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~~HW 12391~~

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HAN-21672

REPOSITORY FDL
COLLECTION Atmospheric Releases
BOX No. N/A
FOLDER N/A

- #1 - H. A. Winne
- #2 - Zay Jeffries, Pittsfield
- #3 - C. G. Suits, Schenectady
- #4 - G. R. Prout
- #5 - J. R. Rue
- #6 - C. N. Gross
- #7 - A. B. Greninger
- #8 - F. R. Creedon
- #9 - Hanford Operations Office
Attention: F. C. Schlemmer, Manager
- #10 - Hanford Operations Office
Attention: F. C. Schlemmer, Manager
- #11 - Hanford Operations Office
Attention: F. C. Schlemmer, Manager
- #12 - Hanford Operations Office
Attention: F. C. Schlemmer, Manager
- #13 - Hanford Operations Office
Attention: F. C. Schlemmer, Manager
- #14 - 700 File
- #15 - 700 File
- #16 - 700 File

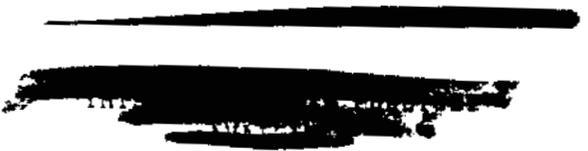
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UNCHANGED

February 25, 1949

By J. M. [Signature]
Date 5-4-73
U. S. AEC Division of Classification

HANFORD WORKS
MONTHLY REPORT
JANUARY - 1949

Classification Cancelled (Change to)
Declassified with Deletion
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WA Snyder 1-7-92
DG Kricker 1-28-92
PM Eick 1-23-92



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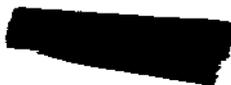
HW 12391-DEL
February 25, 1949

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1224011




GENERAL SUMMARY**DECLASSIFIED**JANUARY - 1949

A total of 53 tons of metal was discharged from the three piles which attained an average operating efficiency of 90.0 percent. The nominal power level of 275 MW was maintained throughout the month.

A total of 81 tons of acceptable slugs was canned at a yield of 89.8 percent. The yield improvement of 2.7 percent over December is primarily accounted for by a 2.1 percent reduction of rejects due to non-seating through the use of slightly smaller in diameter but longer slugs.

A total of 70 batches was processed through the isolation phase of the Separations Operations. The over-all Separations waste losses averaged 2.6 percent in January.

Continued difficulty was encountered with high waste losses in the extraction step to the extent that eighty percent of all runs, including all runs from B Pile, were reworked at this point. Intensive study is being given to this problem by the Operating and Technical Divisions.

For the first time in plant history it was necessary to put the re-use water systems of all 100 areas into operation to prevent ice formation in the reservoir pump house suction flumes. The filtered water temperature was thus increased from 33.0°F to 37.5°F.

At month end, all Divisions had returned to a normal 40-hour week work-schedule.

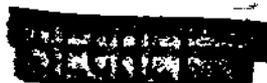
As of January 10 an electrical peak load of 70,800 KW was established. This compares with previous highs of 68,200 KW in December and 62,100 KW in November. The maximum demand of 32,000 KW for the 66 KV system coincided with the entire project system peak. The increased housing load and unusually cold weather are the prime reasons for the peaking in the past three months.

The Electrical and Maintenance Divisions reported reductions in backlogs of incompleting work of 5 percent and 9 percent, respectively.

Attention is directed to the reduction in freight charges which continue to be secured by the Traffic Section of the Transportation Division. The total reduction for the month of January amounted to approximately \$60,000.

The D Pile remained at 40% carbon dioxide concentration and the F Pile at 25%, while the B Pile advanced from 10 to 25%. Thermal and reactivity effects were in line with previous experience. Development of means for electrical annealing, for stress studies on the shields, and for stopping up the gap in the F Pile shield continued. Mockup studies of vertical safety rods in distorted thimbles, and of the operation of the third safety device at high temperatures, were planned.

Changes were made in the graphite purification process to reduce plugging of feeder tubes and orifices and to diminish nitrogen adsorption. Gadolinium, a strong adsorber of neutrons, was found in unpurified graphite in significant quantities. The expansion and thermal resistivity of test hole graphite continues

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General Summary

HW 12391-DEL

to increase linearly, but an unexplained upturn of the electrical resistivity has occurred and the implications of this are being sought.

Zoning of metal in the piles has been shown to offer significant increases in reactivity.

In case of complete failure of electrical power, it has been shown that continuity of Product B production can be obtained by operating three piles on the steam pumps alone.

Practice runs on inert gas mixtures were made on the first extraction line for P-10, and operation is scheduled to begin next month. Satisfactory yields of tritium were obtained by Argonne from alloy slugs exposed two months.

Production testing of agitation of the first by-product precipitation slurry during centrifugation, instead of the standard settling procedure, appears to have stabilized previously erratic waste losses at a slightly lower level but decreased decontamination has been obtained. Test runs with single instead of double-distilled HF in the Concentration process have uncovered no adverse effects on yields. Time cycle savings of more than two hours have been effected in the Isolation process by production testing. Sand filter performance has continued to obtain better than 99.8% efficiency of activity removal, with no measurable increases in pressure drops. Dissolver activity discharge has been confirmed as the cause of the apparent recontamination of sand filter discharge has been confirmed as the cause of the apparent recontamination of sand filter discharge air. Steps are being taken to install fiberglass filters on the dissolver off-gas lines, as a result of extremely promising pilot plant studies.

At month end, the 234-5 Building was approximately 55% completed in construction. A major portion of acceptance procedures has been issued and all operation procedure preparation is expected to be completed during the coming month. All operations task approvals of layout drawings for the Schenectady design of the Remote Mechanical Line have been granted. The ten gram-scale pilot line in Bldg. 231 has been essentially completed and calibration runs carried out.

Redox Demonstration Unit column runs made with dissolved uranium feeds following rigorous scouring and clean-out of the dissolver have evidenced no "Fish-egg" interface emulsification. Investigation of uranium metal recently used for feed preparation points to an unusually high silicon content as the possible cause of the poor phase disengagement. Washing of Scale-Up recycled hexone with Na_2CO_3 and extensive purging of old IAW recycle solutions from the system have eliminated interface "foaming" in this unit. An explosion of an IAW pump test stand on January 23 damaged the 321 Bldg. Semi-Works seriously enough to cause at least a month's shut-down for repairs and rehabilitation, which are proceeding at an accelerated pace.

