shipped by motor freight on February 16, 1953. The instruments and controls will be shipped on or about March 1, 1953.

2. Plant Engineering

Preliminary estimates on a second recovery of copper-tin (eta) crystals initiated in the tin recovery operation indicate a possible saving of

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2. Plant Engineering (Continued)

about \$25,000 annually at present production rates. Previously the eta crystals were segregated and used in either bronze make-up or shipped off plant for reclamation. An investigation is continuing on the feasibility of utilizing a press or some other method of extracting entrained tin from the copper-tin crystals to replace the present manual method using a perforated ladle.

Studies were continued on the overall testing requirements to meet present and future expansion needs. These studies are directed toward improvement in both equipment and layout. Specifications have been completed for the application of semi-automatic or automatic equipment in the inspection of bare slugs, caps, cans and sleeves.

Detailed design is about 75% complete on a semi-automatic welding machine. This machine provides for mechanical control of arc travel during preheat and welding.

Shop fabrication on an improved bronze agitator was completed, except for piping and wiring to be completed upon receipt of unloading valves for air cylinders controlling vertical agitation. It is planned to test the agitator on a bronze furnace early in March.

A mechanized quenching unit is being designed for use in the canning operation, which will assure uniform treatment of canned slugs during quenching and hold caps in intimate contact with slugs until bonding medium is frozen. In addition development work has been started on a spray type rinse for can preparation.

F. Significant Reports

1. Routine

<u>Number</u>	<u>Title</u>	<u>Author</u>	<u>Date</u>
HW-27011	Monthly Report, Process Unit Metal Preparation Section	EW O'Rorke	2-2-53
HW-27220	Metal Preparation Process Committee Minutes of Meeting	EW O'Rorke	2-17-53

2. Non-Routine

HW-26957	Suspected Discrepancy of SF Material Classified as UM Scrap in the Material Handling Balance Area	FE Jochen JA Cowan	2-3-53
HW-26983	Trip Report to FMPC, Fernald, Ohio and Simonds Saw & Steel Co., Lockport, N.Y., January 9-18, 1953	SM Gill	

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DECLASSIFIED2. Non-Routine (Continued)

<u>Number</u>	<u>Title</u>	<u>Author</u>	<u>Date</u>
HW-26986	Minutes of Meeting, 1-15-53 on MPS P-10A Program Responsibilities	HG Henry	1-26-53
HW-27036	Mfg. Dept. Evaluation Report, Fernald Material	SM Gill	2-3-53
HW-27219	Metal Preparation Section Evaluation of FMPC Material, Jan.-Feb., 1953	SM Gill	2-24-53
HW-27079	Welding Properties of Slugs with Annealed vs. Unannealed Caps and Methods of De-Waxing Before Welding.	HG Henry DS Dixon	2-9-53
HW-27111	Uranium Content of Tin Dross	TG Lambert	2-11-53

III. PERSONNELA. Organization

No change.

B. Force Summary

	<u>Start of Month</u>	<u>End of Month</u>	<u>Net Change</u>
Section General	4	4	0
Operations Unit	212	212	0
Power & Maintenance Unit	238	244	6
Process Unit	26	25	- 1
Plant Engineering Services Unit	20	19	- 1
Radiation Monitoring	3	3	0
Section Total	503	507	4

C. Safety Experience

There was one major, no 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. A very substantial reduction in the external exposure of melt plant personnel was accomplished in February.

Richland, Washington
March 10, 1953

MANUFACTURING DEPARTMENT
REACTOR SECTION
FEBRUARY, 1953

I. RESPONSIBILITY

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

II. ACHIEVEMENT

A. Operating Experience

The total reactor input production during February was 103.8% of forecast and 1.3% less than in January. Major factors adversely affecting the month's production, in addition to the short month and the scheduled D Reactor Ball 3X outage, were an outage at B Reactor for recovery of the 3X System balls and four outages for removal of ruptured slugs. Reactor output production for the month was 13.6% less than forecast due to the discharge of metal, scheduled for February, during unscheduled outages late in January, making the to-date figure 99.6% of forecast. Established maximum reactor operating levels were increased a total of 95 MW during February as follows: C - 35 MW, F - 35 MW, and H - 25 MW. The maximum levels attained include 8 MW and 13 MW attributable to "C" metal burnout at C and H Reactors, respectively.

There were four uranium slug jacket failures during February of which one was an eight-inch slug.

The total outage time for removal of these slugs was 77.2 hours. There were no process tube failures during the month.

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SECURITY INFORMATION

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DECLASSIFIEDA. Operating Experience (Continued)

The D Reactor was shut down from February 3 to February 25 for the installation of the Ball 3X System and other project work. The outage time charged to Ball 3X work was only 471.8 hours compared to 591.3 hours and 1032.9 hours for similar work at B and F Reactors, respectively. However, the outage was extended an additional 61.0 hours due to panellit difficulties encountered in connection with revision of the reactor orifice pattern (PT-105-534-A).

Facilities at Building 185-D for activating sodium silicate were placed in operation on February 19 to supply the D and DR Water Plants as required by the alum water treatment process.

1. Statistics

	<u>B</u>	<u>C</u>	<u>D</u>	<u>DR</u>	<u>F</u>	<u>H</u>	<u>Total or Average</u>
Reactor Time Operated							
Efficiency (%)	82.3	93.9	14.0	91.5	91.7	94.6	78.0
Reactor Outage Time (Hrs.)							
Plutonium Production	116.0	32.9	496.7	56.5	48.0	29.1	779.2
Special Irradiation and Production Tests	<u>3.0</u>	<u>8.0</u>	<u>81.4</u>	<u>0.3</u>	<u>7.8</u>	<u>7.3</u>	<u>107.8</u>
Total	119.0	40.9	578.1	56.8	55.8	36.4	887.0
Reactor Unscheduled							
Outage Time (Hrs.)	83.0	18.7	32.5	56.8	22.6	8.6	222.2
Metal Discharged (Tons)	11.68	3.03	20.38	12.44	17.81	27.17	92.51
Water Quality (ppm Iron)							
Raw Water - Average	0.08	0.08	0.14	0.11	0.08	0.09	---
Raw Water - Maximum	0.30	0.26	0.56	0.39	0.30	0.34	---
Process Water - Average	0.018	0.006	0.007	0.010	0.012	0.021	---
Process Water - Maximum	0.038	0.020	0.018	0.019	0.024	0.055	---
Water Pumped (MM gals.)							
Bldg. 190 to Reactor	1316	2501	458	1620	1434	1749	9078
Bldg. 181	4480		2570		1783	2246	11079
Steam Generated (MM lbs.)	128		139		126	97	490
Coal Consumed (Tons)	8307		9074		7632	6099	31112

2. Activities

The scheduled outage of D Reactor for installation of the Ball 3X facilities was begun on February 3 and extended until February 25. This work was accomplished without major incident and in a shorter time than was required at either B or F Reactors. Other major reactor facility work completed, or essentially completed, during this outage was the replacement of all rear face thermocouples and associated wiring (CG-495), installation of additional moderator temperature indicators (CG-502), repair of the downcomer (CG-483), repair

2. Activities (Continued)

of the Building 107-D retention basins (CG-506), installation of a junction box in the Building 105-D effluent line to permit later repairs to the line (CG-519), replacement of the steel liner in the discharge area center chute and the thimbles of Nos. 7 and 9 horizontal rods, and re-orificing of the reactor in connection with PT-105-534-A (see Improvement Experience).

During the above outage, a considerable amount of preventive maintenance work was performed in the D Water Plant. This included cleaning, inspection and minor repairs to the Building 182-D and 183-D water storage reservoirs and a general inspection of chemical feed apparatus and pumping equipment at these locations. Approximately 5,000 cubic yards of mud and tumble weeds, which had accumulated since startup in 1944, were removed from the 15 million gallon section of the 182-D reservoir.

At B Reactor on February 18, the 3X System balls dropped into the VSR channels when a relay coil on the Ball 3X water pressure trip circuit burned out. A total of 82.5 hours of outage time was required to recover the balls compared to 218.1 hours for similar work at F Reactor during January. This improvement is attributable to the absence of seam filler in the B Reactor VSR channels which reduced the radiation levels encountered and experience gained at F Reactor. In view of these experiences with the B and F Reactor Ball 3X facilities, a special committee was appointed to study the Ball 3X electrical equipment and circuits. Also, the 3X water pressure trip has been temporarily by-passed at the applicable reactors.

Facilities for activating sodium silicate to meet the demands of the alum water treatment process at the D and DR Water Plants were placed in operation at Building 185-D on February 19. The cost of this installation was approximately \$50,000.

In early February, the first seasonal turbidity surge occurred in the river water, necessitating adjustment of coagulant feed rates in all areas. By February 9, the turbidity had temporarily subsided and chemical feed rates had returned to their former level. This surge is reflected in the water quality data reported under "Statistics".

The amount of non-routine project and maintenance work continued to be unusually high during February. Large amounts of overtime and some loaned Instrument and Electrical labor were again required. However, a significant decrease occurred in the work backlogs of the Instrument and Electrical groups which were reduced to 40 and 43 crew days, respectively. During the D Reactor outage, Minor Construction forces performed work on the Ball 3X installation, Building 107-D retention basin and the effluent line junction box.

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DECLASSIFIED2. Activities (Continued)

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

	<u>Tubes Charged</u>	<u>Tubes Discharged</u>	<u>Casks Shipped</u>
Chemical 10-66	1	3	-
Chemical 72-60	-	10	-
Production Tests	<u>29</u>	<u>10</u>	<u>11</u>
Total	30	23	11

B. Equipment Experience

During February, failure of normal production equipment caused 5 reactor scrams, excluding the shutdown at B Reactor due to electrical failure in the Ball 3X System and four panellit scrams associated with production tests as reported below under "Improvement Experience". Total outage time charged to the five failures was 29.7 hours. The most extensive outage was a 28.2 hour shutdown of DR Reactor caused by burning out the "LXX" relay coil in the reactor safety circuit.

Extensive repairs to the reactor horizontal rod facilities continued during the month. At month end, rod No. A-H is out of service pending repairs during the April Ball 3X outage.

During an outage at B Reactor on February 10, the front face crossheader screens on A and B risers were cleaned and 185 partially plugged cone screens were replaced. This was necessitated by the rupture of a valve pit header screen following the Ball 3X outage. The cone screen plugging limited the power level early in the month by an estimated 55 MW but was practically negligible at month end.

Experience with process pump motor failures improved during February, as no failures were detected.

C. Improvement Experience

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

PT-105-509-E (The Effects of Low pH Alum Water on Pile Operation)
A scram was caused at DR Reactor on February 28 by a high pressure panellit trip on one of the tubes of this test. The outage time was 0.3 hour.

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

C. Improvement Experience (Continued)

- PT-105-529-A (Ink Facility)
Water was circulated through this facility at the rate of 2.25 gpm during February. Inability to control closely the flow of liquid has prevented any appreciable further operation using boron solution.
- PT-105-531-A (Enrichment of H Pile)
Two additional tubes were charged with C Metal during February bringing the total to 47 tubes. The reactivity loss due to helium addition appears to be about five ih for each percent of helium. No further increase in helium concentration was necessary during February.
- PT-105-534-A (D Pile Operation with Maximum Panellit Monitor Protection)
During the Ball 3X outages, the D Reactor was re-orificed in conformance with this test. In connection with this, narrower trip ranges were established on the panellit gauges and, as a consequence, considerable difficulty was encountered in arriving at the correct trip settings. This difficulty resulted in extending the Ball 3X outage an additional 61.0 hours, three scrams totaling 7.6 hours outage time, and a planned outage of 12.8 hours. Process water flow to the reactor was increased from approximately 39,000 to 44,000 gpm as a result of these changes. In order to meet the greater process water requirements, an additional process pump unit was installed in Building 190-D. The major part of this unit was obtained by dismantling one of the Building 190-DR units.
- PT-MR-105-7 (The Effect of the Iron Content of Process Water Produced by the Ferric Sulfate Process on the Over-All Economics of Pile Operation at 100-H)
Under this test, a new plant record for filtration rates with the ferric sulfate process was established at the H Water Plant - 140 percent of the design rate. A similar test was started at the B Water Plant.

One revised Reactor Operating Standard was approved and issued during the month. This was a revision necessary to provide delta T limits for tubes operating at low panellit pressure.

The established maximum power level of F Reactor has been increased 40 MW in the past two months. This improvement is attributable to the changes made in the flattening pattern during the Ball 3X outage. Flexibility in the pattern, made possible by reducing the amount of relatively permanent poison under exposure, is responsible for obtaining near optimum levels in such a short time after major pattern revision. Gradual loading of Chemical 10-66 is expected to be resumed during March.

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C. Improvement Experience (Continued)

On February 2, the first appreciable amount (11 tubes) of flattening material was charged at C Reactor. The increase of 35 MW during February in the established maximum operating level is attributable to this change.

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

D. Events Influencing Costs

The value of coal consumed during February was approximately \$18,000 lower than in January.

The Reactor Section forces were increased by 13 employees during February.

Although extensive unusual maintenance work continued during the month, charges are expected to be somewhat lower than for the previous month. Considering the shorter month, a 1.3% decrease in input production and an anticipated decrease in unusual maintenance, the February Reactor Section irradiation unit cost is expected to be approximately 8% lower than in January.

E. Plant Development and Expansion

1. Project Status

The most significant Reactor Section projects are reported below. Further details concerning projects may be found in the report, "Status of Reactor Section Projects, Informal Requests and Budget Items", dated February 20, 1953, F. A. R. Stainken to E. P. Lee.

CA-431 (100-C Plant)
No further construction work was done during February.

CG-438 (Ball 3X Facilities for B, D, DR, F and H Piles)
The installation at D Reactor was completed as reported above under "Operating Experience". The DR Reactor Ball 3X outage is scheduled to begin on March 2.

CA-512 (100-K Facilities)
Scoping of Project CA-512-R is essentially complete. Design of the 100-K Facilities is approximately 65% complete. Reactor construction is approximately 2 to 3% complete; Water Plant construction is approximately 5% complete. The pipefitters strike, which started on January 19, continued until February 12. At Building 105-KW, footings and walls have been poured up to the

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1. Project Status (Continued)

-2' level except in the storage basin area. Some footings have been poured in the vicinity of the process unit, work area and control room of Building 105-KE. General excavation of the Water Plant site continued.

IR-101 (Installation of Retention Basin Sumps - 100-B and F)
IR-126 (Replace Effluent Line at Building 107-B Basin Outlet)
Construction work on the above Informal Requests was completed during the month.

2. Plant Engineering

A number of engineering and development studies were active in the Reactor Section during February. The studies are, in general, aimed at decreased costs and/or increased production. Details are given in documents HW-27275 and HW-27290. Items of greatest interest are reported below.

Work on the evaluation of boiler performance in the 100 Areas continued. Efforts were directed toward summarizing and verifying data in addition to formulating guides for the use of operating personnel. This work resulted in correction of some steam meters as well as more efficient and reliable analysis of flue gas.

A study involving possible replacement of the secondary process pumps in Buildings 190-B, D, F, H and DR with greater capacity, higher pressure units was begun. Preliminary investigation indicates considerable savings in steam would result.

A review of H-10 loading and H-10 operating history was made in preparation for a possible loading of this type at the DR Reactor. Loading plans are being prepared to meet the various charging schedules that have been contemplated.

A method of safely discharging ruptured slugs immediately following a reactor shutdown was demonstrated during the month. Future demonstrations have been arranged to familiarize operating crews with the equipment.

F. Significant Reports1. Routine

February monthly reports of Reactor Section Units will be found in the following documents: Operations Unit - HW-27302, Process Unit - HW-27290, Plant Engineering Services Unit - HW-27275, Radiation Monitoring Unit (Technical Report) - HW-27305. The Power and Maintenance Unit Monthly Report is a Restricted document.

DECLASSIFIED1. Routine (Continued)

Other major routine reports were:

- "Slug Jacket Failures During February" - HW-27239.
- "Production Summary - February" - HW-27278.
- "Reactor Process Committee Meeting - February 25, 1953" - HW-27310.
- "Annual Report for 1952 on Radiation Surveys of Reactor Section Buildings Outside Exclusion Areas" - HW-27265.

2. Non-Routine

- "Process Test MR-105-4, Supp. B - Radiation Effects of the Removal of Front Cap Supported Shielding Slugs" - HW-26870.
- "Process Test MR-105-10 - Filter Capacity Test - 100-B Area" - HW-26961.
- "100 Area Process Water Pressure Decay Test Program - Part II" - HW-26975.
- "A System for the Location of Leaking Process Tubes" - HW-26973.
- "Methods of Utilizing Poison Column Control" - HW-26911.
- "Electrical Design Change No. 83 - Protection of Safety Rods - 105-B, C, D, DR and H Buildings" - (not classified) by R. D. Crosier.
- "Ball 3X Scram at F Reactor" - HW-27026.
- "Process Change Authorization - Ball 3X" - HW-27206.

III. PERSONNELA. Organization

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

Forty-six Radiation Monitoring Unit employees worked a six-day week schedule for three weeks during the D Reactor Ball 3X outage. Other groups worked overtime on a varying schedule basis.

B. Force Summary

	<u>Beginning of Month</u>	<u>End of Month</u>	<u>Net Change</u>
Section General	3	3	0
Operations Unit	264	266	2
Plant Engineering Services Unit	22	24	2
Power and Maintenance Unit	849	857	8
Process Unit	37	37	0
Radiation Monitoring Unit	<u>58</u>	<u>59</u>	<u>1</u>
Section Total	1233	1246	13

Changes during February consisted of 1 termination, 1 deactivation, 1 reactivation, 2 transfers out and 16 transfers into the Section. The latter included 8 Instrument mechanics who were transferred from the Separations Section.

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SECRET**TOP SECRET**III. PERSONNEL (Continued)C. Safety Experience

One major injury, No. 91, was sustained by a Reactor Section carpenter on February 11 at Building 108-B. The employee suffered a back injury, diagnosed as a cracked vertebra, while assisting three other employees lift a prefabricated hood onto a table. Investigation attributed the injury to lack of coordinated lifting effort.

The Reactor Section Supervisor Safety Training Program was continued during the month. A total of 49 employees attended 4 meetings conducted by the 100 Area Safety Engineers.

D. Radiation Experience

There were no Class I or Class II Radiation Incidents during February. However, an unusual incident with radiation hazard aspects occurred when the outlet gate of the Building 107-DR West retention basin was opened for approximately 15 minutes during basin cleanup operations. This permitted an estimated 0.5 - 1.0 curie of long-lived radio-isotopes to be discharged to the Columbia River. The incident was investigated by the Operations Unit and Radiological Sciences Department.

E. Personnel Activities

At month end, 17 employees are receiving on-the-job training for engineering or supervisory assignments in the Section; 11 of these employees are on assignment under the Rotational Training Program.

During the month, one KAPL and six duPont (Savannah River) trainees completed training assignments in the Operations Unit which were begun during January.

A survey of the education and experience background of all Reactor Section exempt personnel was completed during the past two months. Information obtained, which included the individual's job preference, has been arranged in a kardex system and is expected to be particularly useful in connection with selection of personnel for job assignments.

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Richland, Washington
March 10, 1953

MANUFACTURING DEPARTMENT
SEPARATIONS SECTION
FEBRUARY, 1953

I. RESPONSIBILITY

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

II. ACHIEVEMENT

A. Operating Experience

1. Statistics

a. Bismuth Phosphate Operations

	<u>February</u>		<u>January</u>	
	<u>Normal</u>	<u>Acid Wash</u>	<u>Normal</u>	<u>Acid Wash</u>
Charges started in Canyon Bldgs.	34	-	10	-
Charges completed in Conc. Bldgs.	27	-	15	1
Special charges - Conc. Bldgs.		25		24
Charges completed - Isolation Bldg.	26	-	20	1
Average Waste Losses, %		2.55		2.85
Special charges - Isolation Bldg.		29		25
Material balance, %		99.3		102.9
Yield through process, %		96.7		101
Average cooling time (days)		84		70
Minimum cooling time (days)		70		68

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1. Statistics (Continued)

b. Redox Operations

	<u>February</u>	<u>January</u>
Equivalent charges started	79.3	151.2
Charges completed	79.3	151.2
Tons Uranium delivered to storage	53.7	111.5
Average Production Rate per operating day, Tons	3.40	4.19
Average Daily Operating Rate for the month, Tons	1.73	3.60
Average Yield, %		
Uranium	100.0	99.0
Plutonium	99.2	99.9
Total Waste Loss, %		
Uranium	1.42	.58
Plutonium	1.17	1.01
Average cooling time, days	95	82
Minimum cooling time, days	80	55
Percent down time	43.5	14.1

c. 234-5 Operations

	<u>February</u>	<u>January</u>
Batches completed through Task II	265	390
Runs completed through Task III	146	204
Reduction yield, RM	95.5	97.6
Waste Disposal, units	2.92	2.07

d. UO₃ Operations

	<u>February</u>	<u>January</u>	<u>To Date</u>
Uranium drummed, Tons	257.3	267.26	1368.9
Uranium shipped, Tons	268.5	255.34	1352.4
Average cooling time, days (Redox)	114	106	
Minimum cooling time, days (Redox)	98	91	
Waste loss, %	.60	1.45	

e. TBP Operations

	<u>February</u>	<u>January</u>	<u>To Date</u>
Tons received from Metal Removal	120.03	166.36	554.39
Tons shipped to UO ₃ Plant	111.61	179.34	538.65

e. TBP Operations (Continued)

	<u>February</u>	<u>January</u>	<u>To Date</u>
Average Production Rate per operating day, Tons	6.37	6.58	
Average Daily Operating Rate for the month, Tons	3.99	5.78	
Average yield, %	93.30	105.17	
Total Waste Loss, %	2.48	3.59	
Ratio Waste Volume returned to Volume removed	1.20	1.17	
Percent down time	37.4	13	

f. Power

	<u>200 East</u>	<u>200 West</u>
Raw water pumped, gpm	1 154	4 980
Filtered water pumped, gpm	354	956
Steam generated, lbs/hr	35 430	162 812
Maximum steam generated, lbs/hr	46 000	242 000
Total steam generated, M lbs.	23 809	109 410
Coal consumed, tons (est.)	1 709	7 209

g. Waste Storage

	<u>Equivalent Tons U</u>
Metal Waste Reserve Storage capacity - T Plant	101
1st Cycle Reserve Storage capacity - T Plant	271
Metal Waste Reserve Storage capacity - B Plant	347
1st Cycle Reserve Storage capacity - B Plant	127
Redox Waste Reserve Storage capacity	1 148

2. Activities

a. Redox Processing

The Redox Plant was shut down from the first to the tenth of the month in order to replace the D-12 Waste Concentrator pot which had serious coil leakage. On February 5, a violent chemical reaction, presumably involving hexone and nitric acid, necessitated the evacuation of personnel from the building and extensive decontamination work. (See Page 11). On February 12, it was necessary to suspend first cycle operation for a day while uranium with high gamma content resulting from this incident was reworked. Production from February 19 to February 24 was limited to about 3.5 tons per day due to the condition of the second cycle feed pump. On February 24,

a. Redox Processing (Continued)

this feed pump was replaced and changes were made to allow 1S and 1A columns to operate in parallel with a combined production rate of 5 tons per day. Due to a faulty feed valve, it was not possible to start the 1S column until 2-28-53 at which time the 5 ton rate was attained.

b. TBP Processing

TBP "B" line started on February 7 and "A" line on February 10 after being held up due to lack of feed material from the tank farms. Operations were normal with "A" line at 2½ tons and "B" line at 5 tons per day until February 24 when lack of feed from C Area forced the shutdown of "A" line.

c. UO₃ Processing

The UO₃ Plant averaged 9 tons per day with foaming being the greatest difficulty, particularly during the period February 6 to 10th while working off the heel of TBP material stored in X-19 tank. During one four day period an average production rate of 12.2 tons per day was maintained.

d. Waste Metal Removal

Approximately 89 tons were transferred from the U tank farm to the TBP Plant. This lesser amount than last month (122) was due mainly to the difficulty experienced in sludge removal.

Removal of only 31 tons at the C tank farm was due to two slurry pump failures, inability of jets to operate satisfactorily in the 200 series tanks and several process line leaks.

e. 234-5 Processing

Although the 234-5 Building was seriously handicapped throughout the month due to lack of feed material, its commitment for assemblies was made. Approximately 94% of the month's production was processed through the RMA line with the remainder going to the RG line.

On 2-25-53, during the routine processing of Batch RMX-3-2-119 approximately ten minutes prior to cooling the run after completion of the 600° fluorination cycle, the furnace door to Furnace #4 was ejected into the hood floor, spilling the entire run. No reason for this was readily apparent but it is believed that it was caused by the presence of liquid HF in the furnace. The spilled product material was salvaged from the hood and sent to the Recovery Vault for future processing. The furnace was checked out and upon finding it normal was returned to service.

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3. Special Operations

a. Waste Evaporation

The 242-B Waste Evaporator processed 241,312 gallons of first cycle waste with a reduction in volume of 62.4%. Re-evaporation of waste heel volumes was started in order to provide storage space for more residue.

Re-evaporation of the sludge supernatant was started in the 200-W evaporator on 2-18-53. 165,500 gallons were processed with a volume reduction of 23.2%.

b. Plutonium Recovery - 234-5

Operation of the metal recovery unit (Skull Dissolver) was interrupted for a period of two weeks awaiting replacement of the dissolver pot. During February the equivalent of 8.2 bottles of recoverable metal was reclaimed.

c. Americium Recovery

Special processing of Runs Z-53-02-Z-9, Z-53-02-Z-10, and Z-53-02-Z-16, recovered 90.7 mg out of a possible 101.2 mg of americium. The material was packaged for off site shipment.

d. Decontamination of Redox Vessel

Prior to installation of a spare, an attempt was made to decontaminate the old D-12 Waste Concentrator pot with 60% nitric acid, 5% citric acid, 20% nitric acid and water flushes. Radiation levels of 28 r/hr at 65 feet were obtained when the pot was monitored. Plans are being made to dispose of the pot without further decontamination.

e. B Plant Clean-Up

The program for cleanout and decontamination of the internal surfaces of 224-B equipment is progressing favorably, and it is expected that final flushes will be completed in March.

f. Production Test MS-235-2

Tall reduction crucibles, RS-4, (A-331 thin-walled type) were tested in Task III and found to be very satisfactory. Consequently, the RS-4 crucible has been ordered to replace the Present A-331 type. This completes the production test.

4. Schedule Variance

Redox Pu production was low at 54% of the amount forecasted in the January Annual Forecast due mainly to non-operation during the first

4. Schedule Variance (Continued)

ten days of the month as discussed above. T Plant produced 263% of the forecast to compensate somewhat for low Redox production. The combined production of both plants was 65% of the total forecast.

The 234-5 Building produced its commitment for assemblies.

The TBP Plant produced 59% of its scheduled production, being low due to the slow rate of metal removal at the tank farms.

The UO₃ Plant produced 91% of the amount forecasted in the January Annual Forecast. The low total was due to lack of feed material from both Redox and TBP.

B. Equipment Experience

1. Operating Continuity

The following equipment changes contributed to a major portion of 292 hours of total down-time in Redox during February:

- a. Replacement of G-1 Organic Surge to O-1 Organic Receiver pump.
- b. Replacement of the D-12 Waste Concentrator pot.
- c. Failure and replacement of the F-1 (2D Feed) pump.
- d. Failure and replacement of the D-9 Waste Concentrate Sampler agitator.
- e. Installation of a new F-7 (1A Feed) pump.
- f. Installation of a new 1S Feed jumper.
- g. Installation of a new 1SW let-down valve jumper.

TBP "A" line was down fourteen days and "B" six days due to insufficient capacity of the waste metal removal units at the tank farms.

About three days were lost at T Plant due to a plugged overflow line between waste tanks 105 TX and 106 TX.

2. Inspection, Maintenance and Replacements

a. Nagle Pumps

Two pump failures occurred during the month, 102-C on 2-5-53, and 104-U on 2-26-53. Two replacements of Nagle pumps have been made. The 104-U pump which failed on January 31, (pump No. 16) was removed and stored in 107-U. A new pump (pump No. 21) was installed on February 2. On February 9 this pump was removed from the tank and a baffle type intake was installed over the pump suction. This baffle intake is designed to prevent any foreign material greater than three inches long from entering the pump suction. Following installation, the performance of this unit was very satisfactory until it again failed on February 26 due to failure of the shaft.

a. Nagle Pumps (Continued)

Out of 22 original pumps 18 have failed. Two of the original group are still operable and two have not yet been installed.

b. East-West Pipeline

Cleanout of waste piping in the East-West pipeline was accomplished satisfactorily by use of hydrostatic pressure. Lines were plugged between West Area and the 151-ER diversion box, one line from 151-ER to 109-BX and the entire line from 151-ER to 241-C was frozen. An estimated 40,000 gallons of water were used for these cleanouts which is aggravating an already grave waste storage problem. A sharp reduction in pH of the TBP waste has been made which has helped the situation by raising the freezing point of the waste.

c. Skull Dissolver - 234-5

The platinum liner of the skull dissolver in the 234-5 Building failed as a result of the ignition of plutonium hydride particles which upon contact with the HNO_3 -HF dissolving acid apparently splattered against the bottom of the vessel burning several holes through the liner. The charge itself did not ignite due to the blanket effect of the helium atmosphere in the pot. A replacement dissolver pot was installed and is operating satisfactorily.

d. Plugged Cascade Line - T Plant

The cascade line between extraction waste storage tanks 105-TX and 106-TX became plugged or restricted to the extent that the waste could not cascade from the 105-TX to the 106-TX tank. The line was successfully opened by steam cleaning followed by the use of a steam driven rotary tube cleaner into the plugged line via a curved stainless steel sleeve fitted over the cascade line projection in 106-TX tank.

e. UO₃ Plant Pump

The UO₃ X-19 pump failed twice during the month due to corrosion of the graphitar bearings and seals. Two new materials are being tested to replace the graphitar.

C. Improvement Experience1. Process Tests and Revisionsa. Production Test MS-235-3

Production Test MS-235-3, Reduction of Hi-Temperature Hold Period, has been completed and adopted as standard. This method reduces the overall time cycle by approximately two hours twenty minutes.

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1. Process Tests and Revisions

b. Coating - 234-5

c. Redox Run Acidity Limits

A reduction in recycle volumes of up to 20% is made possible by changing the acidity limits for Redox Runs being processed in the Isolation Process. The pH limits for processing the Redox material were changed from (2.0 to 4.0) to (2.0 to 5.0), and experience on 53 Runs has not shown any appreciable change in process results.

d. Pre-Reduction Digestion on Redox Runs

Thirty minutes of process time is being saved on Redox Runs in the Isolation Process by eliminating the pre-reduction digestion period. A study of 22 Runs showed no change in recycle or filtering rates, when the digestion period was eliminated.

e. Dissolver and Metal Solution Preparation

Two-cut dissolution of 9 bucket charges (4.95T) has been adopted as standard practice in the Redox Plant. Average values of nine hours for the first cut and ten and one-half hours for the second cut should permit attainment of Phase I rates without activating the third dissolver.

2. Adoptions, Inventions or Discoveries

Two Reports of Invention were issued during the month of February.

<u>Inventor</u>	<u>Title</u>
Arthur W. HildeBrandt	Hi-Lo Alarm on Control for use in instruments having a mechanical pen drive.
Arthur W. HildeBrandt	A Counting Rate Meter Circuit

D. Events Influencing Costs

1. Labor Variance

Total force of the Separations Section was reduced by three, due to termination and transfer.

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DECLASSIFIEDD. Events Influencing Costs (Continued)2. Material Variance

A number of Redox flowsheet tests were made in the Silo relative to increased capacity and chemical savings investigations. They were:

- a. Removal of 0.04 M nitric acid from stripping column extractant streams to permit use of plain demineralized water.
- b. Removal of chrome from 2AS makeup to meet the same specifications as for 3AS makeup. These two changes will release or combine facilities to expedite aqueous makeup scheduling for Phase II rates.
- c. Increased concentration of ANN from 62% to 65% to effect an estimated \$8,000 per month saving and a 7% increase in 3D Column capacity.
- d. Reduction in 1CX, 2EX and 3ES flow ratios to effect an increase in F-2, F-5 and E-10 UNH Concentrator capacities.
- e. Operation with low 2A and 3A Column interfaces to reduce emulsification tendencies by introduction of scrub streams above the interface.
- f. Introduction of 0.1 M nitric acid in 1AX to lower disengaging time (transfer of product from the aqueous to organic phase).

A change of pH control point from a previous value of 11 - 11.5 to a new value of 9.5 has resulted in a 7 to 8% reduction in caustic required for waste neutralization in the TBP Plant. Savings are estimated at \$75/ton in caustic consumption and reduced waste storage space.

3. Other

Two highly radioactive Nagle pumps were repaired using the B Canyon Building as a work place at an estimated savings of \$20,000. This was all the more remarkable since the time limit per person averaged three minutes at a reasonable working distance.

Thirty seven proposals are being studied under the Separations Section Methods Improvement Program. To date, six studies have been submitted proposing a yearly savings of \$50,000.

E. Plant Development and Expansion1. Project Status

Phase I Redox Capacity Increase work completed thus far includes four revised condensers, the 1-B column repacked, the 2-D and 3-D columns replaced and the installation of a larger G-1 to O-1 organic pump. A new

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1. Project Status (Continued)

1-B column is presently being fabricated under Phase I and will be large enough for Phase II capacity.

A.E.C. authorized \$120,000 for design and procurement relating to UO_3 plant expansion. The UO_3 design criteria was approved February 18 by the Design Committee. Total costs are estimated to be \$281,000. UO_3 construction schedules indicate start of temporary construction March 16 and project completion July 18, 1953. Detail design is progressing.

Project Proposal Part I (design and procurement), CG-538 - Redox Waste Diversion, approved by the A and B Committee and forwarded to the A.E.C. on 1-14-53 has not yet been A.E.C. approved. Design work by G.E. Engineering has been somewhat curtailed for lack of funds and although design of the lump sum portion of the project is continuing, concern is felt over the scheduling of this work. Revision 1 of the proposal requesting \$500,000 for construction of a tie-line from S Plant to U farm and condensers for U farm tanks is to be submitted to the A and B Committee in March.

2. Plant Engineering

A study to develop a satisfactory method for transferring UNH solution from the UO_3 Plant and from Redox to tank car loading positions was continued. Estimates on several satisfactory arrangements were obtained and a final report is in preparation.

Study work was completed indicating the feasibility of converting two steel decked rail flat cars to two-well cask cars on a temporary basis at a cost of approximately \$30,000. A cost comparison of several other alternatives of obtaining additional well capacity was also presented in P.E. Report No. 51.

Miscellaneous engineering studies include:

- a. A study to determine the economics of larger off-plant shipments from Z Plant was concluded.
- b. A report giving cost estimates for installation of recording weirs on raw water effluent streams was issued.
- c. Design of an area rescue service trailer was completed.

F. Significant Reports1. Routine

HW-27285

Separations Section - Operations
Monthly Report

V. R. Chapman

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1. Routine (Continued)

<u>Number</u>	<u>Title</u>	<u>Author</u>
HW-27286	Separations Section - 234-5 Operations Monthly Report	V. R. Chapman
HW-27291	Separations Section - Process Monthly Report	W. N. Mobley
HW-27292	Separations Section - Radiation Monitoring Monthly Report	A. R. Keene
Restricted	Separations Section - Power and Maintenance Monthly Report	R. T. Jessen
HW-27129	Separations Process Committee Minutes	O. C. Schroeder
HW-27324	Separations Section - Plant Engineering Monthly Report	C. P. Cabell
HW-27323	Essential Materials - Operations Sub-Section Separations Section	J. P. McBride

2. Non-Routine

HW-26700	Labor (Revised) and Material Standards and Basic Data for 222-S Laboratory	P. J. Norderhus & J. E. Fouts
PES #52	Study of Truck Transportation of Process Materials from 100 to 200 Areas	C. F. Falk
Restricted	Unusual Process Incident Leading to Evacuation of the Redox Exclusion Area	E. A. Foskett
HW-27010	Back-Cycling of 2DW-3DW to Earlier Cycles as Scrub - 202-S Building	R. D. Barnes & O. C. Schroeder
HW-27237	Radiation Incident Investigation, Class I, #54	R. N. Donelson
HW-27232	Radiation Incident Investigation, Class I, #53	J. P. Corley

III. PERSONNEL

A. Organization

There were no organizational changes which appreciably affected the Separations Section.

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I. PERSONNEL (Continued)B. Force Summary

	<u>Start of</u> <u>Month</u>	<u>End of</u> <u>Month</u>	<u>Net</u> <u>Change</u>
Section General	4	4	0
Operations	653	654	1
Power and Maintenance	570	566	- 4
Process	213	213	0
Radiation Monitoring	71	70	- 1
Plant Engineering	<u>29</u>	<u>30</u>	<u>1</u>
Section Total	1540	1537	- 3

C. Safety Experience

One sub-major injury occurred to an Operations employee in U Facility when he received a broken arm when a fork lift truck he was operating overturned on February 23rd.

D. Radiation Experience

One Class II Radiation Incident occurred in which exposure of 600 mrem occurred to a Pipefitter, who was engaged in underwater regasketing operations at the 2R pool in 221-T canyon. Because of the awkward size of the connector, it was difficult to position. In positioning attempts the very contaminated dip leg "broke water" and caused a 10 second exposure at an exposure rate of approximately 240 rep/hr including 5 r/hr. More strict control was placed on the types of connectors which can be handled at this underwater facility.

Gross contamination was spread in the South Sample Gallery of Building 202-S when a reaction occurred between organic and nitric acid solution in the 2DW sample pot or in the salt waste header at the Redox facility. The resulting pressure surge resulted in process solution being blown from the six column waste sample ports in the South Sample Gallery and eventual evacuation of the Redox facility because of fume detection. No significant personnel exposure resulted; however, high exposure rates have been encountered in subsequent decontamination work. In addition to this incident, another Class I Incident involved an employee who took electrode readings without benefit of monitoring.

Iodine¹³¹ emission rates, undoubtedly affected by the Redox Plant shutdown, averaged less than 1 curie per day.

E. Personnel Activities

An information meeting of all Radiation Monitoring Unit exempt personnel was held at 760 Building. Items discussed included: Salary plan, appraisals, ratings, cost reduction, expansion and job opportunities.

DECLASSIFIEDE. Personnel Activities (Continued)

Results were obtained from a grievance procedure questionnaire, which was distributed to all Radiation Monitoring non-unit, non-exempt personnel in December. It showed that the people understood the procedure and were reasonably well satisfied with it.

The G.E. Selection Program, combining the use of aptitude tests and skilled interviews in the selection of personnel for upgrading to positions of leadership, was adopted by the Section. Future supervisory needs will be filled to the maximum extent possible through the use of non-technically trained personnel.

A trip report of visit to Vitro's New York office and duPont's Wilmington office dated February 19, 1953 was issued by F. A. Hollenbach. Further details of this trip which was made with Engineering Department and A.E.C. personnel are reported in meeting minutes prepared by Vitro Corporation.

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ENGINEERING DEPARTMENTFEBRUARY 1953TECHNICAL SECTION

The Hot Semiworks carried out the first tracer level runs at a nominal 4% of full activity levels. The Redox flowsheet was tested. Decontamination and waste losses were excellent.

Analysis of the technical data obtained during C Pile start-up has been completed. The critical buckling of the dry pile with air atmosphere was 93.1 microbucks and that of the pile with cooling water and air atmosphere was 58.8 microbucks. A measure of pile reactivity as a function of buckling indicates migration areas of 675 cm² and 642 cm² respectively for the two loadings.

Two production tests have been prepared for the investigation of higher power operation at C Pile. One will utilize a controlled local "hot spot" to obtain experience at higher tube power generation rates. The other will make use of uranium slugs partially enriched in the fissionable isotope to investigate operation at slug powers considerably in excess of present experience.

Pile tests have established the acceptability of iron-limonite concrete, placed by the "Prepakt" process for application in future Hanford biological shields.

A new electronic circuit to convert pulse information from ultrasonic tests of fuel elements into go, no-go indications, has been designed and built. This circuit, together with the pulse generator completed last month, completes all the electronic prototype equipment necessary to make a production model of ultrasonic equipment for testing grain size and bonding.

Stored energy annealing spectra obtained from samples in process channel 1584-D indicates that a relatively large amount of stored energy, easily annealed at 200° C, exists in the fringe regions of the pile. This 200° C peak was not found to exist in the central region of the pile, and therefore the possibility of a disastrous temperature surge is remote.

Tests conducted in a process tube mock-up have shown that unless sodium dichromate is present in the water, ten ppm of diatomaceous earth will cause pitting.

Evaluation of the mechanical bond formed by pressing aluminum into an anodized uranium surface continues to give favorable results. Differential thermal expansion at 400° C did not result in bond rupture.

Alloy foil and wire specimens required for new pile research were success-

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fully produced by rolling and extrusion, respectively. Experimental plutonium metal forming facilities were put into operation in February.

Intermittent mass spectrometer analyses of C Pile atmosphere during and since start-up showed that the carbon monoxide content builds up to a steady state value of about 3%. Calculations based on this observation, together with the daily gas make-up volume added to the pile, indicate that about one pound of graphite per day is burned up and lost from the pile through gas leakage.

Nuclear constants have been determined for plutonium isotopes. The spontaneous fission rate of plutonium-240 was shown to be 1.51×10^6 fissions per gram per hour with a precision of $\pm 2\%$; the currently reported value in the literature is 1.66×10^6 . The alpha decay half-life of plutonium-241 was found to be 3×10^5 years, as compared with the literature value of 5×10^5 .

Analytical procedures developed include a chemical method for the determination of yttrium in UO_3 , a much more rapid procedure for the determination of cadmium in lead dummy slugs, a pH method for monitoring the sodium carbonate concentration of TBP solvent recovery scrub stream, a direct colorimetric determination of uranium in Purex type feed streams, and others.

Solvent extraction process studies continued to show that a high acid feed should improve decontamination in the recovery of uranium from stored metal waste. Ruthenium decontamination was improved by digestion of second cycle Purex feed with 0.05 M beta-mercaptopropionic acid. Conditions have been defined in the Purex system for avoiding an adverse effect on plutonium recovery when employing 0.06 M H_3PO_4 to benefit decontamination.

Items of note in 234-5 research were the first electrolytic reduction of cerium trifluoride, which gave a low yield, and successful reductions of cerium trifluoride (stand-in for plutonium trifluoride) by the stationary bomb technique. In the latter, 20 g scale experiments yields averaged from 97.3 to 84.9% depending on the amount of iodine booster used.

Design of the lattice test reactor has proceeded to the point where the main features of the reactor are definite. Two types, the danger coefficient and the strong transient type, are still being considered.

DESIGN SECTION

A general information meeting for Design Section personnel was held by the Section on February 18 at the Jason Lee auditorium.

Engineering effort of the Section for February was centered on the Expansion Program, with 70% of the Section personnel assigned to the Expansion Program, 14% to other design projects and 16% to research and development studies.

Design on Project CA-512-R, 100-K Reactor Facilities, continued to advance

with over-all design 66.8% complete, an increase of 7.5% during the month. The following items were approved for use in the "K" Reactor by the Design Committee: Horizontal control rod assembly, poison column charge-discharge equipment, effluent water temperature monitoring system design criteria and criteria of a purge system for removal of film tubes and slugs. Test lot orders were placed with the Aluminum Company of America for trial fabrication of horizontal rods and process tubes. An alteration to the purchase order for pumps was negotiated for the changes in specifications of required flow rates and pressures resulting from recent design changes.

Technical management of architect-engineer services in the design of the Purex Separations Plant was transferred to Project Section on February 1, 1953, at which time the scoping was approximately 98% complete. The scoping of the Waste Disposal facilities is still in progress and is now 85% complete.

Design scope for CA-514, 300 Area Expansion, was advanced 16% during the month to 76% completion. The architectural, mechanical and electrical design criteria for the 313 Building were completed. Agreement was reached with the AEC that design of the 313 Building structure be performed by an architect-engineer. The design of the Change House was also completed during the month.

Detail design continued on the prototype fuel element canning machine for the Metal Preparation process and was approximately 90% complete, an advance of 3% during the month. About 80% of the drawings have been issued. Fabrication and assembly of the prototype machine by the Puget Sound Naval Shipyard is being followed closely to expedite the work. The furnaces are on order from the Ajax Engineering Company, and effort is being made to expedite delivery by June.

A study reconsidering the scope of the Metal Conversion Facilities expansion was completed. As a result of the study, no change will be made in the present plans, which call for the expansion of UO₃ capacity as quickly as possible. The decision was reached to install two 8-ft. diameter gas-fired pots, and other supplementary equipment, in a simple and inexpensive building addition. Detail design of the Facility was started during the month.

Detail design of the Recuplex installation, CG-496, is approximately 65% complete, an advance of 10% during the month. The percentage completion of the drawings are as follows: Vessels - 90%; slag and crucible, hood - 90%, piping 85%; reception and blending, hood - 20%, piping 10%; solvent extraction, hood - 30%, piping - 10%.

Detail design of the equipment for the silo portion of CA-535, Redox Expansion Phase II, was started upon receipt of authorized funds from the AEC. The design of eight columns is approximately 85% complete. The major portion of the drafting was completed and check prints will be issued in March. Detail design for the balance of Phase II Redox Expansion is being performed by the Vitro Corporation.

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At the end of the month, construction completion status of major projects was as follows: CG-349, Hot Semiworks, and CA-362, TBP, physically complete; CA-431-A, 100-C (Waterworks), 99.8%; CA-431-B, 100-C (Reactor), 99.8%; CG-438, Ball Third Safety System, overall, 69%, 105-F, 105-B, and 105-D completed; CG-483, Downcomer Repairs, overall, 46%, 107-F, 107-B and 107-D completed; CA-512-R, 100-K Area Facilities - overall, 5.37% - Water Plants, KW, 6.47%, KE, 2.96% - Reactor Buildings, 105-KW, 2.48%, 105-KE, 0.58%; CA-513, Purex Prototype, Part "C," 30%.

Because of increased purchasing activity by Kaiser Engineers, six inspectors are now assigned full time to the Expansion Program, and most of the other inspectors are spending part of their time on this job.

At the request of A.E.C., inspection has been performed at Hanford Works on excess materials which may be used to fill requisitions for 100-K.

The work stoppage begun by plumbers on January 19, 1953, was ended on February 12. The settlement included some concessions for exclusive bus transportation. On February 20, it was necessary to furlough all craftsmen engaged in Ball 3X work until March 2, 1953. Because 13 pipefitters were included in the furlough, all pipefitters walked off the job on February 23. The Union stated that if a furlough exceeded two days, the member would have to be terminated. Therefore, pipefitters were called back to work on February 26, and eleven pipefitters were terminated. This prevented further labor difficulties. On February 25 the plumbers previously laid off were recalled to work.

The long-standing jurisdictional dispute between machinists and millwrights in the 101 Building broke out again on February 23 and resulted in a walkout of all machinists employed by Kaiser Engineers. The employers informed the union that the Building Trades Council would be requested to furnish qualified men. The Millwrights' Union dispatched some of its members by the end of the month.

Minor Construction Management Unit completed its portion of CG-526, Activated Silica Test Facilities, 100-D. The portions of CG-438 (Ball 3X) and CG-506 (Retention Basin Repairs) in 100-D were completed the third week of February in a record installation time of 45 shifts. (Plant forces completed Downcomer Repairs in 105-D at the same time.)

All Department Managers having tenants in the Hanford High School Building were notified of the decision to vacate and declare the building excess on or before July 31, 1953.

For CA-512, 100-K Area, work proceeded on excavation for the water plants and the pouring of concrete on all components of the KW Area and on the River Pump House, basins, and clear wells in the KE Area. It appears that

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progress may be delayed by lack of piping material in both KE and KW Area. For 105-KW, pouring of concrete footings in the gas area continued. Installation of Ball 3X piping to be included in the second pour was substantially complete. Total concrete in place was about 4800 cu. yds. for KW. In 105-KE forming and placement of reinforcing steel proceeded at the minus-15 foot level. Total concrete in place was approximately 370 cu. yds.

Construction of the 2101 Building, 200-E Area, was about 35% complete. Because of labor troubles and slow progress in reconditioning of machine tools, there was little progress made in machining of graphite samples from Oak Ridge. The construction contractor has arranged for about three thousand man-hours of tool fabrication off-site.

At the end of the month the General Electric design status of the Purex production plant was 17% complete; the architect-engineer design was 5.1% complete. The completion status of Part "C," Purex prototype, was design 92%, construction 30%. Work on the concentrator was delayed by the strike of machinists at White Bluffs during the month.

ORGANIZATION & PERSONNEL

Total on Roll, February 1, 1953	1,494
Accessions	38
Separations	<u>29</u>
Total on Roll, February 28, 1953	1,503

A. B. Greninger
 A. B. GRENINGER, MANAGER
 ENGINEERING DEPARTMENT

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HW-27288

ENGINEERING DEPARTMENT

CONTRACT ACTIVITIES

During the month of February 1953 the following contract activities were handled by the Engineering Department:

1. The General Electric Engineering Department and Legal Department are still considering a proposal from Dr. L. M. Currie of National Carbon Co. relative to the extension of Special Agreement No. G-3. Pending the completion of certain other negotiations with National Carbon Co., it is believed that this matter will be reopened and consummated during March 1953.
2. Modification No. 1 to Special Agreement No. G-12 and Modification No. 3 to Special Agreement No. G-5 were drafted and executed by General Electric during February and were forwarded to the Commission for prior approval. These modifications reduce the quantity of graphite production as required to offset the new production under Special Agreement No. G-23.
3. During February, Special Agreement No. G-23 between General Electric and National Carbon Co. was drawn, covering the supplying of 2,000 tons of unpurified graphite (the quantities of purified graphite to be produced under Special Agreements G-5 and G-12 are to be reduced in an amount equivalent to the G-23 production). Special Agreement No. G-23 was executed by General Electric, approved by the Commission, and forwarded to National Carbon Co. for final execution on February 20, 1953.
4. Modification No. 5 to Subcontract No. G-182 between General Electric and Combustion Engineering Co. has been executed by the contractor. This modification provides payment in settlement of all claims arising out of the subcontract in the amount of \$7,818.74. All necessary close out papers have been processed and final payment will be made in the near future.
5. The modification of Subcontract No. G-303 between General Electric and Morrison-Knudsen is still in the hands of AEC Legal. No word has been received as to when action may be expected on this modification.
6. Word was received from the University of Washington at Seattle that the copies of Special Agreement No. G-17, to provide field training for student nurses had been lost. Additional copies have been mailed them for action at the next meeting of the Board of Regents.
7. Modification No. 1, extending the term of Consultant Agreement No. 100 with Dr. Zay Jeffries, was approved by the Commission February 3, 1953.
8. Consultant Agreement No. 108 between Dr. L. R. Donaldson and General

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- Electric, covering consulting services in connection with aquatic research, was approved by the Commission February 3, 1953.
9. Modification No. 1 to Special Agreement No. G-2 between General Electric and Washington Transit Advertising Company, providing an extension of the term of the agreement, was approved by the Commission February 16, 1953.
 10. Three prospective bidders have been contacted by letter regarding furnishing of inspection services for plant boilers and unfired pressure vessels. Negotiation of a third party agreement is awaiting the response to those inquiries.
 11. During February, Modification No. 2 to Special Agreement No. G-12 and Modification No. 4 to Special Agreement No. G-5 (both between National Carbon Co. and General Electric, covering production of purified graphite) were prepared and are in process of execution. These modifications are drawn for the purpose of physically incorporating the process specifications which were formerly attached by reference and to alter the operating procedure by incorporating by reference a new secret document.
 12. Modification No. 2 to Consultant Agreement No. 109 between George W. Watt and General Electric, extending the term of the agreement, was sent to the Commission for approval February 27, 1953.

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PILE TECHNOLOGY UNIT

FEBRUARY, 1953

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VISITORS AND BUSINESS TRIPS

<u>Visitor</u>	<u>Date</u>	<u>Address</u>	<u>Purpose</u>
P. Cohen E. S. Lembesky W. F. Whitzig	2-2/3-53	Westinghouse Atomic Power Division	Observe Hanford in-pile experiments
T. F. Fisher	2-1/8-53	Knolls Atomic Power Laboratory	Regarding mock-up on ANL Project
J. E. Draley	2-9-53	Argonne National Laboratory	Discuss aqueous corrosion of aluminum
W. B. Lewis	2-16/17-53	Materials Testing Reactor, Phillips Petroleum Company	Regarding Material Testing Reactor Project Radiation Program
W. H. Pennington E. Fast	2-16/18-53	Materials Testing Reactor, Phillips Petroleum Company	Regarding Material Testing Reactor Project Radiation Program
W. H. Pennington	2-18-53	Materials Testing Reactor, Phillips Petroleum Company	Observe canning process
E. C. Anderson	2-20/28-53	Los Alamos	Discuss the Nutrino Program
M. P. Warren	2-24/28-53	Los Alamos	Discuss the Nutrino Program
R. Schuch F. Hayes	2-15/28-53	Los Alamos	Discuss the Nutrino Program
C. Cowan F. B. Harrison P. Powell F. Reines	2-25/28-53	Los Alamos	Discuss the Nutrino Program

<u>Name</u>	<u>Date</u>	<u>Place Visited</u>	<u>Purpose</u>
W. L. Schalliol G. E. McCullough W. T. Kattner	2-2/3-53	Mallinckrodt Chemical Works	Attend conference on metal quality

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<u>Name</u>	<u>Date</u>	<u>Place Visited</u>	<u>Purpose</u>
T. W. Ambrose E. A. Eschbach	2-2/3-53	Knolls Atomic Power Laboratory	Consultation on New Fuel Element Development
	2-4-53	Battelle Memorial Institute	Consultation on New Fuel Element Development
	2-5/6-53	Ames Laboratory	Consultation on New Fuel Element Development
E. A. Eschbach	2-9-53	Argonne National Laboratory	Consultation on New Fuel Element Development
W. T. Kattner	2-4/6-53	National Lead Company of Ohio	Observe processing of uranium
	2-9/14-53	E.I. duPont Savannah River	Inspection of facilities
O. W. Rathbun	2-11/20-53	Simonds Saw and Steel Company	Observe processing of uranium
	2-9/20-53	National Lead Company of Ohio	Observe processing of uranium
J. C. Fox	2-2-53	Argonne National Laboratory	Consultation on test facilities
N. R. Miller	2-1/6-53	University of California	Attend "Short Course in Corrosion" presented by University of California in co-operation with National Association of Corrosion Engineers
A. C. Callen	2-14/22-53	AIME National Convention	Attend technical session on physical metallurgy
L. P. Bupp	2-8/15-53	University of Oregon and Oregon State College	Recruiting

PROCESS CONTROL AND ANALYSIS

Slug Rupture Experience for February

Four slug ruptures occurred during the month, three of which were Group 8 metal and one Group 9. One of the Group 8 metal failures occurred in the central zone at F Pile, another in the fringe zone at H Pile, and the third in the fringe zone at DR Pile. The Group 9 failure was in the central zone at C Pile, and was the first rupture at that pile.

Analysis of the slug behavior at C Pile by the equivalent exposure method shows a rupture rate comparable to other piles. There appears to be no gross increase in slug failure rate resulting from the higher local tube powers at C Pile.

From the slug rupture standpoint, the eight-inch, heavy-walled, Group 9 slugs continue to show improvement over the best four-inch metal.

Higher Tube Power Operation

Two production tests have been prepared to investigate operation at higher local power levels. Production Test 105-533-A, "Local Controlled Increases in C Pile Tube Power" will authorize operation with increased tube powers localized in a central group of about 100 tubes by means of changes in the flattening pattern. These tubes will not exceed any of the recognized local power limits. Production Test 105-532-A authorizes the irradiation of uranium slugs enriched to 1.75 per cent U²³⁵ which will have a heat output per slug about twice that of normal uranium in a given neutron flux. A single slug preliminary exposure is planned to check the stability of this material as fabricated. Subsequent irradiations will be made to investigate operation at slug powers in excess of present end cap and slug core temperature limits.

Production Test 105-534-A. "D Pile Operation with Maximum Panellit Pressure Monitor Protection"

This production test was prepared during the month for operation of D Pile with Panellit gauge trips set to shut the pile down in case of any flow abnormality which might lead to boiling in a process tube. The pile was shut down this month for the installation of the Ball 3X safety system. During this extended outage the process tube orifice pattern was revised to permit an increase in water flow from 37,000 to 45,000 gpm. The Panellit gauge ranges were altered to conform to the new flow pattern and the trips set to provide the increased boiling protection. Initial pile operation following these changes was interrupted by frequent shutdowns caused by the Panellit system, but by the end of the month the power level and continuity of operation appeared to be satisfactory. If operation with the reduced trip ranges continues to look feasible, it will be possible to increase the pile power level about ten per cent in the summer and 25 per cent in the winter.

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Present plans call for a similar program of re-orificing and pressure monitor re-setting at H Pile during the Ball 3X outage there.

Analysis of Project CG-482

Installation of enlarged rear face piping components had been planned for DR and H Piles as a means of increasing allowable tube powers. However, possibility of operation with maximum Panellit pressure monitor protection instead of excess header pressure has made this project less profitable and the major portion of the work has been canceled. The larger outlet pigtail fittings for use at DR Pile were tested for flow characteristics and were found to give less flow increase than was expected. As a result, the entire DR Pile portion of the project was canceled. The installation of large pig-tails at H Pile will depend on the results of flow tests using components prepared for the project.

100-300 Area Process Development Survey

Rough drafts of the report on this work have had extensive circulation and review. The document is now being prepared for publication.

Allocation of K Pile Graphite

A report has been prepared containing recommendations for the allocation of graphite for the K Piles and will be issued shortly.

PILE PHYSICS

Pile Activation - C Pile

The analysis of the experimental pile data obtained as a part of the C Pile activation program is essentially complete. The initial rough draft of a report discussing the technical aspects of the C Pile activation program has been prepared.

An analysis of the dry and wet critical pile sizes with air atmosphere, including experimentally determined augmentation distances, yield 93.07 and 58.8 microbucks for the two critical bucklings, respectively. This includes 13.72 and 79.35 microbucks for the dry pile longitudinal and radial bucklings and 14.90 and 43.9 microbucks for the comparable wet pile values. These data correspond to 305 and 625 normal uranium tubes loaded in cylindrical geometry with dry reflector for the dry and wet critical C Pile.

Free pile reactivity data obtained as additional tubes were loaded beyond the critical pile size yield 675 cm^2 and 642 cm^2 for the migration area in the dry and wet pile. The water in the C Pile annulus was evaluated at about 2.3 per cent k.

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

A total of 23 kilograms of U^{235} in the form of aluminum-uranium alloy slugs containing 4-1/8 weight per cent U^{235} enriched to a nominal 93 per cent isotopic purity are now loaded in the H Pile fringe. The H Pile power distribution has been nearly flattened at this enrichment level; yielding approximate increases of 17 per cent increase in pile power and 13 per cent in plutonium production rate. A 25 kilogram investment is expected to be sufficient to complete the programmed enrichment at H Pile. A continuing investment of about two-thirds kilogram per month will be required to compensate U^{235} depletion.

Graphite Allocation - K Pile

The physical concepts involved in the utilization of unpurified graphite in the K Pile reflector regions have been reviewed. In the most pessimistic case, that of permitting reflector bars to extend into the active pile region, about 40 per cent of the pile graphite would be included in the red zone. The use of unpurified material to this extent does not appear costly from either a reactivity or production standpoint. The K Pile graphite is being zoned on this basis.

Pile Control Studies

A general study to determine the minimum control requirements of the 3X system of the present piles as well as the K Piles was initiated during the month. It is expected that this study will lead to recommendations as to the minimum number of operable 3X facilities per pile required as well as establishing specifications for boron content in the 3X system steel balls. Enrichment is being considered in this study.

Review - Pile Instrumentation

A review of the nuclear safety provided by existing pile instrumentation as operated under process specifications is in progress. Of particular concern in this study is the apparent marginal protection provided in the case of inadvertent large reactivity gain, particularly from low power levels. Some progress has been made in analyzing circuit delay times and isolating the factors limiting speed of response.

Test Pile - Instrumentation

The components for the boron trifluoride filled gas control system, designed to yield accurate, continuously variable fine control have been designed, fabricated, and performance tested in part. The system will be installed in the Test Pile in the near future.

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Slug Rupture Detection

The expected high sensitivity of the gamma scintillation spectrometer with respect to the H Pile beta monitor was confirmed through a slug rupture in tube O462-H. The gamma system indicated the rupture several hours prior to the initial indication on the beta monitor. A detailed comparison of the sensitivities of the two instruments show that the spectrometer performance indicated a 30-fold higher sensitivity to this rupture.

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

The duPont gamma detector continued to operate routinely during the month. The faulty beta sensitive system has been returned to operation and operated satisfactorily during the latter portion of the month. Both systems are presently installed to monitor effluent from the far side riser at H Pile.

Plutonium Distribution in a Hanford Slug

The experimental slug assembly which was utilized to determine the distribution of fissions in a Hanford slug has now been adapted to the determination of the distribution of plutonium. Uranium pins which are depleted in ²³⁵U are embedded at various radial positions within the slug during Test Pile exposure.

The plutonium distribution is then obtained by detecting the 109 KEV X-ray from plutonium-239 which arises from the internal conversion of the gamma rays associated with the beta decay of neptunium-239. Gamma-ray spectroscopy techniques are utilized to exclude fission product activities from consideration.

The initial in-pile exposure of the assembly was made late in the month with the data undergoing analysis at the month's end.

Automatic Tube Outlet Water Temperature Recording Facilities

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

The component fabrication on-site for the improved flexowriter, which is serving as prototype equipment for subsequent Reactor Section installations, is now 90 per cent complete. The Flexowriter for this prototype recorder is expected to arrive on-site early in April.

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Assistance, as requested, has been given Manufacturing Department in the preparation of a project proposal for the installation of Flexowriter recorders in the D, DR, and F Area. The technical aspects of the Flexowriter recorder are discussed in detail in a formal report now in preparation.

Test Pile - Routine Tests

Regular slug testing proceeded routinely during the month. Fourteen lots of Mallinckrodt billets eggs were tested yielding TDS values ranging from 13 to 16. Two lots of Hanford billet eggs yielded a TDS of 14.

Test Pile - Special Tests

A section of a horizontal control rod proposed for K Pile was tested to determine reactivity control effectiveness. Test Pile data indicate that the rod should be at least 90 per cent as effective as the C Pile horizontal rod design.

A series of tests to determine sensitivity of the Test Pile as an analytical tool to indicate the impurity level in uranium oxide has been initiated. These tests, which are being performed as Hanford's part of a larger program, should evaluate the relative value of pile tests and neutron howitzer technique in maintaining quality control over the various stages of the uranium fabrication process.

The Specifications - Test Pile Power

Calculations are in progress to establish the integrated fission product activity as a function of both the rate and the accumulated exposure of the Test Pile fuel. These data coupled with a review of pile instrumentation and control will be utilized in specifying a maximum permissible power in Test Pile operation.

SHIELDING STUDIES

Attenuation Studies

Studies to determine the distribution of neutrons in Magnetite-Limonite concrete placed both by the "Prepakt" and conventional techniques are proceeding concurrently in the bulk shield test facilities at DR Pile. Preliminary data describing the distribution of fast neutrons as inferred from the S^{32} (n,p) P^{32} reaction yield an effective removal cross-section of 0.11 cm^{-1} for magnetite-limonite as compared with 0.13 cm^{-1} previously determined for Brookhaven concrete. Data describing the thermal and resonance neutron distributions are being analyzed and additional measurements are in progress to confirm these initial measurements at all three energies.

Radiation Damage Studies

Additional tests to determine the decrease in strength suffered by masonite at F Pile were obtained during the month. Masonite obtained from the outermost

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five cycles from a centrally located vertical safety rod step plug has suffered a 50 per cent reduction in compressive strength. This is to be compared with data reported last month which indicated a 30 per cent reduction in compressive strength in masonite obtained from a fringe step plug, also from F Pile. Both measurements indicate that the masonite in the outermost four of the six laminar cycles are relatively undamaged. Masonite from the innermost cycle, which is most severely damaged, could not be sampled in this work.

Additional experiments are underway to confirm data obtained to date which have formed the basis or the conclusion that iron-limonite concrete placed by the "Prepakt" method will withstand exposure to irradiation as effectively as Brookhaven concrete. It is not expected that these data will modify conclusions previously reached but rather they will serve to extend the range of exposures over which data have been obtained and serve to improve the statistics of measurement in those cases for which data now exist.

HEAT TRANSFER

Boiling Studies

New orifice sizes and new Panellit gauge trip settings were specified for use at the D Pile. The purposes of the changes were two-fold: (a) to enable the Panellit system to trip the pile safety circuit before the flow through any tube can decrease to a value at which boiling would start, and (b) to permit an experimental determination of the reliance which may be placed on the gauges from an operational standpoint. There are at least two significant points from a pile operation standpoint regarding the changes. First, the pile water flow was increased from about 37,000 to about 45,000 gpm. This resulted from the use of larger orifices, and will permit higher power levels in the event that the boiling limits are relaxed. Second, the upper and lower Panellit trip points were moved closer together. This was done so that the trips would be reached before boiling would occur in the tube. Wherein the trip spread was previously about 100 psi, it is now about 60 psi. This narrowing of the trip range is expected to lead to more difficulty in avoiding unnecessary pile shutdowns resulting from variations in the flow from tube to tube. However, it should add materially to pile operational safety.

An investigation is being made of the effect of the passage of air through a process tube. If a large bubble of air passed through a tube, it would essentially insulate each slug during the time that the air blanketed the slug, and the slug surface temperature would rise during this interval. Depending upon the amount of air involved, the effects could vary from a slight, momentary temperature increase to temporary or permanent boiling in the tube or even to melting of the slug jackets and slugs. However, the possibility of the entrance of air in any form other than that of very small bubbles is very remote. The evaluation of both aspects of this problem is being continued.

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Additional bench tests were performed to determine the operating reliability of Meletron pressure switches. It was found that the gauges could withstand several hundred pressure cycles with little effect on the trip point settings.

An experimental study was made to determine the effect of snubbers or pulsation dampeners on the response rates of Panellit and Meletrons. The use of such devices might prove desirable for reducing the pressure fluctuations to which Panellit gauges are subjected. It was found that snubbers which would halve the pressure fluctuations would increase the Panellit gauge response time only slightly, and actually would decrease the "practical" response time of Meletron switches under certain conditions. The latter switches are somewhat unstable when not dampened and the trip switch tends to open and close several times before a stable point is reached. When the pulsations are dampened, this opening and closing is essentially eliminated and the "usable" response rate is improved.

Plans have been made to purchase and install several Mercoid differential pressure switches on a pile so as to test their performance characteristics. These units have been ordered from the vendor and delivery is expected in approximately ten weeks.

Exposure of enriched, natural uranium slugs is planned for the near future in the C Pile under Production Test 105-532-A. A major purpose of this test is to study the effects of high specific power levels on slug stability. Since operating conditions will exist which have never been encountered before, additional pile operating safety will be provided by means of additional instruments on each tube containing such slugs. Present plans call for the installation of Mercoid controls in conjunction with Venturi meters on each of these tubes. The controls will be connected into the pile safety circuit. Tests have been conducted on the controls, Venturi meters have been designed, and the entire assembly is being mocked-up on a C annulus tube in the 105-F flow laboratory.

Tests were conducted in the flow laboratory to determine the increase in tube flow which would result from the installation of larger outlet pigtailed and modified fittings on the DR Pile. It was found that the flow increase would amount to only about one per cent. Similar tests are planned for the components being fabricated for use at H Pile.

Fabrication of a full-scale mock-up heater tube designed for about 700 kw operation with a cosine form of heat generation has been completed by the Kaiser Machine Shop. Final assembly of the tube is anticipated soon. Its use will permit the study of higher slug heat generation rates than have been possible previously.

Slug Studies

Measurements were obtained of the thicknesses of the anodized layers whose heat transfer properties had been studied previously. The thicknesses permitted calculation of the conductivity of the anodized layers, and the latter proved to

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be on the order of 0.58 BTU per hour-foot-degree F. Such layers, if placed on slugs, would tend to increase slug temperatures on the order of 25 to 50° C for 800 MW pile operation and for the thicknesses being considered.

An investigation of the effect of thermal cycling on the stability of untransformed and partially transformed slugs was completed. Three specimens in the former category and two in the latter were tested. Each slug was cycled about 100 times from approximately 10° C to 335° C at the axis and each cycle consumed roughly ten seconds. No adverse effects of any kind were noted although each specimen was examined carefully. For the next phase of the slug investigation, water will be channeled to the axis of a cracked specimen in an attempt to simulate the condition of a cracked slug in which water is allowed to come in contact with the bare metal due to a weld or jacket failure. Specimens are now being accumulated from screened rejects which have passed through the pickling bath.

Calculations are being made to determine the effect of replacing aluminum slug jackets and end caps with zirconium jackets and caps. Preliminary results indicate that the end cap temperature would be about three times as high above the local water temperature as is the case now. This is due to the fact that the conductivity of zirconium is only about one-tenth that of aluminum. Consideration will also be given to the effect of insulation between the uranium and a zirconium end cap.

The pressure drop nomographs for the B, F, DR, and H Piles were revised. These revisions were needed to permit determination of the film build-up in the pile process tubes under altered operating conditions.

Graphite and Shield Studies

Additional data have been obtained to permit comparison of the indications of chromel-alumel and iron-constantan thermocouples when the couples are exposed in a pile at identical temperatures. No firm conclusions have been reached as yet. Data were examined from couples located in process tube channel stringers and C hole stringers at the D, DR, and B Piles. In some cases the iron-constantan couples indicate higher temperatures than the chromel-alumel couples; in other cases, the opposite is true. During shutdowns and start-ups, additional, unexplainable phenomena occur. Plans have been made to determine the effect, if any, of a neutron flux on iron-constantan and chromel-alumel lead wire. During installation of the permanent channel thermocouple stringers at the D Pile, several feet of lead wire were placed in two of the stringers and both ends of each wire were terminated in a junction box on the front face of the pile. Both the hot and cold junctions can be held at the same temperature and any voltages developed along the lead wires during operation can be measured. Readings were taken before start-up, and additional ones will be taken when equilibrium is reached.

Studies are being made with the electrical analogue to enable calculation of the precise temperature distribution in the graphite of a lattice unit. Typical H Pile operating conditions have been assumed, and graphite temperature calculations have been made for the case of a 100 per cent CO₂ pile atmosphere. It has been found so far that tube block and filler block temperatures can be calculated which are within a very few degrees of those measured in the pile. However, in order to obtain a check on the assumptions, further calculations will be made for the case wherein the pile atmosphere is composed of fifteen per cent helium. Should these calculations prove accurate, it may be possible to predict accurately the effect of proposed operating changes on graphite temperatures.

Temperatures in the thermal shield of the H Pile have been measured with the water flow removed from one to three tubes. The data will be analyzed as time permits.

MECHANICAL DEVELOPMENT

Charging and Discharging Studies

The possible use of some type of coating to protect slugs during charging has been under consideration for some time. Samples of several types of water soluble glues have been received and are being tested. The most promising tried to date is "Flexogrip", an abrasive wheel adhesive. It can be applied with an ordinary spray gun and forms a hard tenacious film which resists abrasion when charged into an aluminum process tube. Soaking and washing in cold water completely removes it in from 15 to 45 minutes. There is no apparent residue left after washing. It has not yet been demonstrated that the material will wash away at the point of contact with the tube rib. Use of such material would obviate the need for oil during charging since it is relatively unimportant if the slugs being discharged become scratched.

Further tests with glass tubing, fitted with process tube ribs, indicate that slugs normally stay on the ribs as they are washed downstream but are quite likely to "bounce" out of alignment when they strike the slug ahead of them. They do not realign once they are out of position.

Horizontal Rod Studies

The development of a modified horizontal rod system for the old piles is continuing. Requisitioned parts and materials as well as some of the fabricated parts have been received and are awaiting assembly.

Inspection of the horizontal rods at C Pile indicated that condensation of atmospheric moisture is adversely affecting the hydrograph lubricant being used on the rods. When the hydrograph becomes wet, it easily rubs off in the seal or at any other point of contact. This problem has not caused any trouble as yet, probably because of an accumulation of lubricant in the seal, but it is possible that at some early date rod binding may occur because of lack of lubricant.

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The experimental washer seal in operation on No. 5 rod at C Pile continues to operate satisfactorily.