Redox research studies have continued to demonstrate encouraging promises for increased ruthenium decontamination by ozone volatilization and zirconium removal by glass wool adsorption. The possibility of coupling a reduced plutonium salt solution from a modified Redox process to the BiPO_4 process by intermediate closed-cycle extraction has been successfully demonstrated in the laboratory. An extremely stable oxidized plutonium for Column IIA feed has been prepared by ozonation. Removal of unknown components of dissolved uranium feed solution causing emulsification with hexone has been effected in the laboratory by adsorption on filter aids.

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HW 12391-DEC

General Summary

Production rolling of uranium rods for Hanford was conducted at Lockport, N. Y., and Aliquippa, Pa., under technical supervision by the 300 Area Plant Assistance Group. The AEC (New York Office) has arranged to assume this responsibility at Lockport in February and at Aliquippa in March.

Two 300 Area metal fabrication process changes which have been under technical development were put into practice: (1) The pickling of uranium turnings for reworking through the melt plant; and (2) a change in alpha rolled slug dimensions as required to compensate for the diameter increase and length decrease which this metal undergoes during triple-dip canning.

High frequency induction heating of uranium slugs is being investigated as an attractive alternate to the triple-dip method for effecting structural transformation. Very promising results are being obtained.

The T Plant Control Laboratory concluded a two-month trial use of rubber gloves for all analytical work involving radioactivity. Since gloves were found to reduce hand contamination without increasing equipment contamination, their use has been made standard in all 200 Area analytical laboratories.

Several steps were taken to meet the increasing needs for experimental fabrication work. Visits were made to the Bremerton Navy Yard and to several commercial machine shops with a view toward farming-out most items in the large backlog of work against the present small technical shop in Building 3706. Arrangements were made to place this shop and the Instrument Divisions Shop (Building 3717) on shifts as rapidly as additional machinists can be procured. A proposal for expanding the technical shops is in preparation.

The force increased by fifteen in the H. I Divisions. Once Class I Special Hazards Incident was reported, and did not involve serious consequences. The Operational Division reported survey findings that indicated increased frequency of contamination of personnel and work areas. This is notably true in the 100 Areas. In the Control and Development Division, analytical results on samples of water, air, and vegetation were normal. The Bioassay Laboratory production was stopped for three days to determine the specific cause of failures in the process and to eliminate these causes. The maximum uranium content found in the urine of the 300 Area workers was 82 μ c/liter.

Final settlement of a group of orders cancelled at the request of the Project Engineering Division was made during the month. Total cancellation charges amounted to \$26,343.45.

The Commission notified us that the Voluntary Steel Allocation Plan had been extended to cover the period March 1, 1949, through August 31, 1949. Orders were placed for first quarter delivery of seven carloads of black and galvanized steel pipe.

Responsibility for the Pasco General Depot was to be assumed by the Surplus, Salvage and Scrap Division as of February 1, 1949, with the exception of Warehouse No. 7 which is used by the National Guard and Warehouse No. 1 containing Construction materials.

There were two major injuries in January.

A total of 13 fire alarms, ten of which were in Construction areas, resulted in losses totaling \$170.

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General Summary

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HW 12391-DEL

Effective January 3, 1949, the 200-West Area Laundry returned to a five-day week operation.

Through a combination of duties of Patrolmen and Firemen at the Pasco Warehouse Area, a reduction of ten firemen was effected.

Discussions of Employment practices and procedures and employee benefit plans, were conducted by representatives of Employee Services with the instructors in the 9-Point Job Improvement Program. The statement by Charles E. Wilson before the Joint Committee on the Economic Report and one set of questions and answers were distributed to all supervisors participating in the program.

Open requisitions for additional personnel decreased from 388 at the beginning of the month to 262 at the end of January. This reduction is due primarily to transfer of requisitions for scientific personnel to the Technical Personnel Recruiting Group. Total plant roll increased during January by 60 employees.

Employee Services Counselors made 1,938 contacts during January. One employee retired and four employee deaths occurred during January. Two hundred thirty-seven suggestion awards, totaling \$280, were granted during the month. A conference between representatives of the Atomic Energy Commission, Washington State Department of Labor and Industries, and the General Electric Company resulted in a decision to make no change in the present special Workmen's Compensation Agreement with the State.

Several meetings were held with representatives of the National Labor Relations Board and representatives of the Atomic Metal Trades Council. As a result of these meetings, a stipulation for a consent election was filed on January 26. The election to determine whether certain employees of the Manufacturing, Services, Community and Technical Divisions wanted the Atomic Metal Trades Council to represent them in collective bargaining matters was scheduled for February 8 and 9.

A request for preparation of a project proposal was issued to the Project Engineering Division to cover air horn warning signals for Richland and North Richland.

Traffic accidents increased forty percent during January 1949. The increase was due largely to snow and ice on the streets.

Twenty-seven alarms in Richland and seventeen in North Richland were answered. These fires resulted in damage of \$2,972.64 to project property and \$1,163.98 to personal property.

The responsibility for fire prevention at the Government airport was taken over on January 24 by the Community Fire Division.

Thawing services on water pipes were required in approximately 1,200 individual cases as a result of prolonged sub-freezing weather.

Fuel deliveries were extremely heavy. Over 10,000 tons of coal were delivered during the month. Also, 245,553 gallons of fuel oil were delivered.

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General Summary

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Two hundred twenty-eight newly constructed ranch type houses were completed and made available for occupancy. Three hundred forty-four leases were written during the month.

Considerable progress is being made by several churches toward completion of their respective church structures.

There was no evidence of injury to any employee during the month due to radiation.

Employee physical examinations continued to decrease slightly while the number of first aid treatments remained practically constant.

Total absenteeism was 2.81% while that due to sickness only was 1.85% as compared to 1.73% for December.

Fourteen major and 75 sub-major injuries were treated. Of these, 2 majors and 5 sub-major injuries were sustained by G. E. employees.

The health topic for January was "Heart Disease".

The average daily hospital census was 115, a new peak. This was a 14% increase over December and a 30% increase over January 1948. The average daily census at the North Richland Hospital was 19 (17% of the total 115).

Clinic visits increased by 20% to 10,071. This was a 77% increase over January 1948; 30% of this total was treated in the North Richland Medical Center.

Dental Clinic visits increased by 3% to 3,218.

Chickenpox continued to be the leading communicable disease. Sanitary conditions were satisfactory.

Financial statements for Hanford Works and for the Nucleonics Department were prepared and issued on January 26, 1949 for the month of December, 1948.

Operating reports for the month of December 1948, for the General Divisions were issued on January 21, 1949.

Year-end work for which the Payroll Divisions was responsible necessitated a planned overtime schedule of 48 hours per week for four weeks during January. Approximately 6200 Pension Plan contribution record cards were balanced and reports to the Pension Division were made; withholding statements (form W-2) were prepared and issued to 10,573 employees and former employees on January 14; Federal Social Security tax reports (form SS-1-B) for the fourth quarter of 1948 were prepared and forwarded to Schenectady; and the annual report of taxable earnings by individuals for the State of Washington was prepared.

Following is a comparison of unreimbursed expenditures as of December 31, 1948 and January 31, 1949:

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General Summary

	<u>December 31, 1948</u>	<u>January 31, 1949</u>
Billed on Public Vouchers	\$ 1 937 078	\$ 5 026 544
Submitted on Pre-Billing Audit Vouchers	4 978 234	5 938 914
Unbilled*	<u>7 392 514</u>	<u>6 304 407</u>
Total	\$14 307 826	\$17 269 865

* Preliminary totals prior to final closing entries.

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STAFF

General Manager G. R. Prout

Assistant General Manager. R. S. Neblett

Assistant to the General Manager W. I. Patnode
(Technical and Education Matters)

Assistant to the General Manager J. R. Rue
(Budgets and Expense Control)

Assistant to the General Manager and
Manager of Service Divisions G. G. Lail

Department Comptroller. F. E. Baker

Counsel L. F. Huck

Community Manager E. L. Richmond

Manager, Design and Construction Divisions F. R. Creedon

Manager, Manufacturing Divisions C. N. Gross

Manager, Technical Division A. B. Greninger

Manager, Health Instrument Division H. M. Parker

Manager, Medical Division W. D. Norwood, M.D.

Manager, Employee and Community Relations Division H. E. Callahan

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FORCE REPORT
JANUARY 1949

	<u>Non-Exempt</u>		<u>Exempt</u>		<u>Total</u>	
	<u>12-31-48</u>	<u>1-31-49</u>	<u>12-31-48</u>	<u>1-31-49</u>	<u>12-31-48</u>	<u>1-31-49</u>
<u>GENERAL</u>	14	17	9	10	23	27
<u>LAW DIVISION</u>	3	3	4	4	7	7
<u>DESIGN & CONSTRUCTION DIVISIONS</u>						
ADMINISTRATIVE	29	38	6	6	35	34
CONSTRUCTION	250	231	189	169	439	400
CONSTRUCTION ACCOUNTING	70	75	7	6	77	81
DESIGN	141	143	109	112	250	255
PROCUREMENT	30	27	55	55	85	82
NO. RICHLAND REALTY	274	283	24	28	298	311
<u>MANUFACTURING DIVISIONS</u>						
GENERAL	2	3	7	8	9	11
PROJECT ENGINEERING	72	74	53	53	125	127
MANUFACTURING ACCOUNTING	36	42	7	7	43	49
<u>OPERATIONS DIVISIONS</u>						
"P" DIVISION	313	303	61	68	374	371
"S" DIVISION	251	268	60	65	311	333
POWER	366	376	81	82	447	458
<u>MECHANICAL DIVISIONS</u>						
MAINTENANCE	521	524	73	73	594	597
ELECTRICAL	236	240	47	48	283	288
INSTRUMENT	171	177	45	44	216	221
TRANSPORTATION	687	691	68	69	755	760
<u>TECHNICAL DIVISIONS</u>						
TECHNICAL GENERAL	2	2	5	5	7	7
PILE TECHNOLOGY	12	12	50	54	62	66
SEPARATIONS TECHNOLOGY	86	66	86	94	172	160
METALLURGY & CONTROL	412	414	112	114	524	528
<u>MEDICAL DIVISION</u>	427	427	95	95	522	522
<u>H. I. DIVISION</u>	221	235	94	95	315	330
<u>ACCOUNTING DIVISION</u>	160	160	22	21	182	181
<u>EMPLOYEE & COMM. REL. DIVISION</u>	69	68	23	24	92	92
<u>SERVICE DIVISIONS</u>						
<u>PLANT SECURITY & SERV. DIV'S. 1073</u>			126		1199	
<u>PATROL & SECURITY</u>		633		69		702
<u>SAFETY & FIRE</u>		149		39		188
<u>GENERAL & OFFICE SERVICES</u>		296		23		319
<u>PURCHASING & STORES</u>	169	180	25	25	194	205
<u>COMMUNITY DIVISIONS</u>	815	797	163	169	978	966
<u>GRAND TOTAL</u>	<u>6912</u>	<u>6944</u>	<u>1706</u>	<u>1734</u>	<u>8618</u>	<u>8678</u>

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PERSONNEL DISTRIBUTION - JANUARY 1949

	100-B	100-D	100-F	200-E	200-W	300	Plant	3000	700-1100	Total
	Area	Area	Area	Area	Area	Area	General	Area	Area	
GENERAL	-	-	-	-	-	-	-	-	10	10
Clerical	-	-	-	-	-	-	-	-	17	17
Total	-	-	-	-	-	-	-	-	27	27
LAW DIVISION	-	-	-	-	-	-	-	-	4	4
Clerical	-	-	-	-	-	-	-	-	3	3
Total	-	-	-	-	-	-	-	-	7	7

DESIGN & CONSTRUCTION DIVISIONS

ADMINISTRATIVE
 Supervisors
 Engineers
 Clerical
 Others
 Total

-	-	-	-	-	-	-	-	-	6	6
-	-	-	-	-	-	-	-	-	2	2
-	-	-	-	-	-	-	-	-	22	22
-	-	-	-	-	-	-	-	-	4	4
-	-	-	-	-	-	-	-	-	34	34

CONSTRUCTION
 Supervisors
 Engineers
 Clerical
 Others
 Total

-	1	-	-	-	-	-	13	31	-	45
-	26	-	9	-	1	13	13	23	17	89
-	16	-	1	-	1	13	13	97	7	135
-	40	-	2	-	-	64	64	6	19	131
-	83	-	12	-	2	103	103	157	43	400

CONSTRUCTION ACCOUNTING

Supervisors
 Clerical
 Total

-	-	-	-	-	-	-	-	6	-	6
-	-	-	-	-	-	-	-	75	-	75
-	-	-	-	-	-	-	-	81	-	81

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100-B Area 100-D Area 100-F Area 200-E Area 300 Area Plant General Area 3000 Area 700-1100 Area Total

DESIGN & CONSTRUCTION DIVISIONS

DESIGN

Supervisors	-	-	-	-	-	-	-	13	13
Engineers	-	-	-	-	-	-	-	111	111
Clerical	-	-	-	-	-	-	-	68	68
Others	-	-	-	-	-	-	-	63	63
Total	-	-	-	-	-	-	-	255	255