Vertical Rod and 3X Studies

The experimental step plug assembly was removed from No. 20-D VSR hole during the Ball 3X installation. The sphincter seal is to be removed and thoroughly examined to determine if eight months' service had any deleterious effect on the silicone rubber. The lower end of the step plug will be cut up to determine the effect of radiation on the polythene and lead shielding materials.

The electromagnetic ball conveyor arrived from the General Engineering Laboratory during the month and is being assembled in the 189-D laboratory for testing.

Supplemental Control (Ink System)

Operation of the ink system has been limited to water circulation only because of instrument trouble. It has not been possible to ascertain whether the trouble is due to faulty installation or malfunctioning of the instruments. It is planned to give the system a thorough check-out during the extended outage for the Ball 3X. It has not been possible to do this to date because of lack of shutdown time. The recirculation pump, which was thought might be a source of trouble, has operated continuously for several months.

Corrosion tests of aluminum in BF_3 gas appear quite promising. There are no indications of attack unless water is present in the liquid phase. Samples of aluminum in BF_3 gas have been irradiated in H Pile but as yet have not been examined.

IRRADIATION ENGINEERING

Plant Assistance

The thermocouple slug assembly being irradiated in tube 1383-D for the in-pile measurement of slug operating temperatures was discharged during the Ball 3X outage this month. High helium gas consumption rates indicated a potential process water leak such as that which led to the discharge of a similar assembly from 0978-H last month.

Series III and IV of the graphite samples at controlled temperatures continue to be exposed at B Pile under Production Test 105-403-P.

Exposure has been completed of the second set of samples for the study of gas-graphite reactions under pile irradiation and the samples have been discharged. The irradiation was performed in 0776-H, a water-cooled, dry annulus tube. Further details will be reported by the Graphite group sponsoring the irradiation.

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Preparations have been made for the irradiation of small quantities of uranium oxide in the Y Test Hole at H Pile. This material will be used in the evaluation of ruptured slug detection equipment which employs filters to remove solid rupture products from portions of the effluent stream.

Off-Site Tests

The high pressure water channel, ANL-M-140, used to study the behavior of water, prototype fuel elements, and structural materials for the STR, operated on process water during the month. The remaining test capsules in this facility have been discharged. Replacements for the main circulating pump which failed last month are undergoing pre-operational testing.

Discharge of the third set of neutron monitoring fission chambers from tube 1364-D completes the DPI-M-101 program for the irradiation life testing of these chambers. Difficulties with the test assembly resulted in no useful data being obtained from this set of chambers.

Preparations are under way for the irradiation of prototype Savannah River thorium slugs. Pre- and post-irradiation measurements of length, diameter, and warp will be made at other sites.

Initial in-pile measurements of the fission product gas pressure developed during irradiation of enriched uranium metal have been made. Contrary to expectations, it appears that within the limits of experimental sensitivity, no free gas has been formed. The test, designated KAPL-M-108, was carried out in 1078-DR, a water-cooled, dry, annulus tube.

Fabrication of experimental equipment for the evaluation of control rod and shield cans containing boron carbide which are proposed for SIR is nearing completion. The test, designated KAPL-M-114, is designed to yield information on the reaction of boron carbide and stainless steel at high temperature, the build-up of gases in the sealed cans, and the problems pertaining to thermal ratcheting of boron carbide in the cans.

Two additional irradiation specimens have been received for the study of power generation in semi-conductors under pile irradiation. A new specimen has also been received for the study of the creep rate of fuel pins for SIR. Both of these experiments are conducted under the KAPL-M-105 program.

Studies are being made of the effect of pile irradiation on the creep rate of metals, particularly zirconium, at elevated temperatures as part of the WAPD-M-111 program. The creep test assembly charged in tube 1077-B to study zirconium has been behaving erratically.

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Out-Of-Pile Irradiations

Gamma irradiation of non-metallic materials continues in the 105-F discharge basin. A tantalum-182 gamma source has been set up as a secondary radiation standard. Fabrication of additional facilities for gamma irradiations is proceeding.

The major portion of the equipment for the neutrino experiments has arrived, and the test assembly is being erected at C Pile under the direction of Los Alamos personnel.

Development and Facilities

In pile calibration of chromel-alumel and iron-constantan thermocouples continues in tube 0789-F. Both sets of thermocouples are in reasonable agreement after a total exposure of seven months.

SPECIAL IRRADIATIONS

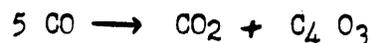
Status of Special Requests

P-10-A pieces charged	321
P-10-A pieces recharged	178
P-10-A pieces discharged	191
P-10-A pieces reaching scheduled exposure	10
P-10-A pieces damaged, for disposal	0
P-10-A pieces under irradiation	1289
P-10-A pieces in storage basin	1084
Thorium pieces charged	15
Thorium pieces discharged	140
Thorium pieces being irradiated	305
Thorium pieces shipped during February	0
Thorium pieces held pending shipment	190
Special request samples charged	0
Special request samples discharged	13
Samples being irradiated	263
Samples shipped during February	52
Samples awaiting charging	125
Samples awaiting shipping	26

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GRAPHITE STUDIES**DECLASSIFIED**Radiation Induced Reactions

Attempts to obtain specific equations showing the formation of the solid residue resulting from pile and cyclotron exposure of carbon dioxide have continued but are hampered by the inconsistent pressure and composition changes. The carbon percentages found in the solid residue have been consistently lower than corresponding suboxides of carbon would indicate. Despite these inconsistencies, it would appear that the most acceptable equation is a composite of the two:

Reaction Rates - Graphite - Carbon Dioxide System

The third of a series of runs to determine the reaction rates of graphite--carbon dioxide system at 1000° C has been made. The results show that storage of the sample in air at the end of each reaction period followed by outgassing at 1000° C in vacuo results in a retardation of the initial reaction rate at the beginning of each successive run. This effect is essentially eliminated by allowing the sample to remain in the reaction train in an atmosphere of carbon dioxide. If this is done, the reaction rate appears to be linear with percent oxidation in the range of six to eight per cent oxidized.

Stored Energy

An attempt is being made to evaluate the validity of using C_o spacing as an indication of stored energy build-up for the monitoring of pile graphite. If such a correlation can be established, it will be highly useful in that the X-ray examination of a sample is a non-destructive test and is simple and inexpensive, compared with a stored energy determination. Samples mined from 1585-D in December, 1951, have been examined with regard to stored energy and C_o spacing. The stored energy was determined as total stored energy by the National Bureau of Standards. A plot of both C_o spacing and total stored energy as a function of distance into the pile, shows that each property exhibits the same shape of curve. To examine further the possibility of correlating these two properties, samples from the same tube, 1585-D were annealed to 500° C and C_o spacing and remaining total stored energy measured. Again the curves have the same shape which indicates that a correlation between the two properties is possible.

To gain further information on pile monitoring, stored energy annealing spectra have been determined for samples from process channel 1584-D. The results indicate that a relatively large amount of stored energy which is readily annealed at about 200° C exists in the fringe regions of the pile at a distance of about nine feet from the front Van Stone flange. This 200° C peak does not exist in

the central zone of the pile from a distance of about twelve feet from the Van Stone flange to the center of the pile. It is the sudden release of the stored energy in this 200° C peak that is the basis for the concern of a sudden pile temperature surge. Because this 200° C peak does not exist in the central zone of the pile where temperature surges would be most troublesome, the possibility of a disastrous temperature surge is apparently remote.

Experimental Graphite Evaluation

Samples of AGHT and Speare graphite have been charged into Materials Testing Reactor at Arco and into a cold test hole at Hanford. An attempt is being made to correlate MTR and Hanford exposures and simultaneously to evaluate AGHT and Speare graphite for possible use in the K Piles.

Pile Monitoring X-Ray Diffraction

The first graphite samples have been removed from the tube channels at the C Pile. These samples represent an initial stage of an extended C Pile monitoring program which will eventually evaluate the effectiveness of the overboring pattern.

The results obtained show virtually no expansion in the fringe region, and slight expansion in the center of the pile.

Because the unit is not at the design power level and the tube channels have not received the exposure for maximum coring effectiveness the results obtained from the present sampling cannot be considered as indicative of the overboring effectiveness at this time.

WATER PLANT DEVELOPMENT

Process Water pH Tests

The in-pile flow laboratory test to determine the effects of pH on dichromate reduction operated until D Pile was shut down for the ball 3X installation. This test is designed to study experimentally the phenomenon of dichromate reduction by radiation to form a tightly adhering film in process tubes. Earlier laboratory data indicated that this effect was more severe as pH is lowered in the range 7.7 - 6.7. At the time the test was interrupted, pH had been lowered to 7.5. The test is being continued by stepwise reductions of 0.2 pH unit at weekly intervals.

Construction of the pipe line to supply lime-free water to the flow laboratory proceeded during the month; expected completion date is March 11, 1953. A production test has been written to test this water with and without dichromate addition and also to evaluate the use of ammonia for pH adjustment to replace lime. The experimental ammonia feed system developed in 183-F has been transferred to the 105-D Flow Laboratory in preparation for this test. A caustic

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addition system is now being developed in the flow laboratory in anticipation of future testing requirements.

Flow Laboratory Tests

A third series of barnacle formation tests was completed. Five tubes supplied with lime-free water through new piping showed an average of six barnacles per tube after less than four weeks operation. Preliminary data from the high chlorine corrosion test showed higher corrosion rates in fire and sanitary water than in process water, which has less added chlorine.

Inspection of the "C" horizontal rod assembly showed that both generalized corrosion and pitting attack are excessive at the test condition of 82° C outlet water temperature. Installation of a steam jacketed C-type tube at 105-F Flow Laboratory to operate at 50 gpm is proceeding. A K-type tube will replace this tube as soon as one is available.

Water Quality Evaluation Tests

Production test operation of C, D, DR, and F water plants was generally satisfactory throughout the month, as the river water continued to show low iron and turbidity concentrations and higher than normal temperatures. A sudden turbidity surge occurred early in the month. Adjustment of feed rates prevented serious film build-ups, however. The Panellit monitoring system demonstrated its effectiveness as a control for determining optimum water treatment methods.

Installation of activated silica preparation and addition facilities at D was completed this month. The high filtering rate tests are expected to begin as soon as final Process Committee approval is obtained.

Maximum Flow Studies

Testing of the 183-D pumping station was further delayed because of repair work during the 3X shutdown. Plans are now complete for testing of all stations at 100-B during the next regularly scheduled shutdown.

The purpose and scope of the 100-K Flow Laboratory is being discussed in a series of meetings with the 100-K Water Plant Project Committee. The major unresolved questions concern the number of systems and the design of the settling basins.

PILE COOLANT EFFECTS

Corrosion

Mock-up tests are now in progress to determine the effect of suspended material on slug and tube pitting. The only effect that was observed when 80 to 2,000 cc per minute of air were injected into 15 to 20 gpm of water at 90° C was a slight

decrease of hydrous oxide film on the slugs. A similar result was obtained with 10 ppm diatomaceous earth when 2 ppm sodium dichromate was in the water. In dichromate-free water at 85 to 90° C the slugs had an abraded appearance after six to ten days. Definite pitting of both slugs and tubes was noticed under these conditions.

The most recent impingement test data, all at 90° C, show no pitting of the aluminum samples after 25 days in water with 2 ppm dichromate, or after 14 days at 1 ppm. Pitting was observed after 14 days at 0.1 ppm dichromate and in dichromate-free water.

Visual examination of tubes in the front tube corrosion mock-up showed no barnacles after 35 days in tubes containing water with as little as 0.1 ppm sodium dichromate. Tubes with dichromate-free water contained an estimated 20 to 25 barnacles per foot. Examination of the in-pile tubes that were cleaned of barnacles by chromic acid showed no regrowth of barnacles after almost two months. Short tube mock-ups to study the effect of the water quality at each pile on front tube corrosion are now in operation at all areas.

The difficulty of contaminating slugs with mercury was demonstrated by recirculating 90° C steam condensate over a pool of mercury and then over autoclaved, unautoclaved, and abraded slugs in a glass tube. Entrained droplets of mercury in the water failed to cause any pitting of the aluminum after 45 hours.

Supplement A to Production Test 105-510-E has been approved and will start during March. The data will be used to determine the mechanism of the irradiation effect on corrosion that was previously reported.

A re-evaluation is being made of the factors that determine the corrosion limit for pile operation. The validity of the present assumptions with respect to residual can thickness is being examined. A review is being made of aluminum corrosion rates in the various types of water in the light of most recent data. An evaluation of sodium dichromate as a process water additive was completed during the month and will be published shortly.

Film Studies

Observation of slug discharges at DR and C Piles during February gave further information about film formation in alum water.

Correlation of Panellit data with film formation is being continued. If the correlation proves to be reliable, it may be used as a measure of the absolute quantity of film in a tube. Samples of film from H and F Piles were obtained so that the chemical composition of Ferrifloc and alum water films could be compared.

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Recirculation

The first set of regular metal slugs that were exposed in the pile to recirculating water were discharged after 200 MWD for examination. Examination of the tube at the time of the discharge showed no localized corrosion other than that previously observed in the first inch from the front Van Stone flange. Necessary modifications to the apparatus were made during the last pile shutdown.

CORROSION STUDIES

The main laboratory (Room 7) is essentially completed. Contaminated benches have been cleaned up and painted. Electrical and plumbing fixtures are being overhauled and replaced wherever necessary. Contaminated hoods will be sealed off with a plastic film and barricaded with metal partitions.

Floor drains have been installed in the Flow Cup Laboratory. As soon as the floor is repaired, equipment will be moved in from Building 108-B.

The composition and properties of water supplied to this building are still being studied in order to determine its suitability in the Flow Cup Laboratory. The pH remains distinctly higher than that of pile process water (7.9 - 8.0 compared with 7.65) and may necessitate corrective measures at the water treatment plant.

Anodized slugs charged into DR Pile January 23, 1953, (Production Test 105-515-E) are under observation. No unusual indications, such as abnormal effluent temperatures or Panellit pressures, have been noted. Some of these slugs will be discharged in March, 1953, and examined for evidence of deterioration.

Studies of the thermogalvanic corrosion of aluminum have continued. Water-cooled slug jackets have been heated in restricted spots by welding torches and by superheated steam jets. Heat fluxes of the order of 100 watts per sq. cm. were obtained with an oxy-propane torch directed against a section of can cut out and insulated from the remainder of the can. Current densities of 100 - 160 micro-amperes per sq. cm. were obtained, corresponding to a penetration of about 0.004 inches per month. In order to obtain a higher heat flux, a water-cooled can was heated by an oxy-hydrogen flame directed against an area of about four sq. cm. An average heat flux of 200 watts per cm. was estimated. The inner surface of the tube directly under the heated spot was found to be extensively pitted.

Routine examination of the front ends of in-pile process tubes has continued during shut-downs.

IRRADIATED MATERIALS EXAMINATION

Process Tube Examination Facility

The L-shaped shielding covers, to be used in covering the process tube storage pits in the 108-B Cave, have finally been completed. These covers will allow

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process tube sections up to five feet in length to be stored in a vertical position, thereby greatly increasing the storage capacity of the pits and the efficiency of tube handling operations.

The Technical Shop has essentially completed the tube cleaning tanks for the 108-B Cave; however, no work has been done on the tube viewing manipulator equipment.

The area on the first floor of the 108-B Building that was converted into laboratory space by Minor Construction forces is being adapted for a Metallurgical Examination Laboratory.

Process Tube Examination

All or portions of the process tubes from channels 2570-H, 3184-D, 2662-B, 1284-B, 3773-B, 0285-F, and 1967-F have been removed from the piles and examined.

The process tube in channel 2570-H was removed on January 19, 1953. No severe pitting was found on the interior of this tube. Slight pitting, however, was found at "slug junctions".

The process tube in channel 3184-D was removed on January 22, 1953, because of a leaking rear Van Stone flange. During inspection of this tube in the 108-B Cave, several deeply pitted "slug junctions" were found. Two of these "slug junctions" extended completely around the circumference of the tube.

Tube 1284-B was removed from B Pile on January 6, 1953, to permit the installation of a graphite thermocouple stringer in this channel. A type of damage was observed on this tube dissimilar to any tube damage previously observed in the 108-B Cave. The damaged area extended from approximately four feet to 17 feet from the rear Van Stone flange.

Extensive hardness tests of cold process tubing were carried out with the Rockwell Superficial Hardness Tester in order to determine the most accurate method of testing process tube samples.

Slug Examination Facilities

The Atomic Energy Commission approval has been received for the 100-C Slug Examination Facility equipment project proposal. Optical Instruments and Design Engineering Units are expected to commence design activities the first part of March, 1953. Prototype handling and dimensioning equipment is approximately 50 per cent completed by the General Engineering Laboratory.

The slug air weigher, scheduled for installation in the 105-B Basin early this year, proved to be unsatisfactory during tests in the 189-D Cold Basin, and will require revision.

SECRETSlug Examination

Approximately 1,500 eight-inch and 150 four-inch slug jacket surfaces were visually examined in the discharge chutes at 105-H. Fourteen eight-inch slugs were slightly blistered. However, nearly 70 per cent of the four-inch slugs were blistered in various degrees of severity. Three eight-inch and nine four-inch slug jackets exhibited slight pitting attack.

Approximately 1,000 eight-inch and 1,500 four-inch slug jacket surfaces were visually examined in the 105-DR discharge chutes. A few slugs of each size were slightly blistered.

A suspected ruptured slug from tube 0462-H was discharged on February 17, 1953. A circumferential crack about an inch long and of an unknown depth was visible in the cap end of the slug jacket near the weld bead.

Examination of slugs before and after irradiation for Pile Fuels Production Tests is continuing.

PRESENT CANNING DEVELOPMENTLead-Dip Canning

The metal fabrication phase of Production Test 313-105-3-M, "Lead-Dip Canning of Salt Bath Treated Slugs", has been completed. Approximately 40,000 slugs are available for irradiation.

304 Building

The 304 Building and Equipment Installation (Project C-491) is essentially complete. The project will be finally accepted upon the completion of several minor items.

Welding

The proposed "v" groove design for the interlocking slug was approved following the welding of simulated test pieces. Due to equipment failure, no pieces were fillerwelded at this time.

The Fillerarc gun was received and tests started. The use of an AC power supply instead of the recommended DC source was found to be impractical. A DC source has been borrowed for Saturday use only.

Canning Fluxes

Trials of various flux combinations for wetting uranium with bronze and with Al-Si were continued. A rough grouping of desirable and deleterious salts has been made. The use of a fluoride with the chloride salts seems to be indicated.

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Autoclave Failure

An eight-inch autoclave failure that failed from entrance of water through the center of the cap created considerable interest in the quality of caps purchased from vendors other than the Aluminum Company of America. Although component use records indicate otherwise, the metallographic examination of the failure and other caps strongly indicate the subject cap was one of a test lot manufactured by the Hunter-Douglas Company. Their caps were found to have large amounts of inclusions isolated in the grain boundaries so as to frequently form continuous grain envelopes. A gross example of this is believed to have been responsible for the large intergranular crack observed in the cap of the failed slug.

Enriched Metal

All enriched metal and control metal slugs have been prepared for canning and can be fabricated as soon as the production test has been finally approved.

"B" Process Specifications

The "B" Process Specifications are being circulated for final approval.

Component Re-Etch

The effects of re-etching on the surface quality of slug caps were studied. It was decided that the slug caps may be re-etched if this is done within eighteen hours after the first processing.

MECHANIZED CANNINGLine Operation

During this month, it has been possible to carry out only limited test work in Building 314 owing to the high contamination level caused by the work of removing the rotary hearth furnace and extrusion press.

Because new steel sleeves are not available from the Metal Preparation Section, it has been necessary to adapt reject sleeves by careful sorting according to dimensions, followed by honing, and machining the bottoms to the correct thickness.

Continued experiments with techniques of precladding aluminum caps indicated promise for a method whereby the caps are pre-heated in an Al-Si bath, rotated slowly with gentle pressure against a submersed tungsten wire brush, and finally centrifuged just above the bath.

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Protective Coatings

Metal parts coated with glass by the Pfaudler Company are showing extremely good resistance to attack by molten Al-Si. A thermocouple well immersed in the Ajax induction furnace bath is still unattacked after 31 days as compared to 21 days service for R-20 Insulation-coated wells, the nearest competitor.

Can-Sleeve Assembly Pre-Heating

Experimental trials using an Ajax 6 KW high frequency converter for pre-heating can-sleeve assemblies have had promising results. A can-sleeve pre-heating unit employing this equipment is being fabricated and will replace the unsatisfactory muffle furnace unit in the mechanical canning system.

TESTINGDestructive Testing of Naturally Penetrated Slugs

In one test involving slugs which had "natural" Al-Si penetrations, nearly half of the slugs failed within the first 300 hours, all as a result of undercutting from small pinpoint-type penetrations. Where the Al-Si penetrations occurred over large areas, no breakdown has resulted.

Radiography

A rough draft of the final report on the development of radiographic inspection of the slug closure has been completed and the report will be issued in March. Six more caps from pile ruptures were radiographed in co-operation with the Radiometallurgy group of Applied Research. Four of the six showed extensive voids of the braze layer between the cap and the can, extending from the weld bead to the slug. Two of these voids appeared to have been opened to water stream at the junction of the weld bead and the can. Together with the caps examined last month, five of the seven caps from cap failures so far examined have shown extensive voiding in the braze.

Al-Si-Penetration Test

The prototype can wall thickness measurement instrument, MJZ-1, was completed by the Electronic Fabrication Shop and is now being checked functionally. The impedance measurements, which were being taken to obtain fundamental data from which calibrations of the MJZ-1 can be made, were completed. Results which appear to correlate with Foerster's published data were obtained. Unfortunately, the results are not as useful because instrument difficulties made precision measurement of the resistance component of the impedance impossible. No additional measurements will be made until better instrumentation can be obtained.

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~~SECRET~~Ultrasonic Testing

An electronic circuit to replace the hybrid electronic-photo-electric system, which has been used to convert pulse information from the ultrasonic tests into a go-no-go indication, was built in the laboratory. This circuit, together with the pulse generator which was completed last month, completes all the prototype electronic equipment necessary to make a production model of either the grain size test or the bonding test. Determinations of its stability and of the precision at which the limits may be set are now being made in the laboratory. The ultrasonic equipment for detecting untransformed slugs by grain size measurement was returned by the Metal Preparations Section with the completion of all testing on slugs from Production Tests 313-105-3-M and 313-105-7-M. Equipment is now being converted for use in a production run to determine the usefulness of the ultrasonic bonding test in comparison with the frost test.

METAL QUALITYUranium Rod Quality

Approximately 200 tons of uranium were processed by Simonds Saw and Steel Company during February. As a result of dates which conflicted with the Feed Materials Production Center rollings, this rolling was not observed. Normal "Red Tag" sampling was followed by National Lead personnel assigned to this rolling.

A sampling procedure for Feed Materials Production Center rolled material similar to that used on Mallinckrodt metal rolled at Simonds, i.e., one ingot in every ten has been initiated. Results of tests run on the material from the experimental and production rollings of December at the Feed Materials Production Center have been received. Values of the mechanical properties compare favorably with those found in tests of Simonds rolled material; the one large variation being an apparent increase in ductility of Fernald rolled metal. The grain size of the Fernald rolled metal showed a slight decrease from that of Simonds rolled metal. Orientationwise, the Fernald rolled material showed a slight decrease in the degree of preferred orientation for the (020), (110), and (130) planes with a slightly higher degree of preferred orientation of the (200) plane. For some unknown reason, the Fernald cast, Fernald rolled metal used in the experimental rolling on December 4 and 5 showed an unusually high degree of preferred orientation of the (200) plane. Samples of approximately 200 tons of metal rolled at Fernald in January have been received and will be tested in a manner comparable to the "Red Tag" testing procedure used on other metal.

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Fabrication of Uranium

Because of the unusually large grain size of the alpha-extruded samples from Massachusetts Institute of Technology, no valid conclusions may be drawn as to the deformation textures determined by X-ray techniques. Massachusetts Institute of Technology indicates that these samples are not typical of their anticipated present process and are directing their efforts towards finer grain size to overcome this difficulty.

Heat-Treatment of Uranium

During February the remainder of the material to be irradiated under Production Test 313-105-7-M, "Alpha Canned Slugs From Simonds Rod Beta Heat-Treated in Salt Bath", was sent to B Pile for irradiation. The total number of slugs to be irradiated are 6,082 four-inch and 8,109 eight-inch. Orientation results on this material show that 36 per cent of the samples have a definite alignment of the (200) plane perpendicular to the rolling direction and 11 per cent of the samples exhibit a pronounced orientation of the sample plane. Triple-dip canned material shows only eight per cent of the samples having a definite alignment of the (200) plane perpendicular to the rolling direction and none with a pronounced (200) orientation.

December's sampling of triple-dip canned material for transformation study was curtailed by the addition of a large number of samples of lead-dip canned material. Transformation was complete in the eight M-metal samples and the one Z-metal sample tested. Grain diameters ranged from 0.083 mm to over 0.169 mm in the M-metal samples. Four of eight had ρ values over 3.00 and seven had ρ values over 2.00. The one Z-metal sample had ρ values over 3.00.

During February exhaustive trials were run on the induction heating unit, in the presence of a TOCCC representative, prior to acceptance of the unit. The tests all proved successful. As soon as the electronic temperature controlling unit, being designed by members of the Testing group, is completed and installed, heat-treating of full-length rods will be started.

Uranium Alloys

An attempt to homogenize the previously cast uranium-20 atomic per cent chromium alloy was successfully performed. This master alloy will now be used in casting uranium-0.4 atomic per cent chromium alloy. Thirty uranium-0.2 atomic per cent chromium slugs have been canned and will be charged in a pile in the near future for irradiation under Production Test 313-105-12-M.

Zirconium

A production test for the in-pile testing of zirconium process tubes has been written and is being circulated for preliminary comments. Difficulties in

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flanging oversize tubes and delay in fabrication of ribs to be used in the non-ribbed tubes has delayed the flow laboratory testing of 16-foot zirconium tubes. Arrangements have been made whereby Knolls Atomic Power Laboratory will follow the fabrication of full-size zirconium process tubes and Massachusetts Institute of Technology will continue their efforts of zirconium cladding of uranium by alpha extrusion.

Metal Fabrication Laboratory

Because of the extensive backlog of machining in 3730, a priority system of work classification has been initiated. The work will be reviewed on a weekly basis and the priority list revised as is necessary. Work on the "Machining Handbook" is nearing completion. A survey report, on machining of materials prepared by the Atomic Energy Commission, has been received for correction and comment. The installation of the 650-ton press has been completed and equipment to be used in conjunction with it is being designed.

NEW CANNING PROCESSES

The testing of hot-pressed slugs utilizing an uranium-aluminum diffusion bond without the Al-Si diffusion barrier has continued with the following results: bonding was accomplished at a high reject rate, a reactivity gain was achieved of approximately 48, 105 Pile in-hours, physical shocking did not produce frost test rejects, undercutting resistance by water autoclaving was lower than triple-dipped pieces, severe blistering in 400° C baking tests, and slow baked pieces at 250° C were frost test rejects. In general, it appears that these slugs excel production material as regards reactivity and unpenetrated can wall at the expense of no diffusion or supplemental corrosion resistance.

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An experiment was performed to demonstrate whether or not holes in the aluminum can wall could be virtually eliminated by hot-pressing. Holes of 1/32-inch diameter were drilled through the can walls into the uranium and then the slugs were hot-pressed. No holes could be detected by visual inspection and the piece withstood the 40-hour autoclave test without incidence.

Eight solid dies and one triple-segmented split die have been fabricated off-site for use in the hot-press canning program. An evaluation of oxidation, heat-treatment, and surface finishing of numerous possible die steels is also underway.

Results show that cold canning of eight-inch enriched aluminum alloys may be done satisfactorily without difficulty.

It is possible that the advantages of nickel plated uranium hot-pressed in aluminum cans may be more simply achieved by plating the internal surfaces of the aluminum can. Such interior coatings are also being studied regarding prevention of Al-Si penetration of the can wall during canning and the forming of diffusion and corrosion barriers for hot-dip canned pieces. Various types of nickel baths are being tested to determine the most favorable conditions for nickel deposits on aluminum. An anode suitable for use in electroplating can interiors is being fabricated.

Ceramic wafers have been crimped in standard four-inch can caps that have been recessed by punch and die operations. A cap with an Al₂O₃ porcelain disc was agitated for 27 seconds in Al-Si and then quenched in water. On this sketchy basis, it appears that a promising production method of installing end-cap insulators in standard Al-Si canned slugs can be achieved.

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:

F. B. Quinlan, "The Art of Conveying Cylindrically Shaped Parts".

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

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March 5, 1953

SEPARATIONS TECHNOLOGY UNITMONTHLY REPORT
FEBRUARY, 1953VISITORS AND TRIPS

A. D. Callihan visited Hanford from Oak Ridge National Laboratory, Oak Ridge, Tennessee, February 9 through 13, for consultations on critical hazards of process production.

J. D. McLendon visited here from Carbide and Carbon Chemical Company, Oak Ridge, Tennessee, February 9 through 12, for consultations on critical hazards of process production.

G. Sherrard visited here from Bird Machine Company, South Walpole, Massachusetts, February 11 and 12, for consultations on the details regarding modification of one of Hanford's centrifuges.

D. O. Darby visited Hanford from Oak Ridge National Laboratory, Oak Ridge, Tennessee, February 18 through 19, for Purex process discussions.

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R. Lindauer and J. W. Landry visited here from Oak Ridge National Laboratory, Oak Ridge, Tennessee, February 15 through 19, for Purex process discussions.

A. C. Jealous and W. F. Schaeffer visited here from Oak Ridge National Laboratory, Oak Ridge, Tennessee, February 16 through 19, for process and development consultations.

D. M. Paige visited here from American Cyanamide Company, Arco, Idaho, February 17 and 18, for process and development consultations.

R. W. Wirta visited Metals and Controls Corporation, Attleboro, Massachusetts, Baker and Company, Newark, New Jersey, and Micrometallic, Glen Cove, New York, February 23 through March 5, 1953, for development of mechanical equipment consultations.

ORGANIZATION AND PERSONNEL

Personnel totals are as follow:

	<u>January</u>	<u>February</u>
Administrative	5	5
Chemical Development	82	79
Process Assistance	58	56
Total	145	140

Chemical Development: One Technical Graduate - Rotational transferred in from Manufacturing-Metal Preparation, two Technical Graduates - Rotational transferred to Manufacturing-Reactor, one Technical Graduate - Rotational transferred to Design-Process Engineering, and two Technical Graduates - Rotational transferred to Technical-Pile Technology. One Technical Graduate - Rotational was assigned from Process Assistance Sub-Unit.

Process Assistance: One Technologist C was hired, one Chemist terminated, one Secretary B terminated, and one Technical Graduate - Rotational was assigned to Chemical Development Sub-Unit.

PUREX DEVELOPMENT

Process Studies

A review was made of the pertinent information concerning the pressure buildup which resulted in the rupture of a uranium nitrate concentrator at Savannah River last month. It was concluded that the conditions existing at the time are not approximated in any existing or proposed Hanford operation, and no

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immediate changes are planned. Experimental work is in progress to determine the magnitude of the margin of safety in Hanford processes. This review was published as Document HW-27122.

Preliminary information indicates that the use of boron-containing stainless steel Raschig rings as a packing for the Purex or Redox IB extraction columns (and possibly in the 2AF tank) would materially increase the margin of nuclear safety in those vessels. A development program is being formulated to evaluate the advantages and disadvantages of such a design.

Purex Plant Design Liaison

Specifications or recommendations transmitted to the Design Section during the month included the following:

1. Summary documentation of all Purex solvent-extraction column specifications.
2. Recommendations for the selection of 308-L welding materials for Purex stainless steel equipment.
3. Reduction of the IO Column pulse displacement volume from 920 cubic inches to 460 cubic inches.

Verbal approval has been received from Radiological Sciences to delete the in-line and back-up condensate ion exchange units from the Purex design scope.

Process Chemistry

Solvent Treatment - Centrifugation times required for removal of entrained aqueous phase from solvent phases (30 volume per cent TBP in Shell Deodorized Spray Base) of various histories were determined. The minimum times for complete phase separation at 1000 G's after one minute agitation with one-half volume of 3 per cent Na_2CO_3 ranged from 1.5 to 5 minutes.

Chemical Engineering Development

Solvent-Extraction Studies - The Purex solvent-extraction investigations were continued during the month, with 84 three inch diameter pulse column studies carried out with "cold" uranium in the 321 Building pilot plant. The approximate conditions of Purex Chemical Flowsheet HW No. 1 were employed. Shell Deodorized Spray Base was used as the diluent. Included in these studies were 32 2A Column H.T.U. determinations, and 23 2A Column extraction section, six 2A scrub section, and 23 IO Column flooding studies. In the 2A Column studies, uranium was used as a stand-in for plutonium. The highlights of the new findings are as follow:

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1. The performance of a pulsed 2A Column was tested with stainless steel and plastic (polythene and fluorothene) one inch Raschig rings, as well as with perforated plates (stainless steel and fluorothene). At volume velocities up to about 800 gal./hr.(sq.ft.), sum of flows, H.T.U.'s as low as 1.4 feet or less (corresponding to an 0.2 per cent or less Pu loss from a 9 foot packed or plate section) were obtainable with all five designs tested. The capacity obtainable with good performance (low losses, low H.T.U. values) was substantially higher with the rings than with the plates. Plastic Raschig rings gave the best results, an H.T.U. as low as 1.2 feet (0.1 per cent loss from a 9 foot packed height) being obtained at 1200 gal./hr.(sq.ft.), sum of flows. (A 1200 gal./hr.(sq.ft.) volume velocity permits a 10 ton U/day instantaneous production rate employing the HW No. 1 Flowsheet and a 7.5 inch diameter, i.e., geometrically safe, 2A Column). The plastic rings exhibited good performance over a wide range of frequencies (at least a two-fold range in one representative case). The evaluation of Raschig rings for a 2A pulse column is continuing.
2. With both stainless steel and fluorothene one inch Raschig rings, the flooding capacity of the 2A Column was controlled by the extraction, rather than by the scrub section.
3. Heating the IOS (scrub) stream to 50 C. exerted no significant effect on the capacity of a pulsed IO Column with one inch polythene Raschig rings.
4. The flooding capacity of a pulsed IO Column with fluorothene perforated plates and with fluorothene one inch Raschig rings was respectively about one-third lower and one-third higher than the 1000 gal./hr.(sq.ft.) sum of flows, capacity obtained with one inch polythene rings (with the organic phase continuous in all three cases).

Mechanical Development

Pump and Bearing Development - A Milton-Roy Company, Chempump, Model C-3-1 1/2 three horsepower, "canned" motor type centrifugal pump has been placed in operation as an in-line pump, pumping water at 113 gal./min. against a 20 lb./sq.in/ga/ discharge head.

A Johnston 713S deepwell turbine pump with a 17 foot drive shaft guided by 11 Corning No. 7280 glass bearings failed (shaft bound) after 840 hours' operation at 1750 rev./min. pumping hot (80 C.) water at 150 gal./min. against a 75 foot discharge head. Inspection revealed that all of the thin walled glass bearings were fractured or fragmented. Failure of these glass bearings is attributed to (1) the thin walls (5/32 inch), and (2) the method of retaining the bearings (bearings pressed into Teflon sleeves which were, in turn,

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pressed into the metal bearing housings. Subsequent tests with glass bearings will be diverted toward developing improved methods of retaining the bearings using thick walled (1/4 to 5/8 inch) glass.

Pulse Generator Development - Teflon Bellows Tests - A three inch diameter four inch face to face Teflon bellows manufactured by the U. S. Gasket Company, which has been in test since May, 1952, was removed from test after completing 26,820,400 cycles at a stroke length of 1 1/2 inches and an average frequency of 75 to 100 cycles/minute. Testing was discontinued because of two radial cracks which developed on one of the flat gasket faces and prevented a leak-free seal. There was no evidence of failure at the bellows convolutions.

URANIUM RECOVERY DEVELOPMENT

Process Chemistry

Solvent Extraction - Spot checks of RA Column uranium equilibria were determined using 30 and 20 per cent TBP.

To determine the relative effectiveness of oxalic acid ($H_2C_2O_4$) and Fe(II) as RA Column U-Pu partitioning agents, aliquots of RAFS were made from (1) U Waste Tank Farm (Tank 103-U) RAF and RAS per Flowsheet No. 4, and (2) Tank 103-U RAF and RAS containing 2 M HNO_3 and 0.05 M $H_2C_2O_4$. These RAFS aliquots were extracted with plant ROO (recovered solvent, 30 per cent TBP) to form unscrubbed RAU solutions which were in turn stripped with H_2O to remove all uranium. Aliquots of the above organic phase produced from the extraction contacts were also given one scrub contact with RAS of the composition used in making the RAFS, and were then H_2O stripped as before. On the basis of the resulting data, no significant difference in the RCU Pu concentration is to be expected if 0.05 M $H_2C_2O_4$ is substituted for the ferrous ammonium sulfate-sulfamic acid mixture currently used.

The proposed use of oxalates in the Uranium Recovery Plant (Building 221-U) has been looked at very briefly in the laboratory, and tentative results indicate:

1. RA system disengaging times are normal when the RAX has been either oxalate or carbonate washed and the scrub contains either oxalic acid or Fe(II).
2. The use of oxalic acid in RAS vice Fe(II), should have little or no adverse effect on beta activity in the uranium product stream.
3. The use of sodium oxalate as ROS may reduce the RCU beta activity very slightly below that obtained with Na_2CO_3 .

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To determine the decontamination characteristics of waste metal aged for one year, simulated RAF (HW No. 4 Flowsheet) was made from one year old T Plant dissolver solution and c.p. chemicals. Several batch contacts were made under various conditions using this feed. The following tentative conclusions are drawn:

1. The processing of feed from one year old waste using TBP-HW No. 4 Flowsheet conditions will give a product containing approximately ten times the beta and thirty times the gamma activity of aged natural uranium, assuming one theoretical RA Column scrub stage.
2. Treatment of the RAF with 0.05 M H_2O_2 at 45 C, increases the Ru dF by a factor of about two.
3. The use of 0.05 M $H_2C_2O_4$ in the RAS increases the Zr-Nb dF by a factor of about three.

Chemical Engineering Development

RAU Purity - The analyses of metallic impurity carryover with the RAU (RA Column product stream) in the "cold" three inch diameter dual purpose 30 per cent TBP RA Column runs in the 321 Building pilot plant studies conducted in December and January have been completed. Sodium and iron concentrations in the RAU were consistently in the vicinity of the limit of sensitivity of analytical methods used; about 10 to 60 parts Na per million parts of uranium and on the order of 20 parts Fe per million parts U.

Continuous Calcination

An economic comparison of the present calcination method and a continuous process reveals an estimated saving of \$228,000 per year on direct costs plus \$184,000 per year on indirect manufacturing expense. It is estimated that a continuous system (two calciners) could be installed for approximately \$350,000 (includes project overhead and contingencies).

Mechanical Development

Rotating Equipment - Pump P-X-19, the 100 per cent UHF transfer pump, has an unfavorable history of operation marked by numerous failures of the graphitar bearings. Inspection of the failed bearings revealed an apparent destruction of the bond between the graphite particles in the bearing. A program is under way to develop a suitable replacement bearing material which will have a longer life. Because of its tendency to gall, titanium has proven unsatisfactory as a bearing material. Glass is currently being tested as a replacement for graphitar.

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MISCELLANEOUS SEPARATIONS PROCESS DEVELOPMENT

Mechanical Development

Recuplex Pulse Generator - A prototype pulse generator for the Recuplex pulse columns has been designed and constructed on site. The unit consists of two three inch diameter, four inch face to face U. S. Gasket Company Teflon bellows, tandem connected, driven by the reciprocating portion of a Lapp pulsofeeder pump. Operation has been satisfactory for 400,000 cycles at a frequency of 60 cycles/minute, stroke of 0.65 inch (equivalent to a one inch amplitude in the Recuplex columns).

HOT SEMIWORKS

The first irradiated slugs were charged into the Hot Semiworks dissolver on February 16. Jacket removal, dissolution, and feed makeup for the initial tracer level run were accomplished without incident. Operation of the Redox first cycle (IA-IB-IC Cascade) at tracer (nominal 4 per cent of full Hanford activity) level was started on February 19. Preliminary data indicate gamma decontamination factors on the order of 10^3 for uranium and 10^4 for plutonium and IAW uranium and plutonium waste losses of 0.12 per cent or less.

METAL RECOVERY PLANT ASSISTANCE

Feed Preparation - Waste Disposal

A total of 827,000 gallons of acidified blend were prepared from "C" and "U" farm metal extraction wastes with an age of five to six years. The dilute feed containing 121.2 tons of uranium was concentrated to 499,000 gallons of solvent extraction system feed (RAF). Equipment problems were primarily associated with the Nagle slurry pumps. A total of four pumps were removed from service. The pump suction inlet was modified on two pumps to include a strainer comprised of a number of 4 1/2 inch long lengths of 3 inch diameter pipes located in a concentric pattern with the long axis parallel to axis of the pump. Failures of boron carbide sleeve bearings in concentrator feed and concentrated feed transfer service necessitated removal of the pumps from service for replacement of the bearings with graphitar sleeves.

Aqueous wastes were neutralized to pH range 9.0 - 9.5 and concentrated to a specific gravity of 1.30 and a saturation temperature of 0 to 10 C. for transfer to storage tanks 109-BX and 105-TX with a volume of 634,000 gallons. This is equivalent to 1.1 gallons waste per gallon of material removed for feed.

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Solvent Extraction Operations

A total of 115 tons of uranium from tank farms were processed with a waste loss of 2.3 per cent. Solvent extraction was effected under essentially TBP HW No. 4 Flowsheet conditions. Both 12.5 per cent and 30 per cent TBP in hydrocarbon diluent were employed as extractants (RAX) in both A and B Lines.

Production data are summarized as follows:

<u>Line</u>	<u>Nominal Processing Rates, TU/Day</u>	<u>Tons U Processed</u> <u>New</u>	<u>Rework</u>	<u>Average TU/Day</u>	<u>Average Loss*</u>	<u>On Stream Efficiency %</u>
A	2.5 - 5.0	24	14	1.3	2.4	45
B	2.5 - 5.0	92	0	3.3	2.4	56

*Estimated from RAW and ROW losses.

Variations in the production rates and suspension of operations were principally due to lack of feed from the tank farms.

Average gross beta log decontamination factors (dF's) were about 3.9 and 4.4 for A and B Lines, respectively. Gross gamma and plutonium dF's averaged about 4.4 and 1.0, respectively. Average RCU product fission product activity was 45 and 35 per cent of natural uranium beta for A and B Lines, respectively, and about 130 per cent of natural uranium gamma. No additional capacity tests were completed during the month, but B Line was operated at 5.5 TU/day rates for 4.5 days using approximately 15 volume per cent TBP (nominal 12.5 volume per cent TBP) as RAX with overall waste losses of less than one per cent of feed uranium.

Solvent consumption amounted to 7.9 gallons of TBP and 21.2 gallons diluent per ton of uranium processed. Routine twice weekly sodium carbonate batch washing of solvent was continued for most of the month with satisfactory maintenance of solvent quality. Special solvent treatments included dilute (2 per cent) HNO₃ washing, followed by 5 per cent NaOH in one case to remove large amounts of solids from a batch of 30 volume per cent TBP which had emulsified in solvent extraction, and a series of alternate acid-caustic washes in canyon tanks followed by strapping in A Line RC Column to recover a batch of 30 volume per cent TBP from the hot waste system. Restoration of solvent quality and return to process use was accomplished by standard carbonate washes following the above special treatments.

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Concentration - Calcination

The TBP stripping operation in fractionator TB-4 proceeded satisfactorily; during the latter portion of the month the feed point was relocated from the top to third tray from top with no observable effect on efficiency of TBP stripping and a ten fold improvement in deentrainment.

The contamination of product uranium with Fe, Cr, and Ni during concentration from 5 to 60 per cent UNH in evaporators (EB-1, EB-2) continued to be a problem. Efforts to reduce the contamination via passivation with 20 per cent nitric acid were ineffective. The equipment was examined for stray currents which might cause electrolytic corrosion and found to be adequate in this regard.

Total production through calcination was approximately 256 tons of U as UO_3 from 975 calcinations. Of the total production, 33 tons of U were produced from Redox source material, 84 tons of U from Metal Recovery source material, and 139 tons were produced from a blend of 55 and 45 per cent Metal Recovery and Redox material, respectively.

One carload (shipment No. 43) derived from Redox source material was shipped to K-25, the balance of production was routed to Harshaw Chemical Company.

Calcining pot charges averaged 526 lbs. of uranium. The pot room production rate ranged from 3.4 tons of U as UO_3 produced per day to a maximum of 14.7 tons of U. The average daily production for the month was 9.2 tons of U as UO_3 .

The off-gas from 42 calcinations has been processed through a baffle-type UO_3 deentrainment chamber (equipped with elbow scoop) on one pot with no fume vent pluggage. The vent lines from two pots equipped with settling chamber type deentrainment devices have plugged after three to five calcinations. Plugging apparently occurs in the horizontal section of vent line between the pot and the settling chamber; consequently, this section is being replaced by flexible stainless steel pipe to permit cleanout by shaking.

Calcining time cycles ranged from 22 hours for foaming pot feeds to 5.5 hours for non-foaming feeds, with an average of eight hours for non-foaming feeds.

Solvent Treatment - Approximately 5500 gallons of 30 per cent TBP from Processing Line B was inadvertently collected in the Waste Receiver Tank 4-5 in Building 221-U (TBP Plant). This solvent was found to contain about 1500 lbs. of uranium. This U content was further increased when approximately two tons of U solution as a heel in a tank car returned from Harshaw, was pumped through Tank 4-6 to be returned as rework feed to A Line. Laboratory tests, aimed at demonstrating recovery of both solvent and U from the Tank 4-6 contents, showed that the best results were obtained by washing the solvent with 5 per cent NaOH and removing the U as the precipitating diuranate.

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On February 12, B Line RC Column U losses rose to over 0.3 per cent and the RC Column became inoperable due to emulsion formation. A sample of the solvent gave a "C" contact uranium distribution ratio (E_a^c) of 0.14, and was found to be almost black due to suspended solids which had resulted in a stable aqueous-in-organic emulsion in the solvent itself. This solvent, as received, gave stable emulsions when contacted with RAFS in the vibrational disengaging time apparatus. When the black solids were removed from the solvent, emulsions were formed neither on extraction and scrubbing nor during seven subsequent stripping contacts. It was recommended that the solvent be contacted in the solvent treatment building with 2 per cent HNO_3 to coalesce the dispersion and settle the solids at the interface (whence they could be removed by decantation) followed by 5 per cent Na_2CO_3 washes to remove HNO_3 and dibutyl phosphate. This was done, and the final "C" contact, E_a^c , was found to be substantially improved ($E_a^c = 0.038$).

Calcination - Severe caking in the calcining pots was again found to be accompanied by high metallic impurities in the UNH. Filtration of the turbid RCU in an attempt to remove suspended metallic impurities produced a clear solution, but did not lower the impurity content as determined spectrographically.

Storage volumes of RCU in Building 224-U vessels were reduced to very low levels, with subsequent contamination of all lines and vessels by organic phase which was present on the surface of stored RCU solutions. This resulted in severe foaming during calcination. Laboratory tests of potential remedies have included (1) hydrolysis with HNO_3 , (2) adsorption on Darco G-50, (3) blending with from 70 to 95 volume per cent non-foaming UNH, and (4) rework through solvent extraction (batch basis). Hydrolysis afforded some improvement, but even after seven days at 90 C. with 2 M HNO_3 , foaming was too severe to permit normal production. (Hydrolysis would be completely useless if an organic layer still exists on the surface of the solution in X-2.) The Darco adsorption showed some benefit but not enough. Approximately 5 per cent of X-2 material can safely be blended with non-foaming UNH.

UO_3 Reactivity - Reactivity determinations on plant lots gave conversion values over the range 0.959 to 1.01 for shipments 35 through 43. Results were based on Mallinckrodt standard T-268.

A series of reactivity tests with Mallinckrodt and Harshaw UO_3 has shown that the hydrogenation period may be safely reduced from two hours to one hour. This means that a 25 per cent decrease in the overall reactivity time cycle can be effected with no attendant loss of conversion.

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REDOX PLANT ASSISTANCE

Plant Performance

The Redox Plant operated at a 56.5 per cent time efficiency (IAF basis) and averaged 3.4 tons of uranium per operating day during the month. A total of six shutdowns were required during the month, the longest continuing for approximately ten days. During this planned shutdown, several column and tank flushes were accomplished, the D-12 Waste Concentrator pot was replaced, and the G-1 Organic Surge Pump was replaced. However, the shutdown was extended four days because of a pressure surge in the waste processing system (reported in Document HW-27106) which resulted in (1) gross contamination of a sample gallery, (2) additional delay in disposal of accumulated process wastes, and (3) rework of contaminated product solutions. The following is an overall summary of plant production performance:

	<u>Approximate</u>
Tons Uranium Shipped	53.7
Plutonium Processed (batch equivalents)	79.3
Per Cent Uranium to Waste	1.41
Per Cent Plutonium to Waste	1.16

Operating Performance

Redox operations continued at a 4.25 tons U/day rate (with IA Column operating at a 3.0 ton/day rate in parallel with IS Column at a 1.25 ton/day rate) until January 29, when the replacement F-7 (IAF) pump failed after only eight days' operation. Since no pump was available for installation in F-7, the F-8 (ISF) pump was connected to the IA Column, and this system was used for the remainder of the month. Following a short period of operation for depleting feed solution inventories, a planned shutdown was effected on February 1, in order to accomplish the following maintenance:

1. Replacement of G-1 (Organic Surge) to O-1 (Organic Receiver) pump.
2. Replacement of original D-12 Waste Concentrator pot.
3. Installation of some Phase I and Phase II instrumentation.

On February 5, during the initial processing of wastes accumulated during the shutdown, an accelerated chemical reaction between hexone and nitric acid occurred in the salt waste header with the evolution of gaseous products. The resultant pressure surge caused spread of gross contamination in the South Sample Gallery by blowback of solution out of the waste stream sampler

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risers; in addition, considerable fission product activity (principally Zr-Nb) was apparently blown into process vessels connected to the common, inert gas vent system. Details of the incident, conclusions reached, and recommendations for prevention of recurrence are documented in HW-27106.

Process Performance

The following table summarizes decontamination and waste losses by solvent extraction cycle for a representative period:

Period covering 1/25/53 through 1/30/53; nominal production rate of 4.25 tons U/day, processing 97 day "cooled" metal.

Cycle	Gamma Decontamination Factors		% to Waste Pu
	U	Pu	
1st	3.6	3.9	0.55
2nd U	2.1	---	0.09
3rd U	0.7	---	----
2nd Pu	---	2.2	0.03
3rd Pu	---	0.9	0.01
Total	6.4	7.0	0.58

Feed Preparation

The dissolvers were charged during the month with eleven 4.95 ton charges of uranium having an average pile exposure of 606 MWD/T. Dissolution of the 4.95 ton charges in two (vice three) "cuts" was started on February 11. This procedure change was instituted after a series of tests in December (Document HW-25574) in order to facilitate meeting charging schedules, and no adverse effects have been noted as a result of the change.

Uranium Extraction and Decontamination

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

IAF:IAS:IAX:IBX:IBS:ICX = 100:115:420:32:160:160

1. with IAS composition of 2.0 M ANN, 0.2 M HNO₃-deficient, Cr⁺², and high flow ratio to reduce Pu loss in IAW

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2. 0.1 M HNO_3 in IAX to reduce aqueous-organic disengaging time in the lower portion of the IA Column
3. 0.075 M HNO_3 in IBS to assure on acidic IBP solution
4. no HNO_3 in ICX

2DF:2DS:2DX:2EX = 100:100:400:130

1. with 2DS composition of 2.0 M ANN, 0.2 M HNO_3 -deficient, no Fe^{+2}
2. no HNO_3 in 2EX

The third Column has been operated as a dual scrub column with the 3DS introduced at the 3DF inlet tee and the 3DA introduced at the top of the column. The current Third Uranium Cycle flowsheet is summarized below:

3DF:3DS:3DA:3DX:3EX = 100:95:30:440:130

1. with 3DS composition of 2.38 M ANN, neutral, no Fe^{+2}
2. no HNO_3 in 3DA or 3EX

An increase in the concentration of stock ANN solution from 2.2 M to 2.38 M ANN has permitted the reduced 3DS and 3DX flow ratios and increased the 3D Column capacity approximately 7 per cent. The metallic impurity content of the uranium product has not been affected.

Plutonium Extraction and Decontamination

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

1. Solution Specifications

2EX and 3EX - demineralized water
2AF, 2AS, 2AX, 3AF, 3AS, 3AX - same as HW No. 4 Flowsheet

2. Flow Rates

2A and 3A Columns

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<u>Feed Rate,</u> <u>Gal./Min.</u>	<u>Scrub Rate,</u> <u>Gal./Min.*</u>	<u>Extractant Rate,</u> <u>Gal./Min.</u>
Less than 0.42	Twice feed rate	(Feed + Scrub Rates)/1.5
Greater than 0.42	0.84	(Feed + Scrub Rates)/1.5

*The 2AS rate has successfully been reduced below these rates for limited period without emulsification; however, more experimentation is necessary in order to evaluate the emulsification phenomenon under the new flow-sheet conditions.

2B and 3B Columns

$$\text{Aqueous flow, gal./min.} = \frac{\text{Organic flow, gal./min.}}{5}$$

However, the minimum aqueous rate is set by critical mass control limitations which determine the maximum plutonium concentrations in the 2BP and 3BP streams.

Solvent Treatment

Solvent processing procedure continued unchanged. Solvent losses for the period have averaged approximately 1.5 per cent of throughput.

Process Chemistry

Head-End Treatment - One-half of an irradiated four inch slug (ca. 300 days from pile discharge) was dissolved in the 1-E cubicle dissolver under standard Redox conditions, and the other half was dissolved under down-draft dissolver conditions. The dissolver solutions are being employed for laboratory tests of solvent extraction behavior.

KMnO₄ stability studies in the absence of radiation indicate that the reduction of permanganate in dissolver solutions is a first order reaction with respect to KMnO₄. No auto-catalysis was observed. The rate of reduction increases rapidly with an increase in temperature and with increasing acid concentration.

Solvent Extraction - The feasibility of recycling 231 Building oxalate supernatant to the Redox process via the feed preparation step, has been demonstrated by two parallel experiments utilizing synthetic IAF solutions spiked with PR solution to nominal Redox IAF Pu concentration. To one of these solutions, oxalate supernatant from 231 Building was added in a volume ratio of 1 to 16, supernatant to IAF. There does not appear to be a significant difference due to the presence of Pu from oxalate recycle. The effect of peroxide recycle material is to be checked in like manner.

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Following the pressure buildup in the salt waste system of the Redox Plant on February 5, a lengthy series of experiments was run in the laboratory in an attempt to duplicate the conditions which are believed to have prevailed at that time. Without exception, the tests produced hexone decomposition, but never at such a rate as to build up uncontrollable pressure anywhere in the laboratory equipment.

Subsequent to the startup of plant operations after the above mentioned incident, excessively high gamma activities were found in the product solutions. This was determined to be over 95 per cent Zr-Nb, but was found by laboratory tests to behave normally under second and third uranium cycle conditions, giving dF's in excess of 65 through a batch simulated 2D-2E cycle. The difficulty is now believed to have been the result of severe sample riser and cup contamination (E-12 and E-13) occurring at the time of the pressure buildup.

The study of Redox Plant emulsion difficulties has been continued by the vibrational disengaging time (D.T.) technique. The cause of the emulsion has not been determined, but the effect of temperature on its elimination or control has produced some interesting possibilities. Observations to date are as follows:

1. An increase of temperature of the aqueous phase from 25 C. to approximately 50 to 80 C. decreases the D.T. in both the acid Pu cycle and acid deficient U cycle by a factor of approximately two to four.
2. Every system studied (including "poor" Redox Plant hexone from Tank 804, with an initial D.T. of 180 seconds vs. synthetic 2DS) was affected in the same manner, varying only slightly in degree.
3. The effect was due to heat alone and not a physical or chemical change in the emulsifying agent, since the D.T.'s returned to their high initial values after the systems were cooled.
4. Fission product distribution into the organic phase decreases by approximately a factor of two between 25 and 80 C. in the top of the 3A Column.

Z AREA - ISOLATION, PURIFICATION, AND FABRICATION PLANT ASSISTANCE

Isolation Building

Plutonium IV Oxalate - Filter Boat Process

Currently the time required for filtration of a Pu IV oxalate batch through filter boats requires four to more than ten hours. This is to be compared to

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times of one or two hours experienced a few months ago. The longer times are probably due to leaks in the system affecting the efficiency of the vacuum filtration and increased resistance flow through the filter disks in the boats. In some instances, considerable quantities of plutonium tetrafluoride have been found in the false bottom of the filter boats beneath the filter disks. Conceivably this could be increasing the resistance to flow through some of the disks. Such plutonium tetrafluoride is not removed by the cleaning procedure normally used on the boats. It is expected that wider latitude in chemical reagents, for example, aluminum nitrate can be utilized for cleaning operations.

Several oxalate strikes were made on Redox Plant material without the thirty minute pre-reduction digestion time following the addition of hydrogen peroxide. No significant changes in filter rates or the amount of plutonium to the filtrate resulted from elimination of the pre-reduction period.

Sintered Stainless Steel N-1 Filter Plant

A sintered stainless steel Grade F (20 micron) porosity filter plate was placed in the Cell 4 N-1 filter tank. The plate was precoated with 2 kg of elutriated filter aid. Over a series of ten runs on bismuth phosphate plant product, the filter time increased from thirty minutes to four hours. Subsequent runs without filter aid resulted in plugging the filter plate; however, caustic and acid washes succeeded in restoring the filter flow rates.

Purification

Approximately 85 per cent of the month's production has been through the RMA Line. Each of the Tasks II, III, IV, and VII of the RG Line was operated during the month.

Task II (Hydrofluorination)

Twenty-two per cent of 142 runs through Task II were rehydrofluorinated because of "poor" fluoride color. This rehydrofluorination rate compares to 24 per cent in January. On the basis of the color of the fluoride, the present 5.5 hour hydrofluorination cycle appears to be as good as the eight hour cycle used in previous months.

A program for reducing the temperature of hydrofluorination to reduce corrosion in the Task II equipment was started. To determine whether reducing the final temperature would cause an increase in the pressure produced during reduction, samples of the material being hydrofluorinated were taken at 300 C. and at 600 C., and were reduced in the laboratory. Pressures of 120 and 50 lbs./sq. in. ga., respectively, were observed in several runs on such samples. One laboratory run made on a sample of material that had been fluorinated to

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450 C. also produced 120 psig pressure when reduced. Further work on this is planned, including reductions in plant equipment of material that has been hydrofluorinated to a final temperature lower than 600 C.

Task III (Reduction)

Reduction yields for 114 runs averaged 95 per cent compared to 97 per cent last month and 93 per cent in December. The causes of the variations in yields have not been demonstrated; however, variations in the composition of the plutonium fluoride which is not routinely analyzed could be of major influence.

Yields for 20 runs made without recycle turnings in January averaged 99.9 per cent and for five runs in February averaged 98.0 per cent. These yield figures are three per cent above the averages for all runs during these months. A similar observation has previously been made for RG Line reductions. One reduction (RMX-13-2-30) was made with chipped turnings placed in the bottom of the reduction crucible. The yield was about 88 per cent. Higher yields for runs containing recycled metal should be obtainable by mixing chipped turnings throughout the charge. The present mixer will not handle chips. No further use of the chip cutter is planned at this time, therefore, inasmuch as reduction yields with chips in the bottom of the crucible appear to be lower than with unchipped turnings in the crucible.

Task IV (Casting)

Task VII (Coating)

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Recovery

A new skull dissolver, fabricated from 1/2 inch thick 309 SCB stainless steel and installed without a platinum liner, was placed in operation near the end of the month following a violent exothermic reaction in the previous dissolver which severely damaged the thin (10 mil) platinum liner. Two steps were taken to reduce the fire hazard associated with Hood 40 operations: (1) the operating procedure was modified to insure cooling of the dissolver prior to the addition of a charge, and the introduction of dilute acid prior to the addition of the concentrated acid; and (2) a laboratory program was initiated to develop a suitable environment that will prevent the formation of pyrophoric materials on the skulls during storage.

Processing of skulls, after two months' operation on burned turnings, was resumed in February. When the HNO_3 -HF mixed acid addition was started on the fifth run, a violent exothermic reaction occurred which virtually destroyed the bottom of the platinum liner. The incident cannot be attributed to any equipment failure and is believed to have resulted simply from the pyrophoric nature of the skulls. Rather than repair the damaged liner, it was decided to install more rugged equipment and a new dissolver was fabricated from 1/2 inch thick 309 SCB stainless steel. To reduce the possibility of the violent reaction taking place again, the following modifications to the operating procedure were adopted:

1. The addition of 250 ml of distilled water to the dissolver before adding the 800 ml of 70 per cent HNO_3 - 0.1 M HF mixed acid; the water actually enters the dissolver slightly acid as a result of picking up the acid heel in the addition tank remaining from the acid addition to previous run.

Quality Control

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234-5 PROCESS DEVELOPMENT

Plutonium (IV) Oxalate Precipitation

Three methods of addition of H_2O_2 (for Pu (VI)-Pu (IV) conversion) are being evaluated to improve the procedure for plutonium (IV) oxalate precipitation so as to produce more readily filtered precipitates: No. 1, H_2O_2 addition thirty minutes prior to the strike; No. 2, H_2O_2 addition immediately before the strike; and No. 3, H_2O_2 addition simultaneously with the strike (mixed with the $H_2C_2O_4$). At acidities below 4.5 g H+/l methods 1 and 2 give lowest plutonium recycle. At acidities above 4.5 molar (normal for 3-BP) method 3 is the only one giving low plutonium recycle and short filtration times.

Plutonium Peroxide Precipitation

Decontamination of 3-BP Solution - Fission product removal by plutonium peroxide precipitation from 3-BP solution (concentrated to 60 grams of plutonium per liter) has shown a total BDF of 1.4 and a total GDF of 10. Gamma spectrometer scans indicate the decontamination factors to be greater than 20 for ruthenium and about three for zirconium.

High Recycle from Peroxide Strike

Laboratory investigation of a sample from Run MRC-5, which gave 20 per cent recycle from a peroxide precipitation in the 231 Building has shown: (1) the solution was typical F-10-P except for the presence of 8×10^5 parts Ca per 10^9 parts Pu; and (2) a 50 per cent increase in both sulfate and H_2O_2 concentration for the strike reduced the loss in a laboratory strike from 20 per cent to 6 per cent.

Plutonium (IV) Oxalate Drying Cycle

Laboratory investigations of plutonium (IV) oxalate drying cycles has substantiated previous observations of an exothermic reaction which, under the proper conditions (as yet undefined), may set in as soon as the water is removed from the cake and produce a relatively non-reactive oxide. Drying of a "wet" filter cake, in a laboratory filter boat, by down-draft passage of either air or Freon-12 through the cake, gave rise to a rapid increase in temperature from 100 C. to a point about 100° above the furnace temperature. The two oxides which were heated to 400 C. or higher by this reaction could not be converted to PuF_3 by freonation, indicating their decreased reactivity.

Freonation

In recent work on the formation of PuF_3 by reaction of Freon-12 with PuO_2 , successful freonations have been carried out in two hours at 450 C. with (1)

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a 2 cm. deep bed in a solid bottom boat, and (2) a 1.5 inch bed in a filter boat, in which the gas was pulled through the bed. The major problem in the path of successful freonation at present appears to be in controlling the oxalate decomposition reaction so as to prevent the filter bed from attaining temperatures greater than 350 C.

Reduction - Evaluation of Low Temperature Fluorides

Five samples taken from plant PuF_4 powders after hydrofluorination at 300 C., 400 C., or 600 C. were reduced to metal on the 40 gram scale. Maximum pressures measured during reduction were 110 to 120 psig for 300° and 400° fluorides as compared to 55 and 65 psig for the standard 600° fluorides. All reduction yields, assuming that the powders were entirely PuF_4 , were between 95 and 96 per cent.

Reduction - Casting

Calcium oxide crucibles containing 5 to 10 per cent calcium fluoride which were well bonded following firing at 1300-1325 C. were used in five reductions of PuF_4 on the 40 gram scale. Metal yields of 95 to 96 per cent were obtainable and are comparable to the yields previously obtained in pure CaO crucibles.

Reduction of UF_4 by calcium without the addition of a "booster" resulted in a 97.3 per cent yield from a 1200 gram charge when a flat bottom crucible was used. Use of the round bottom 1901 crucible resulted in a 98.8 per cent yield with the maximum charge of 900 grams of metal was reduced without a "booster". These compare to yields of 99.9 per cent which may be obtained consistently on a 500 gram scale when UF_4 is reduced in the presence of either iodine or sulfur as "booster". The buttons produced without booster were clean but quite rough.

The bomb and work coil for reductions on a nominal 1500 gram scale have been completed. Continuation of this program is awaiting the fabrication of a die for fabricating large crucibles.

RM Line Filter Boats

In continuation of the program to obtain an improved filter boat for use in the RM Line, a design for an enlarged, unlined filter boat has been made. This boat has a total volume of about 3000 cc, compared to the 1500 cc volume of the present boat. About four times the filtering surface of the present boats is provided in the newly designed boat. It is hoped that it will be possible for the new boat to hold 1200 gram batches. To determine whether this is likely, for most runs under the present processing conditions, the bulk densities of the plutonium (IV) oxalate cakes put into the present filter boats in the 231 Building operation have been measured. It has been observed that the most frequent bulk density of the cake is about 0.35 grams of plutonium per cc,

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but that the densities vary from 0.1 to 1.2 grams per cc. Further study of processing conditions in the plant that may affect the density of the oxalate cake are being made to determine whether it will be possible to obtain densities consistently as great or greater than 0.5 grams/cc. The larger 1200 gram batches of oxalate of this density would fit in the 3000 cc boat.

Crucible Shop

The RS-3 reduction crucible recently tested in the RM Line was modified slightly to accommodate a thicker button and is identified as the RS-4 crucible (Drawing No. H-2-15639).

Equipment Development - Pulsed Mixer-Settler Extractor

Initial tests of a pulsed mixer-settler extractor have been completed, using a cold Purex IA column simple extraction section. The unit consists of alternate mixing and settling chambers arranged either vertically or horizontally in a cylinder through which flow is obtained by pulsation of one of the feed streams. Operation of the unit is characterized by relatively low throughput rates (45 gallons per hour per sq. ft.) and high transfer efficiency (HTU 0.5 inch). Changes in the design are being made toward the raising of the flooding capacity of the unit.

Recovery

Plutonium Oxidation in E-4 Cell, 224-T Building

A study of the rate of oxidation of plutonium (IV) to plutonium (VI) in synthetic E-4 solution (waste solutions recycled to 224-T: in this case, 0.02 M Mn⁺⁺, 0.275 Pu/l, 1.5 g H⁻/l), undertaken to demonstrate the feasibility of lowering the oxidation temperature, has shown the following: in 1/2 hour, the oxidation is 75 per cent complete at 25 C., 93 per cent complete at 35 C., 96 per cent complete at 50 C., and 98 per cent complete at 55 C.

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 beliefs, no inventions or discoveries were made in the course of their work during the period covered by this report. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

R. B. Richards

R. B. Richards, Manager
Separations Technology Unit

RBR:eb

March 9, 1953

APPLIED RESEARCH UNIT

February, 1953

VISITORS AND BUSINESS TRIPS

R. C. Vogel, ANL, spent February 11-12 at Hanford for a general exchange of information on separations and analytical problems.

A. F. Scott, Reed College, Portland, visited here February 12-13 to discuss progress on the Reed College research sub-contract.

R. E. Connally spent February 2-4 at the Consolidated Engineering Corporation, Pasadena, California, discussing mass spectrometers. February 5-6 was spent at UCRL discussing counting methods and instruments.

N. Endow spent February 2-6 at the University of California, Berkeley, taking the Corrosion Short Course.

R. H. Moore spent February 9-10 at Iowa State College, Ames, and February 11-12 at the University of Nebraska, Lincoln, recruiting chemical engineers.

T. C. Nelson and I. D. Thomas spent February 9-13 and February 9-21, respectively, at LAMS studying plutonium metallurgy techniques.

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G. L. Flint and T. C. Nelson spent February 16-21 attending the annual meeting of the AIME at Los Angeles.

K. L. Sanborn spent February 9-10 at the du Pont Company, Wilmington, Delaware; February 11 at the International Nickel Company, Bayonne, New Jersey; and February 12 at the U. S. Steel Corporation, Pittsburgh, Pennsylvania, in consultation on acceptance test for stainless steels.

E. P. Galbraith spent February 12 at Washington State College, Pullman, and February 13 at the University of Idaho, Moscow, recruiting technical personnel.

W. J. Ozeroff spent February 26-27 at KAPL discussing arrangements for the transfer of KAPL research equipment to Hanford.

ORGANIZATION AND PERSONNEL

Personnel totals as of February 28 were as follows:

	<u>Exempt</u>	<u>Technical Graduates</u>		<u>Non-Exempt</u>	<u>Total</u>
		<u>Permanent</u>	<u>Rotational</u>		
Physics Research	28	1	5	9	43
Metallurgy Research	33	4	4	29	70
Chemical Research	29	1	2	10	42
Analytical Research	53	0	1	29	83
Administration	<u>4</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>5</u>
Total	147	6	12	78	243

PHYSICS

Lattice Studies

The data obtained on the thermal neutron diffusion lengths in graphite stacks of different sizes have been analyzed. Values obtained for the diffusion length are between 55 and 56 cm for a graphite density of 1.6 cm. Since it is expected that the refinement using fast source theory will shorten the values by about 1 cm, these values agree very well with the original sigma pile value of 54.4 cm.

The uranium metal, with which exponential experiments on lattices utilizing small diameter slugs (0.926 inch and 1.176 inch) will be done, has been canned. Slugs of the smaller diameter have now been loaded into the 7-1/2 inch lattice and neutron distribution measurements are under way. Three hundred of the 1200 process tubes, required for these experiments, have arrived and are already in service in the 7-1/2 inch lattice. Some further delay on the remaining process tubes is expected.

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A further measurement of the buckling of the 6-3/16 inch lattice was made with indium foils as a check on the BF_3 determination. The value obtained is $30.9 \times 10^{-6} \text{ cm}^{-2}$, which is to be compared with the BF_3 value of $30.2 \times 10^{-6} \text{ cm}^{-2}$. The average value, therefore, is $30.6 \pm 0.4 \times 10^{-6} \text{ cm}^{-2}$.

Since attention in lattice studies is turning to lattices utilizing hollow slugs and smaller size slugs, no further work on standard size slugs is contemplated. It therefore seems appropriate to review briefly the data obtained on standard size slug lattices. In Figure 1 are plotted the bucklings of all the wet and dry lattices that have been measured. The wet buckling has a maximum at approximately 7.7 inches, the dry buckling has a maximum at a spacing slightly larger than 8.375 inches. The wet and dry buckling values are equal when the lattice spacing is approximately 6.9 inches.

The construction and testing of the metal separator line for xenon has been completed. The enriched generator slug is presently being fabricated and the fission chamber for monitoring the neutron beam strength at DR Pile has been constructed and is now being tested.

Design is proceeding on the lattice testing reactor. Two plans, the danger coefficient type and the strong transient type are still under consideration. Both types will use high grade graphite and the machining involved will be somewhat more per cubic foot than is required for a production pile. The danger coefficient type will use approximately 50 tons; the other reactor will require about 70 tons. Both of these figures allow for approximately 30% wastage in the machining process. Presently, it is planned to assemble the core to be tested in a sub-basement directly below a hole in the bottom of the test reactor. A hydraulic hoist will then lift the core into the pile. This type of removal equipment will make it possible to incorporate a safety feature, which will prevent the insertion of an overly reactive core into the test hole. All of the electronic equipment necessary for activation of safety and control rods and for reactivity measurements will be of standard types obtainable from manufacturers of electronic instruments. To interpret results from the strong transient type of reactor, it is necessary that the longitudinal buckling be zero for all test cores. In order to achieve this condition, some device must be incorporated to make the longitudinal flux distribution level. This will be accomplished by mechanically moving uranium slugs parallel to the longitudinal axis closer to, or further from, the ends of the various test cores. An arrangement for producing this motion has been designed. Although it is necessary to level the flux in the test hole of the danger coefficient type of reactor, this can be done once and for all, since all the test cores are poisoned to the same reactivity, namely, $K = 1$. The leveling thus could be accomplished by adjusting the density of the uranium in the driver rods when the reactor is assembled.

Drawings have been prepared for both types of reactor and, on the basis of these, cost estimates have been made. The cost of the danger coefficient reactor is

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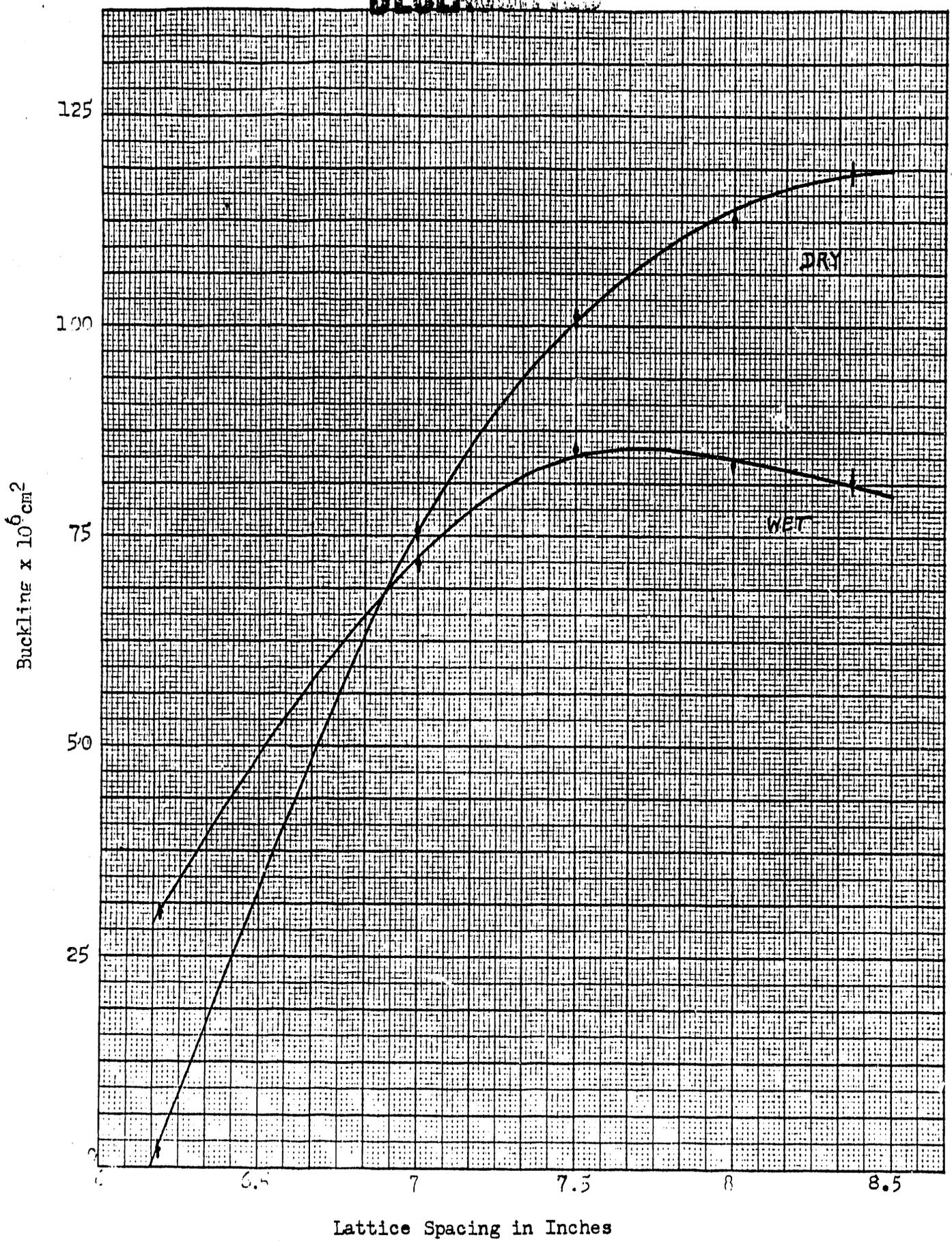


FIG 1

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estimated to be \$198,000, and of the strong transient reactor \$267,000. These estimates are not final but represent the best that can be done without engineering drawings.

A document, HW-27214, has been prepared on the preliminary results of the plutonium-239 fission cross section measurement. This document points out the advisability of preparing standard foils of nearly equal weights in order to minimize the corrections of fission pulse losses due to foil thickness.

Pile Physics

The activation of foils used to measure the blackness of absorbing materials depends upon the angular distribution of thermal neutrons at the place of measurement. An expression has been obtained for thermal blackness in terms of foil activations which takes the angular distribution into account.

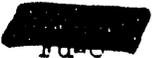
In order to determine whether or not a cadmium-covered slug depresses or otherwise distorts the distribution of resonance neutrons in a column, two irradiations of cadmium-covered gold foils have been made in the test pile, one along a normal column and one along the same column with a 4.375 inch cadmium-covered slug at the center. There are 15 foils extending to 10 slugs on each side of the cadmium-covered slugs. Preliminary results seem to show that the depression of the resonance flux is small.

Plant Physics

An attempt is being made at finding a workable scheme for estimating the effect of steel supports on the critical size of bare cylinders. Experiments, carried out by Callihan's group at Oak Ridge, enable one to determine the reduction in the critical diameter of a cylinder of given height and fuel composition when variable amounts of steel are added in the form of a reflector. On the basis of this type of data, a method has been worked out for taking into account the effect of near supports, other vessels, etc., in the design of Purex and Recuplex.

METALLURGYUranium Metallurgy

Two tests have been performed to evaluate the strength of the mechanical bond formed by pressing aluminum into an anodized uranium surface. The first consisted of a tensile test using a specimen prepared by cementing adapters to the opposite surfaces of the aluminum-uranium bond. The Armstrong adhesive failed at 3140 psi instead of the bond, indicating a bond strength in excess of 3140 psi. The second test consisted of heating a section of the cold-canned slug to 400°C in an evacuated tube to determine whether or not the difference in thermal expansion of the two metals would cause a rupture of the bond. Metallographic examination of this section after heating gave no evidence of rupture or


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failure of the bond. Additional non-destructive and destructive tests of this bond are in progress.

Twelve uranium-chromium alloys have been machined to final dimensions for canning in aluminum inserts. These specimens are to be subjected to pile irradiation to determine the effect of varying chromium content on the pile behavior of uranium.

Work has continued on the preparation of samples for in-pile studies to determine the correlation between preferred orientation and the dimensional instability of uranium.

The magnitude of changes in hardness of cold-rolled and annealed uranium have been determined and appear to be satisfactory for rate studies of the recrystallization process.

Attempts to prepare single crystals of uranium by the Bridgeman technique are continuing. Equipment is also being assembled to utilize the inhibited grain growth technique for single crystal preparation.

Plutonium Metallurgy

Plutonium alloy wire and plutonium alloy foil were fabricated during the month for Production Test 305-2-N. Wire 0.090 inch in diameter was extruded from a 3/8-inch diameter billet at an average pressure of 18,000 psi and a nominal temperature of 350°C. A specimen 8 inches long was cut from the wire and canned in an electroformed nickel tube 8-1/2 inch long, 0.128 inch I.D., having 5 mil walls. The can was closed with copper plugs soldered in each end.

Foil was produced from a 3/8-inch billet by flattening it to 1/4 inch, cross-rolling to form a slab about 1-3/4 inch by 2 inches, followed by longitudinal rolling to the required thickness of 5-6 mils. Reductions in thickness of about 40% could be made before annealing was required. Reduction in thickness of more than 40% resulted in edge cracking. Annealing was done at 350°C for 15 minutes. Five specimens, 0.005 inch by 1/4 inch by 8 inches, were cut from the foil, canned in electroformed nickel sleeves 0.03 inch by 5/16 inch inside dimensions, 8-1/2 inches long and with 5 mil walls. The sleeves were closed with copper plugs soldered in place in each end. The canned foil and wire specimens had no detectable surface contamination and were delivered to the Experimental Physics group for testing.

Hood 12 (rolling mill) and hood 17 (tensile testing machine) have been sealed and committed to plutonium work. Hood 12 when finally sealed had a measured leak rate of 0.6 cubic foot per hour under a negative pressure of 2.5 inches of water. This hood is equipped to maintain a static atmosphere at a controlled negative pressure, and thus makes feasible the maintenance of a dry and inert hood atmosphere for hot working plutonium without excessive oxidation. The atmosphere purification system attached to the hood provides continuous circulation of the inert atmosphere, e.g., argon, over uranium chips heated to

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600°C which removes oxygen and water vapor leaking into the hood. Hood 17 has a measured leak rate of 1.9 cubic feet per hour under a negative pressure of 2.5 inches of water. It will be temporarily operated as a ventilated hood.

Radiometallurgy

Eighteen ruptured slugs were successfully examined in the slug examination cave prior to examining Rupture No. 164 on February 17, 1953. Rupture No. 164 from tube 2192-DR was totally fragmented (swept off of the basin floor) and when first viewed at 111-B, was completely dry. After being exposed to air for several minutes, the pieces began to glow and the absorbent paper on the wooden viewing platform ignited. This is the first time that the pyrophoric nature of uranium has been observed on irradiated slugs at the Hanford Works even though several other fractured slugs have been similarly examined. A similar fire had been reported at the Westinghouse Atomic Power Division Laboratories when they examined a ruptured slug from the Hanford Works. Since the pieces from Rupture No. 164 were canned wet, it is supposed that the large exposed surface area decomposed the water in the container to form hydrogen and oxygen, which forced the water from the can and formed a hydride with uranium. As soon as more oxygen was available, the hydride ignited to form water and U_3O_8 , thereby causing the fire.

Six slug cap assemblies were removed from cap type failures, cleaned and radiographed in the 300 Area. Four of the six had large voids in the braze layer; these suspected areas will be metallographically examined.

The X-ray diffraction unit which is to be used for the study of radioactive materials has been installed in Building 3746-A. The components which have been fabricated to adapt this unit for crystallographic studies of irradiated materials are being assembled and tested.

One intermediate and one high radiation level cell have been delivered and erected in the 272-E Building. The radiographic testing of these cells is being held up pending delivery of more cell plugs and the selection of a radiation source. The chemical and mechanical slug strippers were received from the Technical Shops but no operational runs were made.

Corrosion and Welding

Preliminary corrosion tests of 304L, 309 SCb, and 347 stainless steels in boiling H-4 Oxidizer solutions indicated that the 304L and 304 SCb steels would be suitable for construction of the replacement H-4 Oxidizer. A limited number of tests indicated that no serious corrosion problem would arise from the use of an oxalic acid scrub solution in the RA columns of the TBP plant.

In view of the recent failures of the X-19 pump in the TBP plant, a study was undertaken to determine a suitable material to be used in the presence of 100% UNH solutions.

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Solution potential measurements in boiling RCU and 60% UNH solutions indicated that a metal ion concentration cell might be causing the iron, chromium, and nickel pickup in the UO_3 produced in the 224-U Building. Additional laboratory tests are being conducted prior to electrically isolating the pre-concentrator.

The new oxalic acid test to screen certain types of stainless steels from the Huey test was investigated. From the results on fourteen specimens and numerous conferences with corrosion authorities throughout the country the test was recommended for use at Hanford.

Metallurgical examinations of nickel-plated boron steel balls revealed that the dull finish was the result of cracked nickel plating. The cracked plating had allowed moisture to penetrate and rust the steel.

On the basis of preliminary tests it was recommended that type 308L stainless steel welding electrodes be used to weld type 304L and 347 stainless steels in the Purex facility.

ANALYTICAL RESEARCH

Physicochemistry

Observation that platinum electrodes undergo a pitting attack even at extremely low current densities led to elimination of the -10% bias previously reported in the coulometric determination of submicro quantities of plutonium. The substitution of platinum-iridium electrodes was found to alleviate the bias, after unsuccessful tests of gold or tungsten electrodes. With Pt-Ir electrodes, $100 \pm 3\%$ recoveries, were obtained on plutonium samples in the 3-6 ug range.

Procedures currently employed for determining acid in uranium-containing process streams include coulometric titration for low uranium - high acid streams containing phosphate, and use of the pH method for the analysis of high uranium-low acid streams. Coulometric titration in an aqueous-alcohol medium is now being investigated for acid determinations in Purex high uranium - high acid streams. The procedure yields 100% recovery with a precision of $\pm 5\%$ and is relatively simple and rapid. In parallel with this approach, a study of the somewhat slower conductometric titration proposed by KAPL has also shown 100% recovery with a precision of about $\pm 3\%$. Further work with coulometric techniques included the study of their application to the standardization of reducing agents, an extension of similar work on oxidizing agents previously reported.

Presently available industrial pH measuring equipment was shown to be capable of measuring the carbonate concentration in organic scrub streams and thus to be adaptable for in-line analysis to assure the presence of carbonate in the scrub.

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Prior to and following the start-up of C Pile, the change in composition of the pile atmosphere was followed by mass spectrometric analysis of gas samples. During the past month the composition has appeared to reach a steady state at a CO content of about 3%, which permits an interesting calculation. The rate of addition of gas to the pile and the volume of the pile atmosphere show 11% loss of gas per day. Assuming that the CO is formed by the reaction of CO₂ and graphite, the rate of graphite loss from the pile can be calculated to be about one pound per day. The hydrogen content has built up to approximately 0.4%. This may indicate a smaller additional loss of graphite if it is assumed that the hydrogen is formed by the reaction between water and graphite. Alternatively, the hydrogen may be produced by the decomposition of masonite in the shield.

Attempts to establish an analytical procedure for determining DBP in aqueous solutions by extracting, determining uranium, and relating the latter to the DBP were discontinued because of unpromising results. An observation by Chemical Research personnel that DBP tends to complex with several different metals suggested a new approach to the problem. Although zirconium alone does not immediately form a precipitate with DBP, a white turbidity forms upon the subsequent addition of carbon tetrachloride and the disengaging time required for this turbidity to condense into a film at the interface is a direct measure of the original DBP concentration. The applicable range is 2-20 ppm of DBP; the disengaging time involved is several minutes; 5000 ppm of aluminum, iron, chromium, or sodium do not interfere; and likewise, butyl alcohol, TBP, and Shell spray base have no effect. However, MBP reduces the disengaging time and appears to be the only interference in the development of an applicable analytical technique.

Radiochemistry

Further test of a mock-up device for the in-line determination of plutonium in waste streams showed that with proper modification of the sample feed, the instrument could determine plutonium at tolerance level in 3BW streams with a precision of $\pm 10\%$ as compared to the former factor of two. At 1/20 of tolerance the precision corresponded to $\pm 50\%$. These precisions are comparable to values currently obtained by laboratory analysis of these low level streams.

It has been shown that the 60 Kev gamma ray formerly attributed to plutonium actually was due to trace quantities of americium, and efforts are currently under way to establish an americium procedure based on the counting of this radiation. The radiation of 100 Kev does arise from plutonium but is considerably less intense than that from americium. Equipment presently on hand will not resolve the two peaks and thus permit in-line analysis for plutonium. However, there is good indication that they can be separated by the selection of a suitable crystal in an optimum geometric arrangement.

The procedure previously developed and successfully applied to the determination of americium in Recuplex-type plutonium solutions did not operate successfully on initial tests when applied to dissolver solutions; further effort

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must be expended to prevent the carry-through of uranium and plutonium with the americium. The chemical procedure for determining yttrium as a fission product contamination in UO_3 was developed to the point of successful operation and is being established as a control laboratory procedure. It is an extraction technique that recovers yttrium and thorium, both of whose activities are corrections to be applied to the total gamma count of the product. The separation of yttrium and cerium is not absolutely sharp but is satisfactory for the purpose.

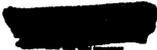
An investigation of the preparation of thin, uniform plutonium samples required for precision alpha counting by electroplating the plutonium from acid solutions has been quite promising. The addition of oxalate, which apparently is oxidized at the anode while plutonium is reduced onto the counting disc cathode, resulted in greater than 90% recovery of plutonium by this relatively simple procedure. The previously developed technique involved electroplating from alkaline medium which has the objectionable feature that plutonium tends to adsorb on any hydrous oxide precipitate formed. Another technique examined during the month was that for decontaminating dissolver solution to permit use of larger sample volumes in the following determination of uranium and/or acid. The addition of Dowex 50 resin that had been surface-saturated in an acid uranium solution, to a sample of dissolver solution afforded a decontamination of 90-99% without affecting the uranium concentration of the solution.

Report HW-26852, issued during the month, describes an interesting and instructive approach to the evaluation of alpha counting chambers by use of the alpha pulse height selector. Continuation of this work has involved an investigation of the chamber gas. Although argon and methane are employed for total alpha counting, it has been conventional to use pure argon in chambers employed for alpha energy measurements. Preliminary work showed that the addition of methane was beneficial in this case, too, giving much more sharply defined americium-curium peaks, for example.

As a corollary to the various radiochemical problems, several fundamental radioactive constants have been determined at the Hanford Works. The spontaneous fission rate of Pu-240 was determined to be 1.51×10^6 fissions/g/hr., with a standard deviation of $\pm 2\%$; the value reported in the literature is 1.66×10^6 . Similarly, the alpha half-life of Pu-241 was determined to be 3×10^5 years, which is in fair agreement with the literature value of 5×10^5 .

Spectrochemistry

Recent experience in the 234-5 control laboratory reveals that the X-ray photometric procedure for determining plutonium in metal yields a precision of $\pm 0.2\%$


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and that the summation of plutonium plus impurities has been very close to 100%. This technique has now been extended to the analysis of uranium in dissolver solutions; where it proved again to be rapid and precise, and to result in a minimum of operator exposure.

An infrequent, but very slow analysis required of the 300 Area control laboratory is that for determining cadmium in lead dummy slugs. A search for a more suitable method led to an evaluation of flame photometric techniques and yielded a fifteen minute determination that allows evaluation of 3% cadmium with a precision of $\pm 0.03\%$.

Attempts to employ colorimetry as a basis for a continuous determination of uranium led to the observation that 0.30 M uranium, corresponding to a 1:3 dilution of Purex feed, could be determined with a precision of ± 0.01 M.

Various techniques for obtaining samples of the minute inclusions in uranium metal have been investigated, all involving chemical or electrolytic dissolution of the uranium and subsequent recovery of the undissolved inclusions. Analyses of the latter show a variation in the carbon and nitrogen contents depending on the method of recovery, thus indicating the need for further evaluation of recovery techniques.

Some observations on the properties of MnO_2 as a catalyst for the decomposition of permanganate were summarized in HW-27131, and the problem turned over for further consideration by process research personnel.

Research Services Laboratories

In support of separations research and development, the service laboratories continued many fission product analyses relating to Purex studies including those on the behavior and effect of phosphate in Purex streams. Certain discrepancies in the determination of ruthenium by the method developed for Redox samples were eliminated by a modification that permitted the use of larger samples.

A pending request for the determination of 16 additional elements in aluminum caps and cans to meet a proposed change in purchase specifications prompted an evaluation of spectrographic methods for the purpose. It has been shown that a single exposure will permit the direct determination of ten of these elements and that there are prospects for likewise evaluating five other elements. Lithium must be determined by a separate analysis, which may be either spectrographic or flame photometric.

Several difficulties have been encountered in an attempted development of a spectrographic determination of aluminum in tin. Further study will be necessary before a quantitative method is established.

The damaged slit on the newly received Hilger spectrograph was returned to the supplier for repair. The unit was recently returned to Hanford only partially repaired.

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The load in the spectrographic control laboratory continued normal and consists principally of 300 Area process samples.

The work load in the mass spectrometer service laboratory continued to include gas and isotopic analyses in support of various pile and Radiological Sciences programs. For example, the gas present in unbonded regions of canned slugs was analyzed and shown to be largely hydrogen with minor quantities of oxygen, nitrogen, and carbon oxides. The new water laboratory in the 108-B Building was completed and conditionally accepted during the month.

WORK VOLUME STATISTICS FOR PAST TWO MONTHS

	<u>January</u>		<u>February</u>	
	<u>No. Samples</u>	<u>No. Detns</u>	<u>No. Samples</u>	<u>No. Detns</u>
Research and Development				
Applied Research Unit	2242	3535	1701	3017
Pile Technology Unit	518	2759	617	2767
Separations Technology Unit	1003	1368	997	1570
Technical Services Unit	3	159	0	0
Process Control	677	5099	771	6240
Other	<u>32</u>	<u>394</u>	<u>39</u>	<u>514</u>
Total	4475	13,314	4125	14,108

CHEMICAL RESEARCH

Solvent Extraction Process Studies

In Uranium Recovery Process studies using two Mini scrub sections, six year old feed and 30% TBP as RAX, acidification of feed to 5.8 M resulted in the beta activity in the RCU being reduced to 24% of natural uranium as compared to 119% obtained with the standard 2.6 M H⁺ flowsheet.

Since recent Purex batch extraction studies, under high acid conditions, indicated that the addition of phosphoric acid (ca. 0.2 M) caused a marked improvement in zirconium and niobium decontamination, it was considered important to study the effect of such phosphate addition on plutonium extraction. Accordingly, the distribution of plutonium (IV) into 30% TBP-Amsco was measured as a function of aqueous acidity (2.4 - 7.0 M HNO₃ in feed), phosphate concentration (0 - 0.125 M), and degree of saturation of the organic phase with uranium. In solutions of up to 65% uranium saturation of the organic phase, addition of 0.06 M H₃PO₄ to a system required increasing the acidity to 5.4 M HNO₃ in order to maintain the same plutonium distribution obtained with 2.4 M HNO₃ containing no phosphate. These results indicate that satisfactory recovery of plutonium can be obtained through use of high acid conditions despite the presence of small concentrations of phosphate.

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In batch extraction-scrub studies simulating the Purex second uranium cycle, pre-treatment of the synthetic feed by digestion with 0.05 M beta-mercaptopropionic acid, coupled with addition of 0.02 M beta-mercaptopropionic acid to the scrubs, improved overall ruthenium decontamination by a factor of 2.5, all of this improvement being realized in the extraction stage.

In other second uranium cycle Purex studies, Mini runs were performed using ORNL 2DF in an attempted demonstration of improved decontamination when employing high acid conditions with phosphate in the feed. When the runs were continued 1-2 hours until a steady state was achieved with ten scrub and eight extraction sections, the product 2EU contained $\leq 5\%$ natural uranium beta and $\leq 100\%$ natural uranium gamma with either high acid feed (6 M HNO_3 , 0.1 M H_3PO_4) or standard HW #1 feed (2 M HNO_3). Gross activity was slightly less in the high acid 2EU. This difference, favoring the high acid feed, was more pronounced in a shorter run where a steady state was not reached. In this case, high acid conditions reduced the 2EU activity to 27% natural uranium beta and 180% natural uranium gamma as compared to 47% and 790%, respectively, obtained with the standard feed; the reduction being largely due to a tenfold reduction in ruthenium extraction.

In a continuation of the study of fission product behavior as a function of dissolving conditions, dissolver solution N-7 was prepared by dissolving irradiated uranium pellets under standard Redox dissolving conditions with sufficient phosphoric acid added to make the final solution 0.01 M in H_3PO_4 . No improvement in fission product decontamination was observed in standard Purex and Redox extraction-scrub studies with this solution. In fact, after N-7 had stood ten days, a reduction in ruthenium decontamination factor from 1500 to 70 was noted under Redox conditions.

The feasibility of adding uranium-zirconium or uranium-niobium alloys during the dissolving operation to achieve isotopic dilution of the fission product zirconium and niobium has been partially tested in several cold dissolvings of 6.9 wt. % Zr and 5.8 wt. % Nb alloys. Analyses of the resulting dissolver solutions indicated that less than 10% of the zirconium added to the system went into solution. The lack of a reliable analytical method for inactive niobium has made it impossible to determine the niobium concentration of the resulting solutions. Other experiments indicate inert zirconium can be introduced during the dissolving operation by adding zirconyl nitrate to the 60% HNO_3 .

Physical Chemistry of Solvent Extraction

The solubility of water in TBP-diluent solutions as a function of TBP concentration has been determined for the diluents cyclohexane, n-hexane, benzene, pentachloroethane and carbon tetrachloride. The mole ratio of water to TBP is a linear function of the volume per cent TBP for the diluents Amsco (previous data), cyclohexane and n-hexane. For benzene-TBP solutions the solubility of water is higher than in paraffin hydrocarbon-TBP solutions. In pentachloroethane-TBP and carbon tetrachloride-TBP solutions the solubility of water is

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less than in paraffin hydrocarbon-TBP solutions for TBP concentrations in excess of 10% by volume. An attempt was made to determine the effect of water activity in the aqueous phase on the solubility of water in the organic phase. However, it was found that the LiNO_3 used to adjust the water activity was appreciably soluble in the organic phase, thus complicating interpretation of the solubility results.

The viscosity of cyclohexane, n-hexane and pentachloroethane solutions of water-saturated and anhydrous TBP was measured. The viscosity vs. concentration curves for both water-saturated and anhydrous pentachloroethane-TBP solutions show maxima at a mole ratio of pentachloroethane to TBP of one, indicating a one-to-one complex between TBP and this diluent. This observation confirms earlier speculation that complex formation was the cause of reduced uranium extraction when employing this diluent. The maximum for the water-saturated solutions was somewhat less pronounced than for the anhydrous system. With cyclohexane and n-hexane the viscosity vs. concentration curves exhibit no such maximum and are essentially identical for both water-saturated and anhydrous cyclohexane-TBP solutions having TBP concentrations up to 30%.

An investigation of the relation between dispersion time and interfacial tension of liquid-liquid systems has been undertaken. For the system H_2O -TBP in Amsco interfacial tensions have been determined for various concentrations of TBP. The values range from 5.6 dynes/cm for pure TBP H_2O to 44 dynes/cm for Amsco- H_2O ; dispersion times have yet to be measured. The effect of a mutually soluble component, HNO_3 , is now being studied and an attempt will be made to investigate the non-equilibrium case.

At the request of Chemical Development, seven pulse column runs were made with the Purex IO system to investigate various hydrophobic packing materials for operation with the organic phase continuous. Fluoroethene plates (0.050 inch diameter holes, 30% open area) with one inch spacing, 1/4 inch fluoroethene Raschig rings, and 1/4 inch polythene Raschig rings were employed in the one inch diameter pulse column. All gave satisfactory operation as far as stability was concerned and showed no tendency toward phase inversion, although considerable entrainment of the scrub was in evidence.

234-5 Investigations

One cerium metal electrodeposition run has been carried out using a zirconia cell filled with 20 mole % CeF_3 - 80 mole % LiF and having a graphite rod anode and molybdenum cathode. The electrolysis was carried out at 900°C for two hours using an electrode potential of 4.5 volts at 7.5 amperes. The metal yield was very low and was in the form of several small cerium pellets rather than one single metal button. In addition to this molten metal which was collected in a molybdenum cup, some cerium metal collected on the cathode even though the cell temperature was higher than the melting point of cerium metal (ca. 740°C). Spectrographic analysis of the electrolytic cerium showed that calcium, copper, iron, lithium, magnesium and sodium were each present in excess of 1000 ppm of the reduced metal. Although the cell was continuously flushed with argon,

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considerable anode and cathode attack was observed at or above the liquid-gas phase boundary.

The stationary bomb reduction of cerium trichloride by calcium using both iodine and sulfur as boosters is being investigated. The cerium trichloride was formed by the action of carbon tetrachloride vapor on cerium dioxide at 500-600°C. On a twenty gram scale the average button yields obtained using 33% excess calcium and 1, 0.6, and 0.4 moles I₂ per mole of cerium were 97, 94, and 85%, respectively. The average button yields obtained using 33% excess calcium and 1, 0.6, 0.4, 0.2, and 0.0 moles sulfur per mole of cerium were 0, 57, 66, 18, and 0%, respectively.

Additional bomb reductions of cerium trifluoride by calcium (33% excess) using 0.64 moles I₂ per mole of cerium resulted in an average yield of 91% as compared to the yields of 96.5-98% previously reported using 1 mole I₂ per mole of cerium.

INVENTIONS

All Applied Research Unit personnel engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during February, 1953. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

Signed: F. W. Albaugh
F. W. Albaugh, Head
APPLIED RESEARCH UNIT

FWA:lrc

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TECHNICAL SERVICES UNIT

FEBRUARY 1953

March 6, 1953

VISITORS & BUSINESS TRIPS

There were no off-site visitors to this Unit and no trips were made by employees of the Unit during the month.

ORGANIZATION AND PERSONNEL

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

	<u>January</u>	<u>February</u>
Laboratory Engineering	59	60
Technical Information	88	86
Administrative	3	3
	—	—
Unit Totals	150	149

LABORATORY ENGINEERING SERVICES

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

Work volume statistics for the Mechanical Shops are as follows:

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	Customer Unit or Program	January		February	
		No. of Jobs	Man- Hours	No. of Jobs	Man- Hours
<u>Work Done on Jobs Completed</u>	Applied Research	15	530	33	892
	Pile Technology	27	807	36	635
	Sep. Technology	13	303	7	77
	Technical Services	9	318	13	181
	Others	22	178	21	98
	Sub-Totals	86	2128	109	1883
<u>Work Done on Jobs Not Completed</u>	Applied Research	11	361	9	390
	Pile Technology	12	478	16	526
	Sep. Technology	1	19	5	423
	Technical Services	8	421	5	386
	Others	2	6	5	206
	Sub-Totals	34	1285	40	1931
Total Work Done			3413		3814*

<u>Work Backlog</u>				Man-Hours To Complete	
<u>Jobs Started</u>	Applied Research	11	571	9	1026
	Pile Technology	15	434	16	664
	Sep. Technology	2	45	5	259
	Technical Services	8	495	5	485
	Others	2	14	5	523
	Sub-Totals	38	1559	40	2957
<u>Jobs Not Started</u>	Applied Research	14	1135	15	481
	Pile Technology	24	1210	20	865
	Sep. Technology	9	946	3	373
	Technical Services	3	60	2	48
	Others	8	840	3	42
	Sub-Totals	58	4191	43	1809
Total Backlog			5750		4766

These figures include:
 Cross orders - 1 271 man-hours
 Off-site - 1 341 man-hours

Total Net Backlog 5339 4154

The net backlog of 4154 man-hours will require approximately 22 crew days to complete.

The following work was completed for the Technical Units:

*Includes 40 hours overtime worked.

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Receipt of special process tubes from the Aluminum Company of America on February 9 allowed resumption of can and tube welding for the Exponential Pile program. End caps for all process and can tubes were completed, and approximately 150 man-hours, including overtime, were expended to complete the first 300 process tubes by February 23.

Final installation, assembly, and testing of the bi-crystal X-ray spectrometer for Metallurgy was completed.

A number of small jobs were completed as a part of the program to provide operating equipment for the Radiometallurgy Building.

A pair of rolls for the 3730 Building rod rolling mill were machined from roll blanks furnished by Metallurgy. A series of accurate, matching contours and radii were machined in each roll.

Numerous small jobs including modifications of X-ray diffraction equipment, an electrode holder, a clamp for dissolver tubes, a stainless steel stopcock with Teflon plug, a shear testing device, and a bottle cap remover were completed.

Pile Technology

A device for monitoring gamma radiation in pile effluent water was fabricated. It consists of a monitoring chamber, a control panel, and the necessary piping to allow the monitoring of 12 different effluent locations. The unit is heavily shielded with formed 2" lead bricks.

Fabrication of an underwater light, a slug holder for the air weigher, and ten "L" shaped lead covers, all required for the underwater slug inspection facilities, were completed.

A process tube cleaning apparatus consisting of a stainless steel table and three stainless steel tanks, one of which was equipped with four Calrod heaters was fabricated.

A control panel for the remotely operated boring tool, described previously, was completed.

Three dry-test channel units were completed in time for a scheduled 100-H Area shutdown. Although these units were originally estimated at 470 hours, it was possible to save approximately 120 hours through the simultaneous fabrication of all three.

Separations Technology

Fabrication continued on the UO₃ calciner and fluidizer, which consists of a shell and cover plate, a turbine, and a belt feeder-frame support housing. The shell and cover plate, belt feeder-frame support, and a special nozzle were completed. Completion of the turbine was scheduled for March 4. A total of

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508 man-hours were expended. These units are constructed of heavy stainless steel plate and employ long seam type welds. A single pass, straight shoulder, no filler-rod technique was developed and used to prevent distortion and warping during welding operations.

Technical Services

Fabrication of various pieces of equipment for research and development studies required 225 man-hours. Of special interest is a hydraulically operated miniature model of a Hanford slave manipulator, which is being developed by Equipment Development in conjunction with shop personnel.

Others

Fabrication of additional parts for two of the total of eight Hanford slave manipulators, recently received from an off-site vendor was started. This work is being done on a Design Section work order. The units will be used in the Radiometallurgy Building.

Work was started on the preparation of laboratory specimens for studies involving the use of Argon, Helium, and dry Nitrogen as blanketing gases in welding stainless steel. A total of 62 hours were used in preparation of these samples for the Design Section.

Glass Shop

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

	<u>January</u>	<u>February</u>
New Jobs	90	78
Revisions	17	13
Repairs	<u>11</u>	<u>17</u>
Total	118	108

Of this total, 19 jobs required quartz and vycor fabrication. The shop is operating on a six man-day backlog at present.

Of interest in quartz work was the fabrication of ampoules to hold four pound uranium slugs. The slugs were enclosed in the quartz ampoules while maintaining a helium atmosphere. After the slugs were encased, the ampoules were evacuated to the proper pressure and sealed. Extreme care was required to prevent the slug from cracking the quartz ampoule.

Equipment Development

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

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	<u>January</u>			<u>February</u>		
	<u>Eng.</u>	<u>Misc.</u>	<u>Drafting</u>	<u>Eng.</u>	<u>Misc.</u>	<u>Drafting</u>
<u>File Technology</u>						
File Materials	-	-	22	-	-	27
File Engineering	16	12	59	12	5	208
File Fuels	105	22	292	76	49	185
<u>Separations Technology</u>						
Chemical Development	139	85	106	100	84	59
234-5 Plant Assistance	120	55	124	48	45	229
<u>Applied Research</u>						
Analytical Research	81	52	118	57	83	120
Chemical Research	296	114	124	243	167	186
Metallurgy	414	131	156	537	115	275
<u>Manufacturing</u>						
Analytical Control	98	171	-	104	203	31
<u>Technical Services</u>						
RDS #TC-1	675	134	163	839	305	21
Laboratory Engineering	<u>408</u>	<u>56</u>	<u>348</u>	<u>408</u>	<u>232</u>	<u>315</u>
Totals	2352	832	1512	2424	1288	1656

Principal development activities are indicated below:

File Fuels

Designs completed during February were an induction-heater coil for slug heating, a ram and support plate for a uranium extrusion press, a roll type conveyor, an eddy-current balancing head for slug testing, and revisions of a drive mechanism for the slug scanning device.

Chemical Development

Designs for the UO₃ mixer and a special hood window were completed. A new stage-sampler for a miniature mixer-settler was under development. Some hot sample casks were decontaminated by chemical wash and sandblasting. A junior cave liner was installed. The problem of safely flushing and disconnecting a line used to transfer dissolver solution from casks to cells has been taken over by the RDS program of Equipment Development.

234-5 Plant Assistance

Drafting of the completed dry-mixer stage was continued until the last week of February, when all work on this development was stopped. Unchecked preliminary drawings are available on the complete equipment.

Analytical Research

The previously designed pH electrode holder and the shipping container for americium were followed in the shops until completed and delivered. Development

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of the equipment for the "controlled irradiation experiment" continued, with the completion of mock-up testing and designs for the dissolver solution sample core, the shielded core carrier, and the "coke machine" type storage shield.

Chemical Research

Scoping studies were completed for the experimental irradiation facility which is to house and shield a 1000 curie cobalt-60 source. A mechanical sine-wave generator was designed to actuate a pulser for experimental pulse column use. Several alterations were made in equipment used with a miniature mixer-settler installation at the Redox Laboratory.

Metallurgy

Several equipment mechanisms were under development for use in the Radiometallurgy Building. Revisions of the Hanford slave manipulator were followed in the shops. Two remotely operated devices were test operated and delivered to Radiometallurgy for continuing tests. One is designed to remove sample wafers from jackets of hot slugs, and the other to mold replicas of hot slugs. A remotely operated electropolishing machine was designed and is under construction. Design revisions were made for a hot slug transfer shield. A design for a profilometer was reviewed, and a pneumatic profile-sensing head was tested on a "breadboard" model.

The specialized shielding was designed for the double crystal X-ray spectrometer. Design modifications were made to permit mounting a British X-ray diffraction camera on a G.E. X-ray machine.

Analytical Control

Several equipment modifications were made. The design of the bayonet pipet was revised, based on mclded polystyrene as a substitute for fabricated lucite. Considerable savings may result.

RDS #TC-1

An intensive program of development of hand tools and remote accessories for "brickpile" use was started. A sharp increase in the number of "brickpiles" in use in laboratories and particularly the successful application of "brickpiles" for work with multicurie gamma sources has resulted in the need for a variety of new tools. Approximately fifty such devices have been scoped for development, ranging from a general purpose manipulator to a remotely controlled miniature hacksaw, a miniature liquid-line coupling which can be de-coupled and flushed without leaks, etc. A successful model "brickpile" manipulator was completed but is being redesigned to reduce size, weight, and cost by the use of plastics.

The development of the window-type viewer is being discontinued pending receipt of additional theoretical information, and a copy of a patent on making glass with a controlled refractive index gradient.

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The continuous recorder of airborne alpha contamination is in operation in a laboratory in Building 3706 for routine performance study.

Engineering

A holder for protective viewing glasses was designed for use on quartz work at the glass shop.

Assistance was given an off-site engineer who was here to repair the Van de Graaff generator in the 300 Area.

New Laboratory Planning

Mechanical Development Building - Proj. C-406

This building is approximately 30% complete. The first floor concrete slab is complete and construction work is now directed toward placement and erection of the interior structural steel which has arrived on plant site.

Radiochemistry Building - Proj. C-381

This building is approximately 80% complete. During this month the second floor piping has satisfactorily passed the acceptance tests. The first floor piping in the chases has also been progressing adequately with some stub-outs already made through the splash backs. The partition installation, however, is continuing slowly. The exhaust ductwork hangers are being placed in the basement. It is too early to ascertain whether any of the time lost because of damaged partitions can be regained.

Radiometallurgy Building - Proj. C-385

The general contractor, L.H. Hoffman Co., has indicated that the major portion of craft work will be completed by April 10. This does not include acceptance tests, balancing of the ventilation system or installation of the "high and intermediate level" cells. A special program has been instigated to test the shielding efficiency of these cells prior to installation in the completed Radiometallurgy Building. At present the high level cell and one intermediate level cell have been cleaned and erected for testing; however, ample shielding plugs must be available before actual testing can commence. These plugs are scheduled to arrive March 4.

Outside Facilities and Utilities - Proj. C-394

This project is approximately 97% complete. During the month the retention basin waste system was accepted and put into use. The neutralization building is still slowed down by lack of stainless steel fittings. The electrical overhead lines have been completed. Rough site-grading has been started around the buildings still under construction.

File Research and Development Building - Proj. C-414

This building is approximately 79% complete and the Commission has estimated

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completion by June 1. The lump sum contractor has now agreed to install the specified thickness of vinyl floor covering. The office and administrative section of this building is complete except for laying the asphalt floor covering, which has been received. Finish painting has begun in the basement laboratories and corridors.

Solvent Storage Building - Proj. CA-441

A draft of the project proposal was circulated and pertinent comments are being incorporated prior to submission for approval.

Building Services

Building 3706

<u>Purchase Requisitions</u>	<u>January</u>	<u>February</u>
Total number processed	103	68
Number requiring emergency handling	2	0
<u>Work Orders Processed</u>	81	67
<u>Miscellaneous Services</u>		
Stores Stock requests	1	1
Office furniture requests	12	2
Office machines sent in for repair	12	8
Precious metal transactions	36	16
Trips to 200-W for disposal of contaminated waste	8	8
Special messenger trips	42	38
<u>Standards Laboratory</u>		
Number of standard solutions prepared	29	39
Stock solutions dispensed	98	76
<u>Calibrations Laboratory</u>		
Number of calibrations performed	9	68
Number of calibrated glassware dispensed	9	29
Number of checked glassware dispensed	80	101
<u>Photographic Services</u>		
Number of work requests	29	23
Number of negatives	237	115
Number of prints	334	348
Number of slides	55	29
Color photos	0	8

All catalogs and bulletins previously held by Equipment Development were inventoried and incorporated in the Material Control catalog system.

A work order expediting card was developed and put into service. This card shows the status of work orders in process and the history of completed work orders. A work order information blank was developed which will keep the customer informed of the progress of all work requested.

TECHNICAL INFORMATION SERVICES

Plant Library

The volume of work completed in the Plant Library during February is reflected in the following statistics:

	<u>January</u>	<u>February</u>
Number of books on order received	306	187
Number of books fully cataloged	271	312
Number of bound periodicals processed but not fully cataloged	120	75
Pamphlets added to the pamphlet file	48	133
Miscellaneous material received, processed and routed (including reprints)	32	59
Books and periodicals circulated	5,095	5,333
Reference services rendered	987	1,641
Inter-library loans	99	62
Photostats from off-site	27	10
New periodical titles added to Kardex	0	23

	<u>Main Library</u>	<u>W-10 Library</u>	<u>108-F Library</u>	<u>Total</u>
Number of books	10,589	4,865	637	16,091
Number of bound periodicals	<u>6,317</u>	<u>1</u>	<u>797</u>	<u>7,115</u>
Totals	16,906	4,866	1,434	23,206

The basic indices of Library activity - reference and circulation - continued high. Book and periodical circulation was the highest of any previous month, and the reference work well above the previous average. A sampling of typical reference questions follows:

Information on Huey corrosion test for stainless steel.
 At what temperature does anhydrous HF exist as a cyclic compound.
 Material on cold pressure welding.
 Ratio of supervisors to workers in petroleum and electrical industries.
 Thermal conductivity of zirconium.
 Effect of radiation on potassium tetraborate.
 What are FCC regulations on carrier current frequencies for transmission lines.
 Adsorption coefficient of 8.5 Kev gamma rays in air.
 Information on the application of statistical methods to ionization counters.
 Absorption of Sr⁹⁰ in tissue or plastics.
 Determination of Ca, K, Na in blood by flame photometry.
 Relative abundance of various beta rays from Au¹⁹⁸.
 Safe operating temperature for Teflon gaskets.
 Method of measuring a distance of 200" within .0002 accuracy.
 Occlusion of chloride ion during cold precipitation of Fe (OH)₃.
 Thermal conductivity of thorium.
 Chromate-phosphate mixtures for corrosion inhibition.
 Design of sidewalk snow melting systems.
 Equilibrium drying conditions of CaCl₂.
 Density and viscosity of anhydrous HF.
 Intergranular corrosion of 61S, 2S and 72S aluminum.
 The effect of uranium and uranyl nitrate on the decomposition of potassium permanganate.
 General information on construction and use of pitot tubes.
 Solubility of lanthanum oxalate in 0-4N nitric acid.
 Has a hydrogen-fluorine torch been invented? How does it operate?
 Mechanical properties of boron carbide, particularly with reference to quick temperature changes.

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The Reference Assistant spent almost the entire month on French and German translations.

Approximately 600 copies of the revised "Chart of the Nuclides" were received from Knolls Atomic Power Laboratory and are being distributed through the Library. This wall chart, an invaluable working tool for project scientists, is the third revision of the original chart prepared by G. Frielander and M. Perlman.

Classified Files

Work volume statistics for the Classified Files were as follows:

	<u>January</u>	<u>February</u>
Documents routed and discharged	24,825	20,771
Documents issued	10,657	6,717
Registered packages prepared for off-site	295	338
Inter-area mail sent via transmittal	66,525	41,011
Holders of classified documents whose files were inventoried:		
(a) Because of normal perpetual inventory procedure	12	29
(b) Because of transfer of work assignment	4	6
(c) Because of termination	2	4
Inventory reductions:		
Copies of documents destroyed	3,537	4,195
Copies of documents downgraded to:		
RESTRICTED and OFFICIAL USE ONLY	99	248
CONFIDENTIAL	0	0
Copies of documents declassified	23	13
Classified documents located which were unaccounted for in previous inventory	13	8
Standard storage cartons of material retired to the Records Center:		
Unclassified and OFFICIAL USE ONLY	0	0
Classified	38	20
Off-site originated reports requested by Hanford personnel	81	48
Hanford originated reports requested by off-site personnel	175	110

The slightly smaller totals reported this month for documents issued, documents routed, and documents handled via inter-area mail resulted from moving the close-out date for statistics forward to the 25th of the month to simplify preparation of the monthly report.

The following is typical of the reference questions received in the Classified Files during the month:

- Information on CP-6 reactor.
- Decay scheme for neptunium-239.
- Document written about a year ago on diH values.
- Effect of neutron bombardment on water.
- Electromagnetic flowmeter.

Argonne reports on electrolytic separation of uranium.
 Description of Argonne Slave Manipulator.
 Argonne quarterly reports covering the chemistry of ruthenium.
 Weight loss of uranium in the pickling bath.
 Neutron energy spectra.
 Hydrates of plutonium and uranium.
 Formation of nitrate ion during irradiation of pile water.
 Failure of H-10 and P-10 slugs.
 Physical properties of irradiated plastics.
 How to detect voids in heavy aggregate concrete.
 Half-life of plutonium-238.

Work in the Audit and Inventory program proceeded satisfactorily. The field inventory, which had been discontinued in order to complete the inventory of research and development reports, was resumed during the month. The full crew, however, could not be devoted to this program because of a number of other emergency assignments. Lists of research and development reports charged out to consultants and to the Nucleonics Office in Schenectady were prepared and mailed out, since accountability for documents charged to consultants and to the Nucleonics Office is held at Hanford. Search continued for documents missing in the recently completed research and development inventory at Hanford, and the number missing has been reduced from 40 to 11. Search also continued for approximately 105 documents missing when the 760 Files were closed out. This number has now been reduced to 23 and the search will be continued until the balance is satisfactorily accounted for. Furthermore, the present Plant reorganization has produced temporarily an increased load for Audit and Inventory due to job transfers. These require clearing the holder of all documents charged to him and recharging them to his successor or designate. At month end a large backlog of job transfers remained to be handled.

On February 3, 1953, "Confidentially Yours," a guide to the preparation and care of classified documents, was distributed to Plant stenographers. It is anticipated that this guide will materially assist Classified Files by standardizing the documents submitted to Files for issuance. Response to the guide has been excellent, indicating that it satisfactorily meets the needs of the group at which it was aimed. Valuable assistance in the preparation of the guide came from Employee Information and, as a result of their efforts, the final product was well organized, stated clearly what needed to be said and was aptly illustrated. Following distribution of the guide, a series of meetings were held in all areas in which it was reviewed in detail and questions on document preparation and control were answered. The meetings were well attended, approximately 180 of the 360 stenographers who had requested and received the guide being present. The meetings cleared up a number of misunderstandings and took care of a number of changes in procedure which had occurred after the manual had gone to press.

All chemists and chemical engineers at Hanford were circularized regarding the types of information to be included in a proposed handbook of chemical data in the atomic energy field. This will revise CL-697, the early "Project Handbook." The preparation of the handbook is being directed by William H. Sullivan of the Oak Ridge National Laboratory and is being coordinated by the Technical Information Panel. The information developed by the questionnaire was quite interesting

and clearly indicates the need for such a compendium. The questionnaires were carefully reviewed by the Library reference staff before forwarding to Oak Ridge so that any local needs which could be handled by the Library would be taken care of immediately.

The program, requested by Security, of establishing accountability records on the Area operating logs has turned out to involve more work than was anticipated. During the month records were set up on the following classified logs:

100-B, D & F AREAS

- 105 Reactor Supervisors Instruction Log
- 105 Chief Operators Control Room Log
- 115 (Gas Wing) Log
- 105 Control Room Log
- 105 Area Supervisors Shift Log
- Shutdown Data Logs
- Control Room Logs of Area Physicist

200-E & W AREAS

- 224 Area Supervisors Instruction Log (E)
- 224 Chief Operators Log (W & E)
- 271 Dispatchers Sample Exposure Log (E)
- 224 Senior Supervisors Shift Relief Log (W & E)
- 271 Area Supervisors Instruction Log (E)
- 221 Senior Supervisors Shift Relief Log (W & E)
- 224 Re-Cycle Data Log (W)
- 221 Area Supervisors Instruction Log (W)
- 221 Chief Operators Log (W)
- 221 Supervisors Special Assignment Log (W)

Additional work remained to be done. Arrangements are being worked to use standard classified notebooks, recorded and issued through the Classified Files, for these logs in the future.

Reports and Abstracting

Work statistics for the group were as follows:

	<u>January</u>	<u>February</u>
Formal Research and Development Reports issued	9	7
Formal reports in process	5	10
Reports abstracted	267	309

Technical Publications issued during the month the first draft of a manual entitled "Preparing Formal Reports: A Guide for Hanford Authors." The guide is intended as a source of information for authors of formal research and development reports at Hanford. The objectives of the guide are:

- (1) To acquaint Hanford authors with the AEC requirements regarding preparation and distribution of research and development reports.

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- (2) To encourage the writing of more research and development reports at Hanford.
- (3) To assist Hanford authors in writing these reports by suggesting an effective method of presentation.
- (4) To minimize reproduction expense by acquainting authors with reproduction methods in use at Hanford and the means of achieving better reproductions at reduced cost.
- (5) To acquaint Hanford authors with the assistance available through Technical Publications and other services.

The guide was routed to a representative sampling of Hanford personnel for comments and suggestions. Initial response to the first draft has been excellent and many comments have been received which will help to make the guide useful for Plantwide use. These suggestions will be incorporated in the final draft to be issued shortly.

During the month the fifth edition of TID-4500, "Standard Distribution Lists for U.S. Atomic Energy Commission Non-Classified Research and Development Reports," was received. The guide governs the distribution of non-classified research and development reports among AEC contractors and cooperating Government agencies. It has been greatly improved in usefulness over previous editions by the adoption of a number of suggestions from Hanford and other AEC installations. Addresses are now titled and arranged alphabetically, and a brief scope note is included with each category.

The Abstracting and Bibliographic group issued a major bibliography during the month, "Hanford Works Separations Production Tests and Process Chemistry Reports," (HW-26352). The bibliography, a compilation of SE-PC reports up to November, 1952, has author, report number, and subject indices. It supplements earlier bibliographies on the 105 Production Tests and the special irradiations program.

In addition to routine abstracting and indexing, the following literature searches were made:

Method and Results of Neutron Flux Monitoring with Manganese.

Report on Contracts:

AT-30-1-821, "Studies of the Fluoride of the Rare Earth Elements."

AT-11-1-151, "A Physico-Chemical Investigation of the Interhalogen Compounds."

AT-11-1-90, "Project No. 3. The Acids of the Hydrogen Fluoride System."

AT-30-1-827, "Inorganic Fluorides."

Entropy, Heat of Formation of Plutonium Oxides and Carbides at Elevated Temperatures.

Intergranular Corrosion of Aluminum.

Solubility of Plutonium IV Oxalate.

Fluorimetric and Fluorophotometric Determination of Uranium.

Removal of Slug from Can by Reaction of Uranium with Hydrogen (leaving bonding layer intact).

Crystallization Temperatures, Viscosity and Valency of Plutonium Nitrate in Nitric Acid.

Justification for Elimination of P-4 Samples.

Reorganization of the Reports Index in proceeding on schedule.

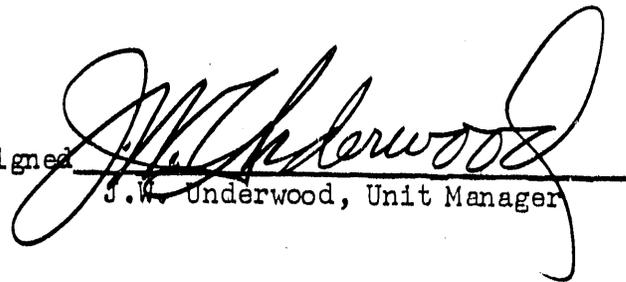
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INVENTIONS

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

Signed


J.W. Underwood, Unit Manager

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DESIGN SECTION
FEBRUARY, 1953

VISITORS AND BUSINESS TRIPS

F. F. Hall, C. T. Main, Inc., Boston, Massachusetts, visited Richland February 2-6 for bid evaluation studies.

C. J. Koch and J. M. Butler, General Electric Co., Schenectady, New York, visited Hanford February 4-5 to discuss design of secondary pump drives for 100-K.

G. E. Auston, Link-Belt Co., Spokane, Washington, visited Richland February 10 to give assistance and advice on increasing capacity of existing "Link Belt" coal conveyor.

E. Vynne, Cascade Distributing Co., Seattle, Washington, visited Hanford February 11 to demonstrate the "Velocity" stud gun to be used underwater for the 105-D discharge chute repair.

R. B. Clendenning, Bristol Company, Waterbury, Connecticut, visited Hanford February 25 to repair recorders provided for CG-431-B.

C. A. Mansius visited Oak Ridge National Laboratory, Oak Ridge, Tennessee, and Brookhaven National Laboratory, Long Island, New York, January 23-February 4 to discuss pneumatic test tube facilities for the 105-K Reactors.

E. B. LaVelle visited Oak Ridge National Laboratory, Carbide and Carbon Chemicals Corporation, Oak Ridge, Tennessee, February 2-3 to attend a meeting of the AEC Welding Committee.

J. M. Frame and H. G. Johnson visited Vitro Corporation, New York City, February 2-6 for an extensive review with the architect-engineer of all scope material transmitted to him.

M. H. Russ visited Sheppard T. Powell, Baltimore, Maryland, February 2-6 to discuss the program for underground water development.

R. C. Mann visited Vitro Corporation, New York City, and E. I. duPont de Nemours and Co., Inc., Wilmington, Delaware, February 2-28 for consultation on instrumentation for Project CA-513.

E. Hollister visited Puget Sound Naval Shipyard, Bremerton, Washington, and Western Gear Co., Seattle, Washington, February 5-6 and February 18-19 to discuss canning machine fabrication.

G. M. Roy and W. J. Love visited Bingham Pump Co., Portland, Oregon, February 10-11 to discuss design change of process water pump.

A. J. McCrocklin visited Bonneville Power Administration, Portland, Oregon, February 17-18 to obtain data on the BPA system for studies being made at Hanford.

ORGANIZATION AND PERSONNELPersonnel Statistics:

	<u>January 31</u>			<u>February 28</u>		
	<u>Exempt</u>	<u>Non-Exempt</u>	<u>Total</u>	<u>Exempt</u>	<u>Non-Exempt</u>	<u>Total</u>
Design Management	4	2	6	4	2	6
Process Engineering Unit	66	16	82	58	14	72
Design Planning Unit	14	13	27	15	13	28
Design Engineering Unit	82	13	95	85	10	95
Total Section Personnel	166	44	210	162	39	201
Technical Graduates (Rotational)	--	13	13	--	12	12
TOTAL	166	57	223	162	51	213
Personnel on loan to Design Section			13			5

Accessions = 9

Separations = 19 (Eight engineers and 5 non-exempt personnel transferred to Project Section on Feb. 1, together with transfer of responsibility for Project CA-513)

GENERAL

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

	<u>Man Months Expended</u>	<u>% of Total</u>
1952 Expansion Program	137.0	70.1
Research and Development	30.2	15.5
Other Projects & Design Orders	28.1	14.4
	<u>195.3*</u>	<u>100.0</u>

The first general information meeting of the Design Section was held February 18 at the Jason Lee auditorium.

DESIGN DEVELOPMENTStatistics:

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

	<u>Man Months Expended</u>	<u>% of Total</u>
RDS-10 Reactor Design Development	3.1	10.3
RDS-11 Water Plant Design Development	1.8	6.0
RDS-12 Separations Design Development	7.6	25.2
RDS-13 Mechanical Design Development	13.3	44.0
RDS-14 Utilities & Services Design Development	1.2	4.0
RDS-15 Engineering Standards and Materials Development	3.2	10.5
	<u>30.2</u>	<u>100.0</u>

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

Work was started during the month on the preparation of Research and Development Program Proposals for Fiscal Year 1954 and 1955.

RDS-D-10 - Reactor Design Development

A development program on high-density concrete for use as the biological shield in a reactor was continued. The Northern Pacific Division, Corps of Engineers, has fabricated approximately one-half of the total number of test specimens which are to be made. An additional small test program will be made to determine the effect of mixing time on fluidity and density of high-density grouts. Work on the testing of high-density concrete by the University of Washington is substantially complete except for preparing the report. Since time is not of the essence, the contract was extended to December 31, 1953. However, it is expected that the contract will be completed by June, 1953.

RDS-D-11 - Water Plant Design Development

An investigation was made into the economics of converting the sodium dichromate handling facilities at 100-C and 100-D Areas from batch solid to continuous liquid handling facilities. A report is being prepared which recommends that liquid handling facilities be installed in all existing areas if sodium dichromate is needed as a corrosion inhibitor. The maximum operating pay-off period is approximately 1.3 years.

Study of protective coatings for steel retention basins and effluent lines is continuing. Approximately 25% of the test samples located in the 100-H Area retention basin indicated after 27 days that they could withstand further exposure. Inspection of samples placed in the 100-H flow laboratory indicated failure of 85% of the samples after 14 days immersion.

RDS-D-12 - Separations Design Development

A study reconsidering the scope of the Metal Conversion Facilities expansion was completed. As a result of the study, no change will be made in the present plans which call for the expansion of UO_3 Capacity as quickly as possible. The current development being done by the Technical Section on a revised process will not affect the proposed timing of the present expansion. Exploratory study was being made on the preparation of molten UNH for emergency off-site shipment in the absence of tank cars. Preliminary design work on the new stripping facilities for TBP product in 224-U Building was concluded.

A review meeting was held with the Design Committee to present the status of the various proposals related to the final processing steps for plutonium. The Design Committee requested that the economic survey be completed and recommendations be submitted as soon as possible.

Preliminary scope information on the Phase II Redox Expansion was prepared for transmittal to the Vitro Corporation. Preliminary work also was done on the scope for the recycling of 3DW.

RDS-D-13 - Mechanical Design Development

Detail design continued on the prototype fuel element canning machine for the Metal Preparation process and is approximately 90% complete, an advance of 3% during the month. About 80% of the drawings have been issued. Fabrication and assembly of the prototype machine by the Puget Sound Naval Shipyard is being followed closely to expedite the work. The furnaces are on order from the Ajax Engineering Company, and effort is being made to expedite delivery by June.

The fabrication of an under-water slug manipulator is continuing and is approximately 90% complete. Testing of the column inter-face position indicator and recorder also is progressing.

After final acceptance tests at Schenectady, the electro-magnetic conveyor was shipped to Hanford. Assembly is currently being done in the 189-D Building.

RDS-D-15 - Engineering Standards and Materials Development

Fifteen design orders and revisions representing a total commitment of \$65,830 have been written to date covering the development of engineering standards.

The H. W. Standards Committee approved the following standards and revisions to standards during February.

HW-3052 - General Design and Installation Standard - Inside
Electrical Work, Revision 3.

HW-4900-S - Specification for Qualifying Welders

D-1-6 - Receptacles, Revision 2.

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

- a. Development of a new standard to color code stainless steel was advanced 30% to 80% complete.
- b. An extended test of the feasibility of substituting nitrogen for argon as a purging gas in stainless steel welding has started, and the preparation of weld samples is approximately 75% complete. Final results are expected in May.

DESIGN PROJECTS:Statistics:

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

	<u>Man Months Expended</u>	<u>% of Total</u>
CA-512-R 100-K Reactor	90.5	54.8
CA-512-W 100-K Water Plant	9.8	5.9
CA-513 Purex Separations Facility	27.5	16.7
CA-514 300 Area Expansion	8.6	5.2
CA-516 Gable Butte Railroad	0.1	0.1
Major Projects - Other than Expansion Program	15.6	9.5
Minor Projects and Design Orders	<u>13.0</u>	<u>7.8</u>
TOTAL	165.1*	100.0

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

DECLASSIFIEDCA-512-R - 100-K Reactor

Design on the 100-K Reactor Facilities continued to advance with over-all design 66.8% complete, an increase of 7.5% during the month. One thousand and seventy-six drawings have been approved to date, of which 148 drawings were approved during the month.

Expenditures to date for design scope and detail design are approximately \$1,080,500 against an authorized amount of \$2,781,500. At the present level of activity, expenditures are in the order of \$120,000 per month.

Four hundred and ninety-nine 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 \$11,600,000.

The Project Committee reviewed and approved proposals covering the horizontal rod design basis, changes in the scope of test facilities, the addition of poison column charge-discharge equipment in the project scope, and the inclusion of continuous temperature monitoring. The proposal to use a five-rib process tube in the "K" Reactor was rejected because of the need of further development and the tight procurement date.

An evaluation of the effectiveness of the ball safety system using plain steel balls was completed. Results indicate that under the worst possible condition, adequate control to compensate for loss of water would be available in 1.5 seconds after trip of the ball hoppers.

The over-all arrangement and all associated major details of the process water piping systems in the piping rooms and that of the inlet and outlet faces have now been determined and the design as a whole has been frozen. A decision was made to eliminate the valves at the bottom of the outlet end risers and operate using only the 105 Building effluent line valves. This revision will result in a saving of approximately \$28,000 in total construction cost.

The sizing of the orifice holes for the cellular-type downcomer was established. The purpose of these orifices is to dissipate the velocity and static heads of the effluent water at the base of the downcomer.

CA-512-W - 100-K Water Plant

The recent decision to enlarge the annulus in the process tubes, together with the possibility of later elimination of the requirements designed to control vaporization of the water in the reactor, materially changed the probable operating range of the secondary process water pumps. From a study, it was found that minor changes could be made to the pumps to fulfil the requirements, and an alteration to the purchase order to this effect was negotiated.

A study was completed on the recirculation system from the discharge side of the secondary pumps located in the process water lines to the clearwells. A document was issued recommending that valves be supplied which would allow interruption of the recirculation when water is being delivered to the 105-Building and thus effect a saving of pumping costs of between \$13,000 and \$40,000 annually for the two 100-K Area installations.

Study was made of the pH adjustment problem in order to define a design program which will permit design of the pH adjustment facilities to proceed, and to analyze the problems associated with the use of lime. It was recommended that a caustic soda system be completely scoped as an alternate to lime for pH correction.

CA-513 - Purex Facility

Technical management of architect-engineer services in the design of the Purex Separations plant, covering the Purex Process Building and associated outside facilities, was transferred to the Project Section on February 1, 1953, at which time the scoping was approximately 98% complete.

The scoping of the Waste Disposal facilities is still in progress and is now 85% complete. A preliminary drawings schedule of 200 drawings was prepared and issued for comment. Detail work was started on the diversion box, water piping, steam supply piping, vapor header, condensers and waste tank piping, and a plot plan. The Design Committee approved the waste disposal design criteria including the profile, flow diagram, utility water and radioactive effluent systems.

Approval by the AEC has been obtained on six drawings and three specifications for the outside facilities. Design is continuing on the 283-E pump house, the export water system and the scoping of the 284 power house expansion. The study of the modifications to the coal handling facilities is continuing.

Detail design was started on the UO_2 facilities. The decision was reached to install two 8-ft. diameter gas-fired pots, and other supplementary equipment, in a simple and inexpensive building addition. Plans call for the increase in capacity as quickly as possible. During the month, a drawing schedule of approximately 40 drawings was prepared.

Electrical and mechanical design work for the Purex Prototype Facility were completed. Instrument design continued on the preparation of instrumentation and piping layouts.

CA-514 - 300 Area Expansion

Design scope was advanced 16% during the month to 76% completion. The architectural, mechanical and electrical design criteria for the 313 Building were completed. Agreement was reached with the AEC that design of the 313 Building structure be performed by an architect-engineer. The design of the Change House was also completed during the month.

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

Design work included revision of drawings to "as-built" status. Design of a 10-inch bellows expansion was completed and arrangements were made to have the Bristol recorders repaired.

CG-482 - Pile and Pile Water Plant Improvement

The thermocouples and connectors purchased and received for 105-H are now unusable due to major scope revisions. A design was prepared for a new thermocouple and well. Flow tests conducted by the Technical Section during February indicate that a complete review of the entire project is in order.

DECLASSIFIEDCG-495 - Outlet Tube Temperature Monitoring, Spare Thermocouples 105-B, D and F

Installation of new thermocouples is complete in 105-B and 105-D while those purchased for 105-F will be installed in 105-DR. Procurement of new components for 105-F is being initiated.

CG-496 - Recuplex Installation - 234-5 Building

Major revision of the instrumentation is being undertaken to provide remote control. Electrical drawings were advanced 5% to 10% completion. Six prints of the pulse generator were issued for comment, and preliminary design was done on samplers. The percentages of completion of the mechanical drawings are as follows: vessels - 90%; slag and crucible, hood - 90%, piping - 85%; reception and blending, hood - 20%, piping - 10%; solvent extraction, hood - 30%, piping - 10%. Over-all design is approximately 65% complete, an advance of 10% during the month.

CG-502 - Additional Indication of Moderator Temperature, 105-B, D, F, DR & H

Design of the thermocouples for additional indication of moderator temperatures in 105-B, D, F, DR and H is complete except for the revision of drawings to the "as-built" status.

CA-535 - Redox Capacity Increase, Phase II

Detail design of the equipment for the silo portion of the Redox Expansion, Phase II, was started upon receipt of authorized funds from the AEC. The design of eight columns is approximately 85% complete. The major portion of the drafting was completed, and check prints will be issued in March. Detail design for the balance of Phase II Redox Expansion is being performed by the Vitro Corporation.

CA-539 - Redox 241-SX Tank Farm

Preliminary design work was started on the Redox 241-SX Tank Farm. A field survey of the tank farm was completed showing one foot contours, and six drawings were issued for comment. Preliminary investigations indicate that by using a steel dome and changing the knuckle section, the storage capacity of each tank may be increased approximately 131,000 gallons with a 10% reduction of the free liquid surface.

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

Checking of preliminary comment drawings submitted by the architect-engineer continued through the month. Drawings reviewed included 55 architectural and structural sheets, three mechanical sheets and three specifications.

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

Plans and specifications for the final design of a new underground waste line between "S" Area and "U" Area were advanced to 60% complete. Design completion may be delayed if the project does not receive A.E.C. approval soon.

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

The final design is approximately 77% complete, an advance of 7% during the month. Considerable revisions in the drawings were necessary and design liaison was maintained with the construction of the junction box in the field.

D.O. 100423 - High Pressure Water Supply to a Single Tube

Design work is essentially complete with seven approved drawings issued. All materials have been requisitioned.

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

Design work on alterations of personnel meter gate houses was advanced 55% during the month to 75% complete.

D.O. 100444 - Fuel Element Pilot Plant

Work on the design criteria for the fuel element pilot plant is 85% complete. A rough draft was completed and issued for comment.

D.O. 100458 - Aquatic Biological Laboratory

Design was advanced to 70% complete with one of three required drawings completed.

D.O. 100460 - Remote Supervisory Control, 100 Area Water Plants

Work on a preliminary design of an automatic backwash system for the filter plants in 183-B, D, F, H and DR was completed and transmitted together with a material and equipment list to the Project Section.

D.O. 100461 - Alterations to Building 713

Work on preliminary design and scoping for alterations to Building 713 was started. Preliminary drawings are approximately 40% complete.

D.O. 100474 - Dock and Partition 300 Area Library and Files Building

The design of a dock and stair addition to the outside of this building was started and completed while work continued on a noise abatement problem. The work is approximately 90% complete.

D.O. 100476 - Positive Ion Accelerator Laboratory

Work on the preliminary design was started and completed.

D.O. 100489 - Conversion of a 221 Type Dissolver Tower

Design was started and completed on the conversion of a 221 dissolver tower to a downdraft type for use on 202-S dissolvers. The finished drawing will be issued early in March.

DESIGN SECTION WORK IN THE CLOSING STAGES OR COMPLETED DURING FEBRUARY

- CG-447 - Portable Meteorological Mast
- D.O. 100346 - Auxiliary Civil Defense
- *D.O. 100433 - Redesign of the H-4 Oxidizer Pot - Building 202-S
- *D.O. 100435 - Fire Protection Facilities for 200-W Area Spare Parts Warehouse
- *D.O. 100465 - 105-DR Replacement Discharge Chute Liner
- *D.O. 100486 - Fiscal Year 1954 Water Tank Replacement
- *D.O. 100493 - Radiochemistry Building - Stress Check of Stainless Steel Ventilation Exhaust Stack

*Design Section Work Completed During February

INACTIVE PROJECTS

No active design work was performed during the month on the following assignments:

- D.O. 100355 - Extension of Flagler Avenue and 720 Building Site Parking Lot

INVENTIONS OR DISCOVERIES

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

<u>Inventor</u>	<u>Subject</u>
R. A. Ciccarelli	Automatic Control Design

[Handwritten Signature]

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DESIGN SECTION WORK STATUS
PROCESS ENGINEERING UNIT
ENGINEERING MAN MONTHS *

Description	Backlog Start Of Month	Orders Received During Month	Time Spent During Month	% of Total Effort	Backlog End of Month	Schedule of Future Effort						Balance
						Mar.	Apr.	May	June	July	Aug.	
CA-512-R	515.0		31.5	52.1	483.5	31	30	30	30	22	18	322.5
CA-512-W	45.0		2.0	3.3	43.0	2	2	2	2	1	1	33.0
CA-513	34.0		2.3	3.8	31.7	3	2	1	1	1	1	22.7
CA-514	36.0		1.9	3.1	34.1	2	2	1	1	1	1	26.1
RDS Program - FY 1953	123.8		20.8	34.4	103.0	23	24	27	29	37	41	0
RDS - Anticipated FY 1954	16.0		2.0	3.3	14.0	2	2	2	2	2	2	2.0
Design Orders	769.8	0	60.5	100.0	709.3							406.3
TOTALS												

DESIGN ENGINEERING UNIT
ENGINEERING MAN MONTHS *

Description	Backlog Start Of Month	Orders Received During Month	Time Spent During Month	% of Total Effort	Backlog End of Month	Schedule of Future Effort						Balance
						Mar.	Apr.	May	June	July	Aug.	
CA-512-R	251.6		24.3	30.9	227.3	23	22	20	20	20	18	104.3
CA-512-W	54.2		4.0	5.1	50.2	4	4	4	4	4	3	27.2
CA-513	148.7		16.9	21.5	131.8	18	18	16	16	14	12	37.8
CA-514	65.0		4.2	5.3	60.8	5	5	5	4	4	3	34.8
RDS Program - FY 1953	47.1	7.3	6.4	8.1	48.0	9	11	13	15	19	20	0
RDS - Anticipated FY 1954	90.3	3.0	13.9	17.7	79.4	14	14	16	14	10	8	3.4
Major Projects - Other	74.0	4.5	9.0	11.4	69.5	9	9	9	10	12	14	6.5
Minor Projects and Design Orders Available for Anticipated Future Work						0	0	0	0	0	5	
TOTALS	730.9	14.8	78.7	100.0	667.0							214.0

Present Total Backlog is distributed over the five engineering branches in terms of man months as follows:

Authorized Projects	Anticipated Future Work	Total
127	20	147
203	33	236
160	25	185
133	22	155
44	7	51
667	107	774
TOTALS		

*Exclusive of technical graduates and people on loan for other sections.

MONTHLY NARRATIVE REPORT - FEBRUARY 1953

PROJECT SECTION

I. SUMMARY

A. ORGANIZATION AND PERSONNEL

As a result of transfers effective February 1, 1953, the total strength of Project Section increased from 480 as of January 31 to 488 as of February 1. (See Separations Project Unit below.)

Following is a summary of personnel data for the Project Section covering February, 1953:

	<u>February 1, 1953</u>	<u>February 28, 1953</u>	<u>Net Changes</u>
Employees on Payroll	488	492	+4
Technical Graduates-Rotational	3	6	+3

The end-of-month status involved these changes, including 8 transferred on February 1:

	<u>Project Section Personnel</u>	<u>Tech. Grad. - Rotational</u>
Payroll Additions	5	1
Payroll Removals	4	4
Transfers into Section	13	0
Transfers from Section	2	0
Transfers within Section	3	1

All Units completed preparations for the reorganization of the Project Section as of March 1, 1953.