PROCUREMENT

Supervisors	-	-	-	-	-	-	-	9	15
Engineers	-	-	-	-	-	-	-	-	-
Clerical	-	-	-	-	-	-	-	26	26
Others	-	-	-	-	13	-	-	28	41
Total	-	-	-	-	19	-	-	63	82

NORTH RICHLAND REALTY

Supervisors	-	-	-	-	-	-	27	-	27
Engineers	-	-	-	-	-	-	4	-	4
Clerical	-	-	-	-	-	-	33	-	33
Others	-	-	-	-	-	-	267	-	267
Total	-	-	-	-	-	-	311	-	311

MANUFACTURING DIVISIONS

GENERAL

Supervisors	-	-	-	-	-	-	-	8	8
Clerical	-	-	-	-	-	-	-	3	3
Total	-	-	-	-	-	-	-	11	11

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MANUFACTURING DIVISIONS
PROJECT ENGINEERING

	100-B	100-D	100-F	200-E	200-W	300	Plant	3000	700-1100	Total
	Area	Area	Area	Area	Area	Area	General	Area	Area	
Supervisors	-	-	-	-	1	-	-	-	12	13
Engineers	-	-	-	-	3	1	-	-	37	41
Drafting Personnel	2	-	-	-	5	3	-	-	29	39
Clerical	1	-	-	-	-	-	-	-	16	17
Others	1	-	-	-	2	-	-	-	14	17
Total	4	-	-	-	11	4	-	-	108	127

MANUFACTURING ACCOUNTING

Supervisors	-	-	-	-	-	-	-	-	7	7
Clerical	-	-	-	-	-	-	-	-	42	42
Total	-	-	-	-	-	-	-	-	49	49

OPERATIONS DIVISIONS
upn DIVISION

Supervisors	13	23	13	-	-	12	-	-	7	68
Operators	48	57	50	-	-	133	-	-	-	288
Clerical	2	2	2	-	-	5	-	-	4	15
Total	63	82	65	-	-	150	-	-	11	371

NSN DIVISION

Supervisors	-	-	-	28	34	-	-	-	7	69
Operators	-	-	-	116	135	-	-	-	-	251
Clerical	-	-	-	4	7	-	-	-	2	13
Total	-	-	-	148	176	-	-	-	9	333

POWER

Supervisors	15	15	14	5	8	1	2	-	-	60
Engineers	5	8	4	-	-	-	5	-	-	22
Operators	92	85	83	27	31	11	-	-	-	329
Clerical	2	1	2	-	1	-	2	-	-	8
Others	8	7	7	5	6	6	-	-	-	39
Total	122	116	110	37	46	18	9	-	-	458

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	<u>100-B Area</u>	<u>100-D Area</u>	<u>100-F Area</u>	<u>200-E Area</u>	<u>200-W Area</u>	<u>300 Area</u>	<u>Plant General Area</u>	<u>3000 Area</u>	<u>700-1100 Area</u>	<u>Total</u>
MECHANICAL DIVISIONS										
MAINTENANCE										
Supervisors	2	8	7	5	16	7	17	-	2	64
Engineers	1	-	2	1	1	1	5	-	5	16
Mechanics	29	30	59	39	96	52	124	-	-	429
Clerical	1	1	2	2	2	2	5	-	1	16
Others	3	1	8	4	15	12	29	-	-	71
Total	<u>36</u>	<u>40</u>	<u>78</u>	<u>51</u>	<u>130</u>	<u>74</u>	<u>180</u>	<u>-</u>	<u>8</u>	<u>597</u>
ELECTRICAL										
Supervisors	2	2	5	2	4	2	2	-	23	42
Electricians	13	12	12	11	13	14	-	-	100	175
Clerical	1	-	1	1	1	1	2	-	4	11
Others	2	2	5	2	3	3	1	-	42	60
Total	<u>18</u>	<u>16</u>	<u>23</u>	<u>16</u>	<u>21</u>	<u>20</u>	<u>5</u>	<u>-</u>	<u>169</u>	<u>288</u>
INSTRUMENT										
Supervisors	3	4	2	1	4	6	-	-	5	25
Engineers	3	-	-	-	1	8	-	-	7	19
Mechanics	8	7	9	6	13	20	-	-	8	71
Clerical	1	1	1	2	1	4	-	-	5	15
Others	10	18	8	9	9	37	-	-	7	91
Total	<u>25</u>	<u>23</u>	<u>20</u>	<u>18</u>	<u>28</u>	<u>75</u>	<u>-</u>	<u>-</u>	<u>32</u>	<u>221</u>
TRANSPORTATION										
Supervisors	7	2	2	5	4	2	-	-	47	69
Drivers (Based on areas served)	28	27	35	34	40	11	-	-	83	258
Mechanics	12	3	1	4	2	-	-	-	78	100
Trainmen	10	4	4	4	4	3	-	-	6	35
Laborers	9	15	11	32	8	7	-	-	35	117
Clerical	-	-	-	1	-	1	-	-	27	29
Others	10	10	13	17	24	6	-	-	72	152
Total	<u>76</u>	<u>61</u>	<u>66</u>	<u>97</u>	<u>82</u>	<u>30</u>	<u>-</u>	<u>-</u>	<u>348</u>	<u>760</u>

MECHANICAL DIVISIONS

MAINTENANCE

- Supervisors
- Engineers
- Mechanics
- Clerical
- Others
- Total

ELECTRICAL

- Supervisors
- Electricians
- Clerical
- Others
- Total

INSTRUMENT

- Supervisors
- Engineers
- Mechanics
- Clerical
- Others
- Total

TRANSPORTATION

- Supervisors
- Drivers (Based on areas served)
- Mechanics
- Trainmen
- Laborers
- Clerical
- Others
- Total

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	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Area	Total
MEDICAL DIVISION										
Physicians	-	-	-	-	-	-	7	12	20	39
Dentists	-	-	-	-	-	-	-	2	10	12
Technicians	1	-	1	1	-	-	-	6	28	36
Clerical	1	1	2	2	-	1	-	32	90	127
Others	6	9	2	4	4	2	18	36	227	308
Total	8	10	2	7	4	3	25	88	375	522
H. I. DIVISION										
Supervisors	1	1	3	4	8	17	-	-	5	39
Engineers	4	4	8	14	16	8	1	-	1	56
Clerical	-	-	1	1	1	5	-	-	6	14
Others	11	14	21	38	63	59	6	-	9	221
Total	16	19	33	57	88	89	7	-	21	330
ACCOUNTING DIVISION										
Supervisors	-	-	-	-	-	-	-	-	18	18
Clerical	-	-	-	-	-	-	-	-	163	163
Total	-	-	-	-	-	-	-	-	181	181
EMPLOYEE & COMMUNITY RELATIONS DIV.										
Supervisors	-	-	-	-	-	-	-	-	24	24
Employee Relations Counselors	-	-	-	-	-	-	-	-	4	4
Clerical	-	-	-	-	-	-	-	-	56	56
Others	-	-	-	-	-	-	-	-	8	8
Total	-	-	-	-	-	-	-	-	92	92