B. SCOPE OF ACTIVITIES

At the end of the month, construction completion status of major projects was as follows: CG-349, Hot Semiworks, and CA-362, TBP, physically complete; CA-431-A, 100-C (Waterworks), 99.8%; CA-431-B, 100-C (Reactor), 99.8%, CG-438, Ball Third Safety System, overall, 69%, 105-F, 105-B, and 105-D completed; CG-483, Downcomer Repairs, overall, revised downward to 74%, 105-F, 105-B, and 105-D completed; CA-506, Repairs to 100 Areas Retention Basins, overall, 46%, 107-F, 107-B and 107-D completed; CA-512-R, 100-K Area Facilities - overall, 5.37% - Water Plants, KW, 6.47%, KE, 2.96% - Reactor Buildings, 105-KW, 2.48% 105-KE, 0.58%; CA-513, Purex Prototype, Part "C", 30%.

C. MATERIAL PROCUREMENT

The acceleration of inspection functions continued during the month, chiefly because of the many orders being placed for the expansion program. Fabrication of duct work is progressing for the H.W. Laboratory Area buildings, and three truck-trailer loads have been received for the Radiochemistry Building. The

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C. MATERIAL PROCUREMENT - (Cont'd.)

first shipment of parts for the Fifth Boiler Addition, 200-West, has been received. The General Engineering Laboratory has been authorized to begin design and fabrication of handling, measuring, and weighing equipment for CG-431-C, (Metal Examination Facility, 105-C). Since cancellation of several orders for CG-482, (Pile and Pile Water), there has been considerable confusion at the vendors' plants; however, the difficulties are being cleared. In the 100-C Area, final work has been suspended until materials can be procured.

At the request of A.E.C., inspection has been performed at Hanford Works on excess materials which may be used to fill requisitions for 100-K.

D. CRAFT LABOR

The work stoppage begun by plumbers on January 19, 1953, was ended on February 12 by their return to work. The settlement included some concessions for exclusive bus transportation. On February 23, all plumbers and pipefitters employed on Minor Construction work walked off the job in protest against alleged discrimination involved in temporary layoffs of certain men. On February 25 those pipefitters laid off were recalled to work. The long-standing jurisdictional dispute between machinists and millwrights in the 101 Building broke out again on February 23 and resulted in a walkout of all machinists employed by Kaiser Engineers. The employers informed the union that the Building Trades Council would be requested to furnish qualified men. The Millwrights' Union dispatched some of its members by the end of the month.

E. SAFETY AND SECURITY

There were 11 regular meetings for discussion of safety, security, and health topics; and they were attended by about 360 personnel. The Minor Construction Management Unit held three "special hazards" meetings, four "tool box" meetings, two foremen's meetings, and one orientation for new employees. The Project Engineering Unit continued a series of bulletins which deals effectively with problems of safety and security. These bulletins have attracted attention from other departments.

F. HIGHLIGHTS OF UNIT ACTIVITIES

Inspection Services Unit made several re-assignments of inspectors to accommodate shifts in workload and also cancellation of orders for the Pile Improvement Program. The last Unit member on loan to Design Section was absorbed into field inspection work. Because of increased purchasing activity by Kaiser Engineers, six inspectors are now assigned full time to the Expansion Program, and most other inspectors are spending part of their time on it. For the H.W. Laboratory buildings, the fabrication of duct work is progressing. Three large truck-trailer loads of duct work, including 29 filter boxes, were delivered to CA-381, Radiochemistry Building. The Unit

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F. HIGHLIGHTS OF UNIT ACTIVITIES - (Cont'd.)

has received about 20 requests from A.E.C. for inspection of items now in excess stock which may be used to fill requisitions for 100-K.

Minor Construction Management Unit completed 16 work orders and its portion of CG-526, Activated Silica Test Facilities, 100-D. The portions of CG-438 (Ball 3X) and CG-506 (Retention Basin Repairs) in 100-D were completed the third week of February in a record installation time of 45 shifts. (Plant forces completed Downcomer Repairs in 105-D at the same time.) On February 20, it was necessary to furlough all craftsmen engaged in Ball 3X work until March 2, 1953. Because 13 pipefitters were included in the furlough, all pipefitters walked off the job on February 23. The Union stated that if a furlough exceeded two days, the member would have to be terminated. Therefore, pipefitters were called back to work on February 26, and eleven pipefitters were terminated. This prevented further labor difficulties. Other work showed satisfactory progress. The Unit accepted seven work orders and Project CG-511, Completion of Minor Construction Fabricating Shops. The re-ordering of general stores material from Kaiser Engineers to be used by Minor Construction is still not satisfactory.

Project Engineering Unit worked on 71 project items and three informal requests totaling \$22,712,200. Completed work consisted of three projects, one informal request, and three engineering requests. The Unit accepted and began work on 12 engineering requests. Six project proposals were transmitted to sponsors. Four project proposals and one informal request were approved by the A&B Committee. Two authorizations were granted by the A.E.C. Important projects now in progress include the Ball 3X Program, Pile and Pile Water Plant Improvements, Downcomer Repairs, Recuplex Installation, Repairs to the 100 Areas Retention Basins, and the 300 Area Expansion Program.

Project Services Unit, as delegated landlord, notified all Department Managers having tenants in the Hanford High School Building of the decision to vacate and declare the building excess on or before July 31, 1953. Drafting production was 318 new drawings and 281 revisions. The drafting room average was 5.2 man-days per drawing. Reproduction output was 588,323 square feet as compared to 475,477 square feet in January. (The January total was revised to conform to the period used by Accounting.) The largest single orders were 12,241 prints on CA-512-R, 100-K Area, and 5,051 prints on CA-512-W. The Field Services group continued its scheduled work on requests from Design Section, Manufacturing Department, and the A.E.C. Of the 52 estimates scheduled, the Estimating group completed 38. The History group issued three histories. Project Control group continued its routine duties and also completed the unitization of C-369, IR-96, IR-122, and MWI-43. This group did extensive work on the Construction Budget and the FY 1954 and 1955 Operating Budgets.

F. HIGHLIGHTS OF UNIT ACTIVITIES - (Cont'd.)

Reactor Projects Unit: The first floor slab for the Mechanical Development Building, CA-406, was placed. Work proceeded on piping and electrical installation and structural steel erection. There was no progress on either CA-431-A or CA-431-B (100-C) because material necessary to completion has not arrived. The architect-engineer has submitted all construction drawings with as-built information for CA-431-B. For CA-512, 100-K Area, work proceeded on excavation for the water plants and the pouring of concrete on all components of the KW Area and on the River Pump House, basins, and clearwells in the KE Area. It now appears that progress will be delayed by lack of piping material in both KE and KW Area. For 105-KW, pouring of concrete footings in the gas area continued. Installation of Ball 3X piping to be included in the second pour was substantially complete. Total concrete in place was about 4800 cu.yds. for KW. In 105-KE, forming and placement of reinforcing steel proceeded at the minus-15 foot level. Total concrete in place was approximately 370 cu.yds. Construction of the 2101 Building, 200-E Area, was about 35% complete. Because of labor troubles and slow progress in reconditioning of machine tools, there was little progress made in machining of graphite samples from Oak Ridge. The construction contractor has arranged for about three thousand man-hours of tool fabrication off-site.

Separations Project Unit assumed responsibility for Part "A" of CA-513, Purex Prototype, and accepted transfer of some personnel from Design Section to Project Section on February 1, 1953. At the end of the month the General Electric design status of Part "A" was 17% complete; the architect-engineer design was 5.1% complete. The completion status of Part "C" was design 92%, construction 30%. Work on the concentrator was delayed by the strike of machinists at White Bluffs during the month. The Unit completed arrangements to assume responsibility for Part "B" on March 2, 1953. Work is being done toward reopening Project C-187-D, Redox. Some additional work is being performed on Projects C-361, Metal Conversion Facilities, and C-362, TBP, and will be included with "start up" requirements. Most of this work has been scheduled to begin March 2, 1953. There will also be additional work on tank farms for Redox.

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

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J. J. McMahon
J. J. McMahon, Manager - Projects

February 28, 1953

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II. STATISTICAL AND GENERAL

A. Significant Assignments

1. Initial Reporting

CA-539, Additional Waste Storage for Redox

Estimated design completion was 5%. Work is proceeding on an unofficial grant of \$5,000 to start design.

ERA-743, Installation of Coal Meters, 100-B, D, F, and H

Studies for scoping and justification for this work are in progress.

ERA-744, Installation of Steam Meters, 100-B, D, F and H

Information was being developed for scoping and estimate of requirements.

ERA-745, 300 Area Badge House Study

Design was 80% complete. The rough draft of a study to determine the feasibility of using a single entry into the 300 Area has been issued. This information indicates need for two additional checking lanes and expansion of the parking lot facilities.

ERA-1197, X Level Cask Handling Facilities, 105-B, C, D, DR, F & H

The Work Order has been received, but no work has been performed.

ERA-1198, E Test Hole Facility, 105-B

The Work Order has been received, but no work has been performed.

ERA-1199, Heat Transfer Process Tube Mock-Up

The Work Order has been received, but no work has been performed.

ERA-1200, Heat Transfer Laboratory

The Work Order has been received, but no work has been performed.

ERA-1201, X Level Controlling and Recording Equipment

The Work Order has been received, but no work has been performed.

[REDACTED]

ER-2738, High Spot Estimates for RMA Line Improvements

Design has been completed. High spot estimates of eight alternate RMA Line improvements and revisions were completed and forwarded to the sponsor on February 12, 1953.

ERA-2739, Redox Cooling Water Disposal Basin

Design was 2% complete. The request has been received to prepare a project proposal for construction of a large crib-type seepage pit for disposal of Redox cooling water by ground percolation. The project cost is estimated at about \$100,000.

ER-6020, Future Records Storage Study

Design was 50% complete. A study is being made to determine the cost of rehabilitating various area buildings to a suitable record storage area which will be required by 1955. This study is to include analysis of operating costs.

ERE-484, Flexowriter Temperature Recorder, 105-D, DR, and F Areas

Design was 50% complete. The project proposal is being prepared, and the Manufacturing Department will have project management.

2. Final Reporting

CG-349, Hot Semiworks

The start-up work was completed except for several small items which are delayed by lack of material. The final closing papers are being prepared.

CG-451, Extension of 300 Area Underground Electrical Power Distribution System

The Physical Completion Notice has been prepared. All claims for extra payment for physical work to the contractor have been agreed upon except that the contractor may claim damages due to time lost for security reasons.

CA-491, Metallurgy Laboratory, 300 Area

Final inspection and acceptance of this project have been held. Information is being assembled for the Physical Completion Notice.

IR-133, Water Quality Laboratory 108-B

The installation was accepted on February 20, 1953, the directive completion date, with two minor exceptions.

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ERA-671, Crushed Rock and Oil Covering, 700 Area

With design at 25% complete, the sponsor has requested that the engineering order be closed out.

ERA-681, Roads and Walks, 700 Area

With design at 25% complete, the sponsor has requested that the engineering order be closed out.

ERA-712 (RCD-4), Richland Air Raid Shelter Study

With design at 10% the sponsor has requested that this work be closed out. No funds are budgeted for air raid shelters, and it appears that no work will be done soon.

3. Current Projects

CA-192, Biology Laboratory 108-F

Completion status remained at design 98%, construction 88%. Invitations to bid have been issued for the train shed conversion portion of this project. The bid opening date is scheduled for late March, 1953. Material procurement is progressing for critical items of the ventilation system.

CA-431-A, New Reactor - 100-C Plant (Waterworks)

Completion status remained at design 100%, construction 99.8%. Further work has been suspended pending arrival of needed equipment and availability of Minor Construction personnel.

CA-431-B, New Reactor - 100-C Plant (Reactor)

Completion status remained at design 100%, construction 99.8%. The architect-engineer has submitted all construction drawings with as-built information. Further construction work on the process unit awaits the arrival of material now on order.

CG-438, Ball Third Safety System

Design had been completed previously; construction progressed 16.2% to an overall total of 69%. Installation in the 105-D reactor was accomplished in 45 shifts, as compared with 70 shifts for 105-B and 99 shifts for 105-F. The ball recovery system for all areas is being reviewed, considering the experience gained from the ball recoveries in the F and B Areas. A special committee has been established to review the electrical components of the Ball Third Safety System to minimize reoccurrences of the electrical failures at F and B Areas.

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CG-482, Pile and Pile Water Plant Improvements

Design progressed 24% to a total of 99%; construction has not begun. Flow tests which were performed with components of the proposed 105-DR outlet pigtailed and fittings indicated that no appreciable gains would be obtained at 105-DR. Therefore, the 105-DR portion of the project has been cancelled. Flow tests with the "H" components are being performed, and it is probable that the pigtail modifications will be cancelled at 105-H. An information letter has been prepared for submittal to the A.E.C. Replacement of thermocouples at 105-H will be continued.

CG-483, Downcomer Repairs in 100-B, D, DR and H and Replacement in 100-F

Design had been completed previously; because of a substantial increase in scope the construction completion status was revised downward to 74%. A revised project proposal is being submitted requesting that the total project funds be increased to \$280,000 to permit completion of the DR and H repairs. The original directive (HW-275) has been modified to permit Minor Construction forces to proceed with the repair of the 105-DR and H downcomers. Repair work on the 105-D downcomer was completed within the month.

CG-506, Repairs to the 107 B, D, F and DR Retention Basins

Design progressed 90% to a total of 85%; construction progressed 17% to a total of 46%. Repair work in the 107-D basin was completed February 20, 1953. Work began in the 107-DR basin on February 23, 1953, on a three-shift, six-day a week basis. The foundation is being grouted, and no exceptionally large voids have been found. It is expected that the west side can be completed, and sufficient work done on the east side to allow normal pile operation on or about April 4, 1953.

CA-512-R, 100-K Area Facilities (New 101 Production and Storage Facility)

105-KW and 105-KE Buildings

The overall design of the 100-KW and 100-KE water plants was 61.6% complete. Construction completion status was, KW 6.47%, KE 2.96%. Work proceeded on the placing of concrete on all components of the KW Area and on the River Pump House, basins, and clear wells in the KE Area. (Total concrete placed: KW Water Area 13,596 cu.yds., KE Water Area 1,731 cu.yds.). In both KE and KW Areas, piping materials apparently will be a delaying factor; for example, an award has not been made on the 1-1/4" wall tunnel process piping.

Communications have been prevented by lack of telephone trunks and terminal equipment. A request for an additional 4-position PBX was submitted in November, 1952, and the purchase order has just been placed.

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For the 105-KW and 105-KE Buildings overall design was 66.8% complete. Construction completion status was KW 2.48%, KE 0.58%. Placing of concrete footings in the gas area of 105-KW continued, and the installation of ball 3X piping required in the second pour was substantially complete. Total concrete placed to date was about 4800 cu.yds. Curing of concrete was delayed by lack of white curing compound necessitated by the lack of sufficient water supply for curing. The Whirley crane was erected and almost ready for operation. For 105-KE, forming and placement of reinforcing steel proceeded at the -15 foot level. Total concrete placed was about 370 cu.yds.

2101 Building, 200-E Area (A.E.C. Administered)

Construction was 35% complete. Work proceeded on the following phases of this project: concrete and reinforcing steel, structural steel, siding and roofing, equipment rehabilitation, sheet metal duct insulation, inside electrical work, and water lines.

There was little progress in the 101 Building on the machining of graphite samples from Oak Ridge. The reconditioning of machine tools is proceeding at a slow pace because of incompetence of craftsmen. The construction contractor has arranged for about 3000 manhours of tool fabrication off-site.

(New 2101 Fabrication and Storage Facility - ERA-728)

Design progressed 10% to a total of 95%; construction progressed 8% to a total of 15%. The steel for the building shell has been erected except for the mock-up room area. The walls and roof deck of the raw storage area are being applied. This raw storage area was scheduled for completion by March 15, 1953. All drawings on the facility have been approved.

CA-512-A, Purex Facility

On February 1, 1953 this responsibility for the Purex Facility was transferred to the Project Section. The detail design completion status was as follows: General Electric design 17%, architect-engineer design 5.1%.

CA-513-B, Uranium Oxide Conversion Facility

Scope design was complete. The detail design work was progressing. A requisition was issued for the procurement of the furnace and controls.

CA-513-C, Purex Prototype 321 Building

Design work was essentially completed. Overall construction progressed about 25% to a total of 30%. All concrete has been placed with the exception of a wall section which must await the placing of the concentrator. Fabrication of the concentrator has been delayed by the machinist's strike at White Bluffs. All tanks have been modified and installed.

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CA-514, 300 Area Expansion Program

Overall scoping progressed 11% to a total of 72%; detail design completion status remained at 5%. No construction has been done. Design completion status of the main parts of the 300 Area Expansion Program was as follows: Operations Change House - 100%; 300 Area Process Facilities - 72%; 300 Area Administration Building - 15%; Renovation of 3707-A Building and 3707-B Building - 5%; Oil, Paint and Solvent Storage Building - 5%; 300 Area Utilities Study - 100%. No work has been done toward the replacement of Building 3741.

B. Other Assignments

CA-406, Phase II, Mechanical Development Building

Design had been completed previously; construction progressed 12% to a total of 22%. The first floor slab has been placed; work is proceeding on the erection of structural steel and the installation of piping and electrical work.

CG-431-C, Metal Examination Facility 105-C

Completion status remained at design 10%, construction 0%. A letter has been issued authorizing the General Engineering Laboratory \$5,000 to start design on an "assistance to Hanford" basis. The General Engineering Laboratory is to design and fabricate handling, measuring, and weighing equipment. The total cost of this work is estimated at about \$165,000.

CA-434, New Bio-Assay Laboratory

Completion status remained at design 20%, construction 0%. The revised project proposal has been approved by the A&B Committee and is now being reviewed by the A.E.C. A detailed cost breakdown of the estimate is being supplied to the A.E.C.

CA-441, Solvent Building

Design completion status remained at 25%. The project proposal is in rough draft form except for the justification. The sponsor has been requested to supply additional information.

CG-442, X-Ray Machine - 3745-A

Design had been completed previously; construction progressed .1% to a total of 99%. The lump sum portion of this project has been completed. The field representative of the High Voltage Engineering Corporation worked at Hanford from February 13 to February 21 to put the X-Ray machine in operating condition. If the machine continues to operate satisfactorily the project will be considered complete.

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CG-447, Portable Meteorological Mast

Design completion status remained at 99%; construction progressed 4% to a total of 97%. Field start-up for this experimental unit is scheduled for March 1, 1953.

CG-454, Spectrometer Shielding

Design had been completed previously; construction progressed 1% to a total of 99%. All work has been completed except placing the beam absorber on the X-2 level in 105-DR. A review of the project at the end of January revealed that it could not be closed out with exceptions. A revised project proposal is being prepared to extend the completion date to April 1, 1953.

CA-455, Replace Two Elevated Water Tanks in 200-E Area

Completion status remained at design 90%, construction 0%. The bid opening was held February 18, 1953. The low bid of \$12,000 is being reviewed by the A.E.C. Engineering and Contract groups.

CA-473, 100-B Automatic Dial Telephone Exchange

Completion status remained at design 100%, construction 0%. The revision to the project proposal has been forwarded to the A.E.C.

CG-477, Building 284-W - Fifth Boiler Addition

Design had been completed previously, construction progressed 7% to a total of 57%. All parties have agreed upon acceptance tests procedures. The first shipments of boiler parts have been received, and the boiler assembly is being erected. Other phases of the work are well advanced toward completion. The contractor has been asked for further justification of the proposed change in contract dates.

CA-489, Neutron Monitoring Calibration Facilities

Completion status remained at design 10%, construction 0%. Specifications for purchase of this new unit have been prepared and are now out for bid. The field representative of the High Voltage Engineering Corporation has been consulted regarding the operation and installation of this unit. A new floor plan arrangement sketch has been completed, and final design is expected to begin in the near future. Shielding problems are now being studied.

CG-495, (ERE-483) Outlet Tube Temperature Monitoring Thermocouples

Design was 35% complete, construction was 58% complete. Revision #2 of the project proposal was prepared and submitted to include the 100-DR reactor in the thermocouple replacement program. The Manufacturing Department has project management.

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CG-496, Recuplex Installation, 234-5 Building

Design progressed 5% to a total of 60%; construction has not begun. The rough draft of a revised project proposal has been reviewed by the Technical Section and the Manufacturing Department. It is being prepared in final form for submittal to the A&B Committee in March. Extensive study is being made of certain phases of project justification.

The A.E.C. has not yet approved expenditures for design funds on shielding scope changes. This approval is needed to avoid some slow-down of design and also to permit completion of related architectural designs.

Material procurement is progressing. Requisitions have been submitted for about 65% of the vessels.

CA-497, New Substation Fences and Grounding of Existing Fences

Design had been completed previously. The contractor began construction in the 1100 Area on February 11, 1953 and progressed to an overall completion of 12%.

CA-500, Lubrication Pits, 1716-D and 1716-F Garages

Design had been completed previously. The contractor began construction on Building 1716-F on February 6, 1953 and progressed to an overall completion of 10%. Scheduled completion date for this project is July 22, 1953. Work is progressing satisfactorily.

CG-511, Completion of Minor Construction Fabricating Shops

Completion status remained at design 15%, construction 0%. The A.E.C. has authorized expenditure of \$97,000 on this project. Work is scheduled to begin soon on paint and shingle application.

CA-516, Gable Butte Railroad

Completion status remained at design 100%, construction 0%. Further work towards construction of this railroad is awaiting additional economic justification for double trackage. This justification is being reviewed by the General Electric personnel concerned.

CA-517, Fire Protection Buildings, 272-E and W

Completion status remained at design 30%, construction 0%. It is now planned to submit a revised project proposal deleting the 272-E shops and including the rehabilitation of the 272-WB Building. Scoping is scheduled to begin soon.

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CG-519, Replacement of 100-D Reactor Effluent Line

Design progressed 50% to a total of 90%; construction began and progressed to a total of 8%. Final design is almost complete, and procurement is progressing. Construction was completed on the junction box which will eventually tie the existing concrete line to the new steel line.

CG-520 (ERA-1182), P-13 Pressure Assembly Removal

Neither design nor construction has begun. The revised project proposal has been forwarded to the A.E.C.

CA-525, Permanent Auxiliary Combined Civil Defense and Plant Disaster Control Center

Completion status remained at design 81%, construction 0%. After a delay of several weeks, the project has been authorized by the A.E.C. The Work Authority is expected during early March, 1953.

CG-526, (DO-100325) Activated Silica-Alum Preparation Facilities, 183-D

Design had been completed previously; construction progressed 19% to a total of 99%. All work has been completed except for one small item which is scheduled for completion by March 2, 1953.

CA-527, (ER-2718) Fire Protection - 200 East and West Spare Parts Warehouse

Design progressed 45% to completion. Approval signatures are being obtained. Plant forces began construction on the fire detector system on February 9 and progressed to 80% complete.

CA-529, Personnel Meter Gatehouse Facility Improvements

Design progressed 35% to a total of 65%; construction has not begun. Preparation continued on final design and specifications for a lump sum contract.

CG-530, (ER-A-3096) 314 Building Revision for Canning Development

Design progressed 50% to a total of 100%; construction progressed 29% to a total of 54%. The rotary hearth furnace and its equipment has been removed. Work on the curtain was halted temporarily when the sponsoring unit received permission from Operations to use one additional bay. The partially installed curtain must be moved from column line 9 to column line 8.

CG-533, (ERE-479) Hanford Works Official Telephone Exchange

With design completed, this project proposal is still awaiting action by the A.E.C.

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CG-534, (ER-2732) Removal of Recovery Equipment, Rooms 221, 222, and 223, Building 234-5

Completion status remained at design 95%, construction 0%. The project proposal for \$80,000 has been approved by the A.E.C. Project Review Committee.

CG-536, (ERA-686) Painting High Tanks - 105-B and 105-F

Completion status remained at design 40%, construction 0%. This project was authorized on February 3, 1953. The work is to be done by Minor Construction forces.

CG-538, (ER-2734) Install Underground Waste Line Between "S" Area and "U" Area 200-W

Design progressed 10% to a total of 20%; construction has not begun. The project proposal requesting funds for procurement of critical materials and design (\$90,000) has not been approved by the A.E.C. A \$5,000 suspense code has been used to continue the design work, and these funds should allow for preparation of bid assemblies. A rough draft of the construction project proposal has been circulated for comment. The estimated cost of the total project for the complete scope requested is about \$875,000; however, only that portion of cost (\$500,000) for the work required to allow use of the "U" Area farm is in the project proposal. A later revision will extend the facilities to include an adjacent farm.

CG-540, Lime-Free Water Facilities for 105-D Flow Laboratory

Design progressed 20% to completion. Construction began and progressed to 60% complete. Use of the facilities is anticipated by March 15, 1953.

CG-541, (ERE-482) Phase Comparison Relaying 230 KV Loop

Completion status remained at design 95%, construction 0%. The project proposal, with additional justification, is being re-submitted in early March.

CG-543, (ER-2733) Replace Sanitary Tile Field 200 West Administration Area

Completion status remained at design 35%, construction 0%. The project proposal has been forwarded to the A.E.C. for approval. The question of possible repairs to the present vent is being considered.

CG-545, (ERA-724) Soil Science Laboratory Facilities

Completion status remained at design 22%, construction 0%. This project proposal has been approved by the A&B Committee and is being reviewed by the local A.E.C. office.

IR-116, (015) Combined Civil Defense and Plant Disaster Control Center

Design progressed 5% to a total of 15%; construction has not begun. Final design has been started, and the project proposal is being prepared.

IR-128, Remote Supervisory Control 100 Area Water Plants

Design progressed 3% to a total of 15%; construction has not begun. A preliminary draft of the project proposal has been completed, and it is scheduled for submittal about March 15, 1953. An extension of time to April 1, 1953 has been requested.

* * * * *

The following studies and Engineering Requests, involving preparatory work and scoping of future projects, were active during the month:

ERA-661, Central Distribution Headquarters

Design completion status remained at 25%. The A&B Committee has requested additional back-up data and justification. The submittal of this project is awaiting further development.

ERA-663, Pile Technology Test and Storage Building

Design completion status remained at 15%. Consideration is being given the use of alternate facilities and other types of building construction before submittal of the project. The scope and estimate of cost level are essentially complete.

ERA-725, Particle Problem Animal Exposure Equipment

Design completion status remained at 5%. The scope meeting was held; however many major problems must be solved by the sponsor before any preliminary design or scope work can be done.

ERA-727, 313 Building Roof Repair or Replacement

Design completion status remained at 50%. No work was done during the month, since the sponsor must first determine the scope of equipment requirements.

ERA-730, Solvent Storage Building Rescoping

Design completion status remained at 25%. Preparation of the project proposal is continuing in connection with Project CA-441, Solvent Building.

ERA-732, Final Design Auxiliary Civil Defense and Plant Disaster Control Center

Design completion status remained at 81%. Since Work Order funds have been expended, design work has been stopped. It will be resumed upon receipt of authorization by A.E.C. This authorization is expected within the first week of March, 1953.

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ERA-733, Asbestos Shakes - 100-B, D, and F Buildings

Design completion status remained at 50%. The project proposal has been approved by the A&B Committee and forwarded to the A.E.C.

ERA-735, Graphite Hot Shop and Storage Building

Design completion status remained at 8%. All scope matters are resolved in accordance with the available funds. The proposal should be in comment form by early March.

ERA-736, Transportation Garage and Facilities - 2713-E

Design completion status remained at 4%. The project proposal should be in rough draft form by the middle of March, 1953.

ERA-741, Renovation of 3722-A, 3702, and 3703 Buildings

Design progressed 25% to a total of 30%. The project proposal for an estimated cost of \$22,000 is being written.

ERA-742, Remodeling First Aid Buildings 100-B, D and F

Preliminary scoping is scheduled to begin in March for the rehabilitation and enlargement of the existing 100-B, D, and F Area First Aid Building.

ERA-1185, Car Puller and Car Shake-out

Design completion status remained at 10%. The revised project proposal is being routed for signatures.

ERA-1188, Xenon Generator

Design completion status remained at 10%. The project proposal has been submitted to the A&B Committee.

ERA-1192, Vertical Rod Test Tower

Design completion status remained at 20%. The project proposal has been revised and will be submitted to the A&B Committee in early March, 1953.

ERA-1193, Slug Rupture Detection Instrumentation

Design progressed 5% to a total of 10%. Scoping studies were resumed during the month for various systems of instrumentation for detection of ruptured slugs.

ERA-3098, Cobalt 60 Source for Radiation Studies

The Technical Section is continuing development work.

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ERA-3099, Fuel Element Pilot Plant - 300 Area

A project proposal has been prepared to request funds for the construction of a fuel element pilot plant. This structure is to be used by the Pile Fuels Sub-Section. The final draft of the proposal is being routed for approvals.

ER-2720, Fire Protection Equipment - Building 234-5 Filter Rooms

Design completion status remained at 20%. Work is still being postponed at the request of the Manufacturing Department.

ER-2723, Steel Handling System - 272-W

Design completion status remained at 20%. The sponsor has provided a revised scope; so preparation of the project proposal will be resumed.

ER-2726, Adaption of 200-W Laundry Building to Branch File Use

Design completion status remained at 20%. Work has been suspended at the request of the sponsor.

ER-2727, 235 Building Laboratory Revisions

Design completion status remained at 20%. The project proposal is being routed for approvals.

ER-2731, Activate Task I, RMA Line - Building 234-5

Design completion status remained at 15%. On the basis of a revised scope, preparation of the project proposal has been resumed.

ER-2736, Replacement of Mixing Equipment Task III, RMA Line, 234-5 Building

Design completion status remained at 5%. Work has been suspended at the request of the sponsor.

ER-2737, Fiscal Year 1954 Water Tank Replacements

Design progressed 5% to a total of 10%. Work on preparation of this project proposal is being delayed pending outcome of an investigation to consider the use of three 100,000 gallon elevated water tanks now in Richland.

ER-6019, Review of 700 Area Steam Study

Design progressed 10% to a total of 90%. The final draft of the report was issued February 26, 1953.

Job 029, Utilities for Sixth Housing Program

Additional funds have been requested from the A.E.C. to cover the additional scope of work to be performed by General Electric.

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C. RELATED SERVICES

1. Project Services

The previous request by General Electric Security to discontinue the physical inventory of blueprints by the Reproduction Audit and Inventory groups has been withdrawn. Arrangements are being made by Reproduction to reactivate the former system immediately.

As delegated landlord, the Project Services Unit notified all department managers having tenants in the Hanford High School Building of the decision to vacate and declare the building excess on or before July 31, 1953.

During the month Projects CA-512-R, CA-513, and CG-496 were the largest jobs for drafting. Drafting is progressing satisfactorily on these projects as well as on mechanization of the 313 Building and various miscellaneous orders. Total drafting production was 318 new drawings and 281 revisions. The Drafting Room average was 5.2 man-days per drawing.

Reproduction output increased substantially to 588,323 square feet as compared to 475,477 square feet in January. (The January total previously shown was revised downward to conform to the period used by Accounting.) The largest single orders were 12,241 prints on CA-512-R and 5,051 prints on CA-512-W.

Of the 52 estimates on schedule, the Estimating group completed 38. The completed total consisted of the following estimates:- 8 high-spot, 7 revised proposal, 6 comparative, 4 project proposal, 2 fair cost, 2 fee determination, and 9 miscellaneous.

The Field Services group continued its scheduled work on requests from Design Section, Manufacturing Department, and the A.E.C.

The History group issued three (3) histories during the month.

The Project Control group continued its routine work on coding of drawings, requisitions, and M&E lists. Group personnel completed the unitization of C-369, IR-96, IR-122, and MWI-43; and they continued studies for unitization of both phases of C-431. This group did extensive work on the construction budget and the FY-1954 and 1955 operating budget, as well as numerous other requests for budget data.

2. Inspection Services

The acceleration of inspection functions continued during the month to keep pace with the many orders being placed for the Expansion Program. Six inspectors are engaged full-time on procurement for the new work, and all others are being absorbed into it. Two inspectors continued their assignments on the graphite being processed in from Oak Ridge. The first requisitions for CA-513-A, Purex Facility, are scheduled for purchasing action in early March, 1953.

C. RELATED SERVICES - (Cont'd.)

2. Inspection Services - (Cont'd.)

At the request of A.E.C., inspectors have been assigned to inspect items now in Hanford Works excess stock which may be used to fill requisitions for 100-K. To date, there have been about 20 requests for inspection on the plant.

Following some design changes, the vendors of duct work for the Hanford Works Laboratory buildings are beginning to deliver fabricated ducts to the job sites. Three large trailer-truck loads have been received at the Radiochemistry Building, and lesser amounts have been received at the Radiometallurgy and Pile Technology Buildings.

There was considerable confusion at the plants of the vendor for parts to be used in the pile and pile water improvements when several cancellations were made. The difficulties concerned items which had been expedited strenuously, and were suddenly cancelled with insufficient explanation. However, the problems are being cleared as soon as possible.

The following is a resumé of inspection activities during the month:

<u>ITEM</u>	<u>NUMBER</u>
Open requisitions requiring inspection	132
Orders assigned to inspectors	203
New orders received	71
Orders completed	23
Sub-vendor orders assigned to inspectors	15
Total requisitions for Program "X" transmitted	129
Total orders for Program "X" placed	160

At the end of February there had been a grand total of 681 Program "X" requisitions transmitted.

D. CRAFT LABOR

Voluntary termination by Atkinson-Jones personnel has almost ceased. The voluntary termination of Kaiser Engineers personnel was quite low (1.6%).

The primary labor problems during February were centered in three main work stoppages.

The strike begun by plumbers on January 19, 1953, was ended on February 12 by their return to work. The settlement was based on understandings reached earlier in the week in Washington, D. C.; and it included some concessions for exclusive bus transportation, particularly for pipefitters and electricians employed at White Bluffs.

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D. CRAFT LABOR - (Cont'd.)

On February 23, all pipefitters and plumbers employed on Minor Construction work walked off the job in protest against alleged discrimination involved in temporary furlough of certain men. The furloughed personnel included 13 pipefitters engaged in Ball Third Safety System work and who had longer service than some pipefitters who were working on Repairs to the Retention Basins. General Electric and construction contractor supervision agreed that it was impractical to transfer men from one job to the other merely as a means of preserving seniority standing. The Union stated that if a furlough exceeded two days, the pipefitters must be terminated. Therefore, all pipefitters were called back to work on February 26, and eleven pipefitters were terminated. This prevented further labor difficulties on this question.

Another work stoppage was caused by the long-standing jurisdictional dispute between millwrights and machinists in the 101 Building, Hanford. On February 23 the machinists walked out on the alleged mis-assignment of a millwright to inspect the rework of a machine tool by machinists. The construction contractor informed the union that the Building Trades Council would be requested to furnish qualified men. The Machinists' Union demurred; so the Millwrights' Union dispatched some of its members by the end of the month. The Davis Panel has not taken jurisdiction in this dispute, as requested by the contractor; however, there are indications that the Panel has been active in trying to effect a settlement.

MEDICAL DEPARTMENT

FEBRUARY 1953

Personnel Changes

The roll decreased from 264 to 261.

Visits

Dr. Norwood attended a meeting of General Electric Industrial Physicians in New York for discussion of policy and professional problems. The health educator and the supervisor of Public Health nurses attended professional meetings in Seattle.

Employee Relations

Twenty-two meetings were held during the month with a total attendance of 241.

General

A committee composed of Messrs. Huck (Chairman), Hiddel and Norwood was appointed by Mr. Johnson to make coordinated plans and time schedules for relieving General Electric of its present municipal operating responsibilities.

Recommendations were made that Richland seek to become a part of the Benton-Franklin Counties Public Health unit and that before community incorporation the R.E.C. purchase public health services from the bi-county unit. Officials of the bi-county will be contacted shortly.

Efforts are being made to secure suitable quarters for the Industrial Medical Section in the administration area in Richland, in order that these activities may be physically separated from the hospital.

Steps necessary for handling hospital purchasing and stores and financial activities independently of General Electric are being studied.

Industrial Medicine

Industrial construction medical activities, with the exception of J and K sub-contractors, were transferred to Dr. C. C. Cutting of Kaiser Engineers as of February 1st. Medical employees, including two physicians, were loaned to Dr. Cutting in order that he be able to operate. Most of the employees have now returned to General Electric except for the physicians.

Due to the above changes, total medical examinations dropped from 4336 to 385. Temporary treatments decreased from 4560 to 517.

One General Electric employee sustained a major injury and one a sub-major injury.

Employee absenteeism was 3.5% as compared to 1.7% for January. Total absenteeism was 3.1% as compared to 1.5% for January. This was the highest absenteeism rate since the spring of 1951 and was due to high incidence of influenza infections, some of which were influenza.

Sanitation

Sanitation daily adult census was 43.4 and reported to the health department. Daily patients were admitted to beds for 100 beds during the month.

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MEDICAL DEPARTMENT

FEBRUARY 1953

Public Health

While there was a decrease in communicable diseases reported, there was a 50% increase in home visits by public health nurses due to the increase in respiratory infections.

Costs-January

Medical Department costs before assessments to other departments were as follows:

	<u>Dec.</u>	<u>Jan.</u>	<u>Jan. Budget</u>
Industrial Medicine (Oper.)	\$38,161	\$38,265	\$41,751
Public Health (Oper.)	10,259	10,840	11,333
Kadlec Hospital (Net)	27,455	15,604	24,020
Hospital Expense Credits	<u>3,447</u>	<u>4,369</u>	<u>2,735</u>
Sub-total-Medical Department (Oper.)	79,322	69,078	79,839
Construction Medical (Industrial and Public Health)	<u>12,144</u>	<u>13,492</u>	<u>12,600</u>
Total-Operations and Construction	\$91,466	\$82,570	\$92,439

The net cost of operating the Medical Department before charges were assessed to other departments for services rendered was \$82,570, a decrease of \$8,896.

This improvement was largely due to increased hospital revenue due to a larger patient load, with little change in operating expense.

MEDICAL DEPARTMENT

FEBRUARY 1953

Industrial Medical Section

Medical examinations decreased from 2236 to 895 in February. Dispensary treatments dropped from 6560 to 5173. This decrease was due to our being relieved of the responsibility for contractor medical services as of February 1, 1953, except for A. J. service and their sub-contractors. General Electric employees sustained one major injury and one sub-major. Contractor employees sustained one major and no sub-major injury. By the month's end we were still supplying some personnel for contractor medical services including two physicians. All remaining personnel will be placed in existing vacancies within the department and have been advised of their new assignments so that personnel relations by the end of the month were considerably improved as compared to January.

The Industrial Physicians' Scientific Meeting was held on February 25, 1953, and heard D. H. Whittaker discuss "Radiation Genetics at the Population Level."

The Chemical Hazards Committee met on February 27th to outline priority for future studies. The noise hazard will continue to be actively worked on along with nitrogen oxide fume hazards.

The Health Activities Committee met on February 18th and the health topic on "Kick What Supports You" was presented. This topic dealt with foot hygiene and stressed the fact that annoying foot conditions are a significant factor in reducing efficiency. This material was prepared for distribution throughout the plant. A guide and curve was also prepared for distribution for determination of the expected absenteeism rate. This will be refined further into the male and female expected rates. The plant sickness absenteeism was 2.83% for February as compared to 1.83% for January.

Gross costs for January totaled \$39,031 as compared to \$39,294 in December, a decrease of \$263. Following are the details:

<u>Costs-Operations</u>	January	December	Increase (Decrease)
Salaries	\$27,478	\$28,104	(726)
Continuity of Service	2,768	2,841	(73)
Laundry	332	327	5
Utilities, Transportation, Maintenance	3,754	3,712	42
Supplies and Other	4,109	4,204	(95)
Total Gross Costs	\$39,031	\$39,294	(263)
Less: Revenue	766	1,130	(364)
Expense Credits	1,930	4,224	2,294
Net Cost of Operation	\$38,265	\$39,927	(1,662)

Actual net costs for fiscal year 1953 to date total \$232,295 with a budget of \$244,120 or 5% over. Changes to be made during the coming months such as transferring of personnel from Construction to Operations have been taken into consideration and it is believed are amply covered.

Industrial Medical - Construction

Total costs in January were \$10,042 as compared to \$11,141 during December, an increase of \$1,099. Details as follows:

MEDICAL DEPARTMENT

FEBRUARY 1953

Industrial Medical Section (Continued)

	January	December	Increase (Decrease)
Salaries	\$ 10,454	\$ 9,118	\$ 1,336
Continuity of Service	1,045	909	136
Laundry	62	61	1
Utilities, Transportation, Maintenance	60	111	(51)
Supplies and Other	1,321	1,267	54
Total Gross Costs	\$ 12,942	\$ 11,466	\$ 1,476

The gross costs of this program increased from \$11,466 in December to \$12,942 in January, an increase of \$1,476 and is represented entirely by additional salaries of nurses to give necessary coverage for 100K and 2101.

MEDICAL DEPARTMENT

FEBRUARY 1953

Industrial Medical Section (Continued)	January	February	Year to Date
<u>Physical Examinations</u>			
<u>Operations</u>			
Pre-employment	68	73	141
Rehire	27	12	39
Annual	355	288	643
Interim	208	142	350
A.E.C.	30	31	61
Re-examination and rechecks	128	103	231
Termination	107	99	206
Sub-total	923	748	1671
<u>Contractors</u>			
Pre-employment	665	0	665
Rehire	39	59	98
Recheck	175	4	179
Termination & Transfer	398	66	464
Interim	36	18	54
Sub-total	1313	147	1460
Total Physical Examinations	2236	895	3130
<u>Laboratory Examinations</u>			
<u>Clinical Laboratory</u>			
Government	106	197	303
Pre-employment, Termination, Transfer	5121	2262	7383
Annual	2142	1791	3933
Recheck (Area)	1432	763	2195
First Aid	9	0	9
Clinic	460	505	965
Hospital	5205	4758	9963
Public Health	7	4	11
Total	14482	10280	24762
<u>X-Ray</u>			
Government	29	26	55
Pre-employment, Termination, Transfer	836	158	994
Annual	383	300	683
First Aid	181	76	257
Clinic	285	232	517
Hospital	405	392	797
Public Health	19	1	20
Total	2138	1185	3323
<u>Electrocardiographs</u>			
Industrial	45	22	67
Clinic	6	2	8
Hospital	58	52	110
Total	109	76	185

MEDICAL DEPARTMENT

FEBRUARY 1953

<u>Industrial Medical Section (Continued)</u>	<u>January</u>	<u>February</u>	<u>Year to Date</u>
<u>First Aid Treatments</u>			
<u>Operations</u>			
New Occupational Cases	368	354	722
Occupational Case Retreatments	1249	1298	2547
Non-occupational Treatments	2711	3007	5718
Sub-total	4328	4659	8987
<u>Construction</u>			
New Occupational Cases	392	100	492
Occupational Case Retreatments	1358	296	1654
Non-occupational Treatments	433	71	504
Sub-total	2183	467	2650
Facility Operators	49	47	96
Total First Aid Treatments	6560	5173	11733
<u>Major Injuries</u>			
General Electric	0	1	1
Contractors	0	1	1
Total	0	2	2
<u>Sub-major Injuries</u>			
General Electric	1	1	2
Contractors	9	0	9
Total	10	1	11
<u>Absenteeism Investigation</u>			
Calls Made	13	9	22
Employee Personal Illness	12	8	20
No. absent due to illness in family	0	0	0
No. not at home when call was made	1	1	2

MEDICAL DEPARTMENT

FEBRUARY 1953

Hospital Section

The average daily adult census increased from 88.1 to 98.4, as compared to 94.7 a year ago. This represents an occupancy percentage of 90.3, broken down as follows: Mixed Service (Medical, Surgical, Pediatrics) 98.9; Obstetrical Service 54.3. The minimum and maximum daily census during the month ranged as follows:

	<u>Minimum</u>	<u>Maximum</u>
Mixed Service	68	108
Obstetrical Service	6	16
Total Adult	77	120

The average daily newborn census decreased from 13.9 to 10.1, as compared to 15.4.

Nursing hours per patient per day:

Medical, Surgical Pediatrics	2.94
Obstetrical	5.55
Newborn	3.61

The ratio of in-patient hospital employees to patients (excluding newborn) for the month of January was 1.87. When newborn infants are included, the ratio is 1.62.

The net expense for the operation of Kadlec Hospital for January was \$15,604 as compared to \$27,455 for December. Summary is as follows:

Kadlec Hospital net expense \$15,604
This is a decrease of \$11,851, due primarily
to a large increase in revenue from a higher
patient census and more major surgery. Costs
increased only \$37, but revenue increased
\$10,966 and expense credits increased \$922.

The average daily adult census noted above was the highest census experienced since the hospital opened. Previous high was 97.7 in March, 1951. Of the 598 patients (excluding newborn infants) who were admitted during February, 50 or approximately 8% had to be placed in a bed in the corridor for a short period of time until rooms became available.

Fifteen employee relations meetings were held by the hospital during the month with approximately 166 people in attendance.

MEDICAL DEPARTMENT

FEBRUARY 1953

Hospital Section (Continued)	January	February	Year to Date
<u>Kadlec Hospital</u>			
Average Daily Adult Census	88.1	98.4	93.0
Medical	28.8	34.1	31.3
Surgical	30.3	33.3	31.7
Pediatrics	15.9	19.7	17.7
Mixed	75.0	87.0	80.7
Obstetrical	13.1	11.4	12.3
Average Daily Newborn Census	13.9	10.1	12.1
Maximum Daily Census:			
Mixed Services	90	108	108
Obstetrical	20	16	20
Total Adult Census	105	120	120
Minimum Daily Census:			
Mixed Services	50	68	50
Obstetrical Service	7	6	6
Total Adult Census	62	77	62
Admissions: Adults	645	598	1243
Discharges: Adults	628	590	1218
Newborn	76	62	138
Patient Days: Adult	2730	2755	5485
Newborn	430	282	712
Total	3160	3037	6197
Average Length of Stay: Adults	4.3	4.7	4.5
Medical	3.8	5.0	4.3
Surgical	4.8	4.4	4.6
Pediatrics	4.6	4.8	4.8
Mixed	4.3	4.7	4.5
Obstetrical	4.6	4.2	4.4
Newborn	5.7	4.5	5.2
Occupancy Percentage: Adults	80.8	90.3	85.3
Medical	77.8	92.2	84.6
Surgical	94.7	104.1	99.1
Pediatrics	83.7	103.7	93.2
Mixed	85.2	98.9	91.7
Obstetrical	62.4	54.3	58.6
Newborn	53.5	38.8	46.5
(Occupancy Percentage based on 109 adult beds and 26 bassinets.)			
Avg. Nursing Hours per Patient Day:			
Medical, Surgical, Pediatrics	2.94		
Obstetrics	5.55		
Newborn	3.61		
Avg. No. Employees per Patient (excluding newborn)	1.87		
Operations: Major	84	93	177
Minor	76	71	147
E.E.N.T.	70	73	143
Dental	0	0	0

MEDICAL DEPARTMENT

FEBRUARY 1953

Hospital Section (Continued)	January	February	Year to Date
<u>Kadlec Hospital (Continued)</u>			
Births: Live	79	59	138
Still	3	1	4
Deaths	5	1	6
Hospital Net Death Rate28	0	.14
Net Autopsy Rate	40.0	0	33.3
Discharged against advice	0	0	0
One Day Cases	166	131	297
 Admission Sources:			
Richland	79.7	79.1	79.4
North Richland	8.4	9.7	9.0
Other	11.9	11.2	11.6
 Admissions by Employment:			
General Electric	76.3	73.8	75.1
Government	3.1	3.0	3.1
Facility	3.4	4.0	3.7
Contractors	8.7	10.5	9.5
Schools	1.4	2.7	2.0
Military9	.8	.9
Others	6.2	5.1	5.7
Hospital Outpatients Treated	451	436	887
 <u>Physical Therapy Treatments</u>			
Clinic	337	188	525
Hospital	251	197	448
Industrial: Plant	140	156	296
Personal	10	5	15
Total	738	546	1284
 <u>Pharmacy</u>			
No. of Prescriptions Filled	3336	3254	6590
No. of Store Orders Filled	586	502	1088
 <u>Patient Meals</u>			
Regulars	4140	3910	8050
Children under 8	610	735	1345
Specials	1553	1746	3299
Lights	0	1	1
Softs	879	1016	1895
Tonsils	145	148	293
Liquids	257	245	502
Surgical Liquids	88	61	149
Total	7672	7862	15534
 <u>Cafeteria Meals</u>			
Noon	2059	1779	3838
Night	320	227	547
Total	2379	2006	4385

MEDICAL DEPARTMENT

FEBRUARY 1953

Public Health Section

General

Although the total number of communicable disease cases reported dropped, there was a slight increase in the number of chickenpox cases. Mumps dropped materially since the upper limit of susceptibility has been passed and we undoubtedly are beyond the peak case load.

The level of home visits made by the public health nurses increased about 50% due to the amount of morbidity present in the community, due primarily to influenza and other infectious diseases. The incidence seems to be spotty from reports received from blood samples and checking of absenteeism in schools. It is anticipated that this disease will level off within the next few weeks.

Several meetings were held with a representative of the Atomic Energy Commission with regard to the transfer of Public Health and Welfare activities to another official agency prior to the incorporation of the village of Richland. The proposal which seems to be meeting with some success, is one in which the activities will be incorporated in the Benton-Franklin County Health District. It is anticipated that this proposal will be presented to the County Commissioners of the District Board of Health for their consideration.

A tuberculosis clinic was held by Dr. A. R. Allen of the Central Washington Tuberculosis Hospital of Selah for patients and contacts from this area.

Mr. Waring Fitch, Washington State Department of Health Hearing Consultant, held a clinic for hard-of-hearing cases from the Richland School District.

A visit was made to the department by Miss Julia Anderson, Student Field Nursing Consultant of the University of Washington School of Nursing, with regard to our student nurse training program.

The Health Educator attended a technical meeting in Seattle concerning technical matters as related to local activities.

The supervising nurse attended the quarterly meeting in Seattle of various supervisors in the State.

One staff meeting was held with 17 present and four unit meetings with 44 present.

Nine meetings were held by the Section Chief with 34 different individuals present at which time individual matters with regard to the job were discussed.

Restaurants and taverns in the area received their routine monthly inspection. One establishment was regraded up to an "A" after making necessary improvements. Improper food handling seemed to be the major violation in most of the establishments.

MEDICAL DEPARTMENT

FEBRUARY 1953

Public Health Section (Continued)

General

Plans for the proposed tile field in 200 W Area were inspected and approved.

Seventy-seven grade "A" dairy farms were inspected. One producer was degraded because of high bacteria counts. Another was degraded for existing insanitary conditions. Two producers were approved for the shipping of Grade "A" milk. Bacteriological results of pasteurized milk samples indicated all are meeting required standards.

Recommendations relative to sanitary conditions of Riverside Swimming Pool were forwarded to the municipal division. An inspection of the pool by the state district engineer is planned for the near future.

Inspection of school cafeterias revealed all to be in excellent condition insofar as sanitation is concerned. Operation and cleaning of dishwashing machines showed improvement over preceding inspections.

Bait was supplied to the 300 Area for control of rodents in one of the shops. Baiting of rodents in uptown shopping area decreased the prevalence of rodents; however, better sanitary practices are needed.

Water and sewage samples taken during the month were satisfactory.

During March the Social Service Counselors met with groups of parents to discuss general problems of parent-child relationships. There were also meetings with the national representative of the United Defense Fund to study ways of most effectively meeting the community's need for counseling service.

A large part of the counselors' time continued to be devoted to work with parents who were concerned about their children's behavior.

MEDICAL DEPARTMENT

FEBRUARY 1953

<u>Public Health Section (Continued)</u>	<u>January</u>	<u>February</u>	<u>Year to Date</u>
<u>Education</u>			
Pamphlets distributed	10,989	9,990	20,979
News Releases	7	27	34
Staff Meetings	3	1	4
Classes	10	14	24
Attendance	30	87	117
Lectures & Talks	15	12	27
Attendance	961	349	1,310
Films Shown	7	20	27
Attendance	622	402	1,024
Community Conferences & Meetings	30	35	65
Radio Broadcasts	3	5	8
<u>Immunizations</u>			
Diphtheria	43	12	55
Diphtheria Booster	11	168	179
Tetanus	91	17	108
Tetanus Booster	38	242	280
Pertussis	0	6	6
Pertussis Booster	0	125	125
Smallpox	21	16	37
Smallpox Revaccination	175	384	559
Tuberculin Test	13	3	16
Immune Globulin	2	6	8
<u>Social Service</u>			
Cases carried over	78	83	161
Cases admitted	18	10	28
Cases closed	13	8	21
Remaining case load	83	85	168
Activities:			
Home Visits	10	15	25
Office Interviews	269	311	580
Conferences	55	52	107
Meetings	9	8	17
<u>Sanitation</u>			
Inspections made	114	162	276
Conferences held	18	25	43
<u>Bacteriological Laboratory</u>			
Treated Water Samples	168	175	343
Milk Samples (Inc. cream & ice cream)	33	35	68
Other bacteriological tests	492	471	963
Total	693	681	1,374

MEDICAL DEPARTMENT

FEBRUARY 1953

<u>Public Health Section (Continued)</u>	<u>January</u>	<u>February</u>	<u>Year to Date</u>
<u>Communicable Diseases</u>			
Chickenpox	38	48	86
German Measles	7	6	13
Gonorrhœa	12	8	20
Impetigo	2	0	2
Influenza (U.R.I.)	2	0	2
Measles	2	1	3
Mumps	116	38	154
Pinkeye	1	2	3
Ringworm	3	1	4
Roseola	0	1	1
Scabies	1	0	1
Scarlet Fever	8	12	20
Total	192	117	309
Total No. Nursing Field Visits	742	1081	1823
Total No. Nursing Office Visits	69	139	208

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Radiological Sciences Department

RADIOLOGICAL SCIENCES DEPARTMENT

FEBRUARY 1953

Summary

There were seven Class I radiation incidents and one Class II incident. In no case was there an exposure of serious import.

The control activities of the department proceeded without unusual findings, except as to unexpectedly high active particle counts in the vicinity of the Redox plant.

The biophysics laboratory was occupied in full.

The average annual exposure of personnel for 1952 was reported at a satisfactory level.

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Radiological Sciences Department

RADIOLOGICAL SCIENCES DEPARTMENT

FEBRUARY, 1953

Organization

The month end force of 374 included 32 supervisors, 96 engineers and scientists, 18 clerical, and 228 other personnel.

Number of Employees on Payroll

Beginning of month	-	372
End of month	-	<u>374</u>
Net increase	-	2

General

Beneficial occupancy of the remainder of the biophysics laboratory began, with some limitations imposed by lack of gas facilities, and the like.

Early experience with the formal system of requests for reimbursement of contaminated personal effects showed an average of 6 requests per month, and reimbursements of less than \$50.00 per month.

The average annual exposure of all personnel wearing film badges in 1952 was 0.21 rep above the background of observation, which is an uncertain amount, about 1 rep, being made variable and uncertain by multiple badging in the separate areas. With considerable confidence, the average exposure can be written as less than 1.5 rep per year, or one-tenth the official permissible limit. This is an appropriate level of operation.

Several information meetings were held with small groups of employees, and a program was developed for periodic general assemblies.

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.

<u>Inventor</u>	<u>Title</u>
none	none

The Class I emergency in the Redox plant initiated the first live exercise of the department's planning for disaster monitoring. The functioning of

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Radiological Sciences Department

the recently installed crash alarm system was highly satisfactory, as was the balance of the practice. Some weaknesses observed are receiving attention.

The recently organized function of radiological engineering led to the application of hydrology and soil science findings to effect a savings of \$250,000 in Purex waste disposal design.

RADIOLOGICAL RECORDS AND STANDARDS SECTION

1. Radiation Monitoring Services

General Statistics

	<u>January</u>	<u>February</u>	<u>1953 To Date</u>
Special Work Permits	503	455	958
Routine and Special Surveys	937	1034	1971
Air Samples	877	1119	1996
Skin Contamination cases	8	10	18

A fire at the Metallurgical laboratory, involving a ruptured slug, resulted in no significant radiation problem. Airborne radioactive materials released during the incident were trapped in the filter of the exhaust system.

A quantity of sludge, containing between one and fifteen curies of radioactive materials, was accidentally released to the Columbia River from the 107-DR retention basin. Sampling downstream by Regional Survey was carried out promptly after the incident was reported.

A chemist in one of the Applied Research laboratories became extensively contaminated with plutonium, when a sample blew up in his face. Decontamination of exposed body surfaces was successful except for small spots about the face. The initial bioassay sample indicated no significant deposition of plutonium in the body.

2. Standards

One Class II and seven Class I radiation incidents were reported. The Class II incident involved the probable overexposure of three employees in the T-plant canyon. The Class I incidents included exposure to a highly radioactive speck in the discharge area at the 105-F reactor, the Class I emergency at the Redox plant, hand exposure during electrode reading work at the 105-IX tank, exposure resulting from inadequate monitoring during cask decontamination work at the Redox laboratory, and the three incidents discussed under Radiation Monitoring Services above. The incident involving the failure of a Calibrations employee to wear badges and pencils, reported last month, was reclassified as a Class I incident.

Radiological Sciences Department

3. Exposure Records

(a) Personnel Meters, and Records and Photometry

<u>General Statistics</u>	<u>January</u>	<u>February</u>	<u>1953 To Date</u>
Gamma pencils read	231,826	245,008	476,834
Potential overexposures	6	10	16
Confirmed overexposures	0	0	0
Slow neutron pencils read	1,652	1,494	3,146
Potential overexposures	2	0	2
Confirmed overexposures	0	0	0
Beta-gamma film badges processed	38,281	41,641	79,922
Potential overexposures	30	98	128
Confirmed overexposures	5	1	6
Fast neutron badges processed	267	428	695
Potential overexposures	0	0	0
Confirmed overexposures	0	0	0
Lost readings (all causes)	25	40	65

(b) Bioassay

1. Plutonium Analyses

	<u>January</u>	<u>February</u>	<u>1953 To Date</u>
Samples assayed	752	439	1191
Results over detection limit*	3	3	6
Maximum d/m/sample	2.08	1.00	2.08
Resamples of previous months	16	2	18
Maximum d/m/sample	BDL**	BDL**	BDL**

*The detection limit by the electrodeposition method has not been determined precisely. In January, it was taken arbitrarily at 0.18 d/m. In February, it was lowered to 0.10 d/m.

** Below detection limit.

The low spike yield continued during February and has not been resolved.

2. Fission Product Analyses

	<u>January</u>	<u>February</u>	<u>1953 To Date</u>
Samples assayed	369	427	796
Results above 10 c/m/sample	1	0	1

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3. Uranium Analyses

Results of 400 samples were as follows:

METAL PREPARATION - 300 AREA

<u>Job Description</u>	<u>End of 4th Day Exposure</u>			<u>End of 2 Days-No Exposure</u>		
	<u>Maximum</u>	<u>Average</u>	<u>Number Samples</u>	<u>Maximum</u>	<u>Average</u>	<u>Number Samples</u>
Canning	13	4	25	17	4	17
Machining	55	13	27	16	6	15
Melt Plant	48	9	64	39	8	52
Material Handling	37	10	34	13	6	30
Testing	21	6	16	5	2	10
305 Building Coverage	6	6	1	-	-	-
Technical	11	6	12	9	5	5
Maintenance	11	4	5	2	2	4
Slug Recovery	6	5	4	3	2	4
	51	41	2	-	-	-

	<u>Before Job</u>			<u>After Job</u>		
	<u>Maximum</u>	<u>Average</u>	<u>Number Samples</u>	<u>Maximum</u>	<u>Average</u>	<u>Number Samples</u>
Car unloading	6	4	3	38	20	3
Billet loading	16	9	4	6	2	4

	<u>Miscellaneous Samples</u>		
	<u>Maximum</u>	<u>Average</u>	<u>No. Samples</u> ($\mu\text{g/liter}$)
224-U	22	3	59

4. Tritium Analyses

	<u>Activity Density</u> ($\mu\text{c/cc} \times 10^3$)			
	<u>< 2</u>	<u>2-20</u>	<u>> 20</u>	<u>Total</u>
Number of samples	85	0	0	85

(c) Thyroid Checks

All thyroid checks reported were below the warning level.

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(d) Hand Score Summary

There were 53,431 alpha and 71,460 beta scores reported. About 0.01% of the alpha and about 0.01% of the beta scores were above the warning level. No attempt was made to reduce two of the high alpha scores at the 271-T building. Where decontamination was attempted, it was successful.

4. Calibrations

	<u>Number of Routine Calibrations</u>		1953
	<u>January</u>	<u>February</u>	<u>To Date</u>
Fixed Instruments	98	73	171
Portable Instruments	1,336	1,746	3,082
Personnel Meters	3,745 *	7,297	11,042
Total	5,179 *	9,116	14,295

*Incorrectly reported last month.

BIOPHYSICS SECTION

CONTROL UNIT

Regional Survey

The general findings are summarized in the following table:

SAMPLE TYPE AND LOCATIONS

<u>Drinking Water</u>	<u>Activity Type</u>	<u>Average Activity Density (µc/cc)</u>
Benton City Water Co. Well	alpha	1.7×10^{-8}
Richland, N. Richland, Benton City Wells	alpha	$< 0.5 \text{ to } 1.0 \times 10^{-8}$
100 Areas	beta	$< 0.5 \text{ to } 4.7 \times 10^{-7}$
*Pasco, Kennewick, McNary Dam	beta	$< 0.05 \text{ to } 1.1 \times 10^{-6}$
Backwash Solids-Pasco Filter Plant	beta	$5.0 \times 10^{-2} \mu\text{c/gm}$
Backwash Liquids-Pasco Filter Plant	beta	$1.2 \times 10^{-6} \mu\text{c/gm}$
Sand Filter-Pasco Filter Plant	beta	$2.1 \times 10^{-4} \mu\text{c/gm}$

* The value of $2.8 \times 10^{-7} \mu\text{c/cc}$ in the January report was erroneously tabulated and should have been $1.3 \times 10^{-6} \mu\text{c/cc}$.

Radiological Sciences Department

CONTROL UNIT (Continued)

SAMPLE TYPE AND LOCATIONS

Activity Type Average Activity Density
µc/cc

Other Waters

300 Area Wells #1, 2, 3	alpha	0.7 to 1.9 x 10 ⁻⁸
300 Area Well #4	alpha	1.3 x 10 ⁻⁷
Well #4 measured as uranium	U	6.7 x 10 ⁻⁸
Miscellaneous Wells on the reservation	beta	< 0.5 to 3.1 x 10 ⁻⁷
Columbia River-Hanford Ferry	beta	1.1 x 10 ⁻⁵
Columbia River-Below reactors	beta	1.0 x 10 ⁻⁵
Columbia River-Patterson to McNary	beta	7.0 x 10 ⁻⁷
Columbia River-Shore mud	beta	5.0 x 10 ⁻⁵
Raw Water-Operating areas	beta	< 0.05 to 1.5 x 10 ⁻⁶
Reactor Effluent retention basins	beta	2.4 to 4.5 x 10 ⁻³
Reactor Effluent retention basins	alpha	< 5.0 x 10 ⁻⁹
I ¹³¹ in farm wastes	I ¹³¹	6.4 x 10 ⁻⁶
I ¹³¹ in Columbia River-Hanford	I ¹³¹	2.0 x 10 ⁻⁷

Atmospheric Pollution

Gross alpha emitters	alpha	< 0.4 to 5.0 x 10 ⁻¹⁴
Gross dose rate-Separations areas	beta-gamma	0.5 to 1.9 mrep/day
Gross dose rate-Residential areas	beta-gamma	0.3 to 0.7 mrep/day
Filterable beta-Separations areas	beta	2.4 to 9.1 x 10 ⁻¹³
I ¹³¹ -Separations areas	I ¹³¹	0.7 to 3.4 x 10 ⁻¹³
I ¹³¹ -Separations stacks	I ¹³¹	1.2 curies/day
Active particles -Wash., Ida., Ore., Mont.	--	0.001 to 0.005 ptle/m ³
Active particles -Hanford Works	--	0.001 to 0.03 ptle/m ³
Tritium (as oxides)-Reactor stacks	T	0.08 to 0.31 curie/day

Vegetation

		<u>µc/gm</u>
Environs of Separations areas	I ¹³¹	1.6 to 3.0 x 10 ⁻⁵
Residential areas	I ¹³¹	< 3.0 x 10 ⁻⁶
Eastern Washington and Oregon	I ¹³¹	< 3.0 x 10 ⁻⁶
Non-volatile beta emitters-Wash. & Ore.	beta	4.0 x 10 ⁻⁵
Alpha emitters-Separations areas	alpha	1.5 x 10 ⁻⁶
Alpha emitters-300 Area	alpha	4.0 x 10 ⁻⁶

Ground surveys in the environs of the 100-B Area immediately following the fire at the 111-B building on February 17 showed no contamination detectable by VGM or Zeuto instruments. Radiochemical analyses of 50 gram vegetation samples from the same location for gross alpha particle emitters showed all values to be below the detection limit of 5 x 10⁻⁸ µc/gm.

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Regional Survey (Continued)

Operation of portable air monitoring equipment during low dilution periods while dissolving was in progress showed no detectable I¹³¹ at ground level. Particle estimates obtained by preliminary operation of the new large-volume air sampler during the same intervals indicated values as high as 1.8 particle per cubic meter of air at a distance of one-half mile from the Redox plant. In another instance, when no dissolving was in progress, particle concentrations averaged 0.4 particle per cubic meter of air near the Meteorology Tower. Further measurements are in progress to determine the source of these particles and the possible contribution to these measurements of wind pickup of active particles previously deposited on the ground.

ANALYTICAL CONTROL LABORATORY

Routine and special analyses were carried out as follows:

<u>Laboratory</u>	<u>Analyses Completed</u>	
	<u>February</u>	<u>To Date</u>
<u>Type Sample</u>		1953
Vegetation	846	2011
Water	1488	3696
Solids	252	564
Air samples	168	350
Uranium (fluorophotometer)	275	782
Oil fog (fluorophotometer)	109	182
Special survey samples (RMU)	12	46
Special survey samples (RS)	116	312
Phillips Petroleum P-10 water samples	0	12
Total	3266	7955
<u>Counting Room</u>		
Beta measurements (recounts included)	5016	11728
Alpha measurements (recounts included)	1948	4715
Control points (alpha and beta)	2108	4522
Decay curve points	4205	9016
Absorption curve points	392	589
Total	13669	30570

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Control Services

A study of laboratory analytical process yields has been concluded and revisions of yield factors have been incorporated in the calculations of the results of the Regional Survey routine sampling program. A problem was undertaken to define the fluctuations in measurements of activity density of the reactor effluent water at the retention basin outlet weirs.

Synoptic Meteorology

<u>Forecasts</u>	<u>Number made</u>	<u>February Percent Reliability</u>
Production	84	82.5
24-hour	56	85.0
Special	32	84.4

	<u>February Actual</u>	<u>February norm.</u>
Monthly average temp:	41.2° F	35.5° F
Temp. range	20° - 65°	
Precipitation	0.25"	0.75"
Average wind speed	6.9 mph	7.4 mph

ENVIRONMENTAL HAZARDS AND GENERAL STUDIES UNIT

Experimental Meteorology

Four oil fog field tests were conducted during the month and during these a reproducibility test was conducted on the sampling procedure. Results indicated that the measured values may be in error by a factor of 2 for the comparatively low dosages.

The fluorescent pigment field dispenser and sampler and the portable mast were tested; modifications will be needed in all cases.

Geology-Hydrology

Data from the second well to water in the vicinity of the 241-B second cycle crib and tile field indicated that there is here a northward movement of the radioactive isotopes above the ground water table. This finding emphasizes that localized movements of radioactive ions may occur in directions unrelated to the general movement of the ground water.

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Geology-Hydrology (Continued)

The Redox swamp has caused a 22 foot rise in the water table at that location in the last six months.

A well about 200 feet south of the 108-F building encountered a perched water table at a depth of 20 feet. This is caused by the Ringold formation which holds the percolating water above the ground water table; the water apparently originated from the 105 Basin trench. Recognition of such perched tables is important both for disposal practices and possible construction.

Soil Science

Laboratory equilibrium studies of the soil adsorption of radioactive isotopes from the 112-T waste solution were made to obtain information relative to existing cribbing programs. The studies indicated that there is a lower adsorption of cesium from the 112-T waste than from a tracer solution containing only radioactive cesium. This lowered adsorption, partially due to the large quantity of sodium salts in the waste, may also be due to the presence of inert cesium, which has yet to be measured. The soil samples were saturated with cesium much sooner than with strontium. The tests also confirmed the greater movement of ruthenium than cesium in soil profiles.

Industrial Hygiene

Concluding the study of filter media, three types of Fiberfrax paper were investigated and found to have relatively high collection efficiencies. The mean particle size of the uranium fume test aerosol was changed insignificantly from its original size of 0.07 μ in passing through the various media studied. A concurrent investigation of the collection characteristics of the electric precipitation equipment used in this study demonstrated, by means of electron micrographs, an inverse relationship between sampling rate and collection efficiency and also a direct relationship between absolute pressure and efficiency.

Air samples were collected for the determination of oxides of nitrogen following the incident at the Redox plant on February 5. Most samples showed appreciable concentrations in operating areas; steps were taken to develop a simple, portable, direct-reading instrument for use where immediate information on such concentrations may be necessary.

Several samples of AAA Fiberglas filter paper were analyzed for lead content to determine applicability as a sampling medium for laboratory test aerosols of lead fume. Original paper samples obtained from the Naval Research laboratory had undesirable lead contents. Later samples were found to be sufficiently lead-free to indicate acceptability for such sampling.

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Methods

It has been found possible to electroplate manganese as MnO_2 on stainless steel plates in the analysis of reactor effluent water. The resulting plate is badly contaminated with other isotopes, however, and some chemical purification before electroplating will undoubtedly be necessary. A measured relation between the ratio of counting rates through an absorber to counting rates without an absorber for various mixtures of Ru^{103} and Ru^{106} agreed with calculated values to within about 5%. The analysis of 2 samples of the 112-T tank solution was started as a test of the analytical procedures for cerium, cesium, ruthenium, yttrium, yttrium and rare earths, barium, strontium, and zirconium; considerable variation in the isotopic content was noted between the two samples. Difficulties with the electrodeposition of plutonium on small areas continued with most of the apparent loss of yield attributed to self-absorption from a simultaneously formed deposit of platinum black probably resulting from the oxidation of the platinum electrode by the free chlorine in the $NaOCl$ oxidant. With other electrode materials so far tried, similar losses of yield occurred due to side reactions at the electrodes and subsequent self-absorption on the counting plate.

A calibration curve was obtained for the determination of radiothorium by measurement of the thoron.

Theoretical studies were undertaken of the movement of ground water and the rate of establishment of ground water mounds with the derivation of several equations which may be solved graphically to give rates of movement. Testing of the fluorophotometer for the analysis of fluorescein in water indicated a sensitivity of about one part in 10^9 ; the equipment may be used economically in ground water migration rate studies.

A sample of the noble gases from the reactor effluent water was diluted with inert argon, krypton, and xenon, and fractionally volatilized at temperatures selected to separate the three noble gases. Decay curves from the three fractions over a period of 4 days indicated approximately the same shape for the curves from the krypton and xenon fractions with all of the active materials decaying essentially to background within this time period. The argon fraction indicated a large component (A^{41}) of about 2 hours half-life, with a sizeable fraction of some long-lived radioactive material; experimental difficulties arose before it could be established that this was the same long-lived material indicated in earlier gross decay curves.

Radiochemical Standards

Experiments designed to measure self absorption and self scatter of Co^{60} beta particles in inert carrier (sodium chloride) showed that, for first shelf counting of precipitates in the range of 0.4 mg/cm^2 to 10 mg/cm^2 , no self scattering occurs, but that appreciable self absorption is experienced. The self scatter of RaE particles in $Pb(NO_3)_2$ residue is

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likewise negligible in the region of 0.25 to 2 mg/cm² for first shelf measurements.

The degree of depletion of tritium in hydrogen generated by the calcium-water reaction was found to be essentially unaffected by the degree of reaction completion, as measured by the amount of water decomposed, in the range of 74% to 90% completion.

RADIATION MEASUREMENTS UNIT

Physics

Development of the K Source continued with interest centered on proper correction for the effects of air absorption on measurements of the lower energy X-rays.

A proportional counter for spectral analysis of low energy photon emitters was used successfully to distinguish the X-rays from plutonium at 13.6, 17.4, and 20.5 Kev.

An ion chamber consisting of a glass flask sputtered with stainless steel was used in the measurement of tritium in water samples and specifically to study the effects of tritium absorbed on the chamber walls. The effect was considerable, and further investigation of its real magnitude is required.

Measurements to determine the depression of the slow neutron flux in the Sigma Pile due to the presence of a BF₃ counter approached completion; depression of 22% to 23% was indicated.

Instrument Development

A working model of a portable scintillation type alpha survey meter giving a visual and quantitative indication was completed. Progress on the gamma-ray spectrometer has determined the feasibility of the coincidence method of analysis. The secondary electron spectrum is analyzed to detect the maximum energy of Compton recoil electrons that are in coincidence with the corresponding scattered photons.

Data obtained for scanning an I¹³¹ source mounted in a plywood model of a pig's neck to simulate a radioactive thyroid allowed determination of the instrumentation necessary to monitor these animals for radioactivity in that gland.

Two new systems for thyroid monitoring were installed in manufacturing facilities, replacing expensive laboratory equipment, now available for experimental purposes, with simpler equipment engineered by Instrument Development.

Evaluation of two prototype radiation detection instruments furnished by an outside vendor (Technical Associates) was completed; on the basis of the evaluation, the balance of the order of 51 instruments was approved.

Radiological Sciences Department

BIOLOGY SECTION

AQUATIC BIOLOGY UNIT

Biological Chains

A fourth aquarium microcosm study, designed to determine radiophosphorus concentration in organisms in various levels of phosphorus nutrient, was initiated. During the first week the micro-organism communities developed satisfactorily toward the mature status desired when P³² is introduced.

Ecology

Survey of the Columbia River

A slight rise in water level inhibited collection of river bottom organisms. Water temperatures remained low, around 43°F. Activity densities of plankton, bottom algae, and small fish collected at Hanford were about 70% to 80% of those observed during January. Small fish averaged 3.8×10^{-4} $\mu\text{c/g}$ and bottom algae 5.1×10^{-3} $\mu\text{c/g}$. The maximum activity density found in game fish, 8.5×10^{-4} $\mu\text{c/g}$, occurred in the scales of a whitefish. This specimen had 1.3×10^{-4} $\mu\text{c/g}$ of muscle. Young chinook salmon, presumably from local spawning last fall, were observed on February 26.

Effluent Monitoring

Routine monitoring of the effluent was carried out with juvenile chinook salmon as usual, except that reactor effluent water was substituted for area effluent due to mechanical outage of pumps. Mortalities slightly higher than for control lots were observed in 2 $\frac{1}{2}$ % effluent (believed to reflect unfavorably high temperature during the early incubation stage), in the 25% reactor influent (believed to be due largely to residual chlorine), and in the undiluted influent filtered through charcoal. No significant change in trend was observed in the temperature tolerance study, mortalities in the coldest lot remaining significantly lower than for any of the warmer lots.

BIOLOGICAL SERVICES UNIT

Biological Monitoring

Radioassay of avian predators taken near the Separations areas indicated no appreciable accumulation of radioactive materials in tissues other than

Radiological Sciences Department

Biological Monitoring (Continued)

thyroid glands, which exhibited a maximum dosage-rate of 26 mrep/day. Rodent thyroid activity densities decreased by a factor of 5 from values reported last month.

Clinical Laboratory

Eight hundred twenty-four determinations. Facilities were moved during the month to the main biology laboratory.

Microscopy

Routine histological preparations and photomicroscopy plus approximately one hundred autoradiographs.

Radiochemistry Laboratory

Services included 348 TTA extraction determinations of Pu and biological samples, the preparation of 34 isotope solutions, and the analysis of special and routine samples involving approximately 4800 alpha and beta counts.

METABOLISM UNIT

Animal Metabolism

Approximately 50 feedings per rat were administered in the high level plutonium absorption experiment.

Collagen and "insoluble protein" fractions were isolated from the residual carcass of rats sacrificed 4 months and 8 months following tritium oxide administration. The decrease in bound tritium content during the 4 month interval corresponded to a biological half-life of 300 days for the collagen and 700 days for the "insoluble protein".

Microbiology

Satisfactory results are now being obtained from the ferrous-ferric system for chemical dosimetry.

Additional studies have confirmed earlier indications that the exchange of tritium gas with water occurs principally in the vapor phase. Blood appears to incorporate slightly more tritium than water. However, difficulties in the counting of blood samples have not been completely resolved.

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Radiological Sciences Department

Plant Nutrition

Dead roots of red kidney bean plants exposed to nutrient solution containing ruthenium accumulated the same concentration of this element as did live roots under the same conditions.

Plant Metabolism

Cell number, cell size, and light absorption were determined over a 3-day period for control algae and algae growing in the presence of 20 mc/ml of tritium oxide. The algae were then subcultured in nonradioactive media and the same determinations continued. During the period of exposure, cell size remained constant and the inhibition of growth as measured by light absorption was closely paralleled by the decrease in rate of cell division as measured by cell numbers. Upon subculture the size of the previously irradiated algae became larger than those of the controls. Rate of growth of previously irradiated algae as compared to control algae, as measured by both light absorption and cell numbers, became progressively slower during the subculture period.

Additional fractions isolated from previously irradiated algae grown in the presence of C^{14} indicated that carotene synthesis was not materially changed following irradiation, but that fatty acid synthesis increased 4 to 8 times.

TOXICOLOGY UNIT

Experimental Animal Farm (Toxicology of I^{131})

The mean monthly ratio of I^{131} concentrated in the thyroid to the amount fed daily declined from 2.6 in January to 2.2 in February.

Yearling ewes fed 5 μ c and 0.15 μ c I^{131} /day since August were divided equally with one group at each feeding level augmented with 2.5 mg of inert iodine per day. This amount is recommended for prevention of goiter in sheep. The augmented iodine resulted in a 45% to 60% decline in thyroid I^{131} content in twenty days.

In another phase of the inert iodine experiment, 19 yearling ewes and rams received iodized salt ad libitum together with 0.5 mg/day in their feed, to approximate the stockmen's method of administration of iodine. Protection against uptake of I^{131} by a factor of not more than 2 was achieved.

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Physiology

The mice in the north sample gallery of the Redox building are in their eighth month of exposure. A process blowback on February 5 resulted in exposure to unusual amounts of irradiation and noxious fumes. The latter resulted in considerable respiratory distress and death in 20% of the animals. The experiment was temporarily abandoned.

A surgical technique allowing exposure of the trachea for injection of radioactive sols directly into the lung is being developed. Dyes are being injected in order to predetermine the approximate lung distribution of the material.

FINANCIAL DEPARTMENT MONTHLY REPORT
FEBRUARY, 1953

Summary

The first in a series of Management Information meetings for Financial Department personnel was held in the library on February 25, all exempt employees of the Accounting Section attending. Meetings for all exempt and non-exempt employees of the department are planned for the future.

The General Cost Unit discontinued the preparation of formal monthly departmental cost reports after December reports were issued and will issue these reports on a quarterly basis hereafter. To keep management informed concerning the level of costs and the relationship of actual to budget figures, monthly analysis letters are to be issued to department, section and unit heads. This program was inaugurated with January costs, reported in February.

Work continued during February on the preparation of the FY 1955 budget and revision of the FY 1954 budget.

Salary Adjustment Lists for employees in the Executive, Administrative and Operating salary plan, for use in connection with the Spring payroll review, were sent to department managers on February 3 for completion and return on or before February 20. One copy of lists returned by department managers was forwarded to the Salary Administrator. Completion of the payroll review is scheduled for March 13.

Insurance certificate riders outlining increased insurance benefits effective September 15, 1952, were distributed during the month to all employees participating in the Group Insurance Plan.

As a part of the plan for making complete physical inventories during the first six months of 1953, medical supplies, bulk steel and essential materials were inventoried in February.

A report issued during the month on an audit of procurement activities indicated that, in general, procurement procedures which are followed satisfy HOO-AEC requirements and should secure materials at the lowest cost consistent with time and quality requirements.

Statistics

A summary of cash disbursements and receipts (excluding reimbursements by AEC) for the months of February and January, 1953, is shown below:

<u>Disbursements</u>	<u>February</u>	<u>January</u>
Payrolls (net)	\$2 578 995	\$3 401 923
Materials and Freight	1 539 855	1 903 828
Pension Plan - Employers' Portion	1 523 313	-0-
Payroll Taxes	890 309	490 905
U. S. Savings Bonds	169 838	224 938
Payments to Subcontractors	129 513	6 543
Group Insurance Premium	126 694	127 050
Pension Plan - Employees' Portion	119 800	77 279
Other	147 193	150 355
Total	7 226 010	6 382 821

<u>Receipts</u>		
Rents	104 467	166 047
Hospital	55 554	58 286
Sales to AEC Cost-Type Contractors	51 684	41 223
Utilities	51 076	81 261
Telephone	22 392	21 156
Bus Fares	7 602	8 474
Scrap Sales	6 801	19 543
Refunds from Vendors	1 231	1 547
Other	22 822	36 428
Total	323 629	433 965
Net Disbursements	\$6 902 381	\$5 948 856

Advances as of February 28 and January 31 may be summarized as follows:

	<u>February</u>	<u>January</u>
Cash in bank - contract accounts	\$3 422 619	\$3 376 144
Cash in bank - salary accounts	50 000	50 000
Travel advance funds	125 000	125 000
	3 597 619	3 551 144
Disbursements not reimbursed	6 902 381	5 948 856
Total	\$10 500 000	\$9 500 000

Personnel and Organization

	<u>Current Month</u>	<u>Frior Month</u>
<u>Personnel Changes During Month</u>		
Employees at beginning	351	353
Additions and transfers in	6	6
Removals and transfers out	(14)	(6)
Employees at end of month	343	351
<u>Personnel by Unit at Month-End</u>		
General	9	9
Reimbursement Unit	3	0

Personnel and Organization (Continued)

Personnel by Unit at Month-End (Continued)

	<u>Current Month</u>	<u>Prior Month</u>
General Accounting Unit		
General Accounts	24	23
Plant Accounts	28	29
Accounts Payable	36	37
Accounts Receivable	22	22
General	3	3
	<u>113</u>	<u>114</u>
General Cost Unit		
Consolidated Costs and Budgets	5	6
Utilities and General Services	16	17
Community Real Estate & Services	11	11
Radiological Sciences and Other	7	7
Medical	3	3
General	2	2
	<u>44</u>	<u>46</u>
Manufacturing Cost Unit		
Costs and Budgets	34	36
General	7	7
	<u>41</u>	<u>43</u>
Engineering Cost Unit		
Project Section Costs	19	19
Design Section Costs	7	8
Technical Section Costs	9	9
General	4	4
	<u>39</u>	<u>40</u>
Payroll Unit		
Preparation and Employee Records	37	36
Confidential Payroll Records	16	17
Employee Benefit Plans and Payroll Reports	21	20
IBM Procedures	1	0
General	3	9
	<u>78</u>	<u>82</u>
Internal Audit Unit	14	14
Rotational Trainees	2	3
Total	<u>343</u>	<u>351</u>

Unit Reports

The monthly reports of six of the units of the Financial Department, as listed below, are shown on the following pages:

General Accounting Unit
General Cost Unit
Manufacturing Cost Unit
Engineering Cost Unit
Payroll Unit
Internal Audit Unit

Ia-1 through Ia-10
Ib-1 through Ib-3
Ic-1 through Ic-2
Id-1 through Id-2
Ie-1 through Ie-8
If-1

GENERAL ACCOUNTING UNIT
MONTHLY REPORT - FEBRUARY, 1953

ACCOUNTS PAYABLE

Volume of work decreased this month, as indicated by the decrease in number of vouchers entered from 4,052 to 3,484, number of checks issued from 2,657 to 2,120, and number of new purchase orders received from 2,079 to 1,443. Cash disbursements of \$4,477,178 were unusually high due to the payment of the Company portion of pension plan costs amounting to \$1,523,313.

Cash discounts earned in February amounted to \$4,598. The fiscal year to date total of cash discounts earned is \$32,771, representing a monthly average of \$4,096.

Freight bills numbering 1,346 and amounting to \$288,990 were received and paid. At the month end, undistributed freight charges amounted to \$14,572, as compared with \$20,849 at the end of last month.

This month two improvements in operating procedures were effected concerning (1) the handling of blanket orders issued by the Plant Library for books and periodicals, and (2) payment of individual and Company memberships in societies and associations. Among other minor changes in procedures in connection with these functions, it was determined and agreed to by all concerned that such expenditures could be made without the issuance of formal purchase orders.

In connection with the inventory and audit of essential materials this month, considerable assistance was given Internal Audit personnel in reviewing and recording all applicable transactions originating in Accounts Payable during February, 1953.

A detailed report was prepared and issued showing the costs of nitric acid and aluminum nitrate furnished under our contracts with General Chemical Division of the Allied Chemical and Dye Corporation. This report, together with supporting schedules, indicates the substantial savings in the costs of these chemicals resulting from the construction of the plant at Hedges, Washington.

ACCOUNTS RECEIVABLE

The gross accounts receivable balance at February 28, 1953, amounted to \$424,849, a decrease of \$1,383 from the balance at January 31, 1953.

General Accounting Unit

ACCOUNTS RECEIVABLE (CONTINUED)

Procedures were prepared and forms were designed during February covering revised procedures relative to in-patient billings at Kadlec Hospital. This change in procedure will provide improved financial controls of certain hospital functions. The new procedures and forms to be used have been approved by personnel of the Medical and Financial Departments and will be put into effect as soon as forms can be printed.

Considerable emphasis was placed on collection efforts during the month of February, and a substantial number of old accounts was collected. Letters were written to our collection agencies requesting that they return to us accounts which they feel there is little possibility of collecting, so that we may take the proper action to clear these amounts from our records.

Billings in the total amount of \$13,551 were made to twenty-six facility operators in the Downtown district, covering one-half the cost of converting the Greenway, now known as the Parkway, into a public parking area. Billings were made in accordance with signed agreements and subscribed amounts.

General Electric employees who have authorized payroll deduction of rents, and who had not returned their signed leases covering revised rental rates effective January 1, 1953, were contacted and requested to return signed leases in order that payroll deduction of rent can be resumed. We further requested that accumulated rental charges be paid in cash. At February 28, fifteen leases were not yet in our hands.

Out-patient invoices issued in February at Kadlec Hospital numbered 1,873 and totaled \$8,720, as compared to 2,092 in January, amounting to \$9,719. In-patient revenue totaled \$66,331, as compared to \$67,925 in January. The Kadlec Hospital receivable balance increased \$15,842, due primarily to the increase in the adult patient day census from 88.1 in January to 98.4 in February and the fact that payment of insurance claims which have been assigned the hospital were extremely low during the month.

Cost comparisons were compiled during the month relative to the handling of telephone accounts receivable. As a result, it was found that this work could be handled more economically at the present time under present procedures than it could be through use of IBM equipment.

Electricity charges covering energy consumed during the month of January, for which billings were issued on February 16, 1953, totaled \$73 415. The electricity receivable balance increased \$22,645 at February 28, 1953, as compared to January 31, 1953. This increase is due primarily to the final date for payment of net billings falling on March 3, 1953.

General Accounting Unit

GENERAL ACCOUNTS

Due to anticipated increased expenditures, an additional \$1,000,000 advance was requested from the Atomic Energy Commission at the beginning of this month. This increased the advance account to \$10,500,000.

Total cash disbursements (which included the Company portion of pension plan costs for 1952 of \$1,523,313) amounted to \$7,226,010, and cash receipts, exclusive of advances from the Atomic Energy Commission, amounted to \$323,629.

Considerable time was spent in February establishing procedures to control and account for spare equipment temporarily withdrawn from stock. In the past, costs have fluctuated according to the withdrawal and return of this equipment. New procedures provide for establishment of a separate plant account and for records to be maintained by Stores personnel, with document control maintained by General Accounts.

Travel advances to employees issued in February totaled 198 and amounted to \$35,678. Advances to employees which were outstanding at February 28, 1953, amounted to \$46,545, of which \$17,429 represents advances open thirty days or longer. Respective department managers were requested to expedite settlement of these accounts at the earliest possible date. Of the amount of travel and entertaining expense reported during the month, \$1,236 was for expenses not directly reimbursable by the Atomic Energy Commission, and may be detailed as follows:

Amount of expense reported in February		\$32 249
Less: Expense applicable to other divisions	\$ 3 342	
Amount billed to Atomic Energy Commission	<u>27 671</u>	<u>31 013</u>
Amount charged to Travel and Living Expense Variation Accounts		<u>\$ 1 236 *</u>

* Includes entertaining expenses (\$678) and cost of operating Company-owned cars (\$70).

The final journal entry for January, 1953, affecting general ledger accounts was received on the afternoon of February 9, 1953, and January trial balance was issued on February 10, 1953.

General Accounting Unit

PLANT ACCOUNTS

Construction costs relating to projects which were unitized during the month and transferred from unclassified property to property in service accounts totaled \$4,120,756 and are represented by projects listed below:

AEC-108	Fourth Housing Addition	\$3 438 286
C-369	Evaporation Facilities for Waste Solution, 200 W	494 554
C-457	Pile Technology Office Building, 100 D	126 702
C-470	200 W Badge House Addition and Remodeling	23 588
M-828	Facilities for Contamination Control Shipping Casks	7 072
MWI-36	Air Lock Doors, 234-5 Building	14 865
MWI-43	Radiation Monitoring Office, 105 D Building	15 689
	Total	<u>\$4 120 756</u>

The unitization of the above projects was completed by Plant Accounts personnel, except for projects AEC-108 and C-369, which were unitized by Atomic Energy Commission and Manufacturing Cost personnel, respectively.

Transfers from construction work in progress to unclassified property accounts in February are represented by the following:

AEC-103	Fifth Wing - 703 Building	\$ 322 353
AEC-108	Fourth Housing Addition	3 438 286
C-423	Expansion of 300 Area Power House and Pumping Facilities	641 444
	Other miscellaneous projects aggregating	<u>211 407</u>
	Total	<u>\$4 613 490</u>

The remaining equipment used in the Physical P-10 Program was transferred from plant and equipment in service to plant and equipment held for future use in the net amount of \$1,933,285, representing a first cost of \$2,025,659 and an accumulated reserve of \$92,374.

General Accounting Unit

PLANT ACCOUNTS (CONTINUED)

Major plant retirements during the month resulted from the burial of a rotary hearth furnace, valued at \$98,622, and the excessing of an extrusion press, valued at \$254,974. Both the above equipment pieces were located in the 300 Area. The value of these items is currently booked in retirement work in progress pending receipt of final dismantlement and burial costs.

Work which has been under way for some time in connection with the following was continued during February:

- Preparation of plant accounting manual
- Studies relative to depreciation rates
- Procedures relative to project unitizations
- Changes in routines in connection with a better property management and utilization program

General Accounting Unit

	<u>February</u>	<u>January</u>
<u>Accounts Payable</u>		
Balance at Beginning of Month	\$ 465 119	\$ 486 018
Vouchers Entered	4 357 406	2 733 514
Cash Disbursements	4 477 178 DR	2 755 960 DR
Cash Receipts	<u>1 231</u>	<u>1 547</u>
Balance at End of Month	<u>\$ 346 578</u>	<u>\$ 465 119</u>
Number of Vouchers Entered	3 484	4 052
Number of Checks Issued	2 120	2 657
Number of Freight Bills Paid	1 346	1 901
Amount of Freight Bills Paid	\$ 288 990	\$ 367 624
Number of Purchase Orders Received	1 443	2 079
Value of Purchase Orders Received	\$ 504 173	\$2 183 955
<u>Cash Disbursements</u>		
Payrolls (Net)	\$2 578 995	\$3 401 923
Payroll Taxes	890 809	490 905
Material and Freight	1 539 855	1 903 828
Pension Plan - Employer's Portion	1 523 313	-0-
United States Savings Bonds	169 838	224 938
Lump Sum and Unit Price Subcontracts	129 513	6 543
Group Insurance Premium	126 694	-0-
Pension Plan - Employee's Portion	119 800	77 279
All Other	<u>147 193</u>	<u>277 405</u>
Total	<u>\$7 226 010</u>	<u>\$6 382 821</u>

General Accounting Unit

	<u>February</u>	<u>January</u>
<u>Cash Receipts</u>		
Prior Month's Expenditures Reimbursed by Atomic Energy Commission	\$5 948 856	\$5 075 365
Advances from Atomic Energy Commission	1 000 000	-0-
Rents	104 467	166 047
Hospital	55 554	58 286
Sales to Atomic Energy Commission Cost-type Contractors	51 684	41 223
Electricity	51 076	81 261
Telephone	22 392	21 156
Miscellaneous Accounts Receivable	17 214	32 554
Bus Fares	7 602	8 474
Surplus, Salvage, and Scrap Sales	6 801	19 543
Refunds from Vendors	1 231	1 547
Other	5 608	3 892
	<u>5 608</u>	<u>3 892</u>
Total	<u>\$7 272 485</u>	<u>\$5 509 348</u>

Bank Balances at End of Month

Chemical Bank and Trust Company - New York Contract Account	\$ 782 405	\$ 600 281
Seattle-First National Bank - Richland Contract Account	1 832 299	2 041 052
United States Savings Bonds Account	225 595	204 084
Salary Account No. 1	20 000	20 000
Salary Account No. 2	30 000	30 000
Travel Advance Account	63 366	55 847
National Bank of Commerce - Richland Contract Account	807 915	734 811
	<u>807 915</u>	<u>734 811</u>
Total	<u>\$3 761 580</u>	<u>\$3 686 075</u>

General Accounting Unit

	<u>February</u>	<u>January</u>
<u>Accounts Receivable</u>		
Hospital	\$ 153 513	\$ 137 671
Atomic Energy Commission Cost-type		
Contractors	104 065	86 634
Electricity	43 652	21 006
Sundry	39 749	32 453
Equipment Sales to Facilities	38 563	39 464
Rents	28 303	93 327
Telephones	15 634	14 801
Safety Shoes	1 034	528
Loans to Employees	336	348
Subtotal	<u>424 849</u>	<u>426 232</u>
Reserve for Bad Debts	<u>40 690</u> CR	<u>41 477</u> CR
General Ledger Balance	<u>\$ 384 159</u>	<u>\$ 384 755</u>
 <u>Hospital</u>		
Number Out-patient Invoices Issued	1 873	2 092
Charges During the Month	\$ 75 051	\$ 77 644
Collections - Cash	55 554	58 286
- Payroll Deductions	4 858	4 552
 <u>Atomic Energy Commission Cost-type Contractors</u>		
Number Invoices Issued	67	51
Amount of Invoices Issued	\$ 69 116	\$ 34 648
Cash Received	51 684	41 223
 <u>Electricity</u>		
Number of Bills Issued	6 125	6 155
Amount of Bills Issued	\$ 73 415	\$ 75 872
Cash Received	51 076	81 261
 <u>Sundry</u>		
Number Invoices Issued	304	252
Amount of Invoices Issued	\$ 24 761	\$ 17 843
Cash Received	17 214	32 554
 <u>Rents</u>		
<u>Houses</u>		
Number Houses Occupied	6 043	6 050
New Leases and Lease Modifications	74	72
Lease Cancellations	65	54
Charges During the Month	\$ 246 054	\$ 246 439
Collections - Cash	44 246	92 123
- Payroll Deductions	211 457	225 238

General Accounting Unit

	<u>February</u>	<u>January</u>
<u>Accounts Receivable</u>		
<u>Rents</u>		
<u>Dormitories</u>		
Number Rooms Occupied	1 054	1 051
New Assignments	79	72
Removals	76	82
Charges During the Month	\$ 16 118	\$ 16 045
Collections - Cash	3 756	4 032
- Payroll Deductions	12 817	13 341
 <u>Facilities</u>		
Number Facility Leases	139	137
Revenue	\$ 56 464	\$ 69 892
 <u>Telephones</u>		
Working Telephones (excludes official telephones)	5 935	5 868
Telephone Work Orders Processed	326	298
Charges During the Month	\$ 51 383	\$ 47 558
Collections - Cash	22 392	21 156
- Payroll Deductions	27 415	24 255
	<u>Number</u>	<u>Amount</u>
<u>Uncollectible Accounts (Total to Date)</u>		
Accounts Forwarded to Collection Agencies	478	\$ 42 300
Accounts Returned as Uncollectible	111	17 573
Collections	166	6 009
	-1.)	-2.)
Balance at Collection Agencies February 28, 1953	<u>231</u>	<u>\$ 18 718</u>

(1- Includes 136 accounts collected in full and 30 accounts partially collected.

(2- Represents total collections, half of which is remitted to General Electric.

General Accounting Unit

	<u>February</u>	<u>Total to Date</u>
<u>Surplus, Salvage, and Scrap Sales</u>		
Number of Sales	5	592
Revenue (excluding Sales Tax)		
Materials or Equipment	\$ 6 801	\$ 644 238
Tract Houses		
Revenue to Atomic Energy Commission	-0-	36 174
Revenue to General Electric	-0-	15 773
	<hr/>	<hr/>
Total	\$ 6 801	\$ 696 185

	<u>February</u>	<u>January</u>
<u>Travel Advances and Expense Accounts</u>		
Cash Advances - Beginning of Month	\$ 55 300	\$ 42 148
Advances During the Month	35 678	60 879
Expense Accounts Submitted	32 249 CR	36 720 CR
Cash Refunded	12 184 CR	11 007 CR
	<hr/>	<hr/>
Cash Advances - End of Month	\$ 46 545	\$ 55 300
Outstanding Cash Advances		
Current	\$ 29 116	\$ 47 582
Over 30 Days	17 429	7 718
	<hr/>	<hr/>
Total	\$ 46 545	\$ 55 300

<u>Traveling and Living Expenses</u>		
Paid Employees	\$ 28 908	\$ 36 804
Billed to Government	27 671	34 039
Balance in Variation Account at End of Month	15 089 DR	13 853 DR

GENERAL COST UNIT
MONTHLY REPORT

FEBRUARY, 1953

The issuance of formal departmental cost reports on a monthly basis was discontinued effective with reports for the month of January. In the future, all such reports will be issued only on a quarterly basis. However, in order to keep management informed as to the level of costs and relationship of cost to budget, analysis letters were prepared and issued to managers at both the department and section level, as well as to some unit managers. Similar letters will be issued monthly in the future to all levels of management including unit heads.

Personnel requirements for each department were reviewed with the Appropriations and Budget Committee early in February. Schedules of consolidated personnel requirements have been prepared and revised during the month as department changes have been made. The final schedule of personnel, as included in the budget preparations, are expected to be completed and issued early in March.

Consolidated Costs and Budget

Budget assistance has been provided to various units of the Financial Department in connection with budget preparation. A large amount of time was required to review the budgeting responsibility and breakdown of the "Stand-by Inventory" account. This account was divided into sub-accounts in December, resulting in additional work prior to budget consolidation.

An improved method of handling payroll billings to various cost units was recommended and adopted during the month.

Utilities and General Services

Analysis letters, regarding January costs, were written to unit heads in addition to section and department managers. This is in line with the new policy of issuing complete cost reports on a quarterly basis only but providing management with adequate financial control through the medium of monthly analysis letters.

As indicated in January, budget activity has proceeded at an accelerated rate. Personnel and overtime hours requirements were approved and have been converted to dollars based on average annual salary rates. Requests for information as to Materials and Other Costs, and Construction Project data was received and the extensions and consolidation of this information is proceeding. In addition, the various managers were requested to forward their estimates of Inventory activity and Unit Cost volume data to this office.

Analysis letters were written and distributed to managers and unit heads during the week of February 22, 1953. Construction Work in Progress Report was issued February 16, 1953, and Financial Statements and Unit Cost Reports were completed February 24, 1953.

Community Real Estate and Services

The issuance of operating reports was changed from a monthly to a quarterly effective January 1. The analysis letters regarding Community and Real Estate functions were expanded in distribution and scope.

Personnel requirements were approved by the A&B Committee and no subsequent revisions have been made.

Staff Departments

Analyses and studies on costs of the Training and Development Unit and Personnel Records and Investigations were completed and put in the hands of managers and other interested individuals early in February.

Complete operating budget estimates were prepared for the Legal Department and Property Management and Control in order to obtain preliminary approval from the managers concerned.

During the latter part of February the recast of Financial Department costs in accordance with the recent reorganization was essentially completed and will be ready for use in the current budget preparations.

It is contemplated that, for February costs, we will prepare analysis letters for all units in the Radiological Sciences Department and similar letters at either department or section managers level for other departments. This will entail the preparation of thirty analysis letters per month as a service to department management.

Research and Development cost reports were completed and issued on February 12, 1953, and Unit Costs and Unit Cost Reports were issued on February 19, 1953.

Considerable time and effort were spent by personnel of the group and by Radiological Sciences Department personnel in trying to uncover the reason for the apparent overrun of the FY 1953 Biological Research Budget and it is expected to publish results of the analysis early in March.

Much time was spent in assisting personnel in the field to prepare their cost estimates, write-ups, etc., for the subject budget. It is hoped that, by using the time in this fashion, the results will be more nearly a finished product when received by us from the field. If this materializes, considerable time will be saved in the last-minute preparation of the budget submissions.

Medical

At the request of plant management, the short form summaries for the Budget for FY 1955 and Revision for FY 1954 were completed prior to the end of February and were made available for review. Submission to AEC of this portion of the budget will be made prior to March 15.

MANUFACTURING COST UNIT
FEBRUARY, 1953

GENERAL

During the month of February new lights were installed in the 717-A Building, the building was repainted, and additional electrical outlets were installed where necessary. This greatly improved working conditions.

PRODUCT COST ACCOUNTING

New billing prices for UO-3 shipments were established by the Atomic Energy Commission. The effect of these new billing prices on the credit for depleted uranium has been incorporated in production and inventory statements. An analysis of Work in Process inventories has been made and estimates prepared of the expected value of inventories at the end of Fiscal Years 1953, 1954, 1955, and 1956.

BUDGETS

A good start on the preparation of the Budget for the Fiscal Year 1955 and Revision of Fiscal Year 1954 was made during the month. Schedules of charges to other departments were issued February 27. The Construction Budget and Equipment not budgeted in Construction Projects will be submitted March 2, as scheduled.

MAINTENANCE AND PLANT IMPROVEMENT

Efforts were intensified during February to reduce undistributed charges arising from unmatched detail due to the miscoding of maintenance charges in the field, and the receipt of labor and material charges prior to the receipt of the corresponding work order authorizations. The reduction of undistributed charges was partially accomplished by using the records and reports group to check work orders. By this means the work load of the work order control group was reduced and other personnel in the Unit were familiarized with work order procedure.

REPORTS AND RECORDS

Landlord costs by buildings were compiled for the Separations and Reactor Sections. Information for the Metal Preparation Section will be completed in March.

A great deal of time and effort has been spent with the Internal Audit personnel this month in preparing for and taking the physical inventory of essential materials.

SEPARATIONS SECTION ACCOUNTING

Monthly Variance Reports covering those portions of Separations Section costs now under the standard program were prepared. These reports cover labor and material for 221-T, 224-T, 231, 202-S and 222-S.

Data for preparation of the Operating and Project Budget was submitted to the budget group for compilation.

METAL PREPARATION SECTION ACCOUNTING

Personnel from this group assisted the Internal Audit group in taking physical inventories of essential materials in the 300 Area. Standards for 4" and 8" triple dip slugs are expected to be completed in March.

Budget for FY 1955 and Revision of FY 1954 is complete except for the organizational write-up.

REACTOR SECTION ACCOUNTING

A more accurate method of charging tenants for space and facilities through the Landlord Account has been developed. Through the utilization of records on metered and calculated usage of heat, light and process steam, the revised basis will result in charges to tenants commensurate with their usage.

Data for the preparation of the operating budget for the FY 1955 and revision of the FY 1954 budget was prepared and submitted to the budget office.

ENGINEERING COST UNIT
MONTHLY REPORT - FEBRUARY, 1953

DESIGN COST

Cost transfers to Kaiser Engineers from General Electric during the month amounted to \$229 742. This amount compares with \$223 082 transferred in January after adjusting for the transfer of the account balances of the reserve for major overhaul. Both the volume handled and the value of cost transfers to Kaiser Engineers increased during the period as shown:

	<u>Number of Invoices</u>		<u>Total Cost Billed</u>	
	<u>To Kaiser</u>	<u>From Kaiser</u>	<u>To Kaiser</u>	<u>From Kaiser</u>
February	51	30	\$229 742.31	\$116 060.40
January	49	29	\$ 32 723.24	\$ 66 646.55

Cost transfers to Kaiser Engineers from General Electric include:

	<u>February</u>	<u>January</u>
Major Construction Program Equipment - Net Book Value	\$140 733.38	\$159 003.73
Excess Material Withdrawals	47 817.67	17 462.04
Services - Telephone and Telegraph, Printing, Fire, Patrol	34 535.24	42 330.68
Work Order Cost	8 930.61	4 685.47
Coal	6 876.00	5 738.95
Railroad Car Handling	4 280.00	3 120.00
Other	2 144.39	809.64
Major Equipment Overhaul and Repair - (Monthly Accrual)	(10 178.57)	(10 068.38)
Account Balance as of December 31, 1952		(190 358.89)
Kaiser Engineers Inventory Declared Excess	<u>(5 396.41)</u>	
	<u>\$229 742.31</u>	<u>\$ 32 723.24</u>

Cost Transfers from Kaiser Engineers to General Electric include:

	<u>February</u>	<u>January</u>
Store Orders	\$ 74 707.82	\$ 48 139.13
Work Order Costs	18 244.04	15 502.90
Transfer of Major Equipment	17 163.83	
White Bluffs Utilities and Services Cost	4 837.76	3 004.52
Correction of Charge Billed in Error	864.00	
Transfer of Office Equipment	<u>242.95</u>	
	<u>\$116 060.40</u>	<u>\$ 66 646.55</u>

Satisfactory progress was made in the preparation of the Budget for FY 1955 and Revision of Budget for FY 1954. Information was received from the Design Section from which the budget can be prepared. Review by the Manager - Design Section was scheduled for the end of the month.

Engineering Cost Unit

PROJECT COST

Report covering Engineering Department Construction Work in Progress as of January 31, 1953 was furnished to the Atomic Energy Commission on February 9, 1953. Expense statements for the month of January were forwarded to Unit Managers on February 10, 1953. All other reports were forwarded by February 11, 1953.

Work continued on preparation of the Budget for FY 1955 and Revision of the Budget for FY 1954. Details of the budget were submitted to the Project Section Control Unit for review on February 28, 1953.

Financial Closing Statements were issued on the following Projects and Informal Requests during the month:

CG-445	BY Telephone Exchange Additions and Changes
CA-479	Replacement of Docks and Outside Stairs - Permanent 700 Area Buildings
CG-503	Waste Storage Hutment, 234-5 Building
CG-510	Unusual Maintenance 101 Building
IR-140	Relocation of Utility Poles, Richland Parkway

TECHNICAL COST

Monthly cost reports were issued to the Manager, Technical Section on February 9, 1953 followed by Research and Development detailed reports and a cost analysis letter on February 13, 1953.

There was continued emphasis on cost analysis and cost and budget comparisons during February because there were indications that the Technical Section would have to exercise close cost control in order to avoid exceeding the budget during FY 1953.

Discussions with Separations Technology Unit revealed that about \$180 000 in Process Assistance costs applicable to TBP start-up were miscoded to Research and Development over a five month period in 1952. February costs included a correction of this mistake which resulted in a substantial overrun of the Process Assistance budget. Work has been started on a request to the Appropriations and Budget Committee for approval to exceed this budget.

Preparation of the Budget for FY 1955 and Revision of the Budget for FY 1954 continued according to schedule.

PAYROLL UNIT

MONTHLY REPORT - FEBRUARY 1953

On February 4, the Atomic Energy Commission issued Reimbursement Authorization No. 198 covering a new classification of Engineering Assistant, Grade 15, in the non-exempt non-bargaining unit. The Commission also issued Reimbursement Authorization No. 199 on February 9, which provides for revision of the method of calculation of vacation payments for employees working extended schedules.

During February, two new time clocks, together with the necessary clock card racks were installed in the new Consolidated Stores Building located in the 3000 Area. A total of 43 time clocks are now in use on the project.

During the month, reports were reviewed with the aim of eliminating, where possible, unnecessary procedures and data; also to revise data requested from Computing Services so that the information may be used as presented, thereby eliminating additional calculations.

Washington's Birthday was observed on Monday, February 23, at Hanford Works. Weekly salary checks, normally delivered to area gatehouses before 2 p.m. on Thursday of each week, were delivered to the outer areas by 3 p.m. on the scheduled day. Despite the loss of a regular working day, only nine man hours of overtime were required to accomplish this.

Annual "Information at the Source" reports for payroll tax purposes were filed with various State Tax Commissions during February.

Salary Adjustment Lists for employees in the Executive, Administrative and Operating salary plan, for use in connection with the Spring payroll review, were sent to department managers on February 3, for completion and return on or before February 20. One copy of lists returned by department managers was forwarded to the Salary Administrator. Completion of the payroll review is scheduled for March 13.

Insurance certificate riders outlining increased insurance benefits effective September 15, 1952 were distributed during the month to all employees participating in the Group Insurance Plan.

Preliminary preparations pertaining to the retroactive vacation allowance for those employees working extended schedules was begun in February.

Approximately 40 man hours were expended in preparing data for off-site storage.

Bank Reconciliations Completed

Weekly Salary Roll #3-53 through 6-53
Weekly Salary Vacation Roll #3-53 through 6-53
Bond Account - January, 1953
Monthly Payroll #77, January, 1953

Payrolls Reimbursed

Weekly Salary through February 27, 1953
Monthly Salary through February 28, 1953

Payroll Section (continued)

<u>STATISTICS</u>	<u>Total</u>	<u>Monthly Payroll</u>	<u>Weekly Payroll</u>
Employees on Payroll at beginning of month	8 755	2 279	6 482
Additions and transfers in	81	7	74
Removals and transfers out	(99)	(9)	(90)
Transfers from weekly to monthly payroll		11	(11)
Transfers from monthly to weekly payroll		(3)	3
Employees on payroll at end of month	<u>8 737</u>	<u>2 279</u>	<u>6 452</u>
<u>Number of Employees</u>		<u>February</u>	<u>January</u>
Bargaining group - HAMTC		3 456	3 467
- Building Services		67	69
- Two Platoon Firemen		45	45
- Hanford Guards		522	527
Other weekly - non-bargaining		2 413	2 419
Executive, administrative and operating		1 742	1 758
Professional		491	489
Other Monthly		1	1
Total		<u>8 737</u>	<u>8 752</u>
<u>Number of Employees</u>			
Engineering		1 501	1 466
Manufacturing		3 313	3 303
Utilities & General Services		2 257	2 276
Community Real Estate and Services		416	420
Financial		342	351
Employee & Public Relations			
Technical Personnel		110	123
Other		118	117
Radiological Sciences		375	371
Medical		261	264
General		12	12
Law		5	5
Accountability		21	22
Property Management and Control		5	5
Total		<u>8 737</u>	<u>8 752</u>
<u>Overtime Payments</u>			
Weekly Paid Employees		\$108 668 (a)	\$121 650 (b)
Monthly Paid Employees		32 676 (c)	43 046 (d)
Total		<u>\$141 344</u>	<u>\$164 696</u>
<u>Number of Changes in Salary Rates And Job Classifications</u>		<u>911</u>	<u>1 413</u>
(a)	Includes 4 weeks ended 2-22-53		
(b)	Includes 5 weeks ended 1-25-53		
(c)	Payments cover period February 1 through February 28, 1953, and include overtime for the month at the rate of time and one-half on the first \$7 500 of annual base compensation.		
(d)	Payments cover period January 1 through January 31, 1953, except in the case of Patrolmen in the Plant Security and Services Section of the Utilities and General Services Department who were paid for period December 1 through December 31, 1952. Includes overtime for the month at the rate of time and one-half on the first \$7 500 of annual base compensation.		

Payroll Section (continued)

Gross Amount of Payroll

	<u>February</u>	<u>January</u>
Engineering	\$ 722 234	\$ 947 494
Manufacturing	1 486 664	1 956 310
Utilities & General Services	851 582	1 137 710
Community Real Estate & Services	167 033	225 714
Other	495 712	639 008
Total	<u>\$3 723 225 (a)</u>	<u>\$4 806 726 (b)</u>

Annual Going Rate of Payroll

Base Plus Overriding Adjustment	\$42 774 359	\$42 747 160
Overtime	1 879 685	2 228 006
Isolation Pay and Area Differential	1 982 014	1 991 066
Shift Differential	451 333	456 835
Other	40 850	29 593
Total	<u>\$47 128 241</u>	<u>\$47 452 660</u>

Average Hourly Base Rates*

Bargaining group - HAMTC	\$2.223	\$2.218
- Building Services	1.708	1.712
- Two Platoon Firemen	2.173	2.173
- Hanford Guards	1.941	1.942
Other Weekly - non-bargaining	1.892	1.890
Executive, administrative and operating	3.063	3.065
Professional	3.431	3.382
Other Monthly	2.525	2.519
Total	<u>\$2.346</u>	<u>\$2.340</u>

*Including overriding adjustment.

Average Earnings Rate Per Hour	<u>February (c)</u>			<u>January</u>		
	<u>Weekly</u>	<u>Monthly</u>	<u>Total</u>	<u>Weekly</u>	<u>Monthly</u>	<u>Total</u>
Engineering	\$2.031	\$3.254	\$2.697	\$2.021	\$3.247	\$2.684
Manufacturing	2.441	3.244	2.595	2.437	3.246	2.589
Utilities & General Services	2.117	2.995	2.237	2.111	2.994	2.232
Community Real Estate & Services	2.155	2.720	2.352	2.165	2.717	2.357
Other	1.946	3.406	2.300	1.948	3.388	2.296
Total	<u>\$2.220</u>	<u>\$3.205</u>	<u>\$2.467</u>	<u>\$2.217</u>	<u>\$3.196</u>	<u>\$2.461</u>

(a) Includes payments for four-week period ended February 22, 1953 in the case of weekly paid employees.

(b) Includes payments for five-week period ended January 25, 1953 in the case of weekly paid employees. Also includes \$466 536 retroactive general salary adjustment for both monthly and weekly paid employees.

(c) Includes shift differential and isolation pay in the case of weekly paid employees and area differential in the case of monthly paid employees. Excludes overtime premiums, commissions, suggestion awards, etc.

Employee Benefit Plans

	<u>February</u>	<u>January</u>
<u>Pension Plan</u>		
Number participating at beginning of month	7 563	7 464
New participants and transfers in	76	153
Removals and transfers out	(52)	(54)
Number participating at end of month	<u>7 587</u>	<u>7 563</u>
% of eligible employees participating	<u>94.9%</u>	<u>94.6%</u>

Payroll Section (continued)

<u>Employees Retired</u>	<u>February</u>	<u>Total to Date</u>
Number	4	255 (a)
Aggregate Annual Pensions Including Supplemental Payments	\$1 082	\$58 882 (b)
Amount contributed by employees retired	2 832	70 382
(a) Includes 11 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.		
	<u>February</u>	<u>January</u>
Number who became eligible for participation	52	67
Number who applied for participation	42	56
Number who elected not to participate	4	11
Replies not received	6	-
 <u>Insurance Plan (c)</u>		
<u>Personal Coverage</u>		
Number participating at beginning of month	8 846	8 897
New participants and transfers in	64	57
Cancellations	(19)	(13)
Removals and transfers out	(86)	(95)
Number participating at end of month	<u>8 805</u>	<u>8 846</u>
% of eligible employees participating	<u>98.7%</u>	<u>98.7%</u>
 <u>Dependent Coverage</u>		
Number participating at beginning of month	5 749	5 761
Additions and transfers in	36	27
Cancellations	(22)	(5)
Removals and transfers out	(28)	(34)
Number participating at end of month	<u>5 735</u>	<u>5 749</u>
 <u>Claims - Disability Benefits (d)</u>		
Number of claims paid by insurance company:		
Employee Benefits		
Weekly Sickness and Accident	96	129
Daily Hospital Expense Benefits	99	169
Special Hospital Services	111	197
Surgical Operations Benefit	69	144
Physicians' Attendance	66	117
Dependent Benefits		
Daily Hospital Expense Benefits	218	208
Special Hospital Services	261	260
Surgical Operations Benefits	188	213
Amount of claims paid by insurance company:		
Employee Benefits	\$24 658	\$37 350
Dependent Benefits	<u>28 785</u>	<u>29 601</u>
Total	<u>\$53 443</u>	<u>\$66 951</u>

- (c) Current month statistics include 185 insured employees not active on the payroll while prior month statistics includes 211 insured employees not active on the payroll.
- (d) Statistics cover only claims paid and not all claims incurred during the month.

Payroll Section (continued)

Number of Disability Claims Forwarded to Insurance Company

Hospital Benefits

Kadlec Hospital

Other Hospitals

Weekly Sickness and Accident Benefits

Total

	<u>February</u>	<u>January</u>
	493	440
	112	89
	605	529
	199	128
	<u>804</u>	<u>657</u>

Claims - Death Benefits (a)

Number

Amount

	<u>February</u>	<u>Total to Date</u>
	2	113
	\$17 500	\$681 013

Group Life Insurance

The Group Life Insurance Plan was discontinued November 30, 1950. As of February 28, 1953, 4 employees who are absent due to total disability are still participating in the Group Life Insurance Plan. They were not actively at work December 1, 1950, and therefore were not eligible to participate in the new Insurance Plan. However, they will become eligible upon their return to work.

Claim Payments

Number of Checks

Number of Claims

Amount of Benefits

Total benefits paid since December 1, 1950 to date

	<u>February</u>	<u>January</u>
	960	1 157
	758	860
	\$53 443	\$66 951
	\$1 606 032	\$1 552 589

Vacation Plan

Number of employees granted permission to defer one week of their 1953 vacation to 1954

	<u>February</u>			<u>Year to Date</u>		
	<u>Weekly</u>	<u>Monthly</u>	<u>Total</u>	<u>Weekly</u>	<u>Monthly</u>	<u>Total</u>
Engineering	0	3	3	0	4	4
Manufacturing	34	6	40	38	6	44
Utilities and General Services	67	11	78	99	14	113
Community Real Estate and Services	3	3	6	4	3	7
Financial	2	0	2	2	0	2
Employee and Public Relations	0	0	0	0	0	0
Radiological Sciences	0	0	0	1	0	1
Medical	1	0	1	1	0	1
General	0	0	0	0	0	0
Total	<u>107</u>	<u>23</u>	<u>130</u>	<u>145</u>	<u>27</u>	<u>172</u>

(a) Total to date includes all claims under the old and new Insurance Plans and 9 deaths on which accidental death benefits were paid.

Payroll Section (continued)

Employee Benefit Plans (continued)

<u>U. S. Savings Bonds</u>	<u>February</u>	<u>January</u>
Number participating at beginning of month	4 332	4 257
New authorizations	79	142
Voluntary cancellations	(39)	(40)
Removals and transfers out	(17)	(27)
Transfers in	1	-0-
Number participating at end of month	<u>4 356</u>	<u>4 332</u>
Percentage of Participation		
G. E. Employees Savings and Stock Bonus Plan	43.7%	43.6%
G. E. Savings Plan	10.9%	10.7%
Both Plans	49.9%	49.5%

<u>Bonds Issued</u>		
Maturity Value	\$239 000	\$194 000
Number	4 330	4 080
Refunds Issued	75	69
Revisions in Authorizations	43	75
<u>Annual Going Rate of Deductions</u>		
G. E. Employees Savings and Stock Bonus Plan	\$1 684 723	\$1 671 286
G. E. Savings Plan	<u>479 308</u>	<u>469 149</u>
Total	<u>\$2 154 031</u>	<u>\$2 140 435</u>

<u>Withdrawal of U. S. Savings Bonds from G. E. Employees Savings and Stock Bonus Plan</u>	<u>February</u>	<u>Year to Date</u>
Number of participants withdrawing Bonds	123	259
Maturity value of U. S. Savings Bonds withdrawn	\$64 275	\$110 075

Check-Off of Union Dues

<u>Number of Payroll Deduction Authorizations in Effect</u>	<u>1-31-53</u>	<u>Cancellations And Terminations</u>	<u>Additions</u>	<u>2-28-53</u>
Hanford Atomic Metal Trades Council Building Service Employees International Unit; Local 201 (Medical Department Employees)	1 399	4	36	1 431
Hanford Guards Union, Local 21, of the International Guards Union of America	26	-0-	-0-	26
	<u>234</u>	<u>3</u>	<u>6</u>	<u>232</u>
Total	<u>1 659</u>	<u>12</u>	<u>42</u>	<u>1 639</u>

<u>Special Absence Allowance Requests</u>	<u>February</u>	<u>January</u>
Number submitted to Pension Board	5	4

<u>Military Allowance Payments</u>	<u>February</u>	<u>Total to Date</u>
Number	4	48
Amount	\$1 389.60	\$16 903.75

Payroll Section (continued)

Employees Who Have Entered Military Service

	Total to Date		
	Called to Duty	Volunteered for Duty	Total
Reserve Officers	37	3	40
Enlisted Reserve	56	6	62
National Guard	6	0	6
Selective Service	70	0	70
Voluntary Enlistments	0	114	114
Total	169	123	292

Number of Rent, Telephone and Hospital

Deductions from Salaries

	February	January
House Rent	5 035	4 394
Dormitory Rent	847	288
Barracks Rent	67	77
Trailer Space Rent	192	195
Telephone	3 969	3 939
Hospital	489	619
Total	10 599	9 512

Annuity Certificates (for duPont Service)

	February	Total to Date
Number Issued	0	96

Suggestion Awards

Number of awards	0	1 919
Total amount of awards	\$ 0	\$38 725

Employee Sales Plan

	February		Total
	Major Appliances	Traffic Appliances	
Certificates Issued	27	187	214
Certificates Voided	3	-0-	3

	February	Year to Date
Applications for normal retirement pensions	6	6
Applications for optional retirement pensions	1	2

Patent Award Payments

Number of award	1	2
Amount	\$25.00	\$50.00

Absenteeism

	February	January
Weekly - Men	3.55%	2.68%
Weekly - Women	5.17%	3.49%
Total Weekly	3.96%	2.88%
Monthly	1.99%	1.78%
Grand Total	3.46%	2.58%

Payroll Section (continued)

<u>Salary Checks Deposited</u>	<u>February</u>		<u>January</u>	
	<u>Weekly</u>	<u>Monthly</u>	<u>Weekly</u>	<u>Monthly</u>
Richland Branch - Seattle-First National Bank	736	940	725	931
North Richland Area Office - Seattle - First National Bank	9	4	11	4
Richland Branch - National Bank of Commerce	546	396	532	390
Out of state banks (Schenectady Staff)	<u>-0-</u>	<u>1</u>	<u>-0-</u>	<u>1</u>
Total	<u>1 291*</u>	<u>1 341</u>	<u>1 268**</u>	<u>1 326</u>

<u>Preferential Rates</u>	<u>February</u>	<u>January</u>
Number Eliminated	6	3
Number Currently in effect	810	816

* Week ended 2-22-53

** Week ended 1-25-53

INTERNAL AUDIT UNIT
MONTHLY REPORT - FEBRUARY, 1953

Work continued on the physical inventory program. Following are the principal activities during the month:

1. Medical Supplies in the custody of Utilities and General Services Department were inventoried on February 5.
2. Bulk Steel in the custody of Utilities and General Services Department was inventoried on February 19.
3. Essential Materials in the custody of the Manufacturing Department and located in the 100, 200 and 300 Areas were inventoried as of midnight of February 28. The quantities actually counted on February 26, 27, 28 and March 2 were adjusted for transactions between those dates and midnight of February 28.
4. Replies from department managers to letters regarding unrecorded materials in the custody of their departments (see Monthly Report for January) indicated that materials in excess of shop stocks would be transferred to excess materials or current inventories. Verification will be made of this indicated disposition. In some instances the materials were reported to be the responsibility of other departments; the corrected custodial departments will be requested to indicate the disposition to be made of these materials.

A report of the audit of procurement activities requested by the Finance Division of the Atomic Energy Commission (see Monthly Report for January) was submitted to the Manager - Finance. The audit showed that in general the Purchasing Unit is following procurement procedures which satisfy HOO-AEC requirements and which should secure materials at the lowest cost consistent with time and quality requirements. The audit report indicated the instances, noted in the course of the audit, of failure to follow established procedures.

PLANT SECURITY AND SERVICES SECTION
MONTHLY REPORT- FEBRUARY 1953

ORGANIZATION AND PERSONNEL

Number of employees on payroll:

	<u>Beginning of Month</u>	<u>End of Month</u>	<u>Increase</u>	<u>Decrease</u>
Staff	2	2		
Administration Area Maintenance	65	66	1 (a)	
Patrol and Security	586	579		7 (b)
Safety and Fire Protection	152	153	1 (c)	
Office Services (Laundry and Building Services, Clerical Services, Records Control and Procedures Analysis)	350	340		10 (d)
TOTALS	1,155	1,140	2	17

NET DECREASE: 15

(a) - Administration Area Maintenance

1 - Transferred in

(b) - Patrol and Security

7 - Terminations

(c) - Safety and Fire Protection

1 - Reactivated

(d) - Laundry and Building Services

1 - Transferred out

1 - Termination

Clerical Services

4 - New Hires

1 - Reactivated

6 - Transferred out

1 - Deactivated

5 - Terminations

Procedures Analysis

1 - Termination

SAFETY AND FIRE PROTECTION UNIT

<u>Injury Statistics</u>	<u>January</u>	<u>February</u>	<u>Year to Date</u>	<u>Comparative Period, 1952</u>
Major Injuries	0	2	2	2
Sub-Major Injuries	1	1	2	2
Minor Injuries	353	341	694	749
Exposure Hours	1,511,098	1,366,866	2,877,964	2,987,022
Major Injury F/R	0.00	1.46	0.69	0.67
Major Injury S/R	0.00	0.012	0.006	0.005
Penalty Days	0	0	0	0
Actual Days Lost	0	17	17	17
Minor Injury F/R	2.34	2.49	2.41	2.51
Estimated Medical Treatment Time Required	1,430 hours	1,372 hours	2,802 hours	3,012 hours

Industrial Fires

<u>Department</u>	<u>Area</u>	<u>No. Of Fires</u>	<u>Cause</u>	<u>Loss</u>
Engineering Department Technical Section	100-B	1	Process	\$20.00

Safety Activities

There were two major injuries during February, 1953. The first one occurred on February 11, 1953 and was the first one reported since October, 1952. The Hanford Works had accumulated 5,929,997 man hours of exposure between the above dates.

Acknowledgement from the National Safety Council of our winning its highest safety award, the "Award of Honor", was received during this month.

A new monthly accident statistical report was adopted for plantwide use. It will result in a savings of approximately \$50 per month in printing and stapling charges.

A new and simplified method of distribution of the pamphlet, "Safe Worker", results in considerable less handling by our staff and for greater accuracy in distribution. Addressograph and Mailing groups now provide this improved service.

The 100-H Area was presented with the Area Injury Reduction flag for the month of January. Publicity for same was given in Works NEWS.

A near-serious accident occurred on February 20, 1953 in 100-B Area when a full four-pound CO₂ sample cylinder was jettied over operators' room from the shearing of a defective rupture disk. Three men narrowly escaped serious injury. A complete and satisfactory investigation was conducted and corrective instruction and information will be given all Units required to handle the procedure of taking and analyzing the CO₂.

The cause of an excessive number of minor injuries in the 100-B Area during the Ball X installation was caused by thermocouple assembly. This assembly has been changed and the unsafe items eliminated. Practically no injuries have been received in the installation and assembly of same in the 100-D Area.

The anticipated routine and experimental use of Class I solvents and flammable gases in the new 329 Building, 300 Area, is being reviewed for safe usage.

A survey of all railroad crossings is being made for the purpose of reviewing the safety of crossing and then preparing and distributing to all employees a small pamphlet type of information showing location and describing the safe way at each crossing.

Fire Protection Activities

A small fire in radioactive material occurred in 111-B Building. The only loss was the material. The estimated loss was \$20.00.

Building surveys were completed on Buildings 1713-H, 183-F, 224-U, 231-Z and 3760.

A demonstration and talk was given 30 members of the Power Group in 100-D.

Fire orientation talk was given to members of the Plant Assistance group.

OFFICE SERVICES

Laundry and Building Services

<u>200-West Laundry</u>	<u>January</u>	<u>February</u>
Pounds Delivered	267,916	295,061
Pounds Rewashed	4,579	10,750
	<hr/>	<hr/>
Total Dry Weight	272,495	305,811
<u>Monitoring Section</u>		
Poppy Check - Pieces	178,409	179,155
Scaler Check - Pieces	343,171	359,178
	<hr/>	<hr/>
Total Pieces	521,580	538,333
Rewash Pieces	6,359	8,125
<u>700 Area Laundry</u>		
Flatwork - Pounds	38,101	64,481
Rough Dry - Pounds	18,962	23,214
Finished - Pounds	2,313	3,373
	<hr/>	<hr/>
Total Weight - Pounds	59,376	70,768
Estimated Pieces	77,783	92,706

The volume during the month of February in the 200-West Laundry was the greatest since the laundry has been in operation. The primary reason for this volume was the unusual incident in the Redox Area and the Mine Construction work in the 100-D area.

During the past month two new driers were installed in the 200-West Laundry which, it is estimated, will increase our drying capacity approximately 12,000 pounds a week and will allow us to discontinue working two employees on a four-to-twelve shift because of our previous shortage of drying capacity.

Clerical Services

New quarters were occupied in the fifth wing of the 703 Building by the Supervisors of Mail and Duplicating and all Addressograph equipment has been consolidated in one location.

Central Mail and Addressograph

The postal and interoffice mail are back to normal after the year end rush of reports, calendars, packages, books and the mail which accompanies the Christmas and New Year season.

Distribution of Organization and Policy Guides was down in number through the month. The Organization and Policy Guides, office letters, safety bulletins and security bulletins totaled twenty-nine mailings with six magazines and booklets on a separate count.

The new unit cost system was put into effect for pricing addressograph work.

The recent move of the addressograph files, machines and operators into one room makes a much smoother and more efficient operation. The results will become evident as the volume increases. During February the volume was less than the previous month, but the work on the files and new plates took one operator's time for the entire month.

A new distribution, "The Safe Worker", which previously was done by the Safety Unit, was added to the routine addressograph assignments. A request for a new file was made for "This Way, Please" which will consist of approximately 500 plates.

<u>Types and Pieces of Mail Handled</u>	<u>February</u>	<u>January</u>
Internal	1,307,153	1,285,175
Postal	85,021	89,380
Special	1,967	1,794
	<hr/>	<hr/>
Total Mail Handled	1,394,141	1,376,349
Total Postage Used	\$3,041.95	\$3,328.03
Total Teletypes Handled	3,162	3,271
Total Store Orders Handled	396	398

<u>Addressograph Lists</u>	<u>February</u>		<u>January</u>	
	<u>Number of Runs</u>	<u>Total Copies</u>	<u>Number of Runs</u>	<u>Total Copies</u>
Plant Name List	96	176,278	102	197,628
Housing List	14	28,799	14	42,077
Payroll List	6	34,805	6	14,769
Total New Plates	6,483		4,860	
Total Corrected Plates	396		576	
	<hr/>		<hr/>	
	6,879		5,436	

Office Equipment
Office Furniture

Budget forms for FY 1955 and review of FY 1954 were received from all departments with their justifications for additional office furniture and equipment. Departmental requirements are being consolidated onto a master form to be presented to General Cost for approval.

A Request for Appropriation # 53-S-14 for the amount of \$5,000 was submitted to the A & B Committee for their approval. This request covered the grey metal office furniture ordered by AEC for Blaw-Knox and delivered to GE. In keeping with the policy of exchanging grey metal furniture and issuing used wood furniture to the construction areas, this transaction was approved.

A requisition was issued for 50 lunchroom chairs for replacement of badly worn plywood-seat chairs located in the 100-F Area lunchroom.

A requisition was placed to refinish 100 desks and 50 swivel chairs. Two truck loads of refinished furniture were received and two loads were shipped out during the month.

Office Machine Repair

Several maintenance problems are still existing in office machine cleaning equipment, such as oven not heating to a satisfying drying capacity, vapor condensing in air line and discharging into cleaning solution, hot water tank too small to supply adequate water for washing machines, spray booth needs vapor lamp installed, etc. These discrepancies have all been reported and maintenance is gradually eliminating them.

Storage shelving has been assembled and work will be scheduled to deliver warehouse stock from Building 179 to 722-C.

The service calls from 100-K Area have increased considerably. This is probably caused by the following two factors: a step-up in Kaiser Engineering Company's office work, and the machines are older models and starting to show wear through use under construction conditions.

The Service Superintendent of Royal Typewriter Company conducted an instruction class for one and a half days with twelve employees attending.

The Service Manager of Friden Calculator Company instructed one mechanic on the repair of a Friden Square Root Calculator.

<u>Office Machine Repair</u>	<u>February</u>	<u>January</u>
Office Machines Repaired in Shop	199	152
Office Machine Service Calls	534	462
Machines Picked up by Survey	22	13
	<hr/>	<hr/>
Total Machines Serviced	755	627

Central Printing

Central Printing's production was very good this month considering all the difficulties experienced. First the flu epidemic caused an excessive amount of absenteeism, then the deaths of relatives of two employees charged up another 88 hours to absenteeism.

New work benches were installed in the press room. Rearrangement of the presses was accomplished.

The first copy (Community Section) for type setting of the General Manager's Annual Report was received on 2-5-53. This material has been set and no additional copy has been received on this report since the above date.

The printing presses were thoroughly cleaned and given a routine sixty day check by Office Machine Repair.

The printing and binding regulations governing operation of the Class "B" Printing Plant were carefully reviewed during February to assure strict compliance with these rules.

<u>Work Completed</u>	<u>February</u>	<u>January</u>
Orders Received	399	346
Orders Completed	381	361
Copies Printed	1,087,817	2,249,384
Back Log	52	49
Negatives Masked	630	477
Negatives Processed	717	571
Litho Plates Processed	611	544
Photo Copy Prepared	212	202

Stenographic Services

"This Way, Please" was reviewed with a representative of Procedures Analysis and a number of suggestions made on minor changes for the forthcoming revision of this book. These suggestions were prompted primarily by ideas and from questions raised by a large number of stenographers who use the book.

"Confidentially Yours", issued this month by Technical Services was carefully reviewed and will be of great value, both as a training help and for constant reference on questions concerning preparation, handling and control of classified matter.

The following individual assignments requiring more than 50 hours were completed during February:

142 page booklet, duplimat masters typed, collated and bound - Training Services Unit - 93 hours.

Grievance Card File typed for Union Relations Section - 75 hours.

Accounts Receivable balances typed - 88 hours.

Loan assignments were heavy again this month, accounting for 1,501 hours.

<u>Breakdown of Hours</u>	<u>February</u>	<u>January</u>
Dictation and Transcription	13	8
Machine Transcription	33	30.5
Letters	4	18
Rough Drafts	115.5	155.5
Duplimats, Xerography	286.5	255.5
Miscellaneous	387	319.5
Training Time	328	413
Meeting Time	4.5	--
Unassigned Time	40	64
Absenteeism	43.5	--
	<hr/>	<hr/>
Total	1,255	1,264
Employees Loaned to other Departments	1,501.5	1,292
	<hr/>	<hr/>
Total Hours Available	2,756.5	2,556

Area Mail and Duplicating Services

During this month, a remodeling job was begun of offices occupied by Duplicating personnel in the 760 Building. Changes effected will provide more space, better lighting, reduced noise, and a more efficient equipment layout.

Among several large orders handled by the various Duplicating offices this month was a priority job for Training Unit involving 29,000 impressions. This order was received on February 19 by 703 Duplicating and was completed on the following day.

Seven Formal Reports for Technical Information Services were completed by personnel in the 300 Area Duplicating office.

<u>Mail Statistics</u>	<u>February</u>	<u>January</u>
Total Internal Mail Handled	258,798	216,759
<u>Duplicating Statistics</u>		
Orders Received	2,827	2,787
Orders Completed	2,840	2,985
Orders on Hand	49	82
Offset Plates	15,906	17,182
Offset Copies	774,562	958,220
Stencils	291	324
Stencil Copies	7,545	7,348
Ditto Masters	835	513
Ditto Copies	18,667	13,394
Xerox Plates	1,408	1,337

Records Control

Quantity of records received, processed and stored:

Community Real Estate & Services Department	9	Standard Storage Cartons
Employee and Public Relations Department	4	" " "
Engineering Department	122	" " "
Financial Department	79	" " "
Manufacturing Department	40	" " "
Nucleonics Division Staff	1	Standard Storage Carton
Radiological Sciences Department	97	Standard Storage Cartons
Utilities and General Services Department	87	" " "

TOTAL 439 Standard Storage Cartons

Persons provided records service: 650

Records Destroyed: 10 Cartons

Records Cartons Issued: 499

Percentage of Records Service Center Vault occupied by records is 100% plus excluding Civilian Defense portion.

Twenty-seven requests for file cabinets were received, 23 requests were filled. Twenty-three requests for file cabinets are pending. Three combination locked cabinets were exchanged by substituting key locked cabinets resulting in a savings of \$375.00 (\$200.00 cost of combination cabinet minus \$75.00 cost of key locked cabinet equals \$125.00 savings per cabinet exchanged). Fourteen key locked cabinets were picked up with no exchange resulting in a savings of \$1,050.00. Six orders for file cabinets were cancelled through standardization and more efficient use of cabinets in use by the requester.

Uniform filing was established in seven offices during the month. A total of 412 offices have installed the uniform filing system to date.

Remington Rand, Inc. has developed and returned as completed 584 reels or 1,957,367 images to date.

Eight Evaluations of Records for disposal were approved by the Records Committee. Four Evaluations of Records for disposal were sent to the Records Committee for approval. Eleven additional Evaluations of Records for disposal were developed and submitted for internal departmental approval.

Procedures Analysis

	<u>January</u>	<u>February</u>
Printing Orders Received	432	392
Printing Orders Rejected	11	12
New Form Numbers Assigned	81	91
Forms Designed	72	90
Suggestions Processed	5	3

The 200-W Laundry Scoping Report was completed on February 5, and submitted for review. An estimated \$63,926 in annual savings are possible. The amount of time required to complete this analysis has been established as 44 man weeks. From this scoping data it has been determined that the 200-W Laundry Survey will be scheduled to begin March 3, 1953.

A proposed revision to Organization and Policy Guide 10.3 has been approved. All of the necessary forms required for this new procedure have been ordered. Organization and Policy Guide 14.6 issued 9-9-52 titled "Free-Issue Project Clothing and Personnel Equipment" has been revised and rewritten in the form of two separate Organization and Policy Guides. These rough draft versions of the Policy Guide have been submitted to the chairman of the Protective Clothing Committee for review.

Suggestions Investigated and Completed

- No. 965 - Mechanized Circular Collating Table
- No. 10560 - Redesign "Reason Sheet" form W-833-BS
- No. 10669 - Pamphlet Showing Reproduction Costs and Methods

There have been a total of 91 form numbers assigned during the month of February. Of this total 63 form numbers were of a permanent type and 28 of these form numbers were X numbers - of a temporary or one time type.

<u>Savings Realized for February</u>	<u>One Time</u>	<u>Annual</u>
Forms Control	\$ 895	--
Procedures Analysis	--	--
Total Annual Savings for February		\$ 895
Accumulated Savings for 1953		\$6900

ADMINISTRATION AREA MAINTENANCE UNIT

Status of Work Progress

- IR-125 Ventilation, 700 Area Rest Room Facilities: Work approximately 95% complete.
- IR- 760 Building Drafting Room Improvements: Awaiting AEC action.
- IR- 761 - 762 Building Alterations: Awaiting AEC action.

- IR- Central Stores Warehouse phone and electrical outlets and partitions: Limited Work Authority received; outlet installation expected to be completed week of March 2.
- CA-507 720 Parking Lot and Extension of Flagler Avenue: Project deferred to FY 1954 per request of A & B Committee.
- CA-505 Floor Covering, 703 and 760 Buildings: Awaiting AEC action.
- CA-504 Improved Lighting, 700 Area Buildings: Design being studied.
- IR- Electrical Distribution Headquarters Revisions: Work held up pending determination of permanent future use of building.
- IR- 729 Building Alterations: Approved by A & B February 26 and forwarded to AEC for action.
- New Office Buildings (AEC): Informally notified that Washington AEC has requested additional information from HOO re frame construction vs concrete.
- New Transportation Facility: Supplied AEC requested information on equipment and justification of building space requirements.
- 713 Building, Conversion of 6000 Square Feet in East End for Office Space: Design group working on preliminaries. Project included in FY 1954 Construction Budget.

General Maintenance

Steam generated hot water tanks at 705 and 713-A Buildings were replaced with electric hot water tanks, which will permit shutdown of steam lines to these buildings during summer months.

The following valves were tested and repaired during the month: 67 safety relief, 7 D-Pilot, 4 Spence "E", and 2 temperature control valves.

Steam leak at field welded joint in the underground steam line at W-10 was repaired. All leaks detected to date in the underground system have been at field weld joints.

Installed two additional steam radiators in 703 and one electric drinking fountain in Excess Warehouse 52.

Grates were replaced in No. 1 boiler, 1131 Area.

Safety guards were made for pump shafts and fans at Stores Warehouse.

The installation of electric heaters in Excess Stores Warehouses is practically complete. These heaters replace oil stoves.

Thirty fluorescent light fixtures were installed in 717 Building to improve lighting conditions.

Electric lift trucks at Central Stores are being serviced and battery chargers are being set up. Daily checks are being maintained until a work history can be established.

Reception Room and several offices in 705 Building were rearranged with Hauserman partitioning to permit better utilization of office space.

Hauserman partitioning was rearranged in fifth wing of the 703 Building to accommodate change in personnel.

New ladders were installed on 25 warehouse docks in Excess Yard. Old ladders were badly worn and broken. Seventy-five broken fence posts in the 1131 Area fence were stubbed and banded.

Two rooms in Kadlec Hospital were painted and safety striping in 700 Area was touched up.

Several nameplates and miscellaneous small signs were made.

Locksmith has "master-keyed" several door locks for 100-K Area. Both locksmith and glazing work were heavy during the month.

Inventories were checked and items for which there is no imminent need were excessed.

Steam Operation

Numbers 1, 2 and 4 Boilers were in service for the entire month, with Number 3 available in reserve.

As a result of continued mild weather, the quantity of steam generated was 7.5% less than for the same month last year.

Soft water usage at Kadlec Hospital decreased to an average of approximately 40,600 gallons per day.

Operations at the 1131 Heating Plant were normal throughout the month, with one boiler carrying the load.

Operation of the Central Stores Heating Plant is becoming smoother as the personnel become more familiar with equipment. A tank-truck load of 5,000 gallons of No. 5 Bumer Fuel was received on February 2 and another load of 5,600 gallons on February 21. In order that all of our miscellaneous Power Operators will be familiar with the operation at both 1131 and Central Stores Heating Plants, an interchange of operators between the two locations has been initiated for several days each week on day shift.

Coal Consumed: 1,540.30 net tons.

Steam Generated:	23,227.8 M. lbs.
Steam Leaving Plant:	19,743.6 M. lbs.
Steam Delivered:	17,761.2 M. lbs.

Total Water Softened:	3,896,000 Gallons
Total Soft Water Sent to Kadlec Hospital:	1,137,460 Gallons
Total Soft Water Sent to 784 Heating Plant:	2,758,540 Gallons
Soft Water Served to Kadlec Hospital:	672 Hours

SECURITY AND PATROL UNIT

Document Report

Number of classified documents unaccounted for as of February 1: 375
 (155 of the above 375 documents are chargeable to E. I. du Pont de Nemours & Co.)

Number of classified documents reported as unaccounted for during February 1953: 0

Number of classified documents recovered during the month of February: 6

Number of classified documents remaining unaccounted for as of March 1, 1953: 369
 (155 of the above 369 are chargeable to E. I. du Pont de Nemours and Company)

The Non-Technical Document Review Board held two meetings during the month of February and it reviewed a total of 100 classified documents. Of this number -

- 22 were downgraded to "Restricted",
- 3 were downgraded to "Official Use Only",
- 59 were declassified,
- 14 had their classification retained and
- 2 were referred to the Coordinating Organization Director.

There were seven security violations during February committed by General Electric personnel involving improper storage of classified material.

Security Education

Three items which appeared in the Works NEWS were concerned with the subject of Security.

There were 324 security meetings held and attended by 5,015 employees of the General Electric Company. A representative of the Security Unit showed one of the security films at some of these meetings as shown below:

"The Man on the Left" was shown at one meeting with twenty-four people in attendance.

"The Defense Rests" was shown at four meetings, each with an average attendance of twenty people, or a total attendance of eighty people.

"Only The River" was shown at two meetings with an average attendance of twenty-two employees at each meeting.

"Signal 99" was shown at thirty-five meetings, each with an average attendance of forty-one employees.

GE Security Bulletin No. 72, entitled "Reporting Suspicious Acts or Activities", was issued on February 24.

The following posters were distributed and posted during the month:

100 copies of the poster furnished by the Munitions Board with the slogan "Deeds, Not Words" were posted throughout the plant areas.