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	100-B	100-D	100-F	200-E	200-W	300	Plant	3000	700-1100	Total
	Area	Area	Area	Area	Area	Area	General	Area	Area	Total
<u>TECHNICAL DIVISIONS</u>										
<u>TECHNICAL GENERAL</u>										
Supervisors	-	-	-	-	-	-	-	-	5	5
Clerical	-	-	-	-	-	-	-	-	2	2
Total	-	-	-	-	-	-	-	-	7	7
<u>PILE TECHNOLOGY</u>										
Supervisors	-	1	-	-	-	9	-	-	-	10
Chemists-Engineers-Physicists	7	5	3	-	-	28	-	-	1	44
Laboratory Assistants	1	2	1	-	-	4	-	-	-	8
Clerical	-	-	-	-	-	3	-	-	1	4
Total	8	8	4	-	-	44	-	-	2	66
<u>SEPARATIONS TECHNOLOGY</u>										
Supervisors	-	-	-	1	4	16	-	-	1	22
Chemists-Engineers & Tech. Grads.	-	-	-	5	16	59	-	-	2	82
Laboratory Assistants	-	-	-	-	-	8	-	-	-	8
Clerical	-	-	-	-	2	8	-	-	1	11
Others	-	-	-	-	1	36	-	-	-	37
Total	-	-	-	6	23	127	-	-	4	160
<u>METALLURGY & CONTROL</u>										
Supervisors	-	6	-	7	11	32	-	-	4	60
Chemists-Engineers-Metallurgists-	1	5	1	9	19	100	-	-	1	136
Technologist & Technical Grads.	9	15	24	37	58	106	-	-	-	249
Laboratory Assistants	-	1	-	1	2	41	-	-	34	79
Clerical	-	-	-	-	-	4	-	-	-	4
Others	-	-	-	-	-	-	-	-	-	-
Total	10	27	25	54	90	283	-	-	39	528

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	100-B	100-D	100-F	200-E	300	Plant	3000	700-1100	Total
	Area	Area	Area	Area	Area	General	Area	Area	

SERVICE DIVISIONS

PLANT SECURITY & SERVICE DIVISIONS

PATROL & SECURITY

Supervisors	4	12	6	8	7	15	-	8	69
Patrolmen	43	124	87	72	80	25	-	41	611
Clerical	-	-	-	-	-	17	-	2	19
Seamstress	-	-	-	-	-	3	-	-	3
Total	<u>47</u>	<u>136</u>	<u>93</u>	<u>80</u>	<u>87</u>	<u>60</u>	<u>-</u>	<u>51</u>	<u>702</u>

SAFETY & FIRE

Supervisors	12	-	-	-	5	9	-	9	39
Firemen	75	-	-	-	14	-	-	22	125
Inspectors	2	4	4	4	1	3	-	1	20
Clerical	-	-	-	-	-	2	-	2	4
Total	<u>89</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>20</u>	<u>14</u>	<u>-</u>	<u>34</u>	<u>188</u>

GENERAL & OFFICE SERVICES

Supervisors	-	-	1	2	1	-	-	17	23
Laundry Operators	-	-	-	-	-	-	-	2	10
Janitors	5	6	5	10	15	-	-	40	91
Office Machine Operators	-	-	-	-	-	-	-	52	52
Office Machine Repairmen	-	-	-	-	-	-	-	8	8
Clerical	-	-	-	-	-	-	-	60	64
Others	-	2	3	-	-	-	-	35	71
Total	<u>5</u>	<u>8</u>	<u>9</u>	<u>12</u>	<u>18</u>	<u>-</u>	<u>-</u>	<u>214</u>	<u>319</u>

PURCHASING & STORES DIVISION

Supervisors	-	-	-	-	-	-	5	20	25
Clerical	1	-	-	-	-	-	12	166	180
Total	<u>1</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>17</u>	<u>186</u>	<u>205</u>



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	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	300 Area	Plant General	3000 Area	700-1100 Area	Total
Supervisors	-	-	-	-	-	-	-	-	169	169
Others	-	-	-	-	-	-	-	-	797	797
Total	-	-	-	-	-	-	-	-	966	966
GRAND TOTAL	528	633	532	587	932	1044	422	654	3346	8678

COMMUNITY DIVISIONS

Supervisors

Others

Total

GRAND TOTAL

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MANUFACTURING DIVISIONS

JANUARY 1949

SUMMARY

Operational

A total of 53 tons of metal was discharged from the three piles which attained an average operating efficiency of 90.0 percent. The nominal power level of 275 M.W. was maintained throughout the month.

A total of 81 tons of acceptable slugs were canned at a yield of 89.8 percent. The yield improvement of 2.7 percent over December is primarily accounted for by a 2.1 percent reduction of rejects due to non-seating through the use of slightly smaller 12 diameter but longer slugs.

A total of 90 batches was processed through the isolation phase of the Separations Operations. The over-all Separations waste losses averaged 2.6 percent in January.

Continued difficulty was encountered with high waste losses in the extraction step to the extent that eighty percent of all runs, including all runs from B Pile, were reworked at this point. Intensive study is being given to this problem by the Operating and Technical Divisions.

For the first time in plant history, it was necessary to put the re-use water systems of all 100 Areas into operation to prevent ice formation in the reservoir pump house suction flumes. The filtered water temperature was thus increased from 33.0°F to 37.5°F.

At month end all Divisions had returned to a normal 40 hour week work schedule.

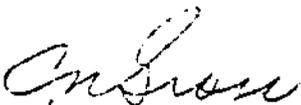
Mechanical

As of January 10 an electrical peak load of 70,800 KW was established. This compares with previous highs of 68,200 KW in December and 62,100 KW in November. The maximum demand of 32,000 KW for the 66 KV system coincided with the entire project system peak. The increased housing load and unusually cold weather are the prime reasons for the peaking in the past three months.

The Electrical and Maintenance Divisions reported reductions in backlog of incomPLETED work of 5 percent and 9 percent, respectively.

Attention is directed to the reduction in freight charges which continue to be secured by the Traffic Section of the Transportation Division. The total reduction for the month of January amounted to approximately \$60,000.