Revisions were made and distributed on the Organization and Policy Guide instructions regarding security regulations as noted below:

OPG No. 15.10 entitled "Authorization and Control of Visitors" on February 6, regarding advance notice of visits to specified Atomic Energy Commission installations.

OPG No. 15.12 entitled "Transmitting Classified Documents and Material", on February 12, to remove the requirement for material classified "Restricted" of being processed through Classified Files or the Blueprint Reproduction Unit on offsite transmittals.

A memorandum was issued to all department and unit heads on February 17 entitled "Temporary Location of 200-E Main Badge House". This was issued relative to the temporary relocation of the 200-E fence line to exclude the majority of administrative and service buildings within the area, to expedite the construction of certain facilities for the 200-E Area.

A meeting was held with personnel of the Employee and Public Relations Department and Technical personnel of the Engineering Department on February 20 for the purpose of emphasizing the need for having applicants accurately complete their Personnel Security Questionnaire forms in order to obtain security clearance for employment. It was agreed that a "fly sheet" would be attached to each set of questionnaire forms calling attention to the need for accurately completing each question in full, and particularly to note the list of organizations relative to items 17, 18, 19 and 20.

A representative of both the General Electric Company and Atomic Energy Commission Security Office made a physical survey of the National Carbon Company's facilities at Cleveland, Ohio, and Columbia, Tennessee, during the period February 8 through 12, 1953. This was made in conjunction with Special Agreement G-5 and G-12, wherein overall document control, security education and shipping of final product, all according to security regulations, were discussed.

Fifty-eight employees of the General Electric Company received a "Q" security orientation talk from either a representative of the Security Unit or an Area Captain during the month of February.

There was one actual evacuation held at 11:43 P.M., February 5, when a Class I emergency existed and evacuation of the 202-S "exclusion" area was made. The area was evacuated at 11:55 P.M. and the caravan arrived at the main gate, 200-W Area, at 12:14 A.M.

Statistical Report of Security Patrol Activities

	<u>100-B</u>	<u>100-D</u>	<u>100-F</u>	<u>100-H</u>	<u>200-E</u>	<u>200-W</u>	<u>300</u>
Pat Searches	84	84	93	96	65	74	6
Escorts	32	24	11	42	51	31	62
Ambulance runs	0	5	8	0	0	6	5
Passes issued:							
One day temporary	60	20	7	8	4	33	19
Travel	10	0	0	0	0	0	25
Red Tag	97	276	32	26	123	558	189
Telephonic	6	5	0	0	0	0	8
Post Contacts	516	581	463	337	316	1,106	827

Other Security Patrol activities computed by hours: 300 & 700 Areas

Security File Check	162	171	340.4	360	131	244	2,880
Security Building Check	432				103		128

Other Security Patrol Activities:

Buildings and doors opened:	234
Railroad Gates opened:	236
Master System Keys issued:	81
Operation gas pumps:	123

Arrest Report:

<u>Violation</u>	<u>Number of Violations</u>	<u>Cont. Cases from Jan.</u>	<u>Cases Cleared</u>	<u>Pending</u>	<u>Fined</u>	<u>Jailed</u>	<u>Dis-missed</u>
Speeding	4	1	4	1	4	0	0
Illegal Parking	2	0	2	0	1	0	1
Public Intoxication	2	0	2	0	2	2	0
Total	8	1	8	1	7	2	1

Citation Tickets Issued:	8
Warning Tickets Issued:	0
Verbal Warnings:	0

Patrol Training Activities:

A total of 251 Security Patrolmen attended firearms training during the month of February and 239 Patrolmen received classroom instruction during the same period. Training courses received during the month were as follows:

Safety Class	1/2 hour
Operations Classes	1 hour
Security Class	1/2 hour

Effective February 3, 1953, the 100-K post was increased from a one man to a two man post.

Security Field Inspection Activities

Contacts made to locate unaccounted for documents:	29
Searches conducted to locate unaccounted for documents:	8
File combination due, custodian advised to change it:	1
File combinations changed:	9

Procedure Memorandum No. 45, Revision No. 1, entitled "Security Patrol Work Schedule" was issued January 30, 1953, providing work hours for Group No. 1 shift, 700 Area, to be from 11:15 P.M. to 7:15 A.M.

HANFORD WORKS
 General Electric Company
 Richland, Washington

REPORT OF VISITORS FOR PERIOD ENDING FEBRUARY 28, 1953

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data Class.</u>	<u>Unclass. Areas</u>
ENGINEERING DEPARTMENT - ADMINISTRATIVE TECHNICAL						
I. Visitors to this Works						
D. H. Almann General Engineering Laboratory Schenectady, New York	Consultation on canning Laboratory methods, P-10, fluoride work, corrosion problems, Purex and Redox	O. H. Greager	2-25-53	2-27-53	X	100-B 105-B, 105-C, 108-B 200-W Redox 300 303
II. Visits to other Installations						
E. B. Montgomery to: North American Aviation Downey, California	Conference on cost of operating reactors	A. B. Martin	2-23-53	2-24-53	X	
ENGINEERING DEPARTMENT-TECHNICAL SECTION						
I. Visitors to this Works						
E. C. Anderson Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program	H. F. Zuhr	2-20-53	3-20-53	X	100-B 105-B, 105-C 100-H XXX 300 XXX; 700
L. J. Brown Los Alamos Scientific Lab. Los Alamos, New Mexico	Run experiment at Reactor	H. F. Zuhr	1-26-53	2-7-53	X	100-B 105-C 100-D XXX 100-H 105 300 XXX; 700
A. D. Callihan Oak Ridge National Laboratory Oak Ridge, Tennessee	Discuss development of Purex Program	R. B. Richards R. E. Tomlinson	2-9-53	2-19-53	X	100-D 105 200-W 221-U, 234 300 XXX

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Departure</u>	<u>Restricted Data</u>	
				<u>Class.</u>	<u>Unclass. Areas</u>
P. Cohen Westinghouse Atomic Power Division Pittsburgh, Pennsylvania	Discuss Hanford in-pile Division experiments for Westinghouse	G. E. McCullough	2-3-53	X	100-B 105-B 100-H 105 300 XXX; 700
C. L. Cowan, Jr. Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program	H. F. Zuhr	4-17-53	X	100-B 105-B, 105-C 100-H XXX 300 XXX; 700
D. O. Darby Oak Ridge National Laboratory Oak Ridge, Tennessee	Consultation on Purex data, metal recovery	F. W. Woodfield	2-16-53	X	200-E 201-C 200-W 231, 234, 221- Redox 300 XXX
J. E. Draley Argonne National Laboratory Chicago, Illinois	Discuss aqueous corro- sion of aluminum	J. J. Cadwell	2-9-53	X	100-B 108-B 100-D 105 200-E 221-B 300 XXX
E. Fast Material Testing Reactor Phillips Petroleum Company Arco, Idaho	Regarding Material Testing Reactor Pro- ject Radiation Program	A. T. Whatley	2-16-53	X	100-B 105-C 100-D 105-D 200-W Redox 300 XXX
T. F. Fisher Knolls Atomic Power Lab. Schenectady, New York	Mock up test of KAPL 108 irradiation	H. F. Zuhr	2-9-53	X	100-D 105-D 100-H 105
F. B. Harrison Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program	H. F. Zuhr	4-17-53	X	100-B 105-B, 105-C 100-H XXX 300 XXX; 700
F. N. Hayes Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program and discuss biology program	H. F. Zuhr	3-20-53	X	100-B 105-B, 105-C 100-F 108-F 100-H XXX 300 XXX; 700
A. C. Jealous Oak Ridge National Lab. Oak Ridge, Tennessee	Discuss separations and development processes	F. W. Woodfield	2-16-53	X	200-E 201-C 200-W Redox, 221-U 300 XXX

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data</u>	
					<u>Class.</u>	<u>Unclass. Areas</u>
J. W. Landry Oak Ridge National Lab. Oak Ridge, Tennessee	Consultation on Purex data, metal recovery	F. W. Woodfield	2-16-53	2-19-53	X	200-E 201-C 200-W 231, 234, 221-U, Redox 300 XXX
E. S. Lembersky Westinghouse Atomic Power Division Pittsburgh, Pennsylvania	Discuss Hanford in-pile Division experiments for Westinghouse	G. E. McCullough	2-2-53	2-3-53	X	100-B 105-B 100-H 105 300 XXX; 700
W. B. Lewis Phillips Petroleum Company Arco, Idaho	Regarding Material Testing Reactor Project Radiation Program	A. T. Whatley	2-16-53	2-17-53	X	100-B 105-C 100-D 105 200-W Redox 300 XXX
R. B. Lindauer Oak Ridge National Lab. Oak Ridge, Tennessee	Consultation on Purex data, metal recovery	F. W. Woodfield	2-16-53	2-19-53	X	200-E 201-C 200-W 231, 234, 221-U, Redox 300 XXX
J. D. McLendon Carbide and Carbon Oak Ridge, Tennessee	Consultation on criticality hazards of product production	R. E. Tomlinson	2-9-53	2-12-53	X	100-D 105 200-W 221-U, 234 300 XXX
D. M. Paige American Cyanamid Company Arco, Idaho	Selection of mechanical equipment for design freeze	F. W. Woodfield	2-17-53	2-18-53	X	200-W 221-U, Redox 300 XXX
W. H. Pennington Materials Testing Reactor Phillips Petroleum Company Arco, Idaho	Regarding Material Testing Reactor Project Radiation Program and observe canning line	A. T. Whatley W. L. Schalliol	2-16-53	2-18-53	X	100-B 105-C 100-D 105 200-W Redox 300 303
C. R. Poole American Cyanamid Company Arco, Idaho	Selection of mechanical equipment for design freeze	F. W. Woodfield	2-17-53	2-18-53	X	200-W 221-U, Redox 300 XXX
P. R. Powell Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program	H. F. Zuhr	2-16-53	4-17-53	X	100-B 105-B, 105-C 100-H XXX 300 XXX; 700

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<u>Name - Organization</u>	<u>Purpose of visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data</u>	
					<u>Class.</u>	<u>Unclass. Areas</u>
F. Reines Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program	H. F. Zuhr	2-25-53	4-17-53	X	100-B 105-B, 105-C 100-H XXX 300 XXX; 700
W. F. Schaffer Oak Ridge National Lab. Oak Ridge, Tennessee	Design and operation of large diameter pulse column	F. W. Woodfield	2-16-53	2-19-53	X	200-W Redox, 221-U 300 XXX
R. L. Schuch Los Alamos Scientific Lab. Los Alamos, New Mexico	Discuss neutrino program and discuss biology program	H. F. Zuhr	2-15-53	3-20-53	X	100-B 105-B, 105-G 100-F 108-F 100-H XXX 300 XXX; 700
A. Scott Reed College Portland, Oregon	Consultation on agreement with Reed College	A. H. Bushey H. R. Smith	2-12-53	2-13-53	X	300 XXX
G. Sherrard Bird Machine Company South Walpole, Massachusetts	Consultation on details regarding modification of one of Hanford's centrifuges	N. G. Wittenbrock	2-11-53	2-12-53	X	300 XXX
E. F. Thurston American Cyanamid Company Arco, Idaho	Selection of mechanical equipment for design freeze	F. W. Woodfield	2-17-53	2-19-53	X	200-W 221-U, Redox 300 XXX
R. C. Vogel Argonne National Lab. Chicago, Illinois	Information on separations process chemistry	F. W. Albaugh	2-11-53	2-12-53	X	200-W Redox 300 XXX
W. R. Wallin American Cyanamid Company Arco, Idaho	Selection of mechanical equipment for design freeze	F. W. Woodfield	2-17-53	2-19-53	X	200-W 221-U, Redox 300 XXX
M. P. Warren Los Alamos Scientific Lab. Los Alamos, New Mexico	Work on neutrino program	H. F. Zuhr	2-25-53	4-1-53	X	100-B 105-B, 105-C 100-H XXX 300 XXX; 700
W. F. Witzig Westinghouse Atomic Power Division Pittsburgh, Pennsylvania	Discuss Hanford in-pile Division experiments for Westinghouse	A. T. Whalley	2-16-53	2-17-53	X	100-B 105-C 100-H 105 300 XXX; 700

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					<u>Class.</u>	<u>UnClass.</u>	<u>Areas</u>
C. J. Koch General Electric Company Schenectady, New York	Inspect pumping installations installa-A..B. Greninger		2-5-53	2-7-53	X		100-B XXX 200-W XXX 700
ii. Visits to other Installations							
T. W. Ambrose to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on new fuel element develop- ment	C. E. Lacy	2-2-53	2-3-53	X		
T. W. Ambrose to: Battelle Memorial Inst. Cincinnati, Ohio	Consultation on new fuel element develop- ment	H. R. Nelson	2-4-53	2-4-53	X		
T. W. Ambrose to: Ames Laboratory Ames, Iowa	Consultation on new fuel element develop- ment	F. A. Spedding H. A. Wilhelm	2-5-53	2-6-53	X		
R. E. Connally to: Radiation Laboratory University of California Berkeley, California	Discuss counting methods and instruments	A. Ghiorso	2-5-53	2-6-53	X		
E. A. Eschbach to: Knolls Atomic Power Schenectady, New York	Consultation on new fuel element develop- ment	C. E. Lacy	2-2-53	2-3-53	X		
E. A. Eschbach to: Battelle Memorial Inst. Cincinnati, Ohio	Consultation on new fuel element develop- ment	H. R. Nelson	2-4-53	2-4-53	X		
E. A. Eschbach to: Ames Laboratory Ames, Iowa	Consultation on new fuel element develop- ment	F. A. Spedding H. A. Wilhelm	2-5-53	2-6-53	X		
E. A. Eschbach to: Argonne National Lab. Chicago, Illinois	Consultation on new fuel element develop- ment	F. G. Foote	2-9-53	2-9-53	X		

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data</u>		
					<u>Class.</u>	<u>UnClass.</u>	<u>Areas</u>
W. T. Kattner Simonds Saw and Steel Co. Lockport, New York	Observe metal fabrication	A. D. Potts C. H. Emery	6-18-52	6-30-53	X		
W. T. Kattner to: Feed Materials Production Center Fernald, Ohio	Consultation on metallurgy of uranium	J. Cibojski	8-1-52	6-30-53	X		
W. T. Kattner to: Argonne National Lab. Chicago, Illinois	Metallurgical consultations	F. G. Foote	9-1-52	6-30-53	X		
W. T. Kattner to: Mallinckrodt Chemical Wks. St. Louis, Missouri	Observe and discuss uranium reduction and casting	W. H. Keller	9-25-52	3-31-53	X		
W. T. Kattner to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Metallurgical consultations	J. S. Parker	10-7-52	6-30-53	X		
W. T. Kattner to: E. I. du Pont de Nemours & Co. Savannah River Ordnance Augusta, Georgia	Inspection of facilities	P. J. Hagelston P. Permar	2-9-53	2-14-53	X		
R. L. Knecht to: National Lead Company Fernald, Ohio	Observe processing of uranium	G. W. Wunder	2-16-53	12-31-53	X		
G. E. McCullough to: Mallinckrodt Chemical Wks. St. Louis, Missouri	Attend conference on metal quality	C. D. Harrington	2-2-53	2-3-53	X		
T. C. Nelson, Jr. to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Consultation on plutonium metallurgical problems	A. S. Coffinberry	2-9-53	2-14-53	X		
W. J. Ozeroff to: Knolls Atomic Power Lab. Schenectady, New York	Thermal testing reactor discussion	R. Kanne L. Tonks	2-26-53	2-27-53	X		

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data Class.</u>	<u>UnClass.</u>	<u>Areas</u>
O. W. Rathbun to: National Lead Company Fernald, Ohio	Observe processing of uranium	G. W. Wunder	2-9-53	12-31-53	X		
O. W. Rathbun to: Simonds Saw and Steel Co. uranium Lockport, New York	Observe processing of uranium	A. D. Potts	2-11-53	2-20-53	X		
K. L. Sanborn to: E. I. du Pont de Nemours & Co. Wilmington, Delaware	Conference on acceptance test for stainless steel	M. A. Streicher	2-9-53	2-13-53	X		
W. L. Schalliol to: Mallinckrodt Chemical Wks. St. Louis, Missouri	Attend conference on metal quality	C. D. Harrington	2-2-53	2-3-53	X		
I. D. Thomas to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Consultation on metallurgical problems	A. S. Coffinberry	2-9-53	2-21-53	X		
A. T. Whatley to: Phillips Petroleum Company Arco, Idaho	Deliver samples for exposure in Material Test Reactor and technical discussions	W. H. Pennington	9-30-52	3-31-53	X		
A. T. Whatley to: Phillips Petroleum Company Idaho Falls, Idaho	Technical discussions on exposure in Materials Test Reactor	W. B. Lewis	11-10-52	5-31-53	X		
P. D. Wright to: National Lead Company Fernald, Ohio	Observe processing of uranium	G. W. Wunder	2-16-53	12-31-53	X		
J. C. Fox to: Argonne National Lab. Chicago, Illinois	Consultation on test facilities	J. T. Bobbitt	2-2-53	2-2-53	X		
N. R. Miller to: University of California Berkeley, California	Attend "short course in corrosion" in cooperation with National Association of Corrosion Engineers		2-1-53	2-6-53	X		X

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data</u>		
					<u>Class.</u>	<u>Unclass.</u>	<u>Areas</u>
L. P. Bupp to: University of Oregon Eugene, Oregon	Recruit technical personnel	- -	2-9-53	2-14-53		X	
L. P. Bupp to: Oregon State College Corvallis, Oregon	Recruit technical personnel	- -	2-9-53	2-14-53		X	
R. W. Wirta to: Metals & Controls Corp. Newark, New Jersey	Development of mechani- cal equipment	P. Chase	2-24-53	3-5-53		X	
R. W. Wirta to: Attleboro Baker & Co. Newark, New Jersey	Development of mechani- cal equipment	L. Burman	2-24-53	3-5-53		X	
R. W. Wirta to: Micrometallic Glen Cove, New Jersey	Development of mechani- cal equipment	Mr. Krakauer	2-24-53	3-5-53		X	
R. E. Connally to: Consolidated Eng. Corp. Pasadena, California	Discuss mass spectro- meters	A. P. Gifford	2-2-53	2-4-53		X	
R. H. Moore to: Iowa State College Ames, Ohio	Recruit chemical engi- neers	- -	2-9-53	2-10-53		X	
R. H. Moore to: University of Nebraska Lincoln, Nebraska	Recruit chemical engi- neers	- -	2-11-53	2-12-53		X	
E. P. Galbraith to: Washington State College Pullman, Washington	Recruit technical per- sonnel	- -	2-12-53	2-12-53		X	
E. P. Galbraith to: University of Idaho Moscow, Idaho	Recruit technical per- sonnel	- -	2-13-53	2-13-53		X	

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Restricted Data
Class. Unclass. Areas

Name - Organization Purpose of Visit Person Contacted Arrival Departure Class. Unclass. Areas

ENGINEERING DEPARTMENT - DESIGN SECTION

I. Visitors to this Works

G. E. Austin
Link Belt Company
Spokane, Washington

Give assistance and advice on increasing capacity of existing Link-Belt conveyor

L. C. Koke
G. R. Hosack
L. J. Nitteberg

2-10-53 2-10-53 X 700
200-E 284-E

R. B. Clendenning
Bristol Company
Waterbury, Connecticut

Repair recorders provided for C-431-B

E. S. Day, Jr.

2-25-53 2-25-53 X 100-B 105-C

G. M. Clifton
General Electric Company
Pasco, Washington

Inspect pumping installations preparatory to design of main pump units for 100-K Area

E. P. Peabody

2-4-53 2-5-53 X 100-C 190-C
200-W XXX
100-K

C. J. Koch
General Electric Company
Schenectady, New York

Discuss design of secondary pump drives

E. P. Peabody

2-4-53 2-5-53 X 100-C 190-C
200-W XXX
100-K

F. F. Hall
Charles T. Main, Company
Boston, Massachusetts

Bid evaluation studies

M. H. Russ
J. H. Snyder

2-2-53 2-6-53 X 700 762 Bldg.

E. Vynne
Cascade Distributors
Seattle, Washington

Instruct and demonstrate use of Ramset fastening

R. L. Oldright
R. R. Meyers
R. Musselman
M. J. Sirola

2-11-53 2-11-53 X 100-B XXX
700

II. Visits to other Installations

J. B. Fecht
to: Vitro Corporation of America
New York, New York

Engineering consultation on Purex Process

J. C. Tourek

2-2-53 2-7-53 X

J. B. Fecht
to: U. S. Atomic Energy Commission
Wilmington, Delaware

Engineering consultation on Purex Process

J. Lover

2-9-53 2-13-53 X

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data Class.</u>	<u>UnClass.</u>	<u>Areas</u>
J. M. Frame to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Design consultation	J. H. Julien J. S. Parker	2-20-53	2-22-53	X		
H. G. Johnson to: Vitro Corporation of America New York, New York	Engineering consultation on Purex process	J. C. Tourek	2-2-53	2-6-53	X		
E. B. LaVelle to: Oak Ridge National Lab. Oak Ridge, Tennessee	AEC Welding Committee Meeting and discussion of collateral welding problems	F. J. Lambert	2-2-53	2-3-53	X		
R. C. Mann to: Vitro Corporation of America New York, New York	Engineering consultation on Purex Process	J. C. Tourek T. G. Watkins	2-6-53	2-16-53	X		
R. C. Mann to: Oak Ridge National Lab. Oak Ridge, Tennessee	Engineering consultation on Purex Process	M. T. Kelly P. R. Bell	2-9-53	2-13-53	X		
R. C. Mann to: U. S. Atomic Energy Comm. Wilmington, Delaware	Engineering consultation on Project CA-513	F. H. Trapnell B. Taber P. Fleming	2-9-53	2-13-53	X		
R. C. Mann to: General Engineering Lab. Schenectady, New York	Consultation on instrumentation problems for CA-513	W. W. Schultz	2-17-53	2-18-53	X		
R. C. Mann to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on instrumentation problems for CA-513	C. A. Hansen, Jr.	2-17-53	2-18-53	X		
M. H. Russ to: E. I. du Pont de Nemours & Co. Wilmington, Delaware	Technical investigation on underground water studies from old files	J. A. Burns	2-6-53	2-13-53	X		

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data</u>		
					<u>Class.</u>	<u>Unclass.</u>	<u>Areas</u>
M. H. Russ t.: Sheppard T. Powell Baltimore, Maryland	Discuss ground water development program	E. L. Knoedler	2-2-53	2-7-53	X		
W. B. Webster to: Vitro Corporation of America New York, New York	Engineering consultation on Purex Process	J. C. Tourek	2-2-53	2-6-53	X		
W. B. Webster to: Oak Ridge National Lab. Oak Ridge, Tennessee	Engineering consultation	F. Steahley	2-9-53	2-13-53	X		
W. J. Love to: Bingham Pump Company Portland, Oregon	Design change of process water pump	E. R. Deardorff W. L. Smith J. T. Rayner	2-10-53	2-11-53		X	
A. J. McCrocklin to: Eemneville Power Adm. Portland, Oregon	Obtain data on BPA system for studies being made at Hanford	O. A. DeMuth	2-17-53	2-18-53		X	
G. M. Roy to: Bingham Pump Company Portland, Oregon	Design change of process water pump	E. R. Deardorff W. L. Smith J. T. Rayner	2-10-53	2-11-53		X	
ENGINEERING DEPARTMENT - SEPARATIONS SECTION							
I. Visitors to this Works							
R; A. Monnierieff Charles T. Main, Incorporated Boston, Massachusetts	Consultation on CC-506	P. J. O'Neil	2-11-53	2-11-53			X
II. Visits to other Installations							
J. C. Geller to: General Engineering Lab. Cohasset, New York	Consultation on separations problems	B. R. Prentice	2-3-53	2-4-53			X

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Restricted Data
Class. Unclass. Areas

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Class.</u>	<u>Unclass.</u>	<u>Areas</u>
G. C. Gabler to: Nuclear Electronics Division General Electric Company Schenectady, New York	Consultation on separations problems	G. R. Prout	2-3-53	2-4-53	X		
G. C. Gabler to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on separations problems	W. W. Kuyper	2-3-53	2-4-53	X		
G. C. Gabler to: Vitro Corporation of America New York, New York	Consultation on design and construction of Furex facilities	J. C. Tourek	2-5-53	2-7-53	X		
H. H. Hubble to: Vitro Corporation of America New York, New York	Engineering consultation on Furex Process	J. C. Tourek	2-2-53	2-7-53	X		
H. H. Hubble to: U. S. Atomic Energy Comm. Wilmington, Delaware	Engineering consultation on Furex Process	J. K. Lower	2-9-53	2-13-53	X		
J. E. Kelly to: Charles T. Main, Inc. Boston, Massachusetts	Liaison on Project CA-512-W	R. K. Patterson	2-16-53	2-18-53	X		
J. E. Kelly to: Knolls Atomic Power Lab. Schenectady, New York	Inspection and coordination	E. R. Frentice	2-18-53	2-18-53	X		
J. E. Kelly to: General Engineering Lab. Schenectady, New York	Inspection and coordination	B. R. Frentice	2-18-53	2-18-53	X		
J. E. Kelly to: Aircraft Nuclear Propulsion Project Cleveland, Ohio	Inspection and coordination	J. S. Farber	2-19-53	2-19-53	X		
R. C. Mann to: Vitro Corporation of America New York, New York	Consultation regarding instrumentation	J.C. Tourek	2-16-53	2-28-53	X		

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data</u>		
					<u>Class.</u>	<u>Unclass.</u>	<u>Areas</u>
D. J. Quigley to: Charles T. Main, Inc. Boston, Massachusetts	Liaison, Project CA-512-W	R. K. Patterson	2-16-53	2-18-53	X		
R. C. Hollingshead to: Byron Jackson Los Angeles, California	Design consultation with vendor	Mr. Blum Mr. Blum	2-3-53 2-26-53	2-7-53 3-6-53	X X		
B.K. Phillips to: University of Washington Seattle, Washington	Recruit personnel	- -	2-26-53	2-27-53	X		
W. D. Richmond to: Cascade Manufacturing Co. Portland, Oregon	Expedite purchase order	R. Warren J. Page C. Richmond	2-13-53	2-13-53	X		
H. P. Shaw to: Cascade Manufacturing Co. Portland, Oregon	Expedite purchase order	R. Warren J. Page C. Richmond	2-13-53	2-13-53	X		
I. Visitors to this Works (cont'd)							
F. P. Robinson General Electric Company Pasco, Washington	Adjust equipment (switch gear)	O. W. Friebe C. D. Berkeley	2-16-53	2-16-53	X		300 384 Bldg
MANAGEMENT							
I. Visits to other Installations							
W. E. Johnson to: Los Alamos Scientific Lab. of theromonuclear Los Alamos, New Mexico	Discuss aims and goals programs.	M. Roy N. Bradbury	2-11-53	2-12-53	X		
MANUFACTURING DEPARTMENT							
I. Visitors to this Works							
R. C. Carter Knolls Atomic Power Laboratory Schenectady, New York	KAPL Training Program	L. Wallace	2-2-53	2-20-53	X		100-B 105-B, 105- 100-D 105 100-F 105 100-H 105

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data</u>	
					<u>Class</u>	<u>Unclass. Areas</u>
R. C. Carter (cont'd)	KAPL Training Program	L. Wallace	2-9-53	2-9-53	X	300 XXX
J. F. Holton Knolls Atomic Power Lab. Schenectady, New York	KAPL Training Program	L. Wallace	1-22-53	3-13-53	X	100-B 105-B, 105-C 100-D 105 100-F 105 100-H 105
W. E. Craddock E. I. du Pont de Nemours & Co. 100 Area Operations Wilmington, Delaware	Training Program on Training Program on	L. Wallace	1-12-53	2-20-53	X	100-B 105-B, 105-C 100-D 105 100-F 105 100-H 105
D. R. Combs Foxboro, Incorporated Seattle, Washington	Inspect faulty equipment	H. A. Carlberg	2-12-53	2-12-53	X	200-W 221-U
D. F. Crumb International Business Machines Richland, Washington	Repair IBM equipment	J. H. Warren E. T. O'Sullivan	2-2-53	2-2-53	X	100-H 105
L. Galloway E. I. du Pont de Nemours & Co. 100 Area Operations Wilmington, Delaware	Training Program on Training Program on	L. Wallace	1-12-53	2-19-53	X	100-B 105-B, 105-C 100-D 105 100-F 105 100-H 105
A. M. Golabek E. I. du Pont de Nemours & Co. 100 Area Operations Wilmington, Delaware	Training Program on Training Program on	L. Wallace	1-12-53	2-19-53	X	100-B 105-B, 105-C 100-D 105 100-F 105 100-H 105
H. Johnston E. I. du Pont de Nemours & Co. 100 Area Operations Wilmington, Delaware	Training Program on Training Program on	L. Wallace	1-12-53	2-20-53	X	100-B 105-B, 105-C 100-D 105 100-F 105 100-H 105
F. J. Meadow E. I. du Pont de Nemours & Co. 100 Area Operations Wilmington, Delaware	Training Program on Training Program on	L. Wallace	1-12-53	2-20-53	X	100-B 105-B, 105-C 100-D 105 100-F 105 100-H 105

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					<u>Class.</u>	<u>UnClass. Areas</u>
H. E. Ost Dahl E. I. du Pont de Nemours & Co. 100 Area Operations Wilmington, Delaware	Training Program on Area Operations	L. Wallace	1-12-53	2-20-53	X	100-B 105-B, 105-C 100-D 105 100-F 105 100-H 105
J. R. Whitman International Business Machines Richland, Washington	Repair IBM equipment	E. T. O'Cullivan	2-2-53	2-3-53		X 100-H 105
III. Visits to other Installations						
H. A. Hollenbach to: Vitro Corporation of America on Purex Process New York, New York	Engineering consultation	J. C. Tourek	2-2-53	2-7-53	X	
F. A. Hollenbach to: U. S. Atomic Energy Comm. on Purex Process Wilmington, Delaware	Engineering consultation	J. K. Lower	2-9-53	2-10-53	X	
PURCHASING AND STORES SECTION - UTILITIES AND GENERAL SERVICES DEPARTMENT						
I. Visitors to this Works						
E. D. Stanley Liquid Carbonic Corporation Seattle, Washington	Deliver liquid carbon dioxide on orders HW 28298, 25484	J. L. Goodrich	2-9-53 2-16-53	2-9-53 2-16-53		X 100-F 105 X 100-D 105, 100-H 105 X 100-B 105-B
J. L. Verschueren Liquid Carbonic Corporation Seattle, Washington	Deliver liquid carbon dioxide on orders HW 25484, 28298	J. L. Goodrich	2-4-53 2-6-53 2-23-53 2-26-53 2-27-53	2-4-53 2-6-53 2-23-53 2-26-53 2-27-53		X 100-D 105 X 100-B 105-B X 100-F 105 X 100-D 105 X 100-D 105
C. Shannon Lee and Estes Kennewick, Washington	Deliver material on order HW 21740	H. H. Hart	2-3-53	2-3-53		X 100-D 105
L. Carter West Coast Fast Freight Kennewick, Washington	Deliver material on order HW 27510	H. H. Hart	2-5-53	2-5-53		X 200-W XXX

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L. Carter West Coast Fast Freight Kennewick, Washington	Deliver material on order OGT 11543	H. L. Morgan	2-18-53	2-18-53	X		100-B 105-C
	Deliver material on order OGT 11543	H. L. Morgan	2-20-53	2-20-53	X		100-B 105-C
	Deliver material on order OGT 11543	H. L. Morgan	2-26-53	2-26-53	X		100-B 105-C
I. Wilson Lee and Estes Kennewick, Washington	Deliver material on order	H. L. Morgan	2-6-53	2-6-53	X		100-D 105
G. Hixon Inland Motor Freight Kennewick, Washington	Deliver material on order HWC 15751	H. L. Morgan	2-16-53	2-16-53	X		200-E 272-E Bldg.
E. A. Janes Consolidated Freightways Kennewick, Washington	Deliver material on order 29388	H. L. Morgan	2-17-53	2-17-53	X		200-W 271-U
J. McCracken Columbia Gas and Heat Kennewick, Washington	Inspect equipment	R. J. Gaudy	2-13-53	2-16-53	X		200-W XXX
R. J. Bledsoe X-ray Department General Electric Company Seattle, Washington	Supervise installation of apparatus purchased on order HW 25097	G. J. Hayward	2-13-53	3-6-53	X		300 3746-A
J. W. Burton Roberts Filter Company Darby, Pennsylvania	Inspect and adjust water clarification equipment furnished by Dorr Company	G. J. Hayward	2-2-53	2-6-53	X		100-B 183-C
C. Ellison High Voltage Eng. Corp. Cambridge, Massachusetts	Inspect electrostatic generator purchased on order HWC 13651	G. J. Hayward	2-14-53	2-28-53	X		300 3745-A Bldg.
D. C. Erdman Electro Circuits, Inc. Pasadena, California	Consult on start-up of reflectoscope modified on order HWC 908	G. J. Hayward	2-17-53	2-17-53	X		300 3704-Z Bldg.

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Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data	
					Class.	Unclass. Areas
T. Robbins X-ray Department General Electric Company Seattle, Washington	Supervise installation of apparatus on Purchase Order HW 25097	G. J. Hayward	2-13-53	3-6-53	X	300 3746-A
C. V. Roberts Roberts Filter Company Darby, Pennsylvania	Inspect and adjust water clarification equipment furnished by Dorr Company	G. J. Hayward	2-2-53	2-6-53	X	100-B 183-C
J. O. Veach Dorr Company Wichita, Kansas	Inspect and adjust water clarification equipment furnished by his firm	G. J. Hayward	2-2-53	2-6-53	X	100-B 183-C
G. P. White Roberts Filter Company Darby, Pennsylvania	Inspect and adjust water clarification equipment furnished by Dorr Company	G. J. Hayward	2-2-53	2-6-53	X	100-B 183-C
II. Visits to other Installations						
A. W. Bradley to: Cascade Manufacturing Company Portland, Oregon	Expedite retooling of aluminum assemblies	R. Warren J. Page	2-13-53	2-14-53	X	
H. A. Hauser to: Precision Spinning Company Seattle, Washington	Negotiate final settlement of order HWC 150	B. M. Stephanus	2-15-53	2-17-53	X	
W. T. Nolan to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Interview for transfer	R. C. Mark	2-16-53	2-18-53	X	
J. F. Spease to: Byron Jackson Company San Francisco, California	Procure replacement pumps for metal recovery	- -	2-15-53	2-20-53	X	
G. H. Wright to: Byron Jackson Company Los Angeles, California	Consultation on critical pump problems	E. C. Lindros Mr. Blum	2-4-53	2-5-53	X	

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					<u>Class.</u>	<u>Unclass.</u>

G. H. Wright to: Peerless Pump Division Food Machine & Chemical Corp. Los Angeles, California	Consultation on critical pump problems	Mr. Lundy	2-4-53	2-4-53		X	
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PLANT SECURITY AND SERVICES SECTION - UTILITIES AND GENERAL SERVICES DEPARTMENT

I. Visits to other Installations							
R. E. Jaynes to: National Carbon Company Cleveland, Ohio	Establish security measures in conjunction with Agreements G-5 and G-12	C. G. Elrick	2-10-53	2-11-53		X	
R. E. Jaynes to: National Carbon Company Columbia, Tennessee	Establish security measures in conjunction with Agreements G-5 and G-12	C. G. Elrick	2-12-53	2-13-53		X	

STATISTICAL AND COMPUTING SERVICES SECTION - UTILITIES AND GENERAL SERVICES DEPARTMENT

I. Visitors to this Works							
J. Amon International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson	2-1-53	3-1-53			X 700 722-A
D. F. Crumb International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson	2-1-53	3-1-53			X 700 722-A
J. McCormick International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson	2-1-53	3-1-53			X 700 722-A
M. R. Meyers International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson	2-1-53	3-1-53			X 700 722-A
N. R. Norby International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson	2-1-53	3-1-53			X 700 722-A

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Class. Unclass. Areas

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Class.</u>	<u>Unclass.</u>	<u>Areas</u>
J. R. Whitman International Business Machines Richland, Washington	Service IBM equipment	P. M. Thompson	2-1-53	3-1-53			X 700 722-A
II. Visits to other Installations							
R. F. Cell to: Mallinckrodt Chemical Wks. St. Louis, Missouri	Metal quality control meeting	C. H. Harrington	2-2-53	2-3-53			X
R. F. Cell to: National Lead Company Fernald, Ohio	Metal quality control meeting	G. W. Wunder	2-4-53	2-4-53			X
P. M. Thompson to: General Electric Company Schenectady, New York	Attend computing seminar and investigate IBM techniques in Schenectady	K. K. Bowman	2-2-53	2-13-53			X
C. B. Poland to: Western Computer Conference Los Angeles, California	Attend conference	- -	2-2-53	2-7-53			X
EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT							
I. Visits to other Installations							
H. L. Greenberg to: Aircraft Nuclear Propulsion Project Lockland, Ohio	Interviews for employment	R. C. Mark	2-16-53	2-17-53			X
FINANCIAL DEPARTMENT							
I. Visitors to this Works							
D. T. Frey Feat. Marwick, Mitchel & Co. Portland, Oregon	Auditing of books	K. L. Robertson W. S. Roe	2-10-53	2-13-53			X 700

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PURCHASING AND STORES SECTION
UTILITIES AND GENERAL SERVICES DEPARTMENT
SUMMARY - FEBRUARY 1953

A bulletin directing the establishment of the Small Business program was received from the A.E.C. All requisitions are being screened to determine those items which are suitable for production by Small Business concerns. "Shelf" or "stock" items have been eliminated by definition in the A.E.C. Bulletin and main concentration is on fabricated items.

Amendment 40 to General Overriding Regulation #9 has removed from price control all sales made by the General Electric Company, Hanford Works, which had not been exempted previously.

Many questions have been received concerning the abolition of controls due partly to newspaper articles which quite generally have used the word "controls" loosely, resulting in the misconception that all controls will be removed by April 30, 1953. The only controls which expire April 30 are those on prices, wages and rent. The material controls which have been issued by NPA in the form of M-orders and Controlled Materials Plan will not expire until June 30, 1953. Material requirement reports and order placement will continue exactly as here-to-fore, until that date. It is expected that Congress will take action to continue authority for defense priorities on scarce and critical materials after June 30, 1953. In that case our priorities procedures will continue to be the same after that date, but on a somewhat reduced scale.

Two purchase orders were placed with Aluminum Company of America for specially designed extruded aluminum tubes. Production of these tubes is on a development basis and written approval was received from A.E.C. to handle the procurement on a purchase order in lieu of a development contract.

Nineteen orders totaling \$2,253,149 have been placed on Construction Project C-513 with six additional orders estimated at \$232,010 yet to be placed.

Two emergency requisitions were received for the purchase of 12 slurry pumps, estimated at \$100,000, required to keep the TBP Plant in operation. Permission to negotiate orders with the Byron-Jackson Pump Company and Nagle Pump Company for 6 pumps each has been secured from the Commission.

Stocks of fabricated aluminum items for the canning line have increased to approximately one and one-half months' supply of the 9½" size and about 4 months' supply of the 4" size. Both caps and cans are included.

Negotiations with suppliers of Nitric Acid and further discussion with Manufacturing indicate that increases may be made in the capacities of the plants at Hedges, Wash., and DuPont, Wash., which will make the total adequate to cover a forecast slightly decreased from the original figures.

Materials and equipment disbursed from Stores Unit Inventories, General Supplies (Account 10.2), Standby (Account 10.1) and Spare Equipment Held In Storage (Account 29) were valued at \$192,351.14, \$86,946.54, and \$51,903.12 respectively for a total of \$331,200.80.

PURCHASING AND STORES SECTION
SUMMARY

Records for Inventories - Bulk Steel (Account 10.18) were received subsequent to physical inventory and reconciliation by the Internal Audit Section.

The Rocky Mountain Tariff Bureau approved our proposal for a reduced truckload rate on Aluminum Extrusions from the East Coast, which will result in a savings of approximately \$301.20 per truckload.

Effective March 1, West Coast Airlines will adjust their flight schedules, which will result in a better connection from Pasco with United Airlines at Pendleton, Oregon. This will eliminate many trips by project cars which were used to transport employees to Pendleton in order to make connections.

Organization and Personnel

	<u>1-31-53</u>	<u>2-28-53</u>	<u>Change</u>
Employees on Roll	318	311	-7

PURCHASING AND STORES SECTION
GENERAL

A Bulletin directing the establishment of the Small Business program was received from the AEC. All requisitions are being screened to determine those items which are suitable for production by Small Business concerns. "Shelf" or "stock" items have been eliminated by definition in the AEC Bulletin. We are concentrating mainly on fabricated items. Several meetings have been held with the Small Defense Plants Administration representatives and the AEC. It is believed that the procedure now established is workable from the purchasing point of view, but it remains to be seen whether or not the Small Defense Plants Administration will insist on further coverage. On those requisitions determined to be the type a small business would produce we are sending a copy of the inquiry to both the Small Defense Plants Administration office in Portland and Seattle. Ledgers have been set up to record information necessary to complete the requested quarterly reports.

Amendment 40 to General Overriding Regulation #9 has removed from price control all sales made by the General Electric Company, Hanford Works, which had not been exempted previously. Mr. Henderson of the Spokane branch of the Office of Price Stabilization visited us to clarify the status of the numerous price regulations which are revoked by GOR #9 but not identified individually. In the interest of economy the OPS will not revoke regulations individually.

We recently received many questions concerning the abolition of controls. Newspaper announcements have quite generally used the word "controls" loosely, resulting in the misconception that all controls will be removed by April 30, 1953. The only controls which expire April 30 are those on prices, wages and rent. The material controls which have been issued by the National Production Authority in the form of M-Orders and the Controlled Materials Plan will not expire until June 30, 1953. Material requirement reports and order placement will continue exactly as here-to-fore, until that date. The President recommended congressional action to continue authority for defense priorities on scarce and critical materials after June 30, 1953 and it is expected that Congress will follow his recommendation and that our priorities procedures will continue to be the same even after June 30, 1953, but on a somewhat reduced scale.

2 Requests for NPA Directive or DX action were received.

3 Cases were submitted to the Atomic Energy Commission for directive or DX action.

Eight representatives were brought in from four vendor's to supervise inspection and installation of equipment in the areas.

The following table shows the dollar value of business, by cost category, and the number of procurement actions placed with different types of vendors. Dollar amounts are based on the net value of purchase orders and alterations as transmitted to A.E.C.

February 1953	Cost Category	Vendor Type			
		Government Agency	Small Business	Big Business	Educational and Other
	\$0 - \$ 9.99	\$ 4.50	\$ 419.98	\$ 247.15	\$ 3.50
	\$10 - \$ 499.99	485.01	104,821.07	54,603.49	60.50
	\$500 - \$ 9,999.99		87,448.88	65,916.67	
	\$10,000 - Up		76,348.83	151,084.12	
	TOTAL	\$ 489.51	\$269,638.76	\$271,851.43	\$ 64.00
	Number of Actions	6	878	478	6

PURCHASING AND STORES SECTION

GENERAL

Requisitions on hand 2-1-53	<u>G</u>	<u>D</u>	<u>Total</u>
Operations Procurement	767	2	769
Construction Procurement	00	96	96
A.E.C. Procurement	<u>140</u>	<u>24</u>	<u>164</u>
Total	907	122	1029

Requisitions Assigned during February			
Operations Procurement	1815	00	1815
Construction Procurement	00	181	181
A.E.C. Procurement	<u>200</u>	<u>17</u>	<u>217</u>
Total	2015	198	2213

Requisitions Placed during February			
Operations Procurement	1763	00	1763
Construction Procurement	00	213	213
A.E.C. Procurement	<u>243</u>	<u>24</u>	<u>267</u>
Total	2006	237	2243

Requisitions on hand 2-28-53			
Operations Procurement	819	2	821
Construction Procurement	00	64	64
A.E.C. Procurement	<u>97</u>	<u>17</u>	<u>114</u>
Total	916	83	999

Purchase Orders Placed	<u>HW</u>	<u>HWC</u>
Operations Procurement	1113	
Essential Material	9	
Construction Procurement		<u>140</u>
Total	<u>1122</u>	<u>140</u>

Value of Purchase Orders Placed		
Operations Procurement	\$269,487.66	\$
Essential Material	150,642.50	
Construction Procurement		<u>83,112.33</u>
	<u>\$420,130.16</u>	<u>\$83,112.33</u>

Alterations Issued	<u>Increase</u>	<u>Decrease</u>	<u>No Change</u>	<u>Total</u>
HW Operations	36	27	1	64
Essential Material	4	3	6	13
HWC Construction	<u>16</u>	<u>10</u>	<u>3</u>	<u>29</u>
Total	56	40	10	106

Value of Alterations Issued	<u>Increase</u>	<u>Decrease</u>	<u>Total</u>
HW Operations	\$6,753.11	\$7,504.00	\$14,257.11
Essential Material	6,015.55	31,411.79	37,427.34
HWC Construction	<u>69,066.08</u>	<u>4,717.71</u>	<u>73,783.79</u>
	<u>\$81,834.74</u>	<u>\$43,633.50</u>	<u>\$125,468.24</u>

Government Transfers	<u>OR</u>	<u>ORC</u>
	0	0

Return Orders - 124

PURCHASING AND STORES SECTION
GENERAL

Vendor Contacts	146
Claims Processed	7
Damage Reports Processed	10
Over & Short Reports Processed	2
Accounts Payable Requests Handled	303
Difference Slips Processed	43
Clearance Slips and Purchase Order Change Approvals	166
Material Exception Reports	120
Return Orders Issued	124

Organization and Personnel

	<u>1-31-53</u>	<u>2-28-53</u>	<u>Change</u>
Employees On Roll	41	38	-3

PURCHASING AND STORES SECTION
CONSTRUCTION PROCUREMENT UNIT
FEBRUARY 1953

Statistical and General

The major activity during the month consisted of placing emergency orders for material required by Minor Construction during the pile shut-downs. Although the dollar volume of these purchases was insignificant, considerable expense was incurred in getting orders placed and expediting delivery. Arrangements were made over two week ends to receive material which arrived by air and rail express.

Two purchase orders were placed with Aluminum Co. of America for specially designed extruded aluminum tubes. Production of these tubes is being undertaken on a development basis and written approval was received from AEC to handle the procurement on a purchase order in lieu of a development contract.

Nineteen orders totaling \$2,253,148.72 have been placed on construction Project C-513. Six additional orders, five of which are on Record of Purchase, are yet to be placed on this project. These six orders have an estimated value of \$232,010.00. As soon as the details can be worked out with AEC and Blaw-Knox Company, these orders will be assigned to the Blaw-Knox Company.

Two emergency requisitions were received for the purchase of twelve slurry pumps critically required to keep the TBP Plant in operation. Permission to negotiate orders with the Byron-Jackson Pump Company and Nagle Pump Company for six pumps each has been secured from the Commission. The total estimated amount of these purchases is approximately \$100,000.00.

A visit was made to the Byron-Jackson Pump Company to discuss the possibility of using a jet type pump in place of the slurry pumps which are causing much difficulty in the TBP operation. The results of this visit are encouraging and a project proposal is being prepared for Research and Development funds to further advance this idea.

Only 44 open requisitions are in the Construction Procurement Unit at the present time.

Organization and Personnel

	<u>1-31-53</u>	<u>2-28-53</u>	<u>Change</u>
Employees on Roll	18	17	-1

PURCHASING AND STORES SECTION
OPERATIONS PROCUREMENT UNIT
FEBRUARY - 1953

Statistical and General

Stocks of fabricated aluminum items for the canning line have improved to the point that we finished the month with approximately one and one-half months' supply of the 9-1/2" size and approximately four months' supply of the 4" size. Both caps and cans are included. Present indications are that within sixty days we will have gained another month's supply and that within a few weeks thereafter, we will be up to full stock level.

Negotiations with suppliers of Nitric Acid and additional discussion with Manufacturing indicate that increases may be made in the capacities of the plants at Hedges, Washington, and Du Pont, Washington, which will make the total adequate to cover a forecast slightly decreased from the original figures. This should assure sources of supply for this item and the two contracts will be modified to formalize the informal arrangements presently existing. The transportation bottleneck (stainless steel tank cars) may be solved by supplementing our tank car fleet with stainless steel tank trucks which may be made available by commercial carriers. This phase of the matter has reached the stage at which the Traffic Section is talking rates with the carriers and it is anticipated that the solution to the problem is in sight.

Essential Materials contracts in process are as follows:

1. Aluminum Sulfate -- award made and negotiations proceeding toward a contract.
2. Ferric Sulfate -- award made and negotiations proceeding toward a contract.
3. Sodium Silicate -- award made and negotiations proceeding toward a contract.
4. Sodium Dichromate -- award made and negotiations proceeding toward a contract.
5. Ferrous Ammonium Sulfate -- negotiations completed; contract approved by A.E.C. and in force.

Organization and Personnel

	<u>1-31-53</u>	<u>2-28-53</u>	<u>Changes</u>
Employees on roll	35	33	-2

PURCHASING AND STORES SECTION
STORES UNIT
FEBRUARY, 1953

Statistical and General

Disbursement:

General Supplies (Account 10.2)	\$ 192,351.14
Standby Equipment (Account 10.1)	86,946.54
Spare Equipment Held in Storage (Account 29)	<u>51,903.12</u>
Total	\$ 331,200.80

Surplus Activity:

Received	\$ 18,793.69
Disbursed	145,628.77 *
*Includes \$38,955.83 reused on project by construction forces.	
Shipments Offsite	322,154.79
Number of Excess lists sent to AEC	8
Number of Excess lists awaiting AEC disposition	217

Miscellaneous:

Representatives of Government and private business escorted through sales yard	104
Requisitions screened	1842
Items supplied from stocks as a result of screening	26

Comments

Captions 1, 2, 5, 7, 9, 13, 14, 17 and 26 have been moved completely to Central Stores warehouse and Caption 6 is now in process of moving. A portion of building 713 will be used as 700 area store instead of 713-A as previously reported.

Records for Inventories, Bulk Steel (Account 10.18) were received during the month, after physical inventory and reconciliation by Internal Audit Section.

A physical inventory of Caption 24, Medical Supplies, was completed by Stores Unit working with Internal Audit Section.

Pre-inventory work is continuing in General Supplies, Standby Equipment and Excess.

Organization and Personnel

	<u>1-31-53</u>	<u>2-28-53</u>	<u>Change</u>
Employees on Roll	213	212	-1

Effective February 1, 1953 the Stores Unit was reorganized in accordance with the Company's decentralization policy. The old sub-units, Surplus, Salvage and Scrap, Operations Stores, and Receiving and Operations Shipping were split up into the following sub-units in order to fix functional responsibility.

General Supplies - Warehousing

General Supplies - Material Records

General Supplies - Area Stores

General Supplies - Receiving

Standby - Warehousing

Standby - Material Records

Surplus - Warehousing

Surplus - Material Records

Surplus - Sales

Shipping

Planning and Analysis

Stores - General

PURCHASING & STORES SECTION

TRAFFIC UNIT
February, 1953

STATISTICAL AND GENERAL:

The Rocky Mountain Motor Tariff Bureau approved our proposal for a reduced truckload rate on Aluminum Extrusions from the East coast, which will result in a savings of approximately \$301.20 per truckload.

An increase in mileage rates which ranges from 8½% to 36% has been granted on Washington intrastate household goods movements, effective February 18.

Effective February 26, truck rates between Richland/Hanford and points in Colorado, Wyoming and Montana were increased 8½% per cwt. Truck rates between Richland/Hanford and points in Oregon and Idaho were increased approximately 6% per cwt.

Effective March 1, West Coast Airlines has adjusted their flight schedules, which will result in a better connection from Pasco with United Airlines at Pendleton, Oregon.

This will eliminate many trips by Project cars, which formerly were used to transport employees to Pendleton, when traveling East on Company business.

As a result of rate reductions obtained from the carriers, there was a total savings in freight charges for the month of February amounting to \$1,505.54. This makes a total savings from September 1, 1946, to date of \$1,738,181.92.

Savings Report

1. Rate reductions obtained from carriers:

<u>Commodity</u>	<u>Origin</u>	<u>Savings for</u> <u>February, 1953</u>	<u>Savings from 9-1-46</u> <u>Thru January, 1953</u>	<u>Savings from</u> <u>9-1-46 to date</u>
Empty Steel cylinders	Richland, Wash.	9.19		
Extrusions, Aluminum	Phoenix, Ariz.	8.31		
Gases, Compressed	Yakima, Wash.	22.71		

PURCHASING & STORES SECTION

TRAFFIC UNIT

February, 1953

Savings Report (continued)

Silicate of Soda	Tacoma, Wash.	522.68		
Sulfamic Acid	Graselli, N.J.	926.50		
Section 22	Various	14.21		
Rail				
Section 22	Various	1.94		
Carloading				
		<u>\$ 1,505.54</u>	<u>\$ 1,736,676.38</u>	<u>\$ 1,738,181.92</u>
2. Freight Bill Audit		859.20	105,958.71	106,817.91
3. Loss and Damage & Over-charge Claims		1,144.72	122,157.03	123,301.75
4. Ticket Refund Claims		712.34	29,257.41	29,969.75
5. Household Goods Claims		<u>81.10</u>	<u>16,876.13</u>	<u>16,957.23</u>
		<u>\$ 4,302.90</u>	<u>\$ 2,010,925.66</u>	<u>\$ 2,015,228.56</u>

Work Volume Report

Reservations Made	Rail	124
	Air	121
	Hotel	162
Expense Accounts Checked		152
Household Goods & Automobiles	Movements Arranged Inbound	5
	Movements Arranged Outbound	3
	Insurance Riders Issued	2
	Insurance Bills Approved	4
	Claims Collected - Number	1
	Claims Collected - Amount	\$ 81.10
Freight Claims	Filed	5
	Collected - Number	8
	Collected - Amount	\$ 1,144.72
	Over and Shorts Processed	9
	Damage Reports Processed	4
Freight Bill Audit Savings		\$859.20
Freight Shipments Traced		61
Quotations	Freight Rates	150
	Routes	161

PURCHASING & STORES SECTION
TRAFFIC UNIT
February, 1953

Work Volume Report (continued)

Ticket Refund Claims	Filed	21
	Collected - Number	28
	Collected - Amount	\$712.34
Bills Approved	Air Freight	2
	Air Express	21
	Carloading	55
	Express	162
	Rail	845
	Truck	358
Carload Shipments	Inbound	778
	Outbound	13

Report of Carloads Received

	<u>CMSTP&P</u>	<u>NP</u>	<u>UP</u>	<u>TOTAL</u>
Aluminum Sulphate	2	4	2	8
Ammonium Sulphate	1		1	2
Carbon Fire Brick	1	1	1	3
Caustic Soda	5	12	22	39
Cement	1	3		4
Chlorine	1	1		2
Clay	2			2
Coal	99	13	555	667
Laundry Tubs		1		1
Lime	2	2		4
Machinery	2	1		3
Methyl Isobutyl Ketone	1		1	2
Nitric Acid		6	12	18
Paper, Building		1	1	2
Petroleum		1		1
Pipe, Cast Iron		2	2	4
Salt	1	1	1	3
Soda Ash			1	1
Sodium Bicromate	1			1
Sodium Silicate	1	2	1	4
Steel Balls			1	1
Steel Partitions			1	1
Steel Plates	1			1
Sulfamic Acid		1		1
Sulphuric Acid	1		1	2
Merchandise	1		1	2
Total	<u>123</u>	<u>52</u>	<u>603</u>	<u>778</u>

Organization & Personnel

Employees on Roll	<u>1-31-53</u>	<u>2-28-53</u>	<u>Change</u>
	11	11	0

TRANSPORTATION SECTION
MONTHLY REPORT
February 1953

GENERAL

Transportation Section personnel forces decreased from 526 to 524 employees during the month by 2 transfers out, 2 terminations, 2 deactivations - personal illness, 2 new hires, 1 transfer in, 1 reactivation - personal illness.

Layout work on the New Consolidated Transportation Facilities continued throughout the month with the Architect Engineer. Prepared justifications for all types of space requirements and furnished requested data on equipment requirements.

RAILROAD ACTIVITIES

Commercial cars handled during February were approximately the same as January. The following recapitulation indicates the distribution of commercial cars handled:

<u>Carload Movements</u>	<u>Loads In</u>	<u>Empties In</u>	<u>Loads Out</u>	<u>Empties Out</u>
General Electric Company	929	34	28	892
Brown-Morse	1	-	-	1
Bumstead-Wolford	4	-	-	3
Bryan W. Burtch	5	-	-	5
Fox-Smith	2	-	-	-
E. F. Hauserman	2	-	-	2
L. H. Hoffman	1	-	-	1
Hopper Co.	12	-	-	9
Kaiser Engineers	103	-	-	95
Paul Larson Co.	1	-	-	1
P. S. Lord Co.	1	-	-	3
R. C. Mahon	3	-	-	3
San Jose Fence Co.	1	-	-	1
Steel Construction Co.	3	-	-	3
Strasser Drilling Co.	1	-	-	2
A. E. C.	1	-	-	1
U. S. Army	<u>57</u>	<u>2</u>	<u>-</u>	<u>57</u>
	1,127	36	28	1,079

Process service for February was slightly below January even with the heavy transfer of material from 100-D to 105-C as production difficulties caused a substantial curtailment in movements between the 100 and 200 Areas.

Special handling has been given to the classified shipments which have been arriving each Thursday at Riverland under escort for movement to the 300 Area.

DECLASSIFIED

Transportation Section

Car movements including process service totaled 2,691 in February compared to 2,730 in January.

Completed the overhaul of trucks and traction motors on locomotive 39-3721. This unit was returned to service on February 16.

Made annual inspections on LOB 3636, 3638, 3640 and 3642 thus completing this phase of work on all cask cars.

Performed routine inspection and maintenance services on January 29 and February 10 for the U.S. Army car operated off plant by the Atomic Energy Commission.

Railroad track maintenance and rehabilitation work continued on a routine basis. Lining, surfacing and dressing of track required 3,824 man-hours. Installation of ties, rail and other track materials required 1,114 man-hours. Distribution and handling of track materials required 915 man-hours. Sand removal and control required 353 man-hours. Weed control required 1,150 man-hours. Special work orders required 275 man-hours.

AUTOMOTIVE ACTIVITIES

The Plant Bus System transported 11.7% more passengers in February than in January. The following statistics indicate the magnitude of service rendered:

Passenger volume	155,488
Revenue - bus fares	\$ 7,772.99
Earnings - transit advertising (January)	\$ 244.83
Bus trips	5,804
Bus miles - Passenger carrying	176,447
Passenger miles	4,500,752

The following is a comparative breakdown of average daily round trips to the Plant Areas:

Passenger buses - 100-B	12
Passenger buses - 100-D	12
Passenger buses - 100-F	11
Passenger buses - 100-H	8
Passenger buses - Hanford	1
Passenger buses - 200-West	32
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

Transportation Section

Effective February 18 the shuttle service in 200-East Area was completely revised with the moving of the 200-East Badge House to a point directly south of the 221 Building, thereby leaving certain facilities outside of the area proper to facilitate construction activities.

Special transportation was provided without incident for the Ball 3X Shutdown in the 100-D Area.

The Richland Bus System transported 14% more passengers in February than in January. The following statistics indicate the volume of service rendered:

Total passengers including transfers	15,586
Revenue - bus fares	\$ 945.21
Earnings - transit advertising (January)	12.09
Bus trips	1,059
Bus miles - passenger carrying	5,613
Passenger miles	29,123

The transit advertising contract for sign card displays on buses assigned to Plant and Richland Bus Systems was extended with minor revisions through January 31, 1956.

Off Plant chauffeured automobile trips (Company business and/or official visitors) totaled 197 which were rendered to the following locations as indicated.

Benton City, Washington	7
Enterprise, Washington	1
Grandview, Washington	1
Hinkle, Oregon	21
Kennewick, Washington	23
McNary Dam, Washington	1
Pasco, Washington	93
Pendleton, Oregon	32
Prosser, Washington	3
Spokane, Washington	1
Sunnyside, Washington	4
Walla Walla, Washington	0
Yakima, Washington	10

The following tabulation indicates the volume of Drivers Test Service rendered:

Applicants: Male	61	Number tests given	70
Female	9	Number rejected	0

Permits issued: Limited to driving with glasses	15
Unlimited	55

Permits reissued: Routine	23
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~~UNCLASSIFIED~~

HW-27288

Transportation Section

The following tabulation indicates the volume of fuel distribution by Equipment Maintenance personnel:

	<u>Gasoline</u>	<u>Diesel Fuel</u>	<u>50 Cetane</u>	<u>Kerosene</u>	<u>White Gas</u>
Stock at start of month.	49,775	19,556	16,800	1,610	213
Received during month	128,520	18,244	31,100	7,396	0
Dispensed during month	130,485	16,570	23,210	6,556	28
Stock at end of month	47,810	21,230	24,700	2,450	185

The following tabulation indicates the volume of inspection and maintenance service rendered to Hanford Works automotive and heavy equipment by Equipment Maintenance personnel:

Motor overhauls	32
Class A Inspections and Repairs	120
Class B Inspections and Lubrications	1133
Other routine maintenance repairs and service calls.	2242
Accident repairs and paint jobs	74
Tire repairs	627
Wash jobs	518

The following tabulation indicates the Plantwide usage of automotive equipment:

<u>Code</u>	<u>Type</u>	<u>No. of Units</u>	<u>Total Mileage</u>
1A	Sedans	335	595,236
1B	Buses	100	236,042
1C	Pickup Trucks	461	303,955
1D	Panel, Carryall, Sta. Wagon	133	157,328
1E	Armored Cars	2	130
1G	Jeeps	2	282
68 Series	Trucks	<u>212</u>	<u>96,876</u>
		1,245	1,389,849

Territorial assignments of the two field service trucks were revised to provide a more equitable distribution of work and improved service in the face of increasing equipment utilization particularly in the vicinity of the 100-B, 100-C and 200 Areas.

Conversion of the former tire storage room to a men's toilet and wash room in the 716 Building has been completed by the contractor and is waiting final inspection. The conversion of the former men's rest room to a ladies' rest room is approximately 10% complete.

Transportation Section

The contractor completed the excavation for the new lubrication pits inside the 1716-F and 1716-D Buildings which was begun on February 6. The outside rack at the 1716-D Building has been dismantled.

Completed the installation of Kim Hotstart out-off switches for all General Motors coaches. These switches prevent engine starting when the plug-in wire is connected, which has eliminated breakage of cords and receptacles formerly caused by drivers failing to make the disconnection before moving the bus.

Four cranes were undergoing complete engine overhauls during the month including one in the 200-West Area where all work was performed under S.W.P. regulations.

LABOR ACTIVITIES

The following tabulation indicates in gallons the volume of road asphalt material handled by Transportation Services personnel:

	<u>MC 1</u>	<u>MC 3</u>	<u>MC 4</u>	<u>MC 5</u>
Stock at start of month	0	10,391	0	0
Received during month	0	0	0	0
Dispensed during month	0	2,796	0	0
Stock at end of month	0	7,595	0	0

The following tabulation indicates the volume of road aggregate material handled by Transportation Services personnel:

	<u>3/4" to 0</u> Pre-mix Tons	<u>1/2" to 0</u> Pre-mix Tons	<u>5/8"</u> Chips Cu.Yd.	<u>1/4"</u> Chips Cu.Yd.
Stock at start of month	3	142	0	6,267
Made during month	235	0	0	0
Used during month	94	41	0	0
Stock at end of month	144	101	0	6,267

Maintenance of primary roads required 1,157 man-hours; Administration Area roads, sidewalks, parking lots and general cleanup 616 man-hours.

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HW-27288 DNL

Transportation Section

Handling of materials and equipment for the Stores Unit at White Bluffs, Hanford, 700, 1100 and 3000 Areas included 25 carloads and 270 truckloads and required 5,054 man-hours.

Area deliveries of operational supplies required 1,699 man-hours; office furniture, equipment and records 1,087 man-hours.

Handling of essential materials and other miscellaneous labor and equipment services for the 300 Area required 509 man-hours.

Movement and operation of heavy equipment for the 100 and 200 Areas required 446 man-hours.

Cleaning of irrigation canal and excavation for water line repairs for the Community required 153 man-hours.

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March 6, 1953

ELECTRICAL DISTRIBUTION & TELEPHONE SECTION

MONTHLY REPORT

February 1953

GENERAL

The Section work backlog, as of February 28, totaled 4206 man days distributed as follows:

	<u>Days per Craftsman</u>	<u>Total Man Days</u>	<u>Net Change Man Days</u>
Line Maintenance	37	1245	59 Increase
Substation Maintenance	26	475	19 Decrease
Telephone Unit	61	2486	26 Decrease

Section total work force at the end of February was one hundred and eighty-six (186), an increase of two (2) from January. Scheduled overtime for Substation Operators will be started March 1 and continued until employment of additional Operators. Requisitions for seven (7) Operators are on file with the Employment Office with four (4) now in process of employment.

Electrical power peak demands for February were:

	<u>Date</u>	<u>Time</u>	<u>February KW Demand</u>	<u>January Comparative Demand (KW)</u>
Process Load	2-27-53	(5:30 am. - 6:00 am.)	102,700	101,600
Richland Load	2-11-53	(5:30 pm. - 6:00 pm.)	21,120	22,080

Process load demand was a new all time high. Despite milder winter weather than anticipated, except for November, revenue from Richland electrical energy consumers should reach, or exceed, the \$318,000.00 estimated margin for FY 1953.

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ELECTRICAL DISTRIBUTION UNITMaintenance and Operation

Defective insulators caused outages on the No. 2 Midway-Bonneville 230 KV line on February 12 and 15 of approximately eleven (11) hours and five (5) hours respectively. The Electrical Distribution Unit's operating procedures were revised recently following additions to BPA's 230 KV transmission network and review of load conditions on their system. Continued Hanford Works production during the outages avoided a substantial loss which would have been incurred under previous power procedures.

The prolonged "downtime" of 100-D Area was utilized to perform important maintenance on Area electrical distribution, and 230 KV transmission, equipment. Small oil leaks were repaired on the main transformer, and 230 KV circuit breakers Nos. A-344 and A-346 in substation 151-D were given a complete overhaul.

A chemical spray weed control program has been initiated for substations and switching stations. This will be more effective than hand weeding and is estimated to provide a \$2000.00 annual saving.

System Expansion and Planning

The new emergency generating unit in Building No. 384 (300 Area Power House) was tied into the area distribution system during a test run on February 17, 1953.

The 100-K Area 230 KV tap station plan was reviewed and a suggestion made to substitute a post and rope barrier for cyclone fence. The saving is approximately \$10,000.00.

Plans for enlargement of Building No. 313 (300 Area) including relocating existing aerial and open conductor feeders under the building extension. The Electrical Distribution Unit System Planning Group's suggested method of aerial re-routing of the feeders will provide an estimated \$18,500.00 saving compared to the underground method.

Construction of Building No. 313 Addition and the proposed Fuel Element Pilot Plant will increase the 300 Area connected load to 10,850 KW. Installation of the additional 115KV/2.3KV transformer now on order will increase incoming capacity to 9,375 KW by using fans. No further substantial load can be added without including plans for an increase in 115 KV transformer capacity.

All General Electric facilities in Richland Village which are associated with Plant operation are now billed at standard commercial rates for electrical service. This is consistent with resale terms of the BPA contract and provides an approximate \$15,000.00 annual increase in revenue for the Community.

A preliminary study has been completed for transferring Richland electrical distribution system operating responsibility to the Community Real Estate and Services Department.

The Bonneville Power Administration has been requested to consider special billing rates for 100-K Area power during the testing period. Metering facilities will be provided to obtain demand and consumption data.

Bonneville Power Administration is expected to increase wholesale industrial rates by \$5.00 per kilowatt-year and the municipality rate by 15-20% in December 1954. Electrical Distribution and Telephone Section budgeting for FY 1955 has allowed for the probable increases.

TELEPHONE UNIT

Maintenance and Operation

A summary of telephone subscriber service is as follows:

	Subscriber Stations In Service		Lines Available For Service	Sides Available For Service	Exchange Lines In Service
	<u>Residential</u>	<u>Official and Misc.</u>			
Richland	5,770	1,018	47	271	3,913
N.Richland	288	303	93	51	507
Process Areas	-----	1,426	485	---	1,367
Total	6,058	2,747	625	322	5,787

Richland Exchange four-party service:

	<u>February 28, 1953</u>	<u>January 31, 1953</u>
Number of lines, complete fill	117	104
Partial fill with three subscribers	59	57
Subscribers	729	684

One hundred and eighty-eight (188) requests for residential telephone service were on hand February 28, 1953.

The Richland Exchange "crash alarm" system, installed in October 1952 for the Radiological Sciences Department, was used for the first time. During a process area emergency answers were received from eighteen (18) of the twenty (20) telephones connected to the system.

Expansion and Planning

A telephone trunk switchboard position was installed at the 100-K Area manual exchange, February 28, 1953. It is equipped with eighty (80) line circuits, and nine (9) trunks directly to the Richland Exchange toll board. Its chief use will be for Kaiser Engineering's purchasing and expediting long-distance calls. There are three trunks from the manual board to the Richland Exchange, making a total of twelve (12) 100-K Area - Richland trunks.

The North Electric Company completed the installation of one hundred (100) additional lines to the White Bluffs dial exchange. Telephones formerly served from the Central

Expansion and Planning (continued)

Shops manual switchboard are now provided dial service from this addition.

A twenty-two (22) line private automatic switchboard was installed in the new Medical Arts Building to provide building intercommunication service.


ELECTRICAL DISTRIBUTION
AND TELEPHONE SECTION

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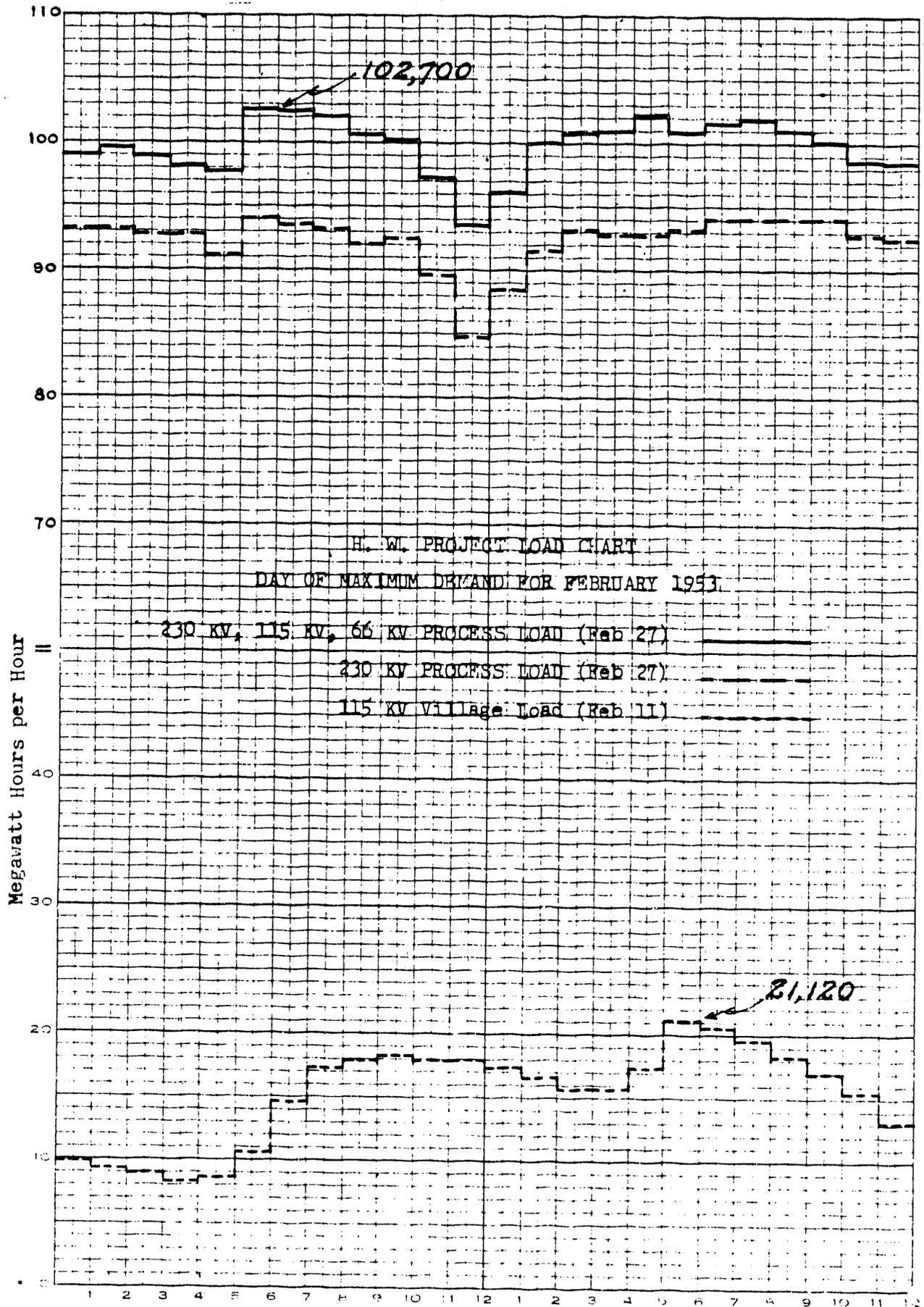
POWER STATISTICS
ELECTRICAL DISTRIBUTION AND TELEPHONE SECTION
FOR MONTH ENDING FEBRUARY 28, 1953

	<u>Energy - MW Hrs.</u>		<u>Max Demand - KW</u>		<u>Load Factor - %</u>	
	<u>Jan.</u>	<u>Feb.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Jan.</u>	<u>Feb.</u>
<u>230 KV System</u>						
A-2 Out (100-B)	20,865	22,835	36,300	38,500	77.3	88.3
A-4 Out (100-D)	14,225	6,510	22,200	22,800	86.1	42.5 "D" down
A-5 Out (100-H)	9,540	11,556	15,500	21,900	82.7	78.5 C4XL9 &
A-6 Out (100-F)	7,445	7,430	13,800	13,100	72.5	84.4
A-8 Out (200 Area)	5,256	4,680	8,280	8,640	85.3	80.6
TOTAL OUT	57,331	53,011	96,080**	104,940**	80.2	75.2
MIDWAY IN	58,184	53,829	92,800*	94,000*	84.3	85.2
Transm. Loss	853	818				
Per cent Loss	1.5	1.5				
<u>115 Kv System</u>						
B1-S4 Out (N. Rich.)	2,256	1,920	4,090	4,032	74.1	70.9
B1-S5	122	108	518	518	32.0	31.0
Richland	10,446	9,454	22,080*	21,120*	63.6	66.6
BB3-S4 Out (300 Area)	1,408	1,176	2,640	2,720	71.7	64.3
TOTAL OUT	14,232	12,658	29,328**	28,390**	65.2	66.3
Benton In	14,340	14,800	42,800*	32,800*	45.0	67.1
So. Richland In	0	0	800	0	0	0
TOTAL IN	14,340	12,940	43,600**	32,800**	44.2	58.7
Transm. Loss	108	282				
Per cent Loss	.8	2.2				
<u>66 KV System</u>						
B9-S11 Out (100-K)	315	306	769	750	55.0	60.7
B7-S10 Out (W. Bluffs)	450	402	877	1,260	69.0	47.5
Hanford Out	229	204	400**	400**	77.0	76.0 Est. Demand
TOTAL OUT	994	912	2,046**	2,410**	65.3	56.3
HANFORD IN	996	896	2,200*	2,300*	60.9	58.0
Transm. Loss	2	+16				
Per cent Loss	.2	+1.8				
<u>Project Total</u>						
230 KV Out	57,331	53,011	96,080**	104,940**	80.2	75.2
115 KV Out	14,232	12,658	29,328**	28,390**	65.2	66.3
66 KV Out	994	912	2,046**	2,410**	65.3	56.3
TOTAL OUT	72,557	66,581	127,454**	135,740**	76.5	73.0
230 KV In	58,184	53,829	92,800*	94,000*	84.3	85.2
115 KV In	14,340	12,940	43,600**	32,800**	44.2	58.7
66 KV In	996	896	2,200**	2,300**	60.9	58.0
TOTAL IN	73,520	67,665				
Transm. Loss	963	1,084				
Per cent Loss	1.3	1.6				

*Denotes Coincidental Demand
**Denotes Non-Coincidental Demand

Average Power Factor - 230 KV System 91.8
Average Power Factor - 115 KV System 93.0
Average Power Factor - 66 KV System 85.9

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UTILITIES AND GENERAL SERVICES DEPARTMENT
STATISTICAL AND COMPUTING SERVICES SECTION

MONTHLY REPORT - FEBRUARY, 1953

Personnel Statistics

Following is the month end summary of personnel:

Statistical and Computing Services Section

<u>Unit</u>	<u>As of 1-31-53</u>			<u>As of 2-28-53</u>			<u>Net Change</u>		
	<u>Ex</u>	<u>Non-Ex</u>	<u>Total</u>	<u>Ex</u>	<u>Non-Ex</u>	<u>Total</u>	<u>Ex</u>	<u>Non-Ex</u>	<u>Total</u>
General	1	1	2	1	1	2	0	0	0
Statistics	8	4	12	8	4	12	0	0	0
Computing	24	43	67	24	44	68	0	+1	+1
Graphics	1	6	7	1	6	7	0	0	0
TOTAL	34	54	88	34	55	89	0	+1	+1

Statistics Unit

	<u>As of 1-31-53</u>			<u>As of 2-28-53</u>			<u>Net Change</u>		
	<u>Ex</u>	<u>Non-Ex</u>	<u>Total</u>	<u>Ex</u>	<u>Non-Ex</u>	<u>Total</u>	<u>Ex</u>	<u>Non-Ex</u>	<u>Total</u>
Staff	1	1	2	1	1	2	0	0	0
Business Statistics	2	0	2	2	0	2	0	0	0
Precision & Quality Control	2	3	5	2	3	5	0	0	0
Research & Development	3	0	3	3	0	3	0	0	0
TOTAL	8	4	12	8	4	12	0	0	0

R. F. Cell spent February 2, 3, and 4 visiting the Mallinkrodt Chemical Works in St. Louis, Missouri, and the Fernald Works in Cincinnati, Ohio. Discussions were held with representatives at each site concerning metal quality and the flow of data to the Hanford Works in order that statistical analyses might be made most effective.

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Computing Unit

	<u>As of 1-31-53</u>			<u>As of 2-28-53</u>			<u>Net Change</u>		
	<u>Ex</u>	<u>Non-Ex</u>	<u>Total</u>	<u>Ex</u>	<u>Non-Ex</u>	<u>Total</u>	<u>Ex</u>	<u>Non-Ex</u>	<u>Total</u>
Staff	2	2	4	2	2	4	0	0	0
Analysis and Programming	15	5	20	15	5	20	0	0	0
Operation	7	35	42	7	36	43	0	+1	+1
Rot. Training	0	1	1	0	1	1	0	0	0
TOTAL	24	43	67	24	44	68	0	+1	+1

One key punch operator terminated effective 2-13-53 and one key punch operator was hired effective 2-13-53. One machine operator was hired effective 2-9-53.

C. B. Poland attended the Western Computer Conference at Los Angeles and obtained data on comparative costs of present system, comparison with large scale computers, evaluation of large recording devices, and physical data recording devices. He also visited the Bureau of Standards Western Computer at the UCLA campus.

P. M. Thompson attended the General Electric Conference on Computing at Schenectady. He obtained information on computing programs and developments in the rest of the Company and obtained further data relevant to the evaluation of large scale high speed computing equipment for use on both scientific and commercial applications.

Graphics Unit

	<u>As of 1-31-53</u>			<u>As of 2-28-53</u>			<u>Net Change</u>		
	<u>Ex</u>	<u>Non-Ex</u>	<u>Total</u>	<u>Ex</u>	<u>Non-Ex</u>	<u>Total</u>	<u>Ex</u>	<u>Non-Ex</u>	<u>Total</u>
Staff	1	1	2	1	1	2	0	0	0
Illustrators	0	5	5	0	5	5	0	0	0
TOTAL	1	6	7	1	6	7	0	0	0

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FOR THE MANUFACTURING DEPARTMENT

A statistical report is being issued on Metal Preparation Section results from machining, canning, autoclave, test pile, melt plant, and oxides. (Document HW-27112, "Statistical Quality Report - 300 Area - January, 1953", R. F. Cell to W. W. Windsheimer.) This will be the first statistical report to be prepared jointly by the Statistics Unit, the Computing Unit and the Graphics Unit. Steps are being taken to revise the routinely issued Uranium Quality Report. This report will also be processed by the Graphics Unit. It is felt that the improved graphical presentation of the data will result in better statistical reports.

Additional work was done on the evaluation of data obtained in the study of the efficiency of 100 Area boiler operations. In cooperation with personnel from the Process Unit, Reactor Section, studies were made which resulted in the elimination in the 100 Areas of routine chemical analyses to determine the alkalinity of feed water to the boilers. Advantage was taken of other similar analyses already existing.

Using a temperature map taken at turnaround on September 11, 1952, factors were calculated for all active tubes in B-pile. A report was prepared listing the ratio of corrected value to average value of the power in each tube. A table of the square and cube of this ratio was prepared.

The ratio of corrected to average temperature rise was calculated for each tube in the C-pile. The corrected temperature rise was weighted according to the water flow in the particular zone. These ratios are used in finding production for each tube in the pile.

Work has been started to establish counting times and warning levels for hand and shoe counters on a statistical basis. Evaluation of background and standard source data collected on different counters, days, and shifts, provided a preliminary estimate of background and geometry factors. On this basis operating characteristic curves were drawn as an aid in considering various counting times. The presence of a scaling factor greatly restricts the choice of warning levels, and limits the counting times available.

A study has been undertaken for the Plant Engineering Services Unit, Separations Section, to determine whether or not a useful standard for maintenance costs can be derived from the relation of maintenance costs to production rates and other measured operating conditions. Preliminary analysis of the data is in process.

Also for the Plant Engineering Services Unit, Separations Section, a formula was derived that will enable the computation of labor standard from samples of operating data without making any assumptions about the distribution of these data (letter from L. W. Smith to V. P. Madson, "A Method Useful in Computing Labor Standards from Samples of Operating Data").

Assistance is being given to the Manufacturing Department Staff in fitting curves by the method of least squares to unit cost versus output data for various production facilities throughout the plant. Statistical investigation has revealed that the relationship is best represented by a hyperbolic equation. In addition to fitting the curves, the associated errors have been calculated with a view to setting up a control system for each facility.

Graphic work for the Department Manager included revisions and additions to existing progress charts to be used in presentation to Mr. R. J. Cordiner. It was later decided that this presentation material was inadequate and it was necessary on short deadline notice to prepare eight new lecture aids.

Additional graphic work for the Department included the preparation of the Manufacturing Department 1952 Annual Report and Yearbook "dummy". The layout and data have been approved and production of illustrations, charts, etc. is underway.

Routine graphics work included preparation of charts on overtime, forecasts, budgets, facility analysis, and posting, inking, lettering and assembly of both "C" and "D" series control charts.

FOR THE ENGINEERING DEPARTMENT

Data on Mallinckrodt Chemical Works billets, including rolling conditions, physical and chemical properties, and the dimensional changes of slugs obtained after the rods from these billets had undergone beta heat treatment, have been submitted by the Statistics Unit to the Computing Unit for calculation of multiple correlations requested by the Pile Fuels Sub-Unit. This problem is part of a long range study being conducted for the Pile Fuels Sub-Unit.

A statistical study was made of the relationship between the canned reactivity values of slugs manufactured from Mallinckrodt virgin uranium and Hanford recast uranium. A report is being prepared covering the results of the investigation.

A report is being issued covering the recommendations of the Statistics Unit as to the types and amounts of data to be collected in connection with the material to be received from the Fernald Works. It is planned to issue routine reports covering the quality of this material, and any other incidental statistical analyses of the data.

An extensive study was made of data relating slug failures to the quality of their particular canning lot as reflected by the reject data. For a particular type of canning reject, the canning lots were ranked in order of percentage of rejects, and then combined into equal groups each representing one-eighth of the total lots investigated. The distributions of the slug failures over these groups were then analyzed, each combination

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of failure type and metal group being considered separately. More than 600 separate tests were made in an attempt to determine if ruptured slugs were associated with lots of high reject rates. (Memorandum from Joan Cannon to L. W. Lang, February 24, 1953.)

A study is being made by the Statistics Unit to prepare adequate sampling plans for the reactivity testing of P-10 slugs in the 305 Test Pile. A similar study to this was made in 1950. The statistical theory of this type of sampling is now better developed, and improved estimates of the protection afforded by the plan against the acceptance of substandard material are available.

Preparations are being made for the study of panellit pressures and pressure increases in 105-DR in connection with the forthcoming P-10 loading. A similar study to this was made in 1951, and the previous study is being consulted to gain information helpful in the present instance.

An investigation has been initiated to discover the effect of the split in a new (proposed) hollow slug design on the thermal and elastic properties of the slug. A total of 99 distinct design cases are included in the problem, for each of which 29 results are required. Also calculations are being made to determine temperatures in a centrally cooled slug. The object of the study is to find design dimensions which allow maximum tube power. A new set of temperature distributions in the Hanford slug have been calculated, using a different value of conductivity for the end cap.

An investigation was completed which determined the expected activity of Zirconium under certain irradiation and decay conditions. The results will aid in deciding whether or not to use Zirconium in slug jackets.

The statistical analysis of the effect of various operating conditions on the corrosive properties of various types of aluminum is continuing as more data are received. Measurements of weight loss, film buildup, and pit depth of the various type metals give indication of significant differences in the behavior of the metals under the different operating conditions. (Memorandum, "Preliminary Report on Corrosion Study", F. H. Tingey and Joan Cannon to Bill Houck, February 12, 1953.)

Discussions were held with representatives of the Pile Technology Unit concerning the routine inspection of discharged tubes for corrosion characteristics. Methods of sampling and classification of corrosion products are being studied by the Statistics Unit in order to obtain the greatest amount of information from this program with the least possible amount of sampling.

The establishment of an objective criterion to indicate film build-up in the reactors was investigated. Test of randomness on averages of panellit water pressure readings at periodic time intervals for a given set of tubes in each reactor were thoroughly investigated for applicability to this problem. An analysis of the sources of variation affecting the readings at C pile over a

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certain period of time was made. Control charts based on previous experience data were constructed for averages of readings from selected tubes in each zone. Adequacy of this method of indication will be assessed by actual experience in C pile before proceeding to establish similar control techniques in the other piles.

A statistical analysis of water quality data is being made to determine whether significant differences in chlorine ion concentration, turbidity, magnesium, iron, alkalinity and sulphate concentration exist between the piles. An attempt is being made to relate these differences to the degree of corrosion evident in the various piles.

Calculations on the C-pile Panellit Pressure Study have been completed. This study resulted from a contemplated change in the riser pressures at C-pile to enable the pile to operate at higher power levels. The quantities calculated were panellit pressures, water flow per tube and total water flow, both for the present top riser pressure, and for several higher top riser pressures. These calculations were used in making decisions regarding proposed higher riser pressures.

An extensive investigation is being made of two alternative methods of calculating individual tube powers. In the present method, the power of a tube is assumed proportional to the product of the temperature rise along the tube and the average flow per tube in the appropriate zone. In the proposed method the actual flow through the tube instead of an average flow is used to obtain increased accuracy. To arrive at the actual flow, it is necessary to make panellit and header pressure readings at the pile at the same time the AT's are read. Individual tube powers are used in the calculation of tube factors, or ratios of individual tube powers to an average tube power. These ratios are useful to the engineer in determining reactivity changes with metal discharges, in making poison column evaluations, in determining reactivity losses of enriched metal or exposure, in determining the burn-out of enriched metal, in getting flow and power information, in making control rod calibrations and in gaining insight into previously unrecognized problems.

Computational work on the Monte Carlo approach to neutron diffusion problems is continuing. To date, this work has been of an exploratory nature. A simple example, that of thermal neutrons from a plane source diffusing into semi-infinite block of moderator, has been run on the Card Programmed Calculator (CPC). Insufficient neutron "Histories" have been completed to date for a full evaluation of the results, but early comparisons to analytic results are promising. A method of doing the same work on the Electronic 605 Calculator at many times the speed has been found. This will expedite the problem.

Work is proceeding on the Boltzmann equation. The case of a finite slab reactor has been successfully solved. However, considerable mathematical difficulties are still being encountered when more general geometries are considered.

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Significant advances have been made on the problem of the size of cube vs. buckling. These advances are conceptual and mathematical and will probably bring the analytical solution of the problem to a form that can be efficiently used.

Additional work is in progress on the mathematical representation of the proposed lattice test pile. A revision has been completed that resulted from a simplification of the arrangements of the driver slugs. The relation between the multiplication factors for the driver and the core is being formulated.

Linear relationships were established between fissions per hour and alpha disintegration rate for the Applied Research Unit. These relationships were based upon experience data in which both readings involved were subject to error. (Secret Rough Draft, "Slopes for Fission Versus Alpha Counts for Samples A and B", from Virginia Leader and F. H. Tingey to E. M. Kinderman).

A statistical analysis of Yttrium decay data was made for the purpose of estimating its half life. The data submitted were separated into two groups according to shelf number from which the counts were taken. Estimates were determined for the half-life based on each set, and the precisions to be associated with these estimates. The procedure used for determining the estimates for the half-life value took into consideration the difference in precision of each of the observed normalized rates. Two methods of determining the precision of the estimates were used in the case of the shelf two data. One was a rapid technique in which the weights used in the least squares equations pertinent to the determinations of the half-life value were considered as fixed constants. The second and more correct method (however, more lengthy) considered the weights as random variables. Since the results were for all practical purposes the same, the more rapid method was used in determining the precision of the estimate the shelf I values. A comparison of the two estimated half-lives in view of the corresponding precision failed to reveal any statistical differences between the two estimates. They were therefore combined to yield a single value, and the precision to be associated with this value was determined. (Letter, "Half Life Study of Yttrium", from Virginia Leader and F. H. Tingey to E. M. Kinderman, February 17, 1953.)

Critical counter differences for various operating conditions were derived and tabulated for the Technical Services Unit. This involved a study of the distribution of the differences between the number of counts recorded at any given time on two electronic counters subjected to the same background rate and having the same leakage factor. The probability of a given difference not being due to a chance combination of background rates was assessed. Tabulations for various background rates and leakage factors were made. (Letter, "Critical Counter Differences for Various $1/e$ Times", F. H. Tingey to J. F. Gifford, February 16, 1953.)

Operating characteristic curves for standard "t" tests have been obtained from literature and are being prepared, along with an explanation of their interpretation, for use by the Applied Research Unit.

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Work was expedited in the preparation of material to be used by the Design Section Manager in their first "Information Meeting". This order involved preparation of new charts and tables, including air brush rendering in color of a number of illustrations. Slides were then made and tested on a 10 ft. screen in the Jason Lee School. All printed matter was easily read at a distance of 60 ft. Three large 20" x 30" lecture aids were prepared for Process Engineering on the 234-5 process flow.

FOR THE UTILITIES AND GENERAL SERVICES DEPARTMENT

Data collection and editing work have been completed on the accident cost study. Only the IBM machine tabulation of the data remains to be done prior to the statistical analysis.

A request has been received from Office Services for a procedural study to determine the value of setting up IBM records for recording and billing rental costs of office machines (Letter of February 2, 1953, C. W. Buchanan to B. F. Butler). Several conferences have been held to discuss the problem.

At the request of the Computing Unit, a questionnaire was designed by the Statistics Unit to aid in evaluating employee job satisfaction. Statistical analysis of the results will be based on "rank correlation" techniques. The Employee and Public Relations Department was consulted in this problem.

Graphic work for the department included design and completion of a new Safety Statistics Report, preparation of control charts for the Statistical and Computing Section, and preparation of organization charts for Purchasing and Stores Section.

FOR THE RADIOLOGICAL SCIENCES DEPARTMENT

A listing has been made of means and variances by dosage groups and by month for PBI, WBC, Hbg, and Creatinine in the radioactive iodine fed sheep. This data is now being analyzed in order to ascertain the effect of seasonal variation and dosage differences on the haematology and blood chemistry of the Suffolk ewes.

Material was gathered and a rough draft written of the seminar on experimental design to be given for the Radiological Sciences group.

Routine computational work consisted of Aquatic Biology calculations (including a complete listing of all cards accumulated since the study was begun), Sheep Thyroid and Radioanalysis calculations, Meteorological Studies calculations for January, and Wind Study calculations for December.

Graphic work for the department involved preparation of fifteen large 20" x 30" colored illustrations and charts to be used by the department manager in his presentation to Mr. R. J. Cordiner.

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Additional work performed for the Department included the development of a detailed perspective of a 105 building. By using section and cut-away technique the drawing shows all rooms and floor levels. It will be used to trace radioactive contamination flow patterns.

FOR THE MEDICAL DEPARTMENT

As a result of the report "Absenteeism Patterns at Hanford Works", the Medical Department has requested that further analysis of men's and women's seasonal patterns of absenteeism be made. The objective of this study will be separate absenteeism control charts for men and women. Work has been started on this project, which involves finding expected rates for each month and the limits of the expected variation, taking trends and seasonal factors into account.

A distribution was prepared of all employees by sex by year of birth.

FOR THE EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

Data collection has been completed for the plant-wide labor separations study. Approximately 4,000 data punching sheets are presently being processed by the Computing Unit prior to the statistical analysis.

At the request of the Employee Relations Section and the consulting firm of Richardson, Bellows, Henry and Company, an attempt is being made to determine a method which would be useful in relating employee separation data to the Hanford Works attitude survey data. Studies such as these could easily be performed if a centralized personnel file was available for use.

Further assistance was given to members of Union Relations in the statistical interpretation of data compiled from Richland and national price indices, rent increases, and salary increases.

Results of the Rotational Trainee Survey sent out by the Technical Personnel Section are presently being analyzed. Upon completion of the analysis a report will be issued.

A listing was prepared of all employees who are either employed as, or have an educational background as chemist or chemical engineer.

FOR THE FINANCIAL DEPARTMENT

Listings were prepared of non-exempt personnel whose General Electric or duPont service date was December 31, 1938, or prior; of all non-exempt persons participating in the insurance program by organizational code; and of all employees showing their dependancy status as reported for withholding tax purposes.

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A new procedure was developed to provide for the processing and reporting of adjustments to gross earnings.

A revision was made in the weekly force report which resulted in approximately \$20 a month savings in computing and 120 hours a month in Payroll Records.

Graphic work for the department involved preparation of a number of large 20" x 30" lecture charts and one 30" x 30" process and cost flow chart to be used in presentation to Mr. R. J. Cordiner. Additional work performed for the Financial Department included preparation of payroll statistics charts, an absenteeism chart and the financial summary pocket booklet charts for the Engineering Cost Section.

FOR ADMINISTRATIVE PRACTICES STAFF

In response to a request from the S. F. Accountability group, Document HW-27069, "The Evaluation of Shipper-Receiver Differences", N. D. Peterson to V. D. Donihee, was written and issued. This document explains the "how" of evaluating shipper-receiver differences; two cases of 224-U process shipments were included as examples.

Analysis has begun on alloy-content phases of the problem entitled "Gross Weight of Shapes". Data for this statistical analysis were obtained from the laboratory daily sample reports, including spectro-chemical analyses. Data are yet to be received for analysis of scale precisions.

Extensive attention has been given to the project concerning precisions of TBP inventories. It appears that re-calibration of the tanks by a method other than inspection or selected-points will be a prerequisite to any useful statements of precision. The current plan is to continue intensive work on the initial tank as a pilot study. After completion of this phase, it is anticipated that there will be a basis for judgment as to future action. It is hoped that a less rigorous procedure may be adopted for the remaining tanks, thus effecting a substantial saving in expenditure of time.

A study of the methods and procedures used in handling billets poured in the 314 Building and the reliability of the off-site shipping weights has been conducted for the S F Accountability group. The work consisted of finding the accuracy and precision of the scale used to weigh the billets, the checks made on the results obtained by this scale, the weighing error per billet, and the weighing error per shipment. Recommendations were made which would lower the percent error per billet to 1/4 of one percent.

The Graphics Unit prepared five charts comparing progress at Hanford in productivity, cost, absenteeism, turnover, and accident frequency with progress curves recently published in a booklet on "Communications".

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FOR THE ATOMIC ENERGY COMMISSION

Graphics work for the AEC included preparation of additional color illustrations to be used on slides for presentation of Wahluke Slope information to the public, preparation of charts on Reactor Power Levels and Efficiency, preparation of a large color perspective of the Redox Plant showing, by cut-away, structural and equipment details, preparation of color overlays for printing of Area Site Plans and the assembly of Area Site Plan Booklets, and the preparation of various maps, charts and organization charts.

NEW STATISTICAL AND COMPUTING DEVELOPMENTS

A general purpose Electronic 605 Calculator control panel has been wired to give sums, sums of squares, and sums of cross products. The panel has been arranged to require minimum modification of the wiring for a given application. Because of repeated requests for these quantities in connection with statistical studies, it is anticipated this panel will result in a considerable saving of programming time.

Work continued on compiling, abstracting, and indexing the bibliography of the application of statistics to problems on administrative control.

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Department Serviced	Percent of Services Rendered				Statistical & Computing Services Section
	Units			Graphics	
	Statistics	Computing	Graphics		
Manufacturing	30	2	21	7	
Engineering	31	26	14	25	
Utilities & General Services	8	12	17	12	
Community Real Estate & Services	0	0	0	0	
Radiological Sciences	0	4	21	6	
Medical	0	1	0	1	
Employee and Public Relations	4	1	0	1	
Financial	0	51	5	40	
Administrative Practices	12	0	2	2	
Atomic Energy Commission	15	3	20	6	
TOTAL	100	100	100	100	

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EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

SUMMARY -- FEBRUARY, 1953

The number of applicants interviewed in February was 1,123 as compared with 1,455 for January. Of these applicants, 318 were individuals who applied for employment with General Electric for the first time. In addition, 94 new applicants applied by mail. Open, nonexempt, nontechnical requisitions decreased from 171 at the beginning of the month to 158 at month end. Eighty-two employees were added to the roll and 98 removed during the month. Turnover decreased from 1.29% in January to 1.03% in February. During February, 55 new requests for transfer to other type work were received by Employment and 39 transfers were effected. Attendance recognition awards were distributed to 88 employees who qualified for one-year awards during January; 69 employees qualified for two-year awards, and 31 employees qualified for three-year awards.

Two employees died during the month and three employees retired. One hundred thirty-four visits were made to employees confined to Kadlec Hospital and eighty-one checks were delivered to employees confined at the Hospital or at home. At month end, participation in the Pension Plan was 94.9%, in the Insurance Plan 98.7%, and the Employee Savings and Stock Bonus Plan 43.7%. At month end there were 854 registered under Selective Service and 770 military reservists were on the roll. Since August 1, 1950, 269 employees have terminated to enter military service, of which 47 have returned, 3 have not claimed reemployment rights, leaving 213 still in military leave status.

Orientation of new employees was presented daily throughout the report month. A total of 65 employees attended this program. Of this number, 98.4% have signed up to participate in the Pension Plan, 98.4% in the Insurance Plan, and 87.6% in the Good Neighbor Fund.

Sixty-eight adopted suggestions were approved by the Suggestion Committee for awards during the month totaling \$735.

Arrangements have been completed by General Electric Supply Corporation for GE dealers in Yakima, Toppenish and Sunnyside to handle sales to GE employees at the usual employee discount. These outlets were established as a convenience for employees residing in the surrounding communities.

The first funds were disbursed from the Good Neighbor Fund during the month in the form of \$2000 as a portion of the commitment to Community Chest, one of the participating agencies. As of the end of January, 1953, the Fund had accumulated about \$12,500.

As an improvement in the pre-retirement program, arrangements have been made for the last annual physical examination before retirement to be given on a more thorough and searching basis.

Employee and Public Relations
Summary

Management Orientation was presented on Monday, February 2, with 25 new exempt personnel in attendance. Labor Management Relations program was presented on Wednesday, February 4, with 20 new supervisors in attendance. Policy Panel Seminar was presented during the week of February 9 through 13 for four hours each day with 12 supervisors in attendance. Principles and Methods of Supervision was presented to two groups of supervisors from February 9 through 20 with 35 supervisors in attendance. These two groups were combined with Groups #40 and 41, who completed these conferences in January, to attend a dinner meeting on Thursday evening, February 26. FMS Refresher was presented on Tuesday, February 3, with 19 supervisors who completed the FMS conferences prior to 1951 in attendance. Conference Leading was presented on Wednesday, February 25, with 12 exempt personnel in attendance. Management Conferences on Human Relations was presented to Group #1 on February 24 with 17 supervisory-management in attendance, and to Group #2 on February 26 with 17 supervisory-management in attendance. Professional Management Development was presented on Tuesday evening, February 3, with the subject "Special Supervisory Considerations" for discussion by 28 members of Hanford Works management. The third of this series was presented on Tuesday, February 17, with the topic "Labor Management Relations" and was attended by 32 members of management. Management Panel Forum was presented on Thursday evening, February 12, with the subject "Disciplinary Action", attended by 56 members of management. The third in this series was presented on Thursday evening, February 26, with the topic "Time Card Procedure" for discussion, attended by 36 members of management. SAGE was mailed to Hanford Works management under dates of February 11 and 25. Economics Study Group continues to meet on Monday evenings using Haney's "How You Really Earn Your Living" as text.

The 1952 annual safety report, a ten-page three-color booklet, was completed and distributed to all members of management.

Safety topic for March, "What's In It For Me?," and the health bulletin for March, "Look What Supports You," were written and placed in production.

The Good Neighbor Fund membership drive publicity included development of a promotion plan and lead-off Works NEWS story, and a letter to management from the Board of Trustees chairman.

Two letters to management were prepared for the Employee Relations manager's signature: one concerned the change in vacation pay policy, and the other announced cancellation of Mr. Cordiner's talks in the areas.

Copies of the following booklets were distributed throughout the 20 information racks: "How To Enjoy Your Job," "How to Cut Your Taxes," "Plants in the Home" and "Nobody Lost His Job". After the four remaining titles in stock have been distributed, the rack service will be restricted to Company materials and other free booklets, in that continued purchase of booklets has been disapproved by the Commission.

Employee and Public Relations
Summary

Final page layouts for the Nucleonics Division's annual report to the Atomic Energy Commission--"1952 at Hanford Works,"--were reviewed by the General Manager, and a few requested alterations in copy were made. After final approval is obtained, the report will be placed in production, with issue date one month following.

Safety was publicized through page one, banner-headline news stories concerning the Nucleonics Safety Council Award. The Works NEWS front page of the February 13 issue was devoted to a photo of Award gifts; however, a last minute injury just before press time eliminated that front page. Another page was substituted, and the size of the paper, as a consequence, was reduced from 10 pages to 8.

Income tax assistance to employees was given through a reproduction of the return forms and an explanation as to how the forms were to be completed. Information was checked and approved by Internal Revenue representatives.

Can You Tell Me question turned into Works NEWS resulted in the dealerships for purchasing Company products through Sales Plan being established in Yakima Valley area. Story was published in Works NEWS advising employees of the stores which now handle GE products under the Employee Purchase Plan.

Supervisors Association Membership Drive received its initial kick-off through Works NEWS publicity, and continued promotion is being planned through the month with pictures and news stories.

Toward hiring approximately 18 Ph.D.'s during the calendar year, the Technical Personnel office has selected 75 of the most promising candidates and are concentrating further negotiations with these men. This number plus a few new candidates who will be added to the consideration, based on past experience, is the number to be dealt with to end up with about 18 first-rate hires.

Spring recruiting of candidates for BS and MS degrees is over fifty percent completed. Including 15 men already hired from the mid-year class, we are aiming at a total of 50, as authorized, from the 1953 class. Trend curves maintained during last year's recruiting are proving invaluable as guides in regulating the number of employment proposals in relation to acceptances and rejections of offers currently being received. In addition a few very promising junior engineering students are being hired for the summer, as authorized; also 5 engineering graduates to be trained at Hanford for the ANP Project, in accordance with earlier authorizations recently confirmed.

Similar summary of the first semester of the School of Nuclear Engineering showed the highest percentage to date of students completing their courses satisfactorily. The second semester enrollment of students, primarily in 15 graduate-level courses, totals 145. The greatest majority are steady graduate students carrying on continuing programs.

**Employee and Public Relations
Summary**

Most of the Departments are now referring to the Technical Personnel Office, men who have indicated a wish to transfer or to resign. In a considerable number of cases transfers within the Plant have been effected, and the need for transfers or resignations has been avoided.

During February a total of four transfers of capable men to other Divisions have been arranged, and several others are pending.

The program of engineering talks at universities, timed for greatest aid to the recruiting program, is being continued actively with three talks given this month.

A total of 36 releases were distributed during the month. Of these, 19 were sent to the "local" list and radio stations. Six were sent to media throughout the Northwest, one to a hometown paper, one to 15 farm journals and nine received special distribution.

The roving reporter for the Walla Walla Union BULLETIN was escorted on a tour of Richland to obtain photographs of new construction and other new developments for the BULLETIN.

The syndicated feature article about the Hanford Works sheep farm was sent with photographs to the Portland OREGONIAN in addition to the 15 agricultural magazines.

The article describing the Hanford Works Industrial Medicine program appeared in the February issue of the INDUSTRIAL MEDICINE AND SURGERY magazines.

It was decided that the established policy throughout the Company will be followed by G.E. at Hanford Works when releasing information about the settlement of law suits out of court. The policy is that generally the amount of such settlements will not be released by the Company. The Company has no objection if the amount is released by the plaintiffs in the case or their attorneys or by the Atomic Energy Commission. The policy was adopted because disclosure of the amount of the settlement might cause embarrassment to the individual concerned.

In answer to a request from the Public Relations Services Division in New York, a Hanford Works security poster was sent to their office for possible submission to the syndicated Sunday supplement "Parade".

The results of the Community Newsletter mail survey have been tabulated and will be considered when material is selected for the Newsletter in the future.

A member of Public Relations visited newspaper and radio station representatives in Prosser, Grandview, Sunnyside and Yakima during the month.

As part of the Community Relations program considerable information on the General Electric Educational Assistance Program was sent to principals of high schools in Prosser, Benton City, Sunnyside, Grandview, Kennewick, Pasco and Richland.

**Employee and Public Relations
Summary**

Five papers were submitted for clearance during the month.

A total of 146 photography assignments were covered during the month, producing a total of 24,660 prints, of which 22,603 were "A" and "B" badge prints. Area and news work consisted of 2,057 prints.

The weekly radio program, Hanford Works Science Forum, was produced and broadcast each week at its regular Tuesday evening show time over radio station KWIE.

Two fifteen-minute radio programs were moderated and recorded for Public Health.

Sixteen motion pictures were obtained for use by plant departments during the month.

All production and processing of the sound slidefilm, "It's Just Knowing How," produced for Office Services Unit, was completed this month and delivery is expected on March 15.

Production on the two-year documentary motion picture of the 100-K Project being produced for Design Section, was continued during the month.

There are indications that the Council will not press their demand for arbitration of a grievance involving work performed on New Year's Day. Discussions with the union attorney are continuing with respect to the 15 Instrument grievances scheduled for arbitration. The Company is asking that a more specific cause of action be set forth. A special HAMTC Committee and the Company are attempting to develop an understanding which would result in a procedure for emergency call-in for employees living off the project. Our attorney presented oral arguments on February 5, 1953 before the Benton County Superior Court concerning the Company's Demurrer to the amended complaint of the HAMTC in the R. E. Mercer case. While no official word has been received from the HAMTC, it is expected at this time that the Contract will be re-opened and that demands will be made for extensive revisions. Scattered reports have been received to the effect that the HAMTC is soliciting pledge cards from GE clerical employees. GE employees represented by the HAMTC performed work in spite of the fact that a construction contractor in the immediate vicinity was being picketed as nonunion. A delegation of three representatives of the local Typographical Union contacted this office on February 6 to protest the future printing of the Works NEWS by the open shop Tri-City Herald.

The 24-day strike of Kaiser Plumbers which resulted from a demand for exclusive bus transportation to the work areas was terminated on February 12 on the basis of understandings reached earlier in the week in Washington, D.C. The entire force of Machinists on Kaiser's payroll walked off the job on February 24, renewing a work stoppage which was temporarily alleviated early in the month.

Employee and Public Relations
Summary

Preparations for the annual General Electric Northwest Area Rate Survey were completed. The AEC issued reimbursement authorization for a new classification --Engineering Assistant, Grade 15. As a result of meetings with the HAMTC, the classification of "Truck Driver (Laundry)" was reinstated.

Analysis of Organization Charts and planning for the documentation and classifying of all the changes listed or planned required a considerable part of the time of the Salary Administration Section. These changes further complicated the current salary review of executive, administrative and operating exempt employees.

Suspension of Salary Stabilization on February 6 released our petition for new salary ranges. Commission approval was received at month's end and the new EAO ranges will be established March 1.

A representative of the Section was ready to start the National Survey at month's end.

EMPLOYEE AND PUBLIC RELATIONS DEPARTMENT

FEBRUARY, 1953

ORGANIZATION AND PERSONNEL

General

There were no organizational changes during February.

Employee Relations

Effective February 2, 1953, Carmella J. Neville, Secretary C, transferred from Investigations and Personnel Files Unit to the Financial Department.

Effective February 2, 1953, Judith A. Porter, Motor Messenger, transferred from Investigations and Personnel Files Unit to Utilities and General Services Department.

Effective February 3, 1953, Joanne McKinney, Messenger, entered Investigations and Personnel Files Unit.

Effective February 16, 1953, T. A. Samples transferred to Employee Communications Unit from the Medical Department.

Effective February 20, 1953, Creta K. Shupe, General Clerk D, resigned voluntarily.

Effective February 24, 1953, A. C. Cooper transferred from Employee Communications Unit to the Engineering Department.

Effective February 24, 1953, Beverly Schreiber, Stenographer-Typist, was assigned to Employment to replace a Stenographer who will transfer 3-2-53.

Public Relations

Effective February 18, 1953, Mary Cain, General Clerk D, was added to the Public Relations Section, Photography Unit.

Technical Personnel

Effective February 6, 1953, Esther Sevcik, Stenographer, was added to Technical Personnel Section.

Trainees - Beginning of Month 105 - End of Month 96

Net Change:	Placements in departments	12
	Resignations	1
	Transfers to ANP	5
	New Hires	9

Employee and Public Relations
Organization and Personnel

Union Relations

Effective February 6, 1953, Helen H. Wallace, Secretary C, began leave of absence.

Salary Administration

There were no organizational changes during February.

Number of Employees on Roll	<u>February, 1953</u>
Beginning of Month	237
End of Month	<u>228</u>
Net Change	- 9

Employee and Public Relations

ACTIVITIES

General

To give employees of the Employee Relations Section a better understanding of the magnitude of the Hanford Works and perhaps a better insight as to some of the operating problems, plant tours have been scheduled. The first of a series of such tours was made by four employees February 27 and will continue until all employees in the Section have been covered. Brief inspections of some of the facilities within the 100-H and 200-West Areas are included in the itinerary. It is felt, too, that this program will give our employees a more intense feeling of belonging to the Company and they can better appreciate their contribution to the important work being carried forward at the Hanford Works.

Personnel Practices

Employment	<u>January, 1953</u>	<u>February, 1953</u>
Applicants interviewed	1,455	1,123

318 of the applicants interviewed during February were individuals who applied for employment with the Company for the first time. In addition, 94 applications were received through the mail.

Open Requisitions	<u>January, 1953</u>	<u>February, 1953</u>
Exempt	0	0
Nonexempt	171	158

Of the 171 open, nonexempt, nontechnical requisitions at the beginning of the month, 64 were covered by interim commitments. Of the 158 open, nonexempt, nontechnical requisitions at month end, 76 were covered by interim commitments. During February, 63 new requisitions were received requesting the employment of 71 nonexempt, non-technical employees.

	<u>January, 1953</u>	<u>February, 1953</u>
Employees added to the rolls	83	82
Employees removed from the rolls	<u>113</u>	<u>98</u>
NET GAIN OR LOSS	-30	-16

Of the 98 employees removed from the rolls, none were removed due to lack of work.

Separation:

	<u>January, 1953</u>		<u>February, 1953</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
Including employees who were laid off for lack of work	.93%	2.76%	.58%	2.89%
Excluding employees who were laid off for lack of work	.88%	2.76%	.58%	2.89%

Employee and Public Relations

Over-all Separation:

	<u>January, 1953</u>	<u>February, 1953</u>
Including employees who were laid off for lack of work	1.36%	1.03%
Excluding employees who were laid off for lack of work	1.29%	1.03%

During February, 20 employees left voluntarily to accept other employment, 7 left to enter military service, and 5 left to enter business for self.

Transfer Data

Accumulative total of requests for transfer received since 1-1-53	105
Number of requests for transfer received during February	55
Number interviewed in February, including promotional transfers	80
Transfers effected in February, including promotional transfers	39
Transfers effected since 1-1-53, including promotional transfers	64
Transfers effected in February for employees being laid off	0
Number of stenographers transferred out of steno pool in February	5
Transfer requests active at month end	318

Employment Statistics

ADDITIONS TO THE ROLLS

	<u>Exempt</u>	<u>Nonexempt</u>	<u>Community Firemen</u>	<u>Total</u>
New Hires	--	56	--	56
Re-engaged	1	--	--	1
Reactivations	3	19	--	22
Transfers	3	--	--	3
TOTAL ADDITIONS	7	75	--	82

TERMINATIONS FROM THE ROLLS

Actual Terminations	6	57	--	63
Removals from rolls (deactivations)	--	27	--	27
Transfers	3	5	--	8
TOTAL TERMINATIONS	9	89	--	98

GENERAL

	<u>1-1953</u>	<u>2-1953</u>
Photographs taken	347	303
Fingerprint impressions (taken in duplicate)	222	183

Employee and Public Relations

PERSONNEL SECURITY QUESTIONNAIRES PROCESSED

	<u>1-1953</u>	<u>2-1953</u>
General Electric cases	93	54
Facility cases	<u>30</u>	<u>26</u>
TOTAL	123	80

INVESTIGATION STATISTICS

	<u>1-1953</u>	<u>2-1953</u>
Cases received during the month	141	136
Cases closed	122	128
Cases found satisfactory for employment	114	76
Cases found unsatisfactory for employment	1	8
Cases closed before investigation completed	0	12
Special investigations conducted	1	0

PERFECT ATTENDANCE RECOGNITION AWARDS

Total one-year awards to date since January 1, 1950	4724
One-year awards made in February for those qualifying in January	88
Total two-year awards to date since January 1, 1950	1284
Two-year awards made in February for those qualifying in January	69
Total three-year awards to date	254
Three-year awards made in February for those qualifying in January	31

During February, 24 people whose continuity of service was broken while in an inactive status were so informed by letter.

An Employment representative was guest speaker before the University of Washington Public Education club on the evening of February 10. Secretarial Science students from both the University of Washington and Seattle University were in attendance, and on February 10 and 11, interviews were conducted with these students.

Employee Benefits

The following visits were made with employees during the month:

Employee contacts made at Kadlec Hospital	134
Salary checks delivered to employees at Kadlec Hospital	81
Salary checks delivered to employees at home	18

At month end participation in Benefit Plans was as follows:

	<u>January</u>	<u>February</u>
Pension Plan	94.6%	94.9%
Insurance Plan	98.7%	98.7%
Employee Savings and Stock Bonus Plan	43.6%	43.7%

Employee and Public Relations

Two employees died during February, namely:

Paul E. Collins, M-1577-TS, Engineering
Hickman W. Nash, W-7031-942, Utilities & General Services

Forty-four letters were written to deceased employees' families during February, concerning payment of monies due them from the Company, and also to answer their questions.

Since September 1, 1946, 111 life insurance claims have been paid totaling \$666,500.

Three employees retired during February, namely:

Wilton E. Snowden, W-5817-VRH, Normal Retirement
Ivory E. Taggart, W-6737-942, Normal Retirement
Lillie F. Galbraith, W-5452-SO, Normal Retirement

During February, 19 letters were written to retired employees providing them with information of general interest. To date 242 employees have retired at Hanford Works, of which 125 are continuing their residence in the vicinity.

Orientation of new employees was presented daily throughout the report month. A total of 65 new employees attended this program. Of this number, 98.1% have signed up to participate in the Pension Plan, 98.1% in the Insurance Plan, and 87.6% in the Good Neighbor Fund.

Arrangements have been completed by General Electric Supply Corporation for GE dealers in Yakima, Toppenish and Sunnyside to handle sales to GE employees at the usual employee discount. These outlets were established as a convenience for employees residing in the surrounding communities.

The first funds were disbursed from the Good Neighbor Fund during the month in the form of \$2000 as a portion of the commitment to Community Chest, one of the participating agencies. As of the end of January, 1953, the Fund had accumulated about \$12,500.

Arrangements were completed during February with the people in the Industrial Medical Section for the last annual physical examination scheduled for employees prior to retirement to be given on a more thorough and searching basis. Although it is recognized that the normal annual physical examination is quite thorough, it has been agreed that it could be more exhaustive for the employees approaching retirement. This should lead to an improvement in the pre-retirement programs.

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

Number of reservists classified in Category A	127
Number of reservists classified in Category B	61
Number of reservists classified in Category C	71
Number of reservists classified in Category D	511

770

Employee and Public Relations

Number who returned to active duty to date		121
Number who returned to active duty in February		0
Number of reservists for which delays have been requested		47
Number of reservists classified in Category B	4	
Number of reservists classified in Category C	3	
Number of reservists classified in Category D	40	
Delays requested (including renewals)		114
Delays granted		105
Delays pending		1
Delays denied		5
Delay requests recalled		3

The statistics with respect to employees registered under Selective Service are as follows:

Employees registered		854
Employees registered who are veterans		312
Employees registered who are non-veterans		542
Deferments requested to date (including renewals)		896
Deferments granted		687
Number of employees for which deferments have been requested		276
Number of employees classified in Category B	6	
Number of employees classified in Category C	9	
Number of employees classified in Category D	261	
Deferments denied and appealed at state levels		17
Deferments denied and appealed at local levels		0
Deferments denied and pending at national level		0
Deferments denied by local board and not appealed		2
Deferments denied by state board and not appealed		14
Deferments denied at national level (by Gen. Hershey's office)		1
Deferments denied at national level (by President)		3
Deferments requested, employees later reclassified		78
Deferments requested, later withdrawn		68
Deferments pending		26

Military terminations since 8-1-1950 are as follows:

Reservists recalled		121
Selective Service		144
Female employees enlisted		4
		<hr/>
	TOTAL	269

Employees returned from military service:

Reservists		40
Selective Service		12
		<hr/>
	TOTAL	52

Known number not claiming reemployment rights		4
Number of employees still in military leave status		213

Employee and Public Relations

Suggestion System, Workmen's Compensation and Liability Insurance

<u>Suggestion System</u>	<u>January</u>	<u>February</u>	<u>Total Since 7-15-47</u>
Suggestions Received	266	227	10968
Acknowledgments to Suggesters	211	286	
Suggestions Pending Acknowledgments	78	19	
Suggestions Referred to Depts. for Investigation	211	286	
Suggestions Pending Referral to Depts.	78	19	
Investigations Completed and Suggestions Closed	286	281	
Suggestions Adopted - No Award	3	5	
Adopted Suggestions Approved by Committee for Award	42	68	
Total Net Cash Savings	\$9,784.79	\$4,425.42	
Total Cash Awards	\$ 960.00	\$ 735.00	

The highest award of \$100 was made to an employee in the Reactor Section for his suggestion of a new type expanding mandrel for removing damaged process tubing from the pile. This suggestion resulted in considerable savings in labor.

An employee in the Separations Section received the second highest award in the amount of \$80 for his suggestion regarding a steam "T" bar, designed by him, for heating the transfer jumper. Savings were material and labor.

Workmen's Compensation

One case under litigation was closed during the month of February.

Liability Insurance

300 Area Bus Accident, B-6835621 -- On June 17, 1952, a collision occurred near the 300 area involving four government buses and a station wagon. Four persons who were injured in the accident subsequently brought suit against the General Electric Company and G. H. Fisher, driver of the bus in which they were injured. Three of the actions, those of Howard R. Cannoles, W. E. Jeter and Lee Owen, were set for trial in Franklin County on February 10 through February 14, 1953. The total amount claimed in the three complaints was \$273,118 plus costs. Prior to trial the three cases were settled for a total of \$59,000. The fourth action, that of Robert A. Carlson, has not yet been set for trial.

Life Insurance

Code information which is known only to Home Office Life Underwriters Association has been furnished 53 insurance companies and investigation agencies during the month of February, 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.

Employee and Public Relations

Insurance Statistics

Claims reported to Department of Labor and Industries	<u>Long Forms</u>	<u>January, 1953</u>	<u>Short Forms</u>
		84	
		<u>February, 1953</u>	
	<u>Long Forms</u>		<u>Short Forms</u>
	67		444
Total Since September, 1946	14,431		
		<u>January, 1953</u>	<u>February, 1953</u>
Claims reported to Travelers Insurance Company		7	* 8
Total Since September, 1946 - 697			

* Of the claims reported to Travelers Insurance Company during the month, all were property damage claims.

Training Program - Collateral Contractors

One trainee from the Knolls Atomic Power Laboratory reported here for a three weeks training period in the Reactor Section.

Employee and Public Relations

TRAINING AND DEVELOPMENT

Training and Development Progress Report for February 1953 including programs and other activities were completed as follows:

MANAGEMENT AIDS:

MANAGEMENT ORIENTATION was presented on Monday February 2 with 25 new exempt personnel in attendance. This 8-hour program includes the welcoming of new exempt employees to the management team, a review of official sources of information and a broad over-all review of current management responsibilities. Mr. C. N. Gross, Manager, Manufacturing Department, was guest at an informal luncheon held in conjunction with this program.

LABOR MANAGEMENT RELATIONS program was presented on Wednesday, February 4, with 20 new supervisors in attendance. This 8-hour program includes as its prime purpose a review of labor laws and union agreements to help supervisors gain a uniform understanding of their responsibilities under labor laws and in operating under a union contract.

POLICY PANEL SEMINAR was presented during the week of February 9 through 13 for four hours each day with 12 supervisors in attendance. This 20-hour seminar includes a panel discussion of all O&PG's distributed to date to List 3. The panel reviews the purpose or philosophy of each of the Guides to help all supervisors in attendance gain a clear understanding of policy and uniform administration.

MANAGEMENT SKILLS:

PRINCIPLES AND METHODS OF SUPERVISION was presented to two groups of supervisors from February 9 through 20 with 35 supervisors in attendance. Group #42 was conducted at Richland, Dorm W-10 and Group #43 at Hanford High School with these meetings running concurrently for 10 one-half days. These two groups were combined with Groups #40 and 41, who completed these conferences in January, to attend a dinner meeting on Thursday evening, February 26. Mr. W. E. Johnson, General Manager, Nucleonics Division, was principal speaker at this dinner meeting attended by ten guest members of the Advisory Committee, at which time completion certificates were presented to each of the supervisors having completed the FMS conferences.

FMS REFRESHER was presented on Tuesday, February 3, with 19 supervisors who completed the FMS conferences prior to 1951 in attendance. This 4-hour refresher meeting was the first of this type of presentation and was presented at both Richland Dorm W-10 and at Hanford High School for the convenience of participating members. The purpose of this program is to afford those who completed FMS in the past an opportunity to inventory the application and to re-examine and strengthen the working principles included in this management art of persuasion skill.

CONFERENCE LEADING was presented on Wednesday, February 25, with 12 exempt personnel in attendance. This 8-hour program is designed to assist exempt

Employee and Public Relations

TRAINING AND DEVELOPMENT

personnel to conduct successful conferences and learn the techniques of directing group thinking toward logically organized conclusions. This program allows participants an opportunity to gain the greatest experience in the conference leading skill through participation in role playing.

MANAGEMENT DEVELOPMENT:

MANAGEMENT CONFERENCES ON HUMAN RELATIONS was introduced for the first time during this current report period. This 12-hour program, divided into three 4-hour meetings to be held once every four weeks, began with Group #1 meeting on February 24 with 17 supervisory-management in attendance. Group #2 met at Hanford High School on February 26 with 17 supervisory-management in attendance. A total of eight groups (four in Richland and four at Hanford High School) will participate in these human relations conferences during the spring of 1953. The groups are limited to 20 members each to afford the desirable number of 15 to 20 participants in these conferences. The purpose of these conferences is to help supervisory-management be more effective leaders in the application of human relations skills. This Management Development program is based on the principle that learning is accomplished by doing. It is intended that judgment concerning human relations will be employed as a result of having discussed and exchanged ideas with other persons who have like problems of similar experience and responsibility, thereby gaining willing, intelligent cooperation of a work unit through a better understanding of people.

PROFESSIONAL MANAGEMENT DEVELOPMENT meetings are a series of evening meetings designed for supervisory-management who have not attended the programs when presented in their entirety, or for those who have attended and desire a refresher of the contents of these programs. During the report period the second and third of this series of meetings were held with the second meeting presented on Tuesday, February 3. The subject at this meeting was "Special Supervisory Considerations" and was attended by 28 members of Hanford Works management. The third of this series was presented on Tuesday evening, February 17, with the subject "Labor Management Relations" being attended by 32 Hanford Works management. Attendance at these meetings is entirely voluntary since those present are attending on their own time. It has been learned that approximately 75% of the participants have not previously participated in the entire program and, therefore, this method is assisting in reaching a larger number of Hanford Works management with this desirable training information.

MANAGEMENT PANEL FORUM meetings are a series of evening meetings styled as panel discussions to give Hanford Works management the advantage of meeting with recognized specialists, which creates a live and fast-moving, completely spontaneous discussion. The second of this series of meetings was presented on Thursday evening, February 12, with the subject of "Disciplinary Action" as the topic for discussion. Mr. E. G. Jones of the Transportation Section and Mr. E. F. Fitzmaurice of the Union Relations Section were guest panelists at this meeting. There were 56 members of Hanford Works management in attendance at this meeting. The third of this

Employee and Public Relations

TRAINING AND DEVELOPMENT

series was presented on Thursday evening, February 26, with the topic "Time Card Procedure" for discussion. Mr. P. A. Burnside and Mr. A. J. McGinnes of the Finance Department, Payroll Section, were guest panelists. There were 36 members of Hanford Works management in attendance at this meeting.

OTHER TRAINING PRODUCTION:

SUPERVISOR'S HANDBOOKS were issued to new supervisory personnel as requested by responsible members of management. Summary of Handbook distribution to date includes:

Number of handbooks issued prior to February 1, 1953	-	1339
Number of handbooks issued during February	-	1
Number of handbooks returned during February	-	1
Number of handbooks issued to date	-	1339
Number of handbooks on hand	-	<u>161</u>
Total number of handbooks		1500

Of the 161 handbooks on hand, 84 have been checked and are ready for issuance upon request, 43 remain to be checked for completeness, and we continue to hold 34 in abeyance as unusable due to lack of pages in their content.

SAGE -- The Hanford Works Supervisor and General Electric bulletin, prepared by Training and Development, was written, edited and mailed to Distribution Lists 1, 2 and 3 under dates of February 11 and February 25. These two bulletins include a few current highlights of Training and Development objectives and brief human relations items of interest to supervisory-management.

ANNOUNCEMENT LETTERS are mailed to distribution lists 1 and 2 approximately ten days prior to presentation of all training programs in accordance with Training and Development 1953 Objectives Schedule. Several sections have reported that the complete 1953 schedule as distributed in January to Hanford Works management has enabled them to more advantageously plan and schedule exempt employees' attendance to training programs throughout 1953.

SURVEY QUESTIONNAIRES are being used in conjunction with Training and Development presentation programs throughout 1953. These anonymous questionnaires are designed to ascertain respondents' value of Training and Development presentations.

ECONOMICS STUDY GROUP continues to meet on Monday evenings using Haney's "How You Really Earn Your Living" as text. During this report period photostat copies of current newspaper clippings were received from Frank Highton of the New York office which will be used in the future in conjunction with this study of economics.

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MATERIAL REQUESTED -- Several requests for miscellaneous items of information were received and materials furnished during the report period, including such items as Objectives Manuals, 1953 Training Schedules and several requests for "The Unwritten Laws of Engineering" by W. J. King, rating booklet. Completed transcripts covering what training programs exempt personnel have attended through 1952 were prepared by Department, Section and Unit and were mailed on February 4 to all Nucleonics Division Department Managers. They were requested to disseminate these in their departments to Section Managers and Unit Managers concerned with the enrollment of exempt personnel in Training and Development programs. Also one copy of "Men and Volts" was sold during the current report period.

EMPLOYEE COMMUNICATIONS

The 1952 annual safety report, a ten-page three-color booklet, was completed and distributed to all members of management.

A letter was prepared for the General Manager's signature to accompany copies of the January-February GE REVIEW, which were sent to community leaders in the Tri-city area at the request of Public Relations.

Assistance was given in publicizing training meetings held to acquaint stenographers with "Confidentially Yours," the recently completed manual on the preparation and control of classified documents.

Safety topic for March, "What's In It For Me?," and the health bulletin for March, "Look What Supports You," were written and placed in production.

Recruitment advertising during February included: advertisement in "The Library Journal" for an Order Catalog Librarian, and advertisements in "The Journal of the American Medical Association" and "Northwest Medicine" to attract a private practicing physician to Richland.

The Good Neighbor Fund membership drive publicity included development of a promotion plan and lead-off Works NEWS story, and a letter to management from the Board of Trustees chairman.

Two letters to management were prepared for the Employee Relations manager's signature: one concerned the change in vacation pay policy, and the other announced cancellation of Mr. Cordiner's talks in the areas.

Copies of the following booklets were distributed throughout the 20 information racks: "How To Enjoy Your Job," "How To Cut Your Taxes," "Plants in The Home" and "Nobody Lost His Job". After the four remaining titles in stock have been distributed, the rack service will be restricted to Company materials and other free booklets, in that continued purchase of booklets has been disapproved by the Commission.

In addition to the weekly Sheldon-Claire posters, approximately 60 copies of an Industrial Security poster, 150 copies of a GE educational assistance poster, and 90 copies each of two photo News Service posters were put up throughout the areas. Also, two official notices were posted on all bulletin boards: one was the Washington birthday holiday notice, and the other a notice of income tax assistance.

Revision of "This Way, Please," the stenographers handbook, was started at the request of Procedure Analysis.

Final page layouts for the Nucleonics Division's annual report to the Atomic Energy Commission—"1952 at Hanford Works,"—were reviewed by the General Manager, and a few requested alterations in copy were made. After final approval is obtained, the report will be placed in production, with issue date one month following.

Employee Communications commercial artist spent full time in preparation of a dummy and final art work for the annual report. At the end of February it was apparent that all art work would be completed by the end of the first week in March.

Safety was publicized through page one, banner-headline news stories concerning the Nucleonics Safety Council Award. The Works NEWS front page of the February 13 issue was devoted to a photo of Award gifts; however, a last minute injury just before press time eliminated that front page. Another page was substituted, and the size of the

paper, as a consequence, was reduced from 10 pages to 8.

Community elections were given front-page prominence, due to the new importance they assume with the possible incorporation of Richland. Story and map of voting districts for the coming election were published at the request of the city clerk.

Attendance Award Plan was featured when the first three-year award pins were given Hanford Works people. A review of the plan was published to reacquaint employees with the way it is administered.

Instrument Training School was the subject for a news feature which publicized the activities of the school in training people to be better equipped on the job in the theory and shop practices.

Income Tax Assistance to employees was given through a reproduction of the return forms and an explanation as to how the forms were to be completed. Information was checked and approved by Internal Revenue representatives.

Can You Tell Me question turned into Works NEWS resulted in the dealerships for purchasing Company products through Sales Plan being established in Yakima valley area. Story was published in Works NEWS advising employees of the stores which now handle GE products under the Employee Purchase Plan.

Good Neighbor Fund was given promotion in two separate issues. The first, a full-page feature, included pictures and background material on each member of the Board of Trustees. The second, a double-page feature, included pictures and explanations of the activities of each of the participating agencies. The entire promotion was developed by the Assistant to the Editor.

Supervisors Association Membership Drive received its initial kick-off through Works NEWS publicity, and continued promotion is being planned through the month with pictures and news stories.

General assistance has been given to Purchasing in determining a fair method for establishing the successful bidder on the Works NEWS engraving contract. At the request of Purchasing, a letter was initiated by the Works NEWS to give average number of square inches for cuts in a Works NEWS issue. Another letter explained that the low bid of a Spokane engraver could not be accepted, in that the engraver could not provide the required one-day service.

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TECHNICAL RECRUITING

For M.S. and B.S. Candidates

We have now completed our visits to 21 of the 32 colleges on our Spring schedule. Although few replies to our employment proposals have yet been received, the outlook is that we will meet our recruiting quota with new graduates of very good caliber. These college visits disclose however that the technical recruiting outlook is deteriorating rapidly, in terms of men available for firm employment, because the ROTC activities are obligating an increasing percentage to military duty after graduation. We are now studying changes in our recruiting plan which will be necessary for next year. We have also found that the percentage of engineering seniors committed to ROTC programs varies widely between schools, and this will influence the direction of our further effort.

For Ph.D. Candidates

Negotiations with Ph.D. candidates, previously reported, will continue through the Spring. As yet none of these men are available from the 1953 class to report for work.

Experienced Engineers

During February, four experienced engineers were added to the rolls. New forecasts are just being received from the principal departments and sections and our search for suitable experienced engineers continued.

TECHNICAL PERSONNEL TRANSFERS AND LOSSES

Resignations	9
Intra-Company Transfers	4

We are maintaining a high rate of effort in discussions with men who are considering resignation or transfer, to determine how either the Nucleonics Division or the entire Company can best utilize the services of capable men who seek a change for logical reasons. We find that some companies make offers to our employees without any advance notice to us but in general we are successful in getting other major employers to contact us before making specific offers to Nucleonics Division employees. It is, of course, our firm policy to do likewise before making offers to technical personnel employed elsewhere.

EDUCATION

Graduate School of Nuclear Engineering

Registration is complete and preparation is underway in the second semester program with 141 students. Due to our tuition arrangement which recognizes good performance, we believe that a very high percentage of these students will complete their courses successfully.

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Undergraduate Education

There is a demand for formal courses of study in many fields related to Nucleonics Division activities. For sometime we have been developing an extension arrangement with the State College of Washington whereby courses are offered under their auspices if a reasonable student enrollment can be attracted. Courses conducted to date include the following:

- Statistical Quality Control
- Mechanics of Materials
- Industrial Statistics
- General Chemistry
- College Algebra (1952)

In general these courses have met the requirements of draftsmen, laboratory assistants, some plant operators, and others who wish to broaden their formal education. The State College charges a small tuition fee consistent with college extension practices. We are giving all reasonable support to this activity since it is a service of value to the Hanford Works, but one properly performed by a public educational institution.

UNIVERSITY CONTACT

During February a talk was presented to electrical engineering students at the University of Idaho by Mr. W. J. Dows. Another talk at Whitman College was presented by Miss Lucile Lomen of the Law Department. Other engineering type talks were given in conjunction with technical recruiting visits.

PUBLIC INFORMATION

During the month of February, the News Bureau issued 36 releases. The breakdown, by category, distribution, and content, was as follows:

<u>Plant or Company</u>		<u>Community</u>	
Engineering or Science	10	Library	1
Employee Relations	8	Municipal Services	2
Speakers	3	Real Estate	1
Union Relations	4		
Other	7		
Total.....	32	Total.....	4

<u>Distribution</u>		<u>Content</u>	
Local List	19	Information	7
Daily List	6	Short News	17
Home or College	1	Long News	11
Special	9	Feature	1
Trade or Company Magazine	1		

The syndicated feature article about the Hanford Works sheep farm was sent with photographs to the Portland OREGONIAN in addition to the 15 agricultural magazines.

Progress editions of the Walla Walla Union BULLETIN and the Spokesman REVIEW contained illustrated feature articles about various General Electric activities at Hanford Works.

The article describing the Hanford Works Industrial Medicine program appeared in the February issue of INDUSTRIAL MEDICINE AND SURGERY magazines.

The roving reporter for the Walla Walla Union BULLETIN was escorted on a tour of Richland to obtain photographs of new construction and other new developments for the BULLETIN.

It was decided that the established policy throughout the Company will be followed by G.E. at Hanford Works when releasing information about the settlement of law suits out of court. The policy is that generally the amount of such settlements will not be released by the Company. The Company has no objection if the amount is released by the plaintiffs in the case or their attorneys or by the Atomic Energy Commission. This policy was adopted because disclosure of the amount of the settlement might cause embarrassment to the individual concerned.

In answer to a request from W. H. Dinsmore, Public Relations Services Division in New York, a Hanford Works security poster was sent to his office for possible submission to the syndicated Sunday supplement "Parade". A description of recent Public Relations activities at Hanford also was sent to Public Relations Services in New York for possible inclusion in the publicity newsletter.

Work done on articles for trade or other magazines during the month included: Arrangements for two articles for the GE REVIEW, one on heat transfer and the other on shielding; two articles on recreation in Richland; a signed article on teflon welding for MATERIALS AND METHODS magazine; articles for several agricultural magazines on experiments conducted with sheep.

A member of Public Relations visited newspaper and radio station representatives in Prosser, Grandview, Sunnyside and Yakima during the month. As a result of the visit changes will be made in some of the mailing lists.

Several requests have been received for the write-up "How to Prepare an Article for the General Electric REVIEW". Copies of this write-up have been made and a description of the papers and speech text clearance procedure at Hanford Works has been attached.

The results of the Community Newsletter mail survey have been tabulated and will be considered when material is selected for the Newsletter in the future.

As part of the Community Relations program considerable information on the General Electric Educational Assistance Program was sent to principals of high schools in Prosser, Benton City, Sunnyside, Grandview, Kennewick, Pasco, and the two high school student counsellors in Richland.

The following papers were submitted for clearance during the month:

"Tungsten Arc Welding of Stainless Steel Piping and Tubing" by E. B. LaVelle, for presentation at the Atomic Energy Commission Welding Committee meeting, Oak Ridge National Laboratory, February 2, 1953.

"Absorption and Metabolism of Tritium Oxide and Tritium Gas by Bean Plants" by John F. Cline, for publication in "Plant Physiology".

"The Effect of Repeated Zirconium Citrate Injections on the Distribution of Plutonium in the Rat" by Patricia L. Hackett, for publication by the "Society for Experimental Biology and Medical Proceedings".

"Inhibition of Growth of Chlorella Pyrenoidosa by Beta-Emitting Radioisotopes," by John W. Porter, for publication in the "Journal of Cellular and Comparative Physiology".

"Some Aspects of Electrical Engineering in Nuclear Plants", by W. J. Dowis, for presentation, A.I.E.E., University of Idaho, February 18, 1953.

Arrangements were made for the following people to speak before audiences in the Northwest: R. E. Curtis, Technical Personnel; H. M. Parker, Manager of Radiological Sciences; L. K. Bustad, Radiological Sciences; Lucile Lomen, Law Department, and Dr. W. I. Patnode, Administrative. Subjects covered included scientific and educational activities at Hanford Works.

A total of 146 photography assignments were filled during the month, producing a total of 24,660 prints, of which 22,603 were "A" and "B" badge prints. Area and news work consisted of 2,057 prints.

The weekly radio program, Hanford Works Science Forum, was produced and broadcast each week at its regular Tuesday evening show time over radio station KWIE. Previously recorded interviews between the moderator, Don Usher, and G.E. executives from Schenectady and other Company locations were edited and produced as a part of the February program of the Science Forum. Invitations will be extended to Columbia High School science classes to take part in future Forum programs. This idea involves the school students posing their own questions to the board of "experts" who regularly preside over the Science Forum roundtable of the air.

Two fifteen-minute radio programs were moderated and recorded for Public Health. All three Tri-City radio stations broadcasted these programs.

A talent quest has started for "This Week at Hanford Works," forthcoming radio program which is to combine documentary, informative and entertainment themes. A six-piece band made up of G.E. employees and a vocalist have been tentatively slated for guest-spots on the show. Actual production of the program must await arrival of a portable tape recorder which can be used for on-the-spot coverage of informative and unique aspects of the Hanford Works operation. A demonstration was held of a tape-recording unit adapted for portable use and found to be acceptable for this purpose and also for recording local management conferences and legal hearings.

Assistance in programming, staging and presentation was given, and a public address system of conference units was set up and operated during the series of three town meetings held by Richland Community Council to discuss the disposal of Richland real estate. The public address system was operated by a member of Public Relations at the February 12, 19 and 26 meetings.

Plans and recommendations for local theater showings of G.E.'s "A is for Atom" motion picture were submitted to the Schenectady Audio-visual Section along with suggestions for making the 16mm version available to local groups.

Arrangements were made for showing of the new 10-minute version of "A Is for Atom," at the Uptown Theater early next month as a short subject feature with one of their week-end schedules. News releases and Hanford Works NEWS were scheduled as publicity aids.

A public address system was provided for a meeting held by W. W. Smith in the North Wing of the library. A turntable also was set up so that those in attendance could hear President Cordiner's recorded 75th Anniversary message.

Requests for 16 motion pictures for use by plant departments were handled by this Section.

A request was received from W. J. Kelly, Supervisor of Employee Services at the Company's Aircraft Nuclear Propulsion Project, to review the three motion pictures produced by this Section for the Manufacturing Department here. They indicated a desire to have copies made of these films for use in their training programs and will advise us following the preview to be made between March 16 and 27.

All production and processing of the sound slidefilm, "It's Just Knowing How," produced for Office Services Unit, was completed this month and delivery is expected on March 15. In addition to preparing the film, a "package presentation" was developed for Plant Security and Services Section that included a training program for all feminine personnel in the offset duplicating methods used here. A summary instructional brochure to be distributed to these people following the showing of the film, demonstration of the equipment and lecture was developed as part of the program.

Production on the two-year documentary motion picture of the 100-K Project being produced for Design Section, Engineering Department, was continued during the periods of satisfactory weather. Over 2000 feet of film was exposed and about 1400 feet was taken to the processing studio for preparation of a workprint. This footage was shown

to J. I. Thomas, Chief of Engineering Division, A.E.C. in connection with their plans to have the entire expansion program documented on 16mm film.

Over seventy-five per cent of the motion picture footage of the film being produced for Minor Construction, Engineering Department has been "shot". During production, Management requested a documentary film on the installation of the Ball 3-X system being done by Minor Construction and photography was extended to include this phase. The bulk of this footage is classified "Secret" and cannot be processed until A.E.C. provides clearances for processing studio personnel.

A revised story for the Orientation film being produced for Employee Relations Section was written and submitted for consideration. The new story provides a more general theme that allows more latitude in the production of the film.

	2"	5"	8"	N	4"	16	35MM	3 1/4" Sli-	3 1/4" Color	11"	35MM	
	X	X	X	E	X	MM	Color	X des	X Slides	X	Color	
	4"	7"	10"	G.	5"		Slide	4"	4"	1 1/4"	Slide	
Hanford Works Photo Unit	2"	5"	8"	N	4"	16	35MM	3 1/4" Sli-	3 1/4" Color	11"	35MM	
Month of February, 1953	X	X	X	E	X	MM	Color	X des	X Slides	X	Color	
	2"	7"	10"	G.	5"		Slide	4"	4"	1 1/4"	Slide	
COMMUNITY REAL ESTATE & SERVICES												
Commercial Services		20	19	13	30							
Parks & Recreation		21		5	21							
Police	36			64								
Employment				166								
News Bureau	41	33	361	87	6							
Special Programs			199	103								
Radio & Special Events	12			22	2							
Training			9	5								
Works News	30	78	55	110								
Civil Defense		6	6	3								
ENGINEERING DEPARTMENT												
Process		17	4	4	4			21	11	12		
Design & Construction				34				21				
Engineers												
Technical	40			21				21				
Rotational Training				18								
Technical Library			12	4								
Pile Technology			842	14		100'						
Project		8	38	12								
MEDICAL			1	9							17	6
MANUFACTURING												
Power & Maintenance			12	3								
Process Unit			9	12								
RADIOLOGICAL SCIENCES				9							20	
Survey			12	2								
Biology												
UTILITIES & GENERAL SERVICES												
Security	12,248			629								
MISCELLANEOUS												
A. E. C. Safety		34	6	18	25							
A. E. C. Security	30			8							9	
TOTAL	10,361	217	1,585	1,375	88	100'	46	60	11	14	15	24
	12,395											
DECEMBER												
Total Prints	6,454			23,436							24,660	
Total Assignments	133			169							146	
Total Negatives	718			1,157							1,375	
JANUARY												
FEBRUARY												

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Employee and Public Relations

Union Relations

UNION RELATIONS - OPERATIONS PERSONNEL

A group of Separations Operators allege that they did not receive sufficient advance notice that they would work the 1953 New Year's Holiday and accordingly were entitled to call-in pay and lunches. The grievance was answered at Step II to the effect that the employees involved were engaged in a continuous operation (Redox) and that all scheduled days are worked, including holidays unless advance notice is given to the contrary. The Council indicated dissatisfaction with the answer and demanded arbitration. There are indications that the Council will not press the arbitration demand.