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C. N. GROSS, MANAGER
MANUFACTURING DIVISIONS

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MANUFACTURING DIVISIONS

PATENT REPORT SUMMARY
FOR
MONTH OF JANUARY, 1949

Richland, Washington
February 11, 1949

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

INVENTOR

TITLE

A. F. Cranmer
(P Division)

Articulated Perforated Aluminum
Dummy Train

D. C. Zeck
(Maintenance Division)

Filter for Tube Replacement

R. M. Scott
(Maintenance Division)

Tube Oil Seal

H. J. Bellarts
(Project Engineering Division)

Crank Handle

This crank can be used to drive the shaft in either direction, yet when released it becomes "free wheeling" and does not rotate with the shaft.



C. N. GROSS

MANAGER, MANUFACTURING DIVISIONS

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P DIVISION

JANUARY - 1949

I. GENERAL

All piles operated at 275 M.W. throughout the month except for the outages listed under Area Activities in this report.

A total of 53 tons of metal was discharged from the piles during the month.

Coincident with the completion of the necessary training programs for supervisors and operators, the 100 Area personnel returned to the normal five-day work week effective January 31. This marks the completion of all currently planned overtime for the P Division.

On January 1, the operating schedule for the Canning and Dipping process was reduced from a two shift five-day week to a one shift five-day week. All operations in the 300 Area are now on one shift operation except for Machining and the Melt Plant which remain on a two shift five-day week basis.

II. ORGANIZATION AND PERSONNEL

Number of Employees on Payroll - January	
Beginning of Month	374
End of Month	375
Net Increase	1

Six operators were transferred to the S Division and three to the Power Division. One steno-typist A was removed from the payroll on leave of absence and one operator terminated voluntarily. One operator, one steno-typist C, and one business machine operator B were hired during the month.

Ten operators were transferred from the 300 Area to the 100 Areas for training in anticipation of the startup of 100-H Pile.

One Chief Operator was reassigned to the 100 Areas from the 300 Area.

The following changes in monthly personnel took place during the month:

G. B. Carlton, Assistant Chief Supervisor, 100-B Area, was relieved of his duties in 100-B Area and placed in charge of the P Division Process Control Group effective January 1.

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D. S. Lewis was promoted from Area Supervisor to Assistant Chief Supervisor, 100-B Area, effective January 1.

R. J. Bursey was promoted from Shift to Area Supervisor effective January 1.

E. T. Hubbard, Supervisor in Training, was promoted to Shift Supervisor effective January 1.

Nine Technical Graduates were transferred from the Technical Division and placed on the monthly roll as Supervisors in Training effective January 3, in preparation for the operation of 100-H Area.

R. K. Wahlen, Senior Supervisor in the 300 Area, is visiting the Victor Manufacturing Company in New York City for two days beginning January 31 to assist in setting up standards which will meet Hanford specifications for aluminum cans.

III. AREA ACTIVITIES

<u>PILE SUMMARY</u>	<u>PILE B</u>	<u>PILE D</u>	<u>PILE F</u>
Time Operated (%)	92.1	94.2	87.4
Operating Efficiency (%)	91.4	93.1	85.4
*Power Level (M.W.)	275	275	275
*Inlet Water Temperature (°C)	5.0	5.3	5.4
*Outlet Water Temperature (Maximum °C., 10 tubes, 0.240" zone)	50.6	44.9	51.2
Number of Scrams	0	0	3
Number of Purges	1	1	1
Helium Consumption (cu. ft.)	47,571	92,437***	65,216
Metal Discharged (tons)	16.97	10.3	25.58
**Inhours Gained (this month)	8	18	8
*Inhours Poisoned	285	453	386
*Inhours in Rods	81	70	56

* Month end figures.

** Does not include increased reactivity due to CO₂ in gas system.

*** Includes losses incident to unloading gas car.

PILE BUILDING

Outage Breakdown

<u>Date of Outage</u>	<u>Metal Discharged</u>	<u>Scheduled Maintenance</u>	<u>Unscheduled</u>	<u>Length of Outage (hours)</u>
1-4	B			20.6
1-4	D			19.5
1-5		F		25.4
1-12	F			21.6
1-14	B			19.5
1-21		B		18.4
1-22	F			20.7

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Outage Breakdown (Continued)

Date of Outage	Scheduled		Unscheduled	Length of Outage (hours)
	Metal Discharged	Maintenance		
1-25	D			23.7
*1-25			F	0.2
*1-25			F	0.2
*1-27			F	0.3
1-28	F			26.2

* Scrums caused by failure of No. 1 Safety Circuit.

Operating Experience

Production tests having operational significance are reported below:

105-81-P (Probe Tests of Top Central Tubes)
 The tubes listed below successfully passed the probes indicated.

1.490"

4674-F

1.480"

4582-B 4583-B
 4564-B 4565-B
 4672-B 4676-B
 4575-B 4674-B

105-114-P (Van Stone Flange Corrosion Test)

The following installations and inspections were made during January at the F Pile to determine their effects on Van Stone corrosion rates:

- (a) Sixteen galvanized front face nozzles were installed on tubes with partially corroded flanges. Aluminum covered steel shielding pieces were placed opposite the Van Stone flanges in these tubes.
- (b) Nineteen rear face galvanized nozzles were installed on tubes with partially corroded flanges. Aluminum covered steel shielding pieces were placed opposite the Van Stone flanges in these tubes.
- (c) An inspection was made of seven rear flanges which have been equipped with aluminum nozzles and aluminum dummies for one year. There was no indication of corrosion and the Van Stone flanges were in good condition. Four of these aluminum nozzles were placed on tubes with partially corroded flanges.
- (d) Inspection of the Mg alloy dummies in the rear of four tubes revealed excessive corrosion of the dummies.

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105-168-P (Replacement of Pile Helium Atmosphere with CO₂)
All three piles are now operating with CO₂ in the helium atmosphere. Changes which were made during the month and month end conditions are noted below:

100-B: The installation of unit motion instruments was essentially completed on January 21. The CO₂ concentration was increased in increments of 3% at 24 hour intervals beginning January 26 until a concentration of 25% was reached on January 31. Observation of operating data revealed no abnormal conditions. The CO₂ concentration at month end was 25%.

100-D: The concentration of CO₂ in the pile atmosphere was maintained at 40% throughout the month. No significant change in operating conditions occurred during the month.

100-F: The concentration of CO₂ in the pile atmosphere was maintained at 25% throughout the month. No significant change in operating conditions occurred during the month.

105-208-P: (Special Irradiation - Request No. 52)
Twenty-one pieces of S.R. 52 were discharged from tube No. 2072-F on January 21. An inspection of the pieces revealed no physical deformation. The remaining four tubes of S.R. 52 will be held in the F Pile for a total exposure of 160 days.

105-230-P: (Special Irradiation Request No. ANL-113)
Six pieces of radium were safely charged into tube No. 1482-B on January 14. Because of the high radiation levels involved, charging of this material required the manipulation of heavy containers on the charging elevator. These pieces were discharged directly from the casks into the process tube.

Because of the abnormally cold weather, the re-use of the barometric condensate water from 190 Buildings at the 182 Building reservoirs was started January 12 at B and January 14 at D and F Areas. This action was taken to prevent the formation of needle ice in the process lines. Results were satisfactory with an increase of approximately 2°C in the pile inlet water and no apparent channeling of the warmer water.

Forty tons of alpha-rolled triple-dipped metal were discharged during the month at a nominal concentration of 240 MWD/ton. Inspection of selected tubes of this material indicated that exposures at this level are satisfactory. This completes the test tonnage to be discharged at this concentration.

In view of these results, the program of increasing concentrations will be continued, and the next test tonnage will be discharged at nominal 280 MWD/ton concentration.

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Two stuck pieces were encountered in the B Pile during the month, (Tubes Nos. 4583-B and 1094-B). These tubes contained gamma-extruded 8" pieces and required higher than normal forces to discharge. Inspection of the charges revealed one warped piece from Tube No. 1094-B but no unusual pieces from 4583-B.

Mechanical Experience

All horizontal and vertical safety rods were operating satisfactorily at month end with the exception of No. 24 VSR at B Area and No. 27 VSR at D Area. Three vertical safety rods at F Area, Nos. 14, 20, and 27, failed to go completely in at the scrams which occurred during the last week of the month. These rods have performed satisfactorily during routine tests and when operated under power.

Vertical Safety Rod No. 27 at D Area is still inoperative. An eccentrically bored rod guide was installed on January 25 but tests at that time revealed that the rod would not pass through the guide without striking the side of the thimble. The rod and guide were removed and the thimble is temporarily shielded with a conventional guide and tip.

Vertical Safety Rod No. 24 at B Area was sticking at month end; this condition will be corrected at the next outage.

Other work of an unusual nature on safety rods during the month included:

1. New DR type stainless steel vertical safety rods and guides were installed in positions 10, 13, and 35 at F Pile and in position 10 at the D Pile.
2. A calibration of the new steel No. 11 rod at F Area indicated a holding capacity of 50 ih., which is in good agreement with the capacity of the old type rods.
3. "A" Horizontal Rod at F Area has given evidence of binding. It was removed from the pile on January 28 and the rough spots removed from the top of the rod and the kick plate. Some improvement in the operation of the rod was noted.

Four process tubes were replaced during the month as follows:

Tubes No. 4583-B and 1094-B were replaced on January 21 after having been discharged with difficulty on January 14 and 4, respectively.

Tube No. 2287-D was replaced on January 25. This tube had been temporarily out of production service in connection with studies covered under PT-105-174-P (Annealing of Graphite).

Tube No. 4561-D, which was removed in December because of a defective Van Stone flange and lack of sum clearance, was replaced on January 4 and recharged with regular metal.

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P Division

An inspection of the stainless steel chute liners in the discharge areas of all pile buildings revealed that the liners in A and B Chutes at F Area have pulled away from the anchoring bolts and split along the seam. This had allowed several metal pieces to be caught underneath the liner. Repairs at F Area will be made in February. The liner in A Chute at D Area showed some signs of shifting but revealed no opening which might allow pieces to get under the metal liner. Repairs will be made at the first opportunity. The chutes at B Area appear to be in satisfactory condition.

Two leaks were found in the 105-107 B Area effluent sewer lines. One is located 30 feet west of the south basin and the other about 400 feet upstream of the basin. Repairs have been postponed pending more favorable weather.

The neoprene seals on the front and rear far top corners at F Pile were found to be stretched tight. Repairs to these seals will be made in February.

Additional horizontal far side and front face tight wires, wye level targets, and micrometer brackets were installed at F Area, and remote indicating magnetic strain gauges and new wye level standards were installed at D Pile for use in evaluating carbon dioxide effect on graphite expansion.

File Development

The piping at the outlet water samplers at D Area has been improved by locating the rotameters on the outlet from the chambers. This has reduced the back pressure on the solenoid valves and has greatly reduced the incidence of stuck valves.

A new thin wall outlet water temperature thermohm for the L & N power recorder at F Area was installed in the line from the near riser in "A" sample room. This installation has decreased the time lag of the L & N recorder from three minutes to one minute and permits a more accurate control of the pile power level.

An eccentric vertical safety rod step plug has been fabricated which will move the center of a vertical safety rod thirteen-sixteenths of an inch off center. The plug is being held for use in any of the 100 Areas when needed.

In order to reduce the radiation beam now emerging from the gap between the far side biological shield and top of the unit at F Area, a mock up of this gap has been fabricated and tests are in progress to determine the most effective plan of action.

GAS PROCESSING BUILDING

Operations were normal.

SPECIAL HAZARDS

Readings on the top far neoprene seal at F Area increased during the month to 2150 mr/hr average as compared with 1350 mr/hr reported during December. The readings at this point on the D Pile have shown wide fluctuations, apparently due to rod configuration, but indicate no definite increase since November.

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A railway express car containing returned shipping containers from ORNL was received January 17. The containers and the inside of the car were found to be generally contaminated with readings up to $12\frac{1}{2}$ mr/hr. The containers and car were successfully decontaminated and the car returned to unlimited service.

300 AREA - METAL FABRICATION

Production for the month of January was as follows:

Billets Produced	31 tons
Rods Machined	119 tons
Bare Pieces Machined	78 tons
Acceptable Pieces Canned	81 tons

Melt Plant

The casting yields were as follows:

	<u>December</u>	<u>January</u>	<u>To Date</u> <u>1949</u>
Billet	61.3	63.6	63.6
Solid Metal	80.2	82.1	82.1

The use of a zirconite mold wash was discontinued this month because of the poor billet surfaces produced and the subsequent reduction in yield resulting from its application last month. Using untreated molds, the average mold life for January was six runs as compared with approximately four runs during the past three months. This increase resulted from improved stripping techniques. In addition, billet surface was improved and the casting yield increased appreciably.

The evaluation of crucibles fabricated from CS-312 graphite was continued. It now appears that little or no improvement in crucible life will be offered, by either the type having standard dimensions or the type having standard dimensions with inner sidewall tapered, over the standard AGR crucible because of cracking during burnout. No breakage has occurred while using the thick-wall and thick-wall tapered crucibles. These evaluations will be completed in February.

Nine charges of TXB, processed from pickled chips during the later part of the month, were cast with an average solid yield of 91.5%.