Representatives of this office and the Law Department discussed the arbitration demand involving fifteen instrument grievances with the union attorney on January 29, at which time he indicated that there was a possibility that the union might not insist upon arbitration in view of the Company's position and the absence of a more specific cause of action.

A special HAMTC Committee and the Company are attempting to develop an understanding which will result in a procedure for emergency call-in for employees living off the project. The HAMTC-GE Agreement provides that "Call-in time shall begin when an employee is picked up at his home...and end when he has been returned to his home." Therefore, it is not practicable to call in employees living off the project. The Company has proposed an arrangement whereby the time for such employees will start and end in Richland, thereby making it practicable to call them in and to assign overtime in a more equitable manner. The Union is giving consideration to the Company proposal.

Our attorney presented oral arguments on February 5, 1953 before the Benton County Superior Court concerning the Company's Demurrer to the amended complaint of the HAMTC in the R. E. Mercer case. The Court has taken the matter under advisement.

In approximately thirty days, the HAMTC-GE Agreement will be subject to reopening for modification. While no official word has been received from the HAMTC, it is expected at this time that the Contract will be reopened and that demands will be made for extensive revisions.

Scattered reports have been received to the effect that the HAMTC is soliciting pledge cards from GE clerical employees. NLRB usually requires a 30 per cent signup in the unit before they will order an election. It is not believed that the HAMTC organizing effort has progressed to this point.

On February 13, the Cisco Construction Company had progressed with the water line to a point intersecting a GE-operated and -maintained railroad track. In order to permit the laying of the line underneath the track, it would be necessary to remove the sections of track to permit the ditching operation and to

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replace same after the ditch was filled. Since Cisco was being picketed as a nonunion contractor, the GE employees represented by the HAMTC indicated that they would not move the track.

In anticipation of incidents of this kind, contact had been made with the President of the Pasco-Kennewick Building Trades Council shortly after the Cisco job was picketed. At that time, we were advised that the pickets would not interfere with GE operations. This information was communicated to the Business Representative, HAMTC, who readily agreed that our operations should not be influenced by Cisco pickets. He so informed the steward of this particular group and the job went forward without delay.

A delegation of three representatives of the local Typographical Union contacted this office on February 6 to protest the future printing of the Works NEWS by the Tri-City Herald. We were informed that the Herald was a "struck" plant and that all work turned out of such plant would be branded as "unfair" and "scab" work, and it would be necessary for the Typographical Union to so identify the Works NEWS if it is printed by the Herald.

They were advised that the Tri-City Herald was low bidder and that, in all probability, the contract would be awarded to that shop. GE is not involved in any way in the dispute, and the Company does not distinguish between organized and unorganized shops in the conduct of its business. They were also informed that, in addition to our Company-wide policies, we have responsibilities at Hanford Works with respect to the letting of contracts; that is, certain laws and Government regulations that bear upon this matter.

Grievance Statistics:

Status of Grievances

	<u>1953</u>	
	<u>Unit</u>	<u>Nonunit</u>
Received this month	29	1
Received this year	62	2
Settled at Step I this month	9	1
Settled at Step I this year	24	4
Pending settlement at Step I at end of month	2	1
Settled at Step II this month	3	1
Settled at Step II this year	25	1
Pending settlement Step II at end of month	209*	0
Brought to arbitration during the month	0	0
Pending settlement by arbitration	9**	0
Total number pending settlement	220	1

*Includes 176 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.

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Analysis of Grievances Received this Month

<u>Department</u>	<u>Unit</u>	<u>Nonunit</u>
Manufacturing Department		
Reactor Section	15	0
Separations Section	6	0
Metal Preparations Section	3	0
Total for Department	<u>24</u>	<u>0</u>
Utilities and General Services Department		
Plant Security & Services Section	2	0
Transportation Section	1	0
Total for Department	<u>3</u>	<u>0</u>
Community Real Estate and Services Department		
Community Services Section	1	0
Community Real Estate Section	1	0
Total for Department	<u>2</u>	<u>0</u>
Radiological Sciences Department		
Radiological Records & Standards Section	0	1
Medical Department	0	0
Engineering Department	0	0
Law Department	0	0
Financial Department	0	0
Employee and Public Relations Department	<u>0</u>	<u>0</u>
	GRAND TOTAL	29 1

	<u>Subject</u> <u>Unit Grievances</u>	<u>Subject</u> <u>Nonunit Grievances</u>
Jurisdiction	5	Vacations
Health-Safety-Sanitation	3	1
Hours of Work	6	
Overtime Rates	2	
Sick Leave	1	
Vacations	4	
Seniority	2	
Wage Rates	4	
Subject not covered by Contract	<u>2</u>	
	TOTAL	29 1

Three meetings were held during the month for the purpose of processing grievances at the Step II level.

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CONSTRUCTION LIAISON

The 24-day strike of Kaiser Plumbers which resulted from a demand for exclusive bus transportation to the work areas was terminated on February 12 on the basis of understandings reached earlier in the week in Washington, D. C. The settlement was a compromise arrangement which rather effectively perpetuated the procedure of hauling Fitters exclusive of other crafts.

All Plumbers on minor construction walked off the job on February 24, alleging preferential treatment to certain Plumbers with short service in minor construction in effecting a temporary layoff. The matter was resolved the same day when Atkinson-Jones management agreed to permit the Plumbers to return to work the following day. This terminated the work stoppage but other crafts are demanding similar treatment, and efforts are being made to resolve the issue prior to a scheduled shutdown of a critical facility on March 2.

A jurisdictional dispute between Machinists and Millwrights in the 101 Shop was temporarily alleviated early in February as a result of an interim arrangement pending a recommendation from the Davis Panel. The dispute again came into evidence on February 24 when the Machinists claimed jurisdiction over certain inspection functions which Kaiser had assigned to Millwrights. The entire force of Machinists on Kaiser's payroll walked off the job. The Union was informed by Kaiser that unless the men returned the following day, on the basis of work assignments to be made by the Company, the Building Trades Council would be requested to dispatch qualified men to perform the work regardless of craft affiliation.

In view of the strained relationship between Machinists and other crafts in the construction industry, it is expected that the Building Trades Council will comply with the request. The contractor's request that the Davis Panel take jurisdiction in this dispute was made several weeks ago. The Panel has been reluctant to formally take jurisdiction but there are some indications that the Panel has been active behind the scenes trying to effect a settlement.

WAGE RATES

Following the Executive Order, all wage controls, established under the Defense Production Act of 1950, were suspended effective February 6, 1953.

As a result of the suspension of wage controls, meetings were held with all supervisors of employees classified as Technical and Business Graduates to discuss a plan to apply merit increases in a consistent manner throughout all departments. These meetings are to be continued.

Preparations for the annual General Electric Company Northwest Area Rate Survey, including the rewriting and printing of the survey questionnaire, were completed. Where possible, questionnaires have been mailed to participating firms. Plant visitations will start immediately.

The Atomic Energy Commission issued Reimbursement Authorization for a new classification entitled "Engineering Assistant, Grade 15".

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As a result of meetings and correspondence with representatives of the Hanford Atomic Metal Trades Council, the classification of "Truck Driver (Laundry)" was reinstated, and individuals performing this function were reclassified.

Weekly meetings were held during the month with superintendents, area engineers and general foremen of all areas to discuss craft assignments. Agreement was reached among those participating in these conferences on the proper assignment of work which may be used in deciding jurisdictional questions.

Classification discussions were held periodically with representatives of the Chemical Workers of the Hanford Atomic Metal Trades Council and Separations Section supervisors. These conferences, which have continued over a four-month period, involved attempts to establish job descriptions for the U-Plant operation in the 200 Area.

Because of unusual conditions involved in an upgrading program, agreement was reached with representatives of the 77-139 IBEW Local of the Hanford Atomic Metal Trades Council on the question of the promotion of trainees to journeymen.

The Wage Rates Unit participated in a wage study conducted by the Westinghouse Electric Corporation, Idaho Falls.

Four hundred nineteen (419) automatic and 5 merit increases were processed during February. Requisitions for 81 people were processed. Forty-five (45) new hires and 18 reactivations were investigated concerning replacement, job, pay grade and qualifications. A review was made of 39 temporary reclassifications, 94 reclassifications and 78 transfers before approval was given.

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SALARY ADMINISTRATION

GENERAL:

Considerable exploratory work and analysis was accomplished in connection with the pending organization changes. The proposed Organization Directory was audited from the viewpoint of determining to what extent it will be necessary to review and revise position descriptions as well as to outline a program for making position comparisons. Plans were also considered for consolidating all organizational changes into a complete, current Position Description Manual. This is a heavy program which will require considerable effort from all departments and close scheduling within this section.

An opinion was requested of the Salary Administration Services Department in New York in evaluation and cross-comparison of several Executive and Administrative positions at Hanford. Confirmation was received that the relative value of these positions, as determined at Hanford, was valid against the proposed overall Company classification which they are developing.

NEW SALARY RANGES:

By Executive Order of February 6, 1953, Salary Stabilization control was suspended. At month end the Commission had approved the Salary Ranges for the Executive, Administrative and Operating Plan. These ranges, constructed from 1952 survey, had been held up pending salary stabilization approval. They will be established effective 3-1-53.

SALARY REVIEW - EXECUTIVE AND ADMINISTRATIVE EMPLOYEES:

The salary review sheets have been completed by the departments and are being reviewed by the Salary Administration office. This salary review has been initiated against the new salary ranges. When completed and approved this salary review will cover normal merit salary recommendations for calendar 1953.

BROCHURE ON SALARY ADMINISTRATION PLANS:

The revision of the first draft of this brochure is essentially complete. Considerable effort is being spent on wording of the part covering the Professional Plan. This draft will be submitted to the Salary Committee in March for acceptance or rejection.

ANNUAL SALARY SURVEY:

Satisfactory progress has been made and the annual salary survey will be started on March 2. Eighty percent of the possible participants contacted have signified their desire to be included, thus far, and an itinerary has been established.

QUARTERLY REPORT OF EXEMPT SALARY RATES:

A report was issued on February 6, 1953, indicating the status of exempt salary rates for the quarter ending December 31, 1952.

**COMMUNITY REAL ESTATE AND
SERVICES DEPARTMENT
MONTHLY REPORT SUMMARY
FEBRUARY, 1953**

ORGANIZATION AND PERSONNEL

Number of employees on roll:	<u>SUFFIX</u>	<u>BEG. OF MONTH</u>	<u>END OF MONTH</u>
General Administration	310	5	5
<u>Community Services Section</u>			
Administration	320	4	4
Public Works	321	72	72
Engineering	326	8	8
Recreation & Civic Affairs	327	6 3/4	5 3/4
Library	327	10 1/2	10 1/2
Fire	328	67	67
Police	329	49	50
	Sub-Total	<u>217 1/4</u>	<u>217 1/4</u>
<u>Community Real Estate Section</u>			
Administration	330	3	3
Housing Rental	331	25	24
Maintenance	333	152	148
Commercial Property	337	13	13
	Sub-Total	<u>193</u>	<u>188</u>
Civil Defense Program	360	2	2
		<u> </u>	<u> </u>
	GRAND TOTALS	417 1/4	412 1/4

There was a decrease of five employees in the Department during the month of February, 1953.

GENERAL

Enforcement of the revised Benton County Dog Ordinance, applicable to Richland, was begun in February.

A large fire occurred on the evening of February 18, in the temporary warehouse of the Bauer-Day Construction Company at Duportail and Wright. The resulting fire loss (estimated at \$200,000) will exceed any previous fire loss for the community.

A lease was entered into with the Richland Lutheran Church for the establishment and operation of a parish workers' office in North Richland.

Fire caused extensive damage, estimated to be approximately \$1,500.00, in an "A" type house at 708 Van Giesen.

A lease was executed with the American Legion for the construction and operation of a privately-owned club house to be located on George Washington Way, south of the Central Fire Station.

The Medical Arts Building, located at 750 Swift Boulevard, was opened for the leasing

Total Housing applications pending - 729.

HARoot/jak
3/10/53

COMMUNITY SERVICES SECTION

SUMMARY

FEBRUARY 1953

ORGANIZATION & PERSONNEL:

	<u>BEGINNING OF MONTH</u>		<u>END OF MONTH</u>	
	<u>Exempt</u>	<u>Non-Exempt</u>	<u>Exempt</u>	<u>Non-Exempt</u>
ENGINEERING	6	2	6	2
FIRE	67	0	67	0
LIBRARY	4	6 1/2	4	6 1/2
POLICE	18	31	18	32
PUBLIC WORKS	14	58	14	58
RECREATION & CIVIC AFFAIRS	<u>3</u>	<u>2 3/4</u>	<u>3</u>	<u>2 3/4</u>
	112	100 1/4	112	101 1/4

The Poundmaster began selling dog licenses in February and as a result the revised Benton County Dog Ordinance applicable to Richland began to be enforced.

COMMUNITY REAL ESTATE AND SERVICES
PUBLIC WORKS UNIT
February 28, 1953

ORGANIZATION AND PERSONNEL

	<u>Exempt</u>	<u>Non-Exempt</u>
Employees Beginning of Month	14	58
Transfers Out	--	1
Transfers In	--	--
New Employees	--	1
Terminations	--	--
Total - End of Month	14	58

SANITATION

Total weight of garbage and trash collected and disposed of during February was 1073 tons. February 23 was observed as a holiday and no collections were made on this day. Residential areas normally collected on Monday were made on the following day by supplemental crews.

ROADS AND STREETS

Ownership responsibility for two parking lots, one on the north side of Columbia Playfield with access from Swift, and one on the south side of Columbia Playfield with access from Lee Boulevard, has been transferred from Roads and Streets to the Richland School District.

The irrigation ditch bridge on Stevens Drive, between Saint and Snyder Roads deteriorated to the point that it was no longer in safe condition, and since the ditch had been abandoned some time ago, the bridge was removed, and the ditch was filled and paved to grade of the adjoining roadway.

The merging of two traffic lanes into one lane on the east side of George Washington Way immediately south of Symons Street, which has been a hindrance to safe movement of traffic at this point, was moved to a point on George Washington Way north of Symons Street by installing an additional traffic lane on the west side of George Washington Way from Symons Street to a point approximately 150' north of Symons Street, and re-locating of traffic lane striping.

Community Services - Public Works Unit

ROADS AND STREETS (Continued)

A 12' storm sewer line running from the northeast corner of Van Giesen Street and Stevens Drive to the southwest corner of Wilson Street and Goethals Drive became completely plugged with tree roots and at several locations the roots had actually broken the concrete pipe. It was necessary to replace approximately 27' of the line to effect an adequate repair.

Routine seasonal maintenance of streets, street drainage systems, public sidewalks and parking lots was continued.

PARKS AND PUBLIC GROUNDS

Ownership responsibility for Spalding and Carmichael Playgrounds in their entirety, and that part of Columbia Playfield which lies west of the toe of the slope on the west side of the Playfield, has been transferred from Parks to the Richland School District.

Installation of one ball diamond back-stop and 2 basketball standards at Columbia Playfield, 2 basketball standards at Frankfort Playlot, one basketball standard at Roberdeau Playground, and one basketball standard at Duane Playlot (which were procured under Parks Development Projects) was completed in February.

Trees were planted as replacements for perished trees in the amount of 24 in shelterbelts, 17 in the Street Tree Pattern, and 13 at Columbia Playfield.

Twelve evergreens and 21 shrubs were dug out, balled and burlapped at the Tree Nursery and turned over to Manufacturing Department for planting in the 200 West Area.

Publicity is now being prepared for release to notify residents of their responsibility for maintenance of trees planted under "Street Tree Projects", both from the standpoint of the health of the trees, and pruning as required to assure that the trees do not constitute a hazard to pedestrians or vehicular traffic.

Seasonal maintenance and clean-up of all assigned areas were continued.

DOMESTIC WATER

Normal seasonal operation and maintenance were continued, and average daily consumption for February was 4.94 million gallons. Maximum usage for the month occurred on the 9th day when 5.85 million gallons were consumed.

DOMESTIC WATER (Continued)

The fire hydrant at the north east side of Columbia High School was damaged by an automobile, this being the second time within two months, and repair costs were charged to person responsible for the damage. Two steel posts were set by the hydrant as a protective barricade against similar accidents.

A 14" valve was installed in the main on George Washington Way immediately south of the Baptist Church to provide adequate section-alizing control on this line. In the past, when it was necessary to shut down this 14" line, the entire area bounded by Van Giesen, Hunt, Newcomber and George Washington Way, was serviced by one 6" line and pressure would drop to a dangerous level. This valve installation will allow the utilization of three additional feeder mains to the area during a shut down on the 14" main.

Three 6", one 8" and one 10" taps were made in the 14" main on Newcomber, west of George Washington Way to provide water service to the mains and fire hydrants installed in the Spokane Housing Development.

Work completed on the Water Development Project during February included:

1. Installation of the 20" main on George Washington Way, from the North Richland Well Field to a point north of Van Giesen has been completed with exception of the connections at each end.
2. Installation of the 36" main on Duportail, from the Yakima River to Wright has been completed, with exception of connection to the line under the river (yet to be installed) and connection to the 20" main at Wright.

Production and consumption records for February are as follows:

	<u>DOMESTIC WATER</u>			
	<u>Well Production</u>	<u>Avg. Daily</u>	<u>Total Consumption</u>	<u>Avg. Daily</u>
	<u>Million Gallons</u>	<u>Production</u>	<u>Million Gallons</u>	<u>Consumption</u>
Richland	68.8198	2.4579	74.6345	2.6655
North Richland	42.5910	1.5211	29.5579	1.0556
Columbia Field	27.0774	0.9671		
300 Area			34.2911	1.2247
TOTAL	138.4882	4.9461	138.4835	4.9458

Community Services - Public Works Unit

SEWERAGE

Inspection and flushing of sewer mains and man-holes has been continued and is now 75% complete.

Approximately 44 thousand gallons of sludge were pumped from the digestors to the drying beds on February 17, 1953 and 5 thousand gallons of sludge were made available to the City of Kennewick for seeding the digestors of their new treatment plant on February 19.

Routine seasonal operation and maintenance of the collection systems, and treatment plant were continued.

Meter recordings of sewage flow have shown a decrease of approximately one million gallons a day as compared to recordings of similar periods in past few years, and although the calibration of the meters has been checked, all indications are that the meters are giving erroneous readings. Further checking of calibration is now in process.

The meter readings of sewage flow for February are as follows:

	<u>Total Sewage Flow Million Gallons</u>	<u>SEWAGE Average Daily Flow Million G.P.D.</u>	<u>Average Rate of Flow Gallons Per Minute</u>
Plant No. 1	16.160	0.577	401
Plant No. 2	38.711	1.383	960
Total	54.871	1.960	1361

IRRIGATION SYSTEM

Water was turned into the canal as far as the "Penstock" on 2-12-53 and the low area northwest of the Penstock was flooded to determine the effect, if any, on the underground water table in the North Richland Well Field. Indications are that the flooding of this area had no effect on the North Richland Field, since the water table continued to drop.

Water was run to the North Richland Recharge Basin 2-26-53, but it was necessary to shut the supply off on 2-27-53 due to a canal break just west of the railroad tracks at North Richland. The break was repaired and water will again flow to the recharge basin on 3-2-53.

RECREATION AND CIVIC AFFAIRS UNIT

MONTHLY REPORT

FEBRUARY, 1953

ORGANIZATION AND PERSONNEL

	<u>Exempt</u>	<u>Non-Exempt</u>
Beginning of Month	3	2-3/4
New Hires	0	0
Terminations	0	0
Transfers - IN	0	0
- OUT	0	0
	<u>3</u>	<u>2-3/4</u>

SCHOOLS

The following is a tabulation of full-time paid School District #400 personnel as of February 28, 1953:-

Administration	7
Principals & Supervisors	14
Clerical	24
Teachers	289
Health Audiometer	1
Cooks	43
Nursery School and Extended Day Care	0
Bus Drivers	1
Maintenance	17
Operations	<u>43</u>
	439

CLUBS AND ORGANIZATIONS

As of February 28, 1953, the employees of the listed organizations, exclusive of those included in the Real Estate, Commercial and Other Properties Unit Report, include:-

Youth Council - Chest	1
Boy Scouts	1
Camp Fire Girls	1
Hi Spot Club	2
Girl Scouts	2
Justice of the Peace	1
Y.W.C.A.	2
Chamber of Commerce	<u>1</u>
	11

Recreation and Civic Affairs Unit Monthly Report (Continued)

The regular monthly meeting of the Parks and Recreation Board was held on February 6, 1953. It was moved and seconded and the motion passed that joint use areas at the schools be released to the administration and maintenance of School District #400 with the exception of the Columbia Playfield area and the Jefferson Playground area south of the tennis courts.

The Board was advised that the Richland Rose Society desired to re-locate the present Rose Garden to the Plaza. The next regular meeting of the Board is scheduled for March 5, 1953 at the Community House.

The number and types of organizations presently served by the Recreation and Civic Affairs Unit include:-

Business and Professional Organizations	23
Churches and Church Organizations	27
Civic Organizations	19
Schools	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
	<u>314</u>

RECREATION

The City Hoop Shoot Finals was held at Chief Joseph High School Gymnasium on Saturday, February 15, before a crowd of 250 people. Approximately 620 boys from Richland participated. The Richland Hoop Shoot champion, accompanied by one of the Recreation Supervisors, competed at Pasco in the Tri-City Hoop Shoot Championship. The Hoop Shoot was co-sponsored by the Columbia Basin News in cooperation with the Recreation and Civic Affairs Unit.

Tennis nets will be placed on all courts by the 16th of this month.

Recreation and Civic Affairs Unit (Continued)

Below is a cumulative attendance record of the Athletics and Recreation Program being sponsored by the Unit:-

	<u>Children</u>	<u>Adults</u>	<u>Total</u>
Sponsored Programs	97	312	409
Special Events	306	110	416
Permit Groups	-	-	-
Totals For Month	403	422	825
Fiscal Year Totals To Date	43,495	40,304	83,799
Indoor Attendance Total	<u>4,207</u>		
Outdoor Attendance Total	<u>79,592</u>		

COMMUNITY HOUSE

The first meeting of 1953 was held by the Community House Board on Tuesday, Feb. 3 at 5:15 P.M. with all members present.

The monthly meeting of the Youth Council Board was held at the Community House, Monday, February 9 at 5:00 P.M.

Another instructor has been named to supervise the Elementary Friday Night Program as a replacement caused by the resignation of and departure from the area of a former instructor.

Attendance - Community House

	<u>Children</u>	<u>Adults</u>	<u>Total</u>
Sponsored Programs	6,118	1,292	7,410
Special Events	-	-	-
Permit Groups	51	991	1,042
Totals For Month	6,169	2,283	8,452
Fiscal Year Totals To Date	43,266	22,686	65,952
Indoor Attendance Total	<u>65,952</u>		
Outdoor Attendance Total	--		

RICHLAND PUBLIC LIBRARY

FEBRUARY 1953

ORGANIZATION AND PERSONNEL	<u>Exempt</u>	<u>Non-Exempt</u>
Employees - Beginning of Month	5	6½
Transfers In	0	0
Transfers Out	0	0
New Hires	0	0
Terminations	0	0
End of Month	5	6½

GENERAL

Circulation

Books	15,640 (Adult - 9,295; Juvenile - 6,345)
Magazines	535
Pamphlets	94
Records	1,041
Interlibrary Loan	39
Grand Total	17,349

Current Book Stock

Books added this month	526
Books dropped this month	9
Grand Total	23,299
Phonograph Records added	39

Registration

Adult	192
Juvenile	33
Total	225
Total Registered Borrowers	12,419

Children's Story Hour Attendance 211 (Pre-School)

Thirteen meetings were held this month in North Hall. A collection of lithographs of Helmi Jovonen, Northwest printmaker, have also been on display in North Hall this month. The exhibit was arranged by Mr. William McGrath, Art Instructor, Columbia High School.

In recognition of Catholic Press Month, an attractive window display was arranged publicizing works of Catholic authors. The display was sponsored by the Knights of Columbus. To tie in with this display and Catholic Press Month, a bibliography of books by Catholic authors was compiled by the Reference Librarian.

Miss McCulloch, Reference Librarian, also compiled bibliographies of material pertinent to the subject of Richland incorporation and municipal government, in general, for the use of individuals interested in studying these subjects.

The regular meeting of the Richland Library Board was held February 4, 1953.

RICHLAND POLICE DEPARTMENT

FEBRUARY 1953

ORGANIZATION

	Exempt	Non-Exempt.
Employees - Beginning of Month	18	31
Transfers In	0	0
Transfers Out	0	0
New Hires	0	2
Terminations	0	1
 Total - End of Month	 18	 32

GENERAL

Compilation of the Richland Police Department's Inventory of Traffic Safety Activities for the National Safety Council contest was completed during the month of February, and has been forwarded to the National Safety Council headquarters. Our entry in the American Automobile Association's Pedestrian Protection Contest has also been forwarded to their headquarters.

Sgt. G. A. Mumper spoke before a chapter of the Beta Sigma Phi on the topic of Juvenile Delinquency on February 2.

The Police Athletic League of Richland, comprised of all members of the Richland Police Department, had an election of officers on February 4, and the following were elected to represent the League for the coming year: J. S. Johnson, President; R. N. Berry, Vice President; A. L. Reil, Secretary; W. W. Kerr, Treasurer; R. H. Hopkins, H. W. Strock, and J. V. Harper, Trustees.

Twenty-four prisoners were processed through the Richland Jail during the month, four of which were from North Richland, and two having been arrested by the Security Patrol.

A total of 13 guns and 48 bicycles were registered with the Police Department during the month of February.

A total of twenty-three bicycles were impounded during this past month for operating on the streets of Richland after the hours of darkness without lights.

A total of 292 police and traffic reports were processed through the records section of the Police Department, consisting of reports originating from both Richland and North Richland.

TRAFFIC

There were 21 reportable accidents this month in Richland, which is the same as during January and three less than the same month last year. This year, to date, we have had 42 reportable accidents, as compared to 72 for the first two months of 1952.

There was only one minor injury this month, as compared to 6 for February last year and one fatality and one injury last month. Injuries this year to date total three, as compared to a total of ten for the same period in 1952.

Eleven of the above accidents occurred in the business district. Most of these were parking lot accidents. Five were in the residential district and five in open areas.

Thirteen of the above accidents occurred during daylight hours and eight after darkness.

Property damage, as a result of accidents this month, was \$5,400.00, or an average of \$257.14, as compared to an average of \$170.76 last month. This increase was chiefly due to one three-car accident resulting in property damage of \$1,345.00. The average for February last year was \$377.29.

Members of the Richland Police Department investigated 14 of the above accidents, and these investigations resulted in Criminal Complaints being signed against eleven drivers.

Traffic violations which contributed to the above accidents were:

Failure to yield right-of-way	10	Negligent driving	1
Following too closely	4	Improper backing	1
Speeding	2	Improper passing	1
Reckless driving	1		

It is noted that of the 42 accidents during the past two months, 22 were caused because one driver failed to yield the right-of-way. An enforcement program which will reduce this cause of accidents is being considered.

There were six traffic safety meetings conducted this month, with a total attendance of approximately 745.

There were 9 reportable accidents in North Richland this month and no injuries.

TRAINING

There was no range activity during the month of February.

ACTIVITIES AND SERVICES

	January		February	
	Richland No.	Richland	Richland No.	Richland
Doors and windows found open in facilities	64	22	45	9
Children lost or found	11	2	9	1
Dogs, cats reported lost or found	20	0	18	0
Dog, cat, loose stock complaints	4	1	4	1
Persons injured by dogs	0	0	1	0
Bank escorts and details	1	8	1	4
Fires investigated	8	3	6	4
Miscellaneous escorts	16	9	20	4
Complaints investigated (no enforc. action)	35	6	20	1
Deaths reported	0	0	0	0
Property lost or found	17	3	28	1
Records inquiries	90	0	94	0
Letters of inquiry	117	0	121	0
Law enforcement agencies assisted	1	0	5	0
Private individuals assisted	7	1	12	3
Plant departments assisted	21	0	19	0
Emergency messages delivered	11	76	8	59
Street lights out reported to Electrical	82	5	80	5
Totals	505	136	491	92

MONTHLY REPORT
 RICHLAND POLICE DEPARTMENT
 (RICHLAND - NO. RICHLAND)
 FEBRUARY 1953

OFFENSES	KNOWN		UNFOUNDED		CLEARED	OTHER*	CLEARED	ARREST
	Rich.	No. Rich.	Rich.	No. Rich.	Rich.	No. Rich.	Rich.	No. Rich.
PART I								
1. Murder								
2. Rape								
3. Robbery								
4. Aggravated Assault								
5. Burglary-Break. & Ent.	2	2	1	2	-	-	-	-
6. Larceny -Over \$50.00	3	2	-	-	-	-	1**	-
Under \$50.00	12	3	-	-	1	-	1	-
7. Auto Theft	1	-	-	-	1	-	-	-
TOTAL PART I CASES	18	7	1	2	2	-	2	-
PART II								
8. Other Assaults	1	-	-	-	-	-	1	-
9. Forgery & Counterfeit	1	-	1	-	-	-	-	-
10. Embezzlement & Fraud	2	-	-	-	-	-	-	-
11. Stolen Prop:Buy:Rec.	-	-	-	-	-	-	-	-
12. Weapons:Carrying:Poss.	1	-	-	-	1	-	-	-
13. Prostitution	-	-	-	-	-	-	-	-
14. Sex Offenses	-	-	-	-	-	-	-	-
15. Offenses Ag.Fam. & Child	-	-	-	-	-	-	-	-
16. Narcotics-Drug Laws	-	-	-	-	-	-	-	-
17. Liquor Laws	-	-	-	-	-	-	-	-
18. Drunkenness	6	4	-	-	-	-	6	4
19. Disorderly Conduct	-	-	-	-	-	-	-	-
20. Vagrancy	-	-	-	-	-	-	-	-
21. Gambling	-	-	-	-	-	-	-	-
22. Driving While Intox.	6	1	-	-	-	-	6	1
23. Violation Rd. & Dr. Laws								
Failure to Stop & Identify	3	-	-	-	1	-	1	-
Speeding	28	5	-	-	-	-	28	5
Stop Sign	17	8	-	-	1	-	16	8
Reckless Driving	4	2	-	-	-	-	4	2
Right of Way	7	2	-	-	-	-	7	2
Negligent Driving	16	2	-	-	-	-	16	2
Defective Equipment	9	3	-	-	5	3	4	-
Illegal Passing	2	-	-	-	-	-	2	-
Following too Close	1	-	-	-	-	-	1	-
24. Parking	16	37	-	-	2	32	14	5
25. All Other Traffic Violations	16	8	-	-	5	-	11	8
Carried forward to page LF-5								
TOTALS	136	72	1	-	15	35	117	37

OFFENSES	KNOWN		UNFOUNDED		CLEARED Rich.	OTHER* No. Rich.	CLEARED Rich.	ARRES No. Ric
	Rich.	No. Rich.	Rich.	No. Rich.				
Cases brought forward from page LF-4	136	72	1	-	15	35	117	37
26. All Other Offenses:								
Malicious Mischief	3	2	-	-	2	2	-	-
Vandalism	9	2	-	-	-	-	1	1
Disturbance	1	-	-	-	1	-	-	-
Dest. Gov't. Prop.	2	-	-	-	-	-	-	-
Dog Poisoning	1	-	-	-	1	-	-	-
Public Nuisance	1	-	-	-	-	-	1	-
Bike Violations	7	13	-	-	6	13	-	-
Annoying Tel. Calls	1	-	-	-	-	-	-	-
Juv. With Liquor	-	1	-	-	-	-	-	1
Investigation	3	2	-	-	1	1	-	-
Cruelty to Animals	3	-	-	-	2	-	-	-
Viol. Dog Ordinance	1	-	-	-	-	-	1	-
TOTAL PART II	170	92	1	-	28	51	120	39
PART III								
28. Missing Persons	3	-	-	-	3	-	-	-
Lost Persons	7	1	-	-	7	1	-	-
Lost Animals	8	1	-	-	2	-	-	-
Lost Property	25	1	-	-	17	1	-	-
29. Found Persons	-	-	-	-	-	-	-	-
Found Animals	6	1	-	-	-	-	-	-
Found Property	5	1	-	-	1	-	-	-
TOTAL PART III CASES	54	5	-	-	30	2	-	-
PART IV								
30. Fat.M.V.Tr. Acc.								
31. Pers.Inj.M.V.Tr.Acc.	1							
32. Prop.Dam.M.V.Acc.	21	9						
33. Other Traffic Acc.								
34. Public Accid.)								
35. Home Accidents)								
36. Occupational Acc.)								
37. Firearms Accidents								
38. Dog Bites	1							
39. Suicides								
40. Suicide Attempts		1						
41. Sud. Death & Bod. Found								
42. Sick Cared For								
43. Mental Cases								
TOTAL PART IV CASES	23	10						
COMPOSITE TOTALS								
PART I, II, III, IV CASES	265	114	2	2	60	53	122	39

* 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. ** Case cleared this month which occurred in previous month.

Property reported stolen	Richland	\$685.94
Property reported stolen	No. Rich.	\$774.27
Property recovered	Richland	\$157.94
Property recovered	No. Rich.	\$.77

MONTHLY REPORT

RICHLAND POLICE DEPARTMENT

JUVENILES INVOLVED

FEBRUARY 1953

OFFENSE	NO. CASES	JUVENILES	SEX	5	6	9	10	11	12	14	15	16	17	TOT
<u>RICHLAND</u>														
Vandalism	1	5	M			2			1			2		5
Malicious Mischief	2	5	M		1		1	1	1			1		5
Possession of Firearms	1	3	M						1			2		3
Stolen Bike	1	3	M						1			2		3
TOTALS	5	16		1	2	2	1	1	1	1	3	7		16

NORTH RICHLAND

Vandalism	1	4	M						2	1		1		4
Malicious Mischief	1	1	M											1
Juveniles with Liquor	2	7	5-M 2-F									1	4	5
TOTALS	4	12		1					2	1	1	1	5	12

LF-6

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.		1952	1953	1953
Six Months (Jan.-June 1952)	One Month Average	Jan. - June	Jan.	Feb.
Murder	.405	.067	-	-
Robbery	10.850	1.808	-	-
Agg. Assault	8.500	1.416	-	-
Burglary	67.975	11.329	8	4
Larceny	210.800	35.131	163	21
Auto Theft	34.475	5.745	4	-

Number of offenses known to police per 25,000 inhabitants regardless of whether offenses occurred in cities or rural districts.

State of Washington		1952	1953	1953
Six Months (Jan.-June 1952)	One Month Average	Jan. - June	Jan.	Feb.
Murder	.355	.059	-	-
Robbery	10.000	1.666	-	-
Agg. Assault	2.650	.441	-	-
Burglary	62.575	10.429	8	4
Larceny	209.125	34.854	163	21
Auto Theft	31.650	5.275	4	-

The percentage of offenses committed by persons under the age of 25 years is shown:

National Average		Richland	Richland	Richland
Percentage of Cases		1952	1953	1953
Jan. - June 1952		Jan. - June	Jan.	Feb.
Robbery	55.1	-	-	-
Burglary	60.2	38%	-	-
Larceny	43.4	12%	5%	7%
Auto Theft	69.4	75%	-	-

Note: Statistics of juvenile offenses throughout the United States were taken from the Uniform Crime Report published by the Federal Bureau of Investigation, which states: "It should be remembered that the number of arrests recorded is doubtless incomplete in the lower group because of the practice of some jurisdictions not to fingerprint youthful offenders."

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.				1952	1953	1953
Six Months (Jan.-June 1952)	One Month Average			Jan. - June	Jan.	Feb.
Murder	.162			-	-	-
Robbery	4.34			-	-	-
Agg. Assault	3.40			-	-	-
Burglary	27.19			1	-	2
Larceny	84.32			45	10	5
Auto Theft	13.79			2	1	-

Number of offenses known to police per 10,000 inhabitants regardless of whether offenses occurred in cities or rural districts:

State of Washington				1952	1953	1953
Six Months (Jan.-June 1952)	One Month Average			Jan. - June	Jan.	Feb.
Murder	.142			-	-	-
Robbery	4.01			-	-	-
Agg. Assault	1.06			-	-	-
Burglary	25.03			1	-	2
Larceny	83.65			45	10	5
Auto Theft	12.66			2	1	-

The percentage of offenses committed by persons under the age of 25 years is shown:

National Average	No. Richland		No. Richland	
Percentage of Cases	1952		1953	1953
Jan. - June 1952	Jan.	June	Jan.	Feb.
Robbery	55.1			-
Burglary	60.2			-
Larceny	43.4			30%
Auto Theft	69.4			-

Figures for comparative statistics not available at present time.

Notes: 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
FEBRUARY 1953

VIOLATION	NO OF CASES		NO OF FORF.		NO OF CONT.		CARR. ISS.		SENT JAIL		SENT SUSP.		LIC. REV.		CASES ORIG. PREV. MON.		CASES INCL. OTHER VIOL.		BAIL FORF.		FINES		FINE SUSP.		
	NO OF CASES	NO OF CONV.	NO OF FORF.	NO OF CONT.	CARR. DISM.	WARR. ISS.	SENT JAIL	SENT SUSP.	LIC. REV.	CASES ORIG. PREV. MON.	CASES INCL. OTHER VIOL.	BAIL FORF.	FINES	FINES	FINES	FINES	FINES	FINES	FINES	FINES	FINES	FINES	FINES	FINES	SUSP.
DEFECTIVE EQUIPMENT	7	4	1	2																					
DISPLAYED DR. LIC. NOT ISSUED TO HIM	1	1																							
DRIVERS LICENSE	18	14	2	2																					
DRUG WHILE LIC. REV.	1	1		1																					
DRUG WRONG WAY ON ONE WAY STREET	1	1																							
DRUNKEN DRIVING	3	2		1																					
FOLLOWING TOO CLOSELY	1	1																							
F.T.V.R.O.W.	9	5	4																						
ILLEGAL PARKING	13	6	5	1																					
ILLEGAL PASSING	3	2	1																						
IMPROPER PLATES	11	7	2	1																					
LOANED DR. LIC. TO UNLIC. OPERATOR	1	1																							
NEGLIGENT DRIVING	23	14	2	7																					
NO REGISTRATION	10	7	1	1																					
PERMITTED UNLIC. OPER. TO OPER. VEHICLE	1	1																							
PERMITTED USE OF DEALER LIC. REGIS.	1	1																							
RECKLESS DRIVING	2	1		1																					
SPEEDING	31	10	18	3																					
STOP SIGN	16	5	10	1																					
DOG ORDINANCE	1	1																							
LARCENY BY CHECK	1	1																							
PETIT LARCENY	3	2																							
PUBLIC INTOXICATION	8	4	4	1																					
PUBLIC NUISANCE	1	1																							
TOTAL	167	88	52	22	4	1	5	2	4	19	21	\$451.50	\$800.00	\$176.50	\$25.00	\$25.00	\$50.00	\$50.00	\$166.50	\$52.50	\$82.50	\$25.00	\$10.00	\$15.00	

TWO DRUNKEN DRIVING CASES WERE AMENDED TO NEGLIGENT DRIVING.
ONE GRAND LARCENY CASE WAS AMENDED TO PETIT LARCENY.
ONE PERSON CHARGED WITH THIRD DEGREE ASSAULT WAS FOUND "NOT GUILTY".

RICHLAND POLICE DEPARTMENT
NORTH RICHLAND JUSTICE COURT CASES
FEBRUARY 1953

VIOLATION	NO OF CASES		NO OF NO OF		SENT JAIL	SENT SUSP.	LIC. REV.	CASES		BA1L FORF.	FINES	
	CONV.	FORF.	CONT.	DISM.				WARR. ISS.	ORIG. MON.		INCL. OTHER VIOL.	FINES
DRIVERS LICENSE	7	2	5				1			\$ 20.00	\$ 12.50	\$12.50
DRUNKEN DRIVING	2	1	1								52.50	
F.T.Y.R.O.W.	2	1		1							10.00	
ILLEGAL PARKING	5	1							14.00		3.50	3.50
IMPROPER PLATES	10	4	4	2				7	25.00		27.50	22.50
NEGLIGENT DRIVING	3	2	1						20.00		25.00	
RECKLESS DRIVING	4	1	3				1				50.00	
SPEEDING	4	2	2						17.50		17.50	
STOP SIGN	10	2	8					1	41.00		5.00	
PUBLIC INTOXICATION	3		3						52.50			
THIRD DEG. ASSAULT	2	2			1	1						
TOTAL	52	18	27	4	3	1	2	8	\$190.00	\$228.50	\$38.50	

ONE DRUNKEN DRIVING CASE AMENDED TO RECKLESS DRIVING.

POLICE DIVISION - TRAFFIC CONTROL STATISTICS
FEBRUARY, 1953

MOTOR VEHICLE ACCIDENTS REPORTABLE:

	Total Number		Fatalities		Major Injuries		Minor Injuries	
	Jan.	Feb.	Jan.	Feb.	Jan.	Feb.	Jan.	Feb.
Richland	21	21	1	0	0	0	1	1
North Richland	6	9	0	0	0	0	1	0

ACCIDENT CAUSES:

	Negligent Driving		Failure to Yield Right of Way		Reckless & Drunken Driving		Other Cases	
	Jan.	Feb.	Jan.	Feb.	Jan.	Feb.	Jan.	Feb.
Richland	2	1	12	10	0	1	8	9
North Richland	1	2	1	2	0	0	4	5

PLANT WARNING TRAFFIC TICKETS ISSUED:

	Speeding		Stop Sign		Parking		Imp. License		Def. Equipment		Other V.		Totals	
	Jan	Feb	Jan	Feb	Jan	Feb	Jan	Feb	Jan	Feb	Jan	Feb	Jan	Feb
Richland	0	0	0	1	12	2	1	5	18	5	0	0	31	13
North Richland	0	0	0	0	26	32	0	0	0	3	0	0	26	35

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	
	Jan	Feb	Jan	Feb	Jan	Feb	Jan	Feb	Jan	Feb	Jan	Feb	Jan	Feb	Jan	Feb	Jan	Feb
Richland	19	30	13	16	2	5	0	2	7	8	15	16	32	12	59	45	149	134
No. Richland	2	4	7	9	2	3	0	3	2	2	9	3	5	5	25	10	45	39

TRAFFIC VOLUME: No Traffic Volume Count taken for the month of February, 1953.

NOTE: TRAFFIC CONTROL STATISTICS SHOW ORIGINAL CHARGES ONLY.

COMMUNITY SERVICES

RICHLAND FIRE DEPARTMENT

FEBRUARY 1953

<u>Organization and Personnel</u>	<u>Exempt</u>	<u>Non-Exempt</u>
Employees - Beginning of Month	67	0
Transfers In	0	0
Transfers Out	1	0
New Hires	0	0
Terminations	0	0
End of Month	66	0

<u>Fire Protection</u>	<u>Richland</u>	<u>North Richland</u>
Fire Loss (Estimated):		
Government	\$930.00	\$ 0.00
Personal	300.00	2,525.00
Total	<u>\$1,230.00*</u>	<u>\$ 2,525.00</u>

* Above figures do not include fire loss on February 18th fire involving Bauer Construction Company warehouse, for which the insurance adjustment is being negotiated.

Response To Fire Alarms	18	18
Investigation of Minor Fires and Incidents	2	4
Ambulance Responses	37	
Inside Schools or Drills	30	10
Outside Drills	10	5
Safety Meetings	8	4
Security Meetings	4	2
Fire Alarm Boxes Tested	168	92

What will perhaps prove to be Richland's costliest fire to date was experienced on February 18th when fire destroyed a temporary shed-type warehouse and destroyed or severely damaged the congested contents owned by the Bauer Construction Company. Quick involvement of the entire building, before three Richland and one North Richland engine companies could respond, resulted in the heavy loss.

Forty three Cub and Boys Scouts with six adults visited the Central Fire Station in four groups. Ten Transportation employees also held a fire-safety meeting at this fire station.

Fire Prevention

A total of 114 hazard inspections during February resulted in 10 hazard reports. Six hundred and ten fire extinguishers were inspected, 74 installed, 8 refilled and 182 removed. Practically all those removed were the carbon tetrachloride type, being replaced by other types at the Safety Unit's request.

Revisions of the 703 Building evacuation plan were discussed by the 700 Area Landlord and the Fire Marshal.

Dry powder type fire extinguishers were provided for Police and Water Department vehicles.

The Assistant Fire Marshal observed a static electricity conductivity test in the Kadlec Hospital operating rooms.

Plans for the additions and modifications of the Jefferson Grade School and construction plans for the Latter Day Saints warehouse were reviewed by the Fire Marshal.

Investigated report of leaking gasoline and sub-standard wiring on gasoline pumps at the Rainbow Service Station. Two pumps were disconnected until repairs could be made. Investigation was also made of a minor dry non fire at the Masonic Temple.

The Fire Marshal addressed the Chamber of Commerce membership on 1952 fire prevention activities and exhibited completed display book of these activities before its submission to the U.S. Chamber of Commerce Fire Waste Contest.

A detail investigation was made by Capt. J. S. Johnson of the Police Department and the Fire Marshal of the cause for the Bauer Construction Company warehouse fire.

At the request of and with the AEC Fire Protection Engineer, the Fire Marshal assisted in making an inspection of the gasoline filling station erected at George Washington Way and McMurray by the Guthrie Construction Company.

The Assistant Fire Marshal attended a meeting of the Richland Traffic Control Committee.

COMMUNITY REAL ESTATE AND SERVICES
DEPARTMENT - ENGINEERING UNIT

FEBRUARY 1953

<u>PERSONNEL</u>	<u>Exempt</u>	<u>Non-Exempt</u>	<u>Total</u>
Employees - Beginning of Month	6	3	9
Employees - End of Month	6	3	9

The Status of Active Projects is as Follows:

- K-713 - Vehicle Activated Traffic Light, George Washington Way & Van Giesen - Work 75% complete. Waiting delivery of traffic actuated bars and pedestrian buttons.
- K-740 - Improvements to Richland Dog Pound - 95% complete. Electric wiring not completed.
- L-662 - Mansfield Street Improvement - 100% complete.
- C-486 - 1952 Street Improvement Program - 98% complete. Completion date extended to June 30, 1953. No change.
- C-488 - Additional Erosion Control and Development, Public Areas, F.Y. 1952 - By-Pass Highway Shelterbelt Extension - Dupertail to Thayer Drive. Bid opening on Shelterbelt March 5, 1953. Jason Lee playground to be revised.

Status of Active ESR's:

- 396-CA - Site Map CAP Field - Deferred for other work pending decision by others on land to be included in map.
- 510-M - Roads and Streets Drawings, 1950 Construction - Deferred for other work.
- 544-SD - Tree Planting for Schools - No request for work to date.
- 565-RC - Site South of Tract House 0-1224 - Deferred for other work.
- 571-M - Free Methodist Church - Progressing slowly - 95% complete.
- 572-M - First Baptist Church - Progressing slowly - 70% complete.
- 574-M - Assembly of God Church - Progressing slowly - 45% complete.
- 579-M - Goethals Drive to Williams, Study of Intersection - Deferred for other work.
- 581-RC - "As Built" Plans for LDS Church - Received for checking - Deferred for other work.
- 588-RC - Alteration Permits - An open active file.
- 591-M - Preparation of Advice Pamphlet for Contractors - Deferred for other work.
- 612-RC - "As Built" Plans for Richland Thrift Drug - Received for checking - Deferred for other work.

ENGINEERING UNIT

- 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 - To be accomplished as time permits.
- 631-M - "As Built" Plans for Sewer System - Work progressing.
- 632-M - "As Built" Plans for Water System - Work progressing.
- 633-M - "As Built" Plans for Streets - Work progressing.
- 634-M - Engineer Liaison, Richland Water Expansion - Work progressing. Following construction closely by inspections.
- 663-M - Plan Checking, Richland Development Co., Block 5, North Commercial Area - Construction work progressing. 98% complete.
- 665-RC - Richland Labor Temple, Site for Labor Hall - Building permit issued. Construction started. 1% complete.
- 674-RC - Uptown Parking Lot Study - To be completed as time permits.
- 686-RC - Utility Lines, Vacant Commercial Sites - An open active file.
- 689-RC - "As Builts" CD Joseph Building #2 - Awaiting receipt of plumbing plans.
- 697-M - Plans, Specifications and Inspections, Drive-In-Theater - Construction progressing. 70% complete.
- 698-RC - Plans, Specifications, and Inspections, Rug Cleaning Plant - Construction progressing. 52% complete.
- 705-RC - Field Supervision, Parking Lots, Chief Joseph Jr. High School - 65% complete. Contract completion date extended.
- 706-RC - Plans, Specifications and Inspections, Medical-Dental Properties, Inc. - Construction progressing. 90% complete.
- 711-PW - Study and Estimate, Sewer Main, Swift Boulevard - Deferred for other work.
- 712-M - Survey of Richland, Washington, Liaison and Assistance - Work progressing.
- 715-M - Television Antennae - An open active file.
- 722-M - Erosion Control & Development of Public Areas, F.Y. 1953 - Project to be revised and resubmitted.
- 724-M - Preliminary Engineering - Hospital Grounds Improvements - Work to start March 10, 1953, on project and estimates.
- 725-M - Plans, Specifications, and Inspections, McVicker Bldg. Lee & Goethals - Plans not yet submitted.
- 726-M - Plans, Specifications, and Inspections, CD Joseph Bldg. #4, Richland Realty Co. - Construction progressing. 40% complete.

ENGINEERING UNIT

- 729-M - Plans, Specifications, and Inspections, Grace Bacon Bldg. - Waiting resubmission of plans.
- 730-M - Plans, Specifications, and Inspections, Richland Realty Co., Symons & Jadwin - Awaiting submission of plans.
- 731-M - Plans, Specifications, and Inspections, Richland Gas Company - Work progressing. 80% complete.
- 742-M - Plans, Specifications, and Inspections, Addition to Standard Oil Company Bldg., Lee Boulevard - Work progressing. 99% complete.
- 745-RC - Legal Description, Campbell's Locker, 704 Comstock - 100% complete.
- 746-M - Preparatory Engineering - Rebuild Parshall Flume at 1182 Reservoirs - 99% complete.
- 747-M - Preparatory Engineering - Float Control Valve at Sewage Lift Station - 95% complete.
- 749-M - Installation of Radio Equipment - North Richland Fire Apparatus - Not started.
- 750-M - Preparatory Engineering - Alterations to Richland Public Library - Not started.
- 751-M - Preparatory Engineering - Increased Turning Radii, Knight & Goethals - Cost estimate and study complete.
- 753-M - Preparatory Engineering - Flow Control Valve, Sewage Treatment Wet Well - 99% complete.
- 754-M - Preparatory Engineering - Air Conditioner, Columbia Playfield Shelterhouse - Not started.
- 755-M - Preparatory Engineering - Tie-in Richland & N. Richland Fire Alarm Systems - Scoped. Project Estimate submitted.
- 756-M - Preparatory Engineering-Installation of Traffic Light, Swift & Wright - Not started.
- 759-RC - "As Builts" Richland Investment Company - Deferred for other work.
- 760-RC - Sewer Extension to Labor Temple - Preparatory engineering design 50% complete.
- 761-M - Review Plans & Specifications, Alterations to Richland Investment Co. Bldg. - 100% complete. Final inspection to be made.
- 762-RC - Herald, Mickeys and Lot Plot & Utility Study - 100% complete.
- 764-RC - Cannon Joseph Bldg. #3, Water & Sewer Service - 100% complete.
- 765-RC - All Saints Episcopal Church, "As Built" Plans - Deferred for other work.
- 766-M - Loaned Labor - Engineering Dept. - 100% complete.

ENGINEERING UNIT

- 767-M - Plans, Specifications, and Inspections - Cannon-Joseph Bldg., Lee & George Washington Way - Awaiting submission of complete plans. Construction started with partial permit.
- 768-M - Plans, Specifications, and Inspections - Carl Peterson Bldg., Lee & Gillespie - Construction started. 1% complete.
- 769-RC - Parker A. Hanson (Tastee-Freez) - 50% complete.
- 770-M - Latter Day Saints Storehouse, West Jordan Street - Construction started. 2% complete.
- 771-M - Plan Checking - Jefferson School Addition - 100% complete.
- 772-M - Alterations to Diettrich's Grocery - Awaiting submission of plans.
- 773-RC - Irrigation Line Removal - Labor Temple Site - To be completed as forces available.
- 774-M - Renovation of Structures Below Flood Elevations - Riverside Park and Vacinity - Preliminary study completed.
- 775-RC - Legal Description - Randolph Insurance - Not started.
- 776-RC - Areas - Uptown Business District - 75% complete.
- 777-RC - Kennill-Ellis Site - Revised Legal Description - Not started.
- 778-M - Landscaping - 2704 Building - Job complete except for irrigation system.

COMMUNITY REAL ESTATE SECTION

SUMMARY

FEBRUARY
1953

ORGANIZATION AND PERSONNEL:

	<u>BEGINNING OF MONTH</u>		<u>END OF MONTH</u>	
	<u>Exempt</u>	<u>Nonexempt</u>	<u>Exempt</u>	<u>Nonexempt</u>
Community Real Estate Sect. 330	2	1	2	1
Housing & Maintenance Unit 331	6	19	5	19
333	13	139	13	135
Commercial Property Unit 337	<u>7</u>	<u>6</u>	<u>7</u>	<u>6</u>
	28	165	27	161
Net decrease in number of employees	<u>5</u>			

GENERAL

A lease was executed by and between General Electric Company and Richland Post #71, The American Legion, covering the construction and operation of a privately-owned building, to be located on George Washington Way south of the Central Fire Station.

The Medical-Arts Building, located at 750 Swift Boulevard, was opened for the leasing of professional office space and a pharmacy.

Fire caused extensive damage to an "A-type" house at 708 Van Giesen Street.

HOUSING & MAINTENANCE UNIT

February, 1953

ORGANIZATION AND PERSONNEL

Number of employees on payroll:

Beginning of month:	19 exempt	
	<u>158 nonexempt</u>	
	177	177
End of month:	18 exempt	
	<u>154 nonexempt</u>	
	172	172

Reduction of exempt personnel is due to the elimination of the Engineering group. The personnel of this group have been transferred to other departments and the work load assumed by present employees of the Housing & Maintenance Unit.

The reduction in nonexempt employees results from voluntary terminations and retirements, for which replacements have not been received.

RICHLAND HOUSING

HOUSING UTILIZATION AS OF MONTH ENDING FEBRUARY 28, 1953
 HOUSES OCCUPIED BY FAMILY GROUPS

	Conven- tional	A&J	T	Pre cut	Ranch	Pre fab	Dorm Apt	A&J Apt	2BR Apt	4th H.	Tract	Total
G.E. Employees	2214	259	9	380	813	1171	10	50	59	197	35	5197
Commercial Facilities	103	13	1	34	84	56		4	5	9	3	312
Commercial Activities	9			1	6	6					1	23
Medical Facilities	3	17			2	1			1	3		27
Post Office	6				2	12				1	3	24
Atomic Energy Commission	86	26		22	59	16		5	2	16	3	235
Other Government	6	2			5	4			1		1	19
Schools	53	1		6	10	57		1	1	1		130
Charles T. Main	1			3	4	11				1		20
Kaiser Engineers	6	7			4			1	1			19
Atkinson-Jones	3	4		1	4	2		1				15
Vitro Corporation	4	2		1	2	1		1				11
Newberry Neon	1	1		1							1	4
P.S. Lord	1				2					1		4
Vernita Orchards										1		4
Urban-Smythe-Warren					2						5	5
Universal Foods						1						2
Blaw-Knox		1										1
Total	2496	333	10	449	999	1338	10	63	70	230	51	6049
Houses assigned leases written	1			1		2						4
Houses assigned leases not written	3				1	2		1				
Total	2500	333	10	450	1000	1342	10	64	70	230	51	6060

	<u>BEGIN MONTH</u>	<u>MOVED IN</u>	<u>MOVED OUT</u>	<u>MONTH END</u>	<u>DIFFERENCE</u>
Conventional Type	2496	28	28	2496	
A&J type	331	4	2	333	Plus 2
"T" type	9	3	2	10	Plus 1
Precut type	450	2	3	449	Minus 1
Ranch type	998	6	5	999	Plus 1
Prefab type	1336	24	22	1338	Plus 2
Dorm Apartments	10			10	
A&J Apartments	64	1	2	63	Minus 1
2 BR Apartments	70	2	2	70	
Fourth housing;	230	1	1	230	
Tract houses	51	1	1	51	
Total	6045	72	68	6049	Plus 4

February 1953

DORMITORY

Dormitories:

		<u>Beds Available</u>	<u>Vacant Beds</u>	<u>Occupied Beds</u>
Men's	15	616	0	616
Women's	<u>12</u>	<u>481</u>	<u>45</u>	<u>436*</u>
	27	1097	45	1052*

*Includes 2 beds used for dormitory office space.

	<u>Waiting Lists</u>	
	<u>Single Rooms</u>	<u>Double Rooms</u>
Men	34	8
Women	63	0

STRAIGHT CANCELLATIONS

Voluntary terminations	14
P.O.F.	1
Discharge	0
Transfers	4
Retirement-divorce-misc.	6
Move off project	6
Deaths	1
Total	32

ALLOCATIONS

Houses allocated to new tenants	31
Exchanged houses	18
Moves	19
Turnovers	5
Total leases signed	73
Total cancellations	74
Houses assigned "As Is"	22
Houses sent to renovation	21
Applications pending	729

TENANT RELATIONS PROGRESS REPORT

	<u>Orders Incomplete as of January 31</u>	<u>Orders Issued 1-31 to 2-28</u>	<u>Total Orders Incomplete as of February 28, 1953</u>
Service Orders	160	2086	291
Work Orders	572	487	437
Service Charges		250	

Principal work order loads

	<u>Incomplete as of January 31, 1953</u>	<u>Incomplete as of February 28, 1953</u>
Laundry tub replacement	16	28
Bathroom renovations (tub, tile, linoleum)	32	38
Tileboard - bathroom	6	6
Kitchen floor linoleum	102	78
Kitchen cabinet linoleum	23	46
Shower stall	21	20

75 alteration permits issued, as compared to 61 permits issued during January.

Remove broom closet	2	Install clothes poles	1
Install automatic dryer	10	Install additional wiring	1
Install automatic washer	13	Install coal stoker	1
Reverse position of range and refer	1	Construct tool shed	2
Install trellis	1	Install water softener	5
Install TV antenna	4	Basement partitions installed	1
Install air conditioner	2	Remove work bench in kitchen	1
Install oil burner	1	Install garbage disposal unit	1
Basement excavations	5	Construct fireplace	1
Enclose basement ceiling	1	Install humidifier over furnace	1
Install fence	10	Install concrete sidewalk	1
Change position of coal bin	1	Remove part of kitchen cupboards	1
Install 2 wall receptacles	2	Install steel cabinets	1
Install patio	1	Install shelves	1
Move hot water heater	1	Sand floors	1

1354 inspections were made as compared to 1300 inspections made during January.

Bathtubs	74	Sidewalks	10
Driving on grass	2	Sinks	31
Floorboards	6	Tileboard	38
Grass seed	1	Dormitories	157
House roofs	2	Toilet seats	19
Jack and shim	10	Topsoil	25
Leaking basements	10	Trees	8
Linoleum	171	Walls	1
Lot lines	41	Windows	2
Paint	263	Cancellations	61
Porch and steps	15	Renovations	64
Screen doors	1	Shows (new tenants)	51
Shower stalls	12	Miscellaneous	279

REAL ESTATE MAINTENANCE PROGRESS REPORT

FEBRUARY, 1953

WORK SUMMARY

JOB TYPE	ISSUE DATE	BACKLOG	JOBS COMP.	COMP. TO DATE F.Y. 1953
BATHTUBS	8/8/52	46	51	249
KITCHEN FLOOR TILE	11/20/52	75	11	220
BATHROOM TILE	11/20/52	46	5	30
KITCHEN SINK TOP	10/9/52	120	71	383
PREFAB FLOOR LINOLEUM	Included in Kitchen Floor Tile			
SHOWER STALLS	8/5/52	9	7	147
LAUNDRY TUBS	11/5/52	34	9	161
MAJOR SEWER STOPPAGES	None	0	14	187
ROOF COATING	8/26/52	15	54	99
REMOVE TREES	8/12/52	16	14	91
RENOVATION	2/25/53	5	27	180
WATER HEATERS	None	0	24	153
REBUILD PORCHES	10/22/52	12	1	147
ASPHALT SERVICE WALKS	7/7/52	65	1	36
ASPHALT STEPS	8/1/52	24	0	99

MONTHLY PROGRESS REPORT
 INTERIOR REDECORATING REPORT
 FISCAL YEAR - 1953

TYPE UNIT	* NO. UNITS SCHEDULED	COMPLETED THIS MONTH	COMPLETED TO DATE	BALANCE TO BE PAINTED
A	201	24	81	120
B	359	32	93	266
D	4	0	1	3
E	33	1	12	21
F	103	2	17	86
G	3	0	1	2
H	74	2	11	63
L	3	0	1	2
M	16	0	14	2
Q	110	1	103	7
R	124	2	117	7
S	12	0	12	0
T	6	0	0	6
U	17	0	12	4
V	101	0	88	13
Y	776	117	282	494
Z	42	4	16	26
1 BR	4	1	2	2
2 BR	10	3	9	1
3 BR	4	0	2	2
TRACT	7	1	3	4
1 BR APT	35	0	33	2
<u>TOTAL:</u>	2043	190	910	1133

Scheduled Hours: 10,171
 Actual Hours: 8,248

* 1437 Units scheduled for Interior Redecoration, Fiscal Year 1953.

PLUMBING SHOP (8 employees)

<u>JOB DESCRIPTION</u>	<u>NUMBER COMPLETED</u>
Replacements - Major fixtures:	
Bathtubs	30
Laundry tubs	9
Electric Water Heaters	26
Shower Stalls	9
Routine Plumbing repairs	33
Plumbing for floor tile replacements	44
Cleared major sewer stoppages caused by tree roots	27
Steam Work Orders	21
Replacement of steam water heater in Dormitory	1

Steam inspections were made once a week on Dorms and Government owned Commercial buildings.

Working on copper sulphate program for control of tree roots in sewers.

SERVICE ORDER CREW (11 employees)

The following is a status report on Service Orders:

A. On hand at the beginning of the month:	160
B. Received during the month:	2067
C. Completed during the month:	2192
D. On hand at the end of the month:	291
E. Man hours spent on Work Orders aside from Housing Routine:	415.2 total.

F. Service Order backlog breakdown by Craft:

Carpentry: 161
Electrical: 68
Plumbing: 62

RENOVATION & LABOR CREW (14 employees)

A. Renovation Crew:

<u>JOB DESCRIPTION</u>	<u>NUMBER COMPLETED</u>
Housing units renovated	31
Dorm room redecorated	10
Maintained Dormitory floors	
Delivered laundry and supplies	
Assembled trash and re-lamped Dorms	
Sprayed attics of Dorms for spiders	
Sprayed rooms in Dorms for silver fish	2
Cleaned fire damage - 706 Van Clessen	
Installed shades on rollers	
Painted file room at 1116 Building	
Painted rest room at Village Theater	
Painted hall and maid's closet in Dorm M-7	

B. Labor Crew:

Excavated and backfilled for sewers and oil tanks	25
Removed trees and regraded lawns	13
Removed sand from lawns in Prefab area	
Delivered approximately 150 yds. of topsoil to houses	
Installed concrete sill at Thrifty Drug	
Installed blacktop pad at Thrifty Drug	
Moved printing machine to studio	
Hauled salvage and scrap to salvage yard	
Hauled furniture to 3000 Area	
Repaired compound drives in Divisions I and VII	

(Labor Crew, Cont'd)

Picked up and disposed of waste oil
Cleaned septic tanks at Tract houses
Filled around window wells at 2-Bedroom Apartments
Hauled gravel from North Richland for compounds
Exchanged ranges and refrigerators in houses
Removed trash from vacant houses
Delivered and exchanged furniture for Dormitories

(Linoleum) CARPENTER SHOP (9 employees)

<u>JOB DESCRIPTION</u>	<u>NUMBER COMPLETED</u>
Replaced bathtubs	36
Installed bathroom wall tile	54
Replaced bathroom floor tile	47
Replaced sink top linoleum	59
Installed vents in houses	7
Replaced kitchen sinks	3
Replaced floor linoleum in Medical Arts Bldg.	6 rooms
Installed sash balances - houses completed	3
Replaced kitchen floor linoleum	8
Repaired roofs	75
Replaced tile board for plumbers	2
Replaced sliding cabinet doors in Prefabs	2
Replaced shelves under sinks in Ranch Houses	2
Repaired porches	1
Repaired ceilings	1
Jack and Level jobs	2
Chempointed around sinks and tubs	237

(Lino. Carpenter Shop, Cont'd)

Replaced outside door at Bus Depot	1
Moved door at Western Union Building	1
Repaired fire damage - 75% complete	1

CARPENTER SHOP (15 employees)

<u>JOB DESCRIPTION</u>	<u>NUMBER COMPLETED</u>
Paint Touchups	39
Interior carpentry repair for painting; housing units	242
Ranch house screen doors repaired - exterior carpentry repair program	218
Ranch house screen doors replaced (new) - exterior carpentry repair program	5
Exterior main doors repaired	26
Cabinet doors replaced	113
Cabinet drawers repaired	109
Carpentry repair for paint for Precuts - exterior carpentry repair program	112
Time spent on office equipment	109 hrs.
Overtime spent on office equipment	32 hrs.

MECHANICAL SHOP (6 employees)

A. Millwright Crew: (4 employees)

<u>JOB DESCRIPTION</u>	<u>NUMBER COMPLETED</u>
Furnace Service Orders	260
Routine furnace inspection	394

GENERAL: The A & J type houses are about 75% complete for routine servicing and lubrication.

B. Sheetmetal Crew: (2 employees)

Replacement of shower stalls	14
Replacement of gutters	42
Fabricate pencil boxes	49

COMMERCIAL PROPERTY - REAL ESTATE SECTION

February, 1953

PERSONNEL - COMMERCIAL PROPERTY:

	<u>February</u>
beginning of month	13
End of month	13
Net difference	0

PERSONNEL - COMMERCIAL AND NONCOMMERCIAL FACILITIES:

	<u>Commercial</u>	<u>Noncommercial</u>	<u>Total</u>
January	1,444	119	1,563
February	<u>1,464</u>	<u>120</u>	<u>1,584</u>
Net increase	20	1	21

SUMMARY OF ROUTINE ITEMS PROCESSED:

work orders	44	4	48
Back Charges	7	1	8
1953 FY Work Order Total	338	40	378
1953 FY Back Charge Total	30	15	45

CONTRACTS AND NEGOTIATIONS:

A. Commercial:

1. Supplemental Agreement

- a. Richland Gas Co. --to delete the limiting adjective "propane" wherever it appeared in the lease.

B. Noncommercial:

1. Lease

- a. The American Legion --covering the construction and operation of a Legion Post to be located on George Washington Way south of the Central Fire Station.

SUMMARY OF OCCUPANCY AND EXPANSION STATUS:

	<u>January</u>	<u>February</u>
A. Commercial:		
1. Number of Government-owned buildings	36	36

COMMERCIAL PROPERTY - REAL ESTATE SECTION

February, 1953

	<u>January</u>	<u>February</u>
a. Number of businesses operated by prime lessees	40	40
b. Number of businesses operated by sublessees	17	17
c. Total businesses operating in Government-owned bldgs.	57	57
2. Doctors and dentists in private practice	26	27
3. Number of privately-owned buildings	49	50
a. Number of businesses operated by prime lessees	39	39
b. Number of businesses operated by sublessees	57	61
c. Total businesses operating in privately-owned bldgs.	96	100
4. Privately-owned buildings under construction	<u>4</u>	<u>7</u>
5. Total number of businesses in operation	153	157
B. Noncommercial:		
1. Government-owned buildings		
a. Churches	4	4
b. Clubs and organizations	8	8
c. Government agencies	<u>3</u>	<u>3</u>
	Total	15
2. Privately-owned buildings		
a. Completed and in use	10	10
b. Under construction	<u>4</u>	<u>5</u>
	Total	15
3. Sites tentatively allocated or leases in process of negotiation	2	2
4. Pasture Land Permits	81	81

GENERAL:

A. Commercial:

1. Federal Finance opened for business at 1333 George Washington Way in the Richland Investment Building, Uptown Richland.
2. Columbia Book Store occupied new quarters in the Richland Investment Building, 1335 George Washington Way, Uptown Richland.
3. The Medical-Dental Properties, Inc. opened its Medical-Arts Building at 750 Swift for the leasing of professional office space and a pharmacy.

- a. Morgan-Olberg Pharmacy has leased the pharmacy space.
- b. The following doctors and dentists moved from the Medical-Dental Building, 1001 Guthrie to the Medical-Arts Building, 750 Swift:

T. J. Albertowicz	P. E. Kendall
L. F. Hulsman	Roy C. McCartney
G. Charles Sutch	R. E. Chase
M. R. Petersen	A. G. Corrado
R. R. DeNicola	Bjorn Lih
N. C. Petersen	L. H. Hildebrant

- 4. J. H. Sawtell, M. D. cancelled his lease covering office space in the Medical-Dental Building and moved from Richland.
- 5. Doctors T. M. Armstrong and L. B. Harville rented offices in the Medical-Dental Building, 1001 Guthrie.
- 6. Prudential and Commonwealth opened for business in the Automatic Laundry Co. Building, Block 5, Uptown District.
- 7. Carl E. Peterson started construction on the buildings to house a Dodge-Plymouth agency and a service station at the southwest corner of Lee and Gillespie, Light Industrial Area.
- 8. H. S. Cannon and C. D. Joseph started construction on a one-story commercial building at the southwest corner of Lee Boulevard and George Washington Way.
- 9. Lease renegotiations were completed with Campbell's Food Market and Stanley Randolph.

B. Noncommercial:

- 1. The Richland Labor Temple Association started construction on a labor temple building on a site near the corner of Knight and Stevens, Light Industrial Area.
- 2. Two pasture permits were issued and two permits cancelled.
- 3. Construction was started on a warehouse for the Church of Jesus Christ of Latter Day Saints.
- 4. Permission was given the Richland Hoving Bowmen to use certain land for an Archery Range.

COMMERCIAL PROSPECTS:

Inquiries were received during the month concerning the establishment of the following types of commercial enterprises:

Variety store	Dentist Practice
Fruit, Vegetable & Produce market	Log Pound

NONCOMMERCIAL PROSPECTS:

Inquiries were received during the month concerning the establishment of the following types of non-commercial enterprises:

None

RECEIVED

NORTH RICHLAND COMMERCIAL PROPERTY MAR 20 1953

February, 1953

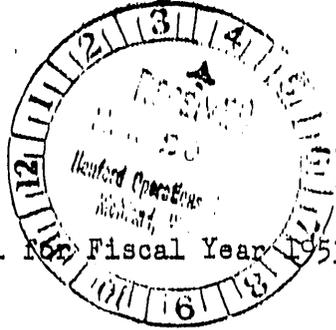
700 AREA
CLASSIFIED FILES

PERSONNEL - COMMERCIAL FACILITIES:

January	173
February	183
Net increase	10

WORK ORDERS PROCESSED:

Month of February	19
Accumulative Total for Fiscal Year 1953	187



TENANT STATUS:

	<u>January</u>	<u>February</u>
A. Number of Government-owned Commercial Buildings	8	8
1. Number of buildings partially and completely occupied	8	8
2. Number of businesses operated by prime lessees	9	9
3. Number of businesses operated by sublessees	0	0
4. Total businesses operated by prime and sublessees	9	9
B. Number of Privately-owned Commercial Buildings	7	7
1. Number of buildings partially and completely occupied	7	7
2. Number of businesses operated by prime lessees	9	9
3. Number of businesses operated by sublessees	2	2
4. Total businesses operated by prime and sublessees	11	11

CONTRACTS AND NEGOTIATIONS:

A. Lease

1. Richland Lutheran Church Office Lease was completed during the month of February.

COMMERCIAL PROSPECTS:

Inquiries were received during the month concerning the establishment of the following types of commercial enterprises:

Box Lunch

Malt Shop

GENERAL:

A. Community Services

1. Processing of work Orders and performance of maintenance for North Richland fire station transferred to Community Services Section

END

**DATE
FILMED**

6 / 29 / 92