Machining

Machining yields were as follows:

	<u>% Yield</u>		
	<u>December</u>	<u>January</u>	<u>To Date</u> <u>1949</u>
	67.6	65.2	65.2

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P Division

Beginning with Lot No. 1168-S on January 4, all slugs were machined to a new "FM" dimension (1.350" \pm .001" diameter and 4.045" \pm .010" length).

The change was made to compensate for the dimensional changes of slugs, found to shrink an average of .040" in length and increase .008" in diameter, during transformation from the alpha to the beta phase in the bronze bath. In addition it has been possible to reduce the penetration of the can wall and non-seating rejects through the processing of the smaller diameter "FM" slugs. This change is outlined in Document No. HW-12072, "Authorization for Process Change - 300 Area." The machining yield on "FM" slugs machined to date is 64.6%. Arrangements are being made to have rods rolled to a nominal diameter of 1.440" so the machining yield for "FM" slugs will be comparable to the yield for "FA" slugs.

A total of 1725 slugs, machined to "FA" dimensions last month from rods produced by a combination forging and rolling process, were remachined to "FM" diameters. These slugs are being processed under Production Test No. 314-58-M, ("Fabrication of Slugs from Forged Uranium"), to evaluate pile behavior.

Thirty-six rods were machined to "FM" dimensions in conformance with Production Test No. 314-60-M, ("Fabrication of Slugs from Uranium Rolled at Different Finishing Temperatures"). This test is to determine the effect of rolling temperatures on the dimensional stability of slugs during canning and in the piles.

Chip Recovery

The Chip Recovery yield was as follows:

		% Yield	
<u>December</u>	<u>January</u>	<u>To Date 1949</u>	
92.3	90.3	90.3	

The entire Chip Recovery Process was operated eleven shifts with the press being operated an additional 17 shifts. A total of 41,651 pounds of TXB was produced in January.

The additional facilities necessary to pickle chips on one of the existing pickling lines in the Canning Area was completed on January 13. Initial operation indicated that an alteration of the exhaust hood over the rinse tank was necessary to remove all of the NO₂ fumes. This was completed on January 18. Approximately 5,000 pounds of chips have been pickled and briquetted to date with an average pickling loss of 4.5%. Although this provides only a temporary means of pickling chips, it is estimated that it will be possible to pickle about one-half of the TX produced.

The material burned in the oxide burner was as follows:

		Weight Out - Pounds	
<u>December</u>	<u>January</u>	<u>To Date 1949</u>	
14,458	15,882	15,882	

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Operations were normal.

Canning Operation

The canning yield was as follows:

	% Yield		To Date 1949
	December	January	
	87.1	89.8	89.8

Canning rejects, by cause, were:

	% Total Canned (4")		To Date 1949
	December	January	
Non-Seating	3.5	1.4	1.4
Marred Surface	3.0	3.1	3.1
AlSi on Outside of Can	0.7	0.9	0.9
Frost Test	2.4	1.9	1.9
Bad Welds	0.9	0.8	0.8
Miscellaneous	<u>2.4</u>	<u>2.1</u>	<u>2.1</u>
	12.9	10.2	10.2

The canning of "FA" dimension slugs was continued until January 6, at which time the canning of "FM" dimension slugs was begun. The yield for "FM" slugs canned this month was 90.3%.

Marred surface and frost test rejects continued to be high, although the over-all canning yield for January was 2.7% higher than last month. In order to reduce marred surfaces, a 100% inspection was made of all pieces at each operation over a period of four days to determine which operations were out of control from a statistical standpoint. The results indicated that the larger percentage of marred surfaces occurred at the marking fluoroscope, facing lathes, and welders. Closer controls have been established on these operations and a significant reduction in marred surfaces is now apparent.

On January 14 a canned piece taken from truck No. 7 on G Line was found to be incompletely transformed. The entire truck load of 112 pieces was rejected.

A total of 1722 slugs was canned in conformance with Production Test No. 314-58-M, ("Fabrication of Slugs from Forged Uranium".)

Bronze furnace performance has continued to show improvement. Furnaces 1A, 3A, and 4A were overhauled once and 2A twice during January.

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The following special canning was done during the month:

<u>Request No.</u>	<u>Contents</u>	<u>Number of Pieces</u>
S.R. 65-5	Lithium Aluminum Alloy	276
S.R. 65-6	Lithium Aluminum Alloy	332
O.R.N.L.-112	Uranium (SX Slugs)	6

In addition 80 papoose slugs, 400 poison slugs, and 3324 lead slugs were canned.

Slug Recovery Operation

	<u>% Recovered</u>		<u>Average Weight--Lbs.</u>	
	<u>January</u>	<u>To Date</u>	<u>January</u>	<u>To Date</u>
		<u>1949</u>		<u>1949</u>
Z Slugs	79.0	79.0	3.911	3.911
X Slugs	16.9	16.9	3.857	3.857
Rejects	<u>4.1</u>	<u>4.1</u>	<u>--</u>	<u>--</u>
	100.0	100.0		

The facilities for pumping waste caustic from the sleeve preparation line and the slug recovery operation to a tank truck were completed January 31. All waste caustic will now be transferred to the old retention pond.

Inspection and Testing

Autoclave rejects were as follows:

	<u>December</u>	<u>January</u>	<u>To Date</u>
			<u>1949</u>
	.27/M	.02/M	.02/M

A single autoclave failure occurred during January. This substantial decrease in failures is apparently the result of improved inspection of pieces prior to autoclaving.

The initial 100 canned "FM" slugs were tested for penetration by machining .010" from the can wall. No penetration was evident. The removal of an additional .005" showed only slight penetration on two pieces. These pieces were canned with the AlSi canning bath temperature regulated between 594°C and 596°C. Beginning on January 17, the canned "FM" slugs selected for daily penetration tests were checked for penetration after .010" had been machined from the surface and again after an additional .005" was removed. One piece has been found to date that was penetrated within .010" of the outer can wall and three to within .015".

Six pieces of ANL-113, containing radium, were bubble tested on January 17, using a special remote-controlled apparatus. All pieces were found to be welded satisfactorily.

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The "As Received" quality of cans, caps, and sleeves was as follows:

	% Usable - 4"		To Date 1949
	December	January	
Aluminum Cans	95.2	96.7	96.7
Aluminum Caps	96.8	92.3	92.3
Steel Sleeves	98.4	96.9	96.9

Thirty additional aluminum cans were received from the Victor Manufacturing Company for inspection prior to their starting on a contract for 100,000 cans. Only eleven of these cans were acceptable; the remainder were rejected because the minimum wall thickness was from .001" to .004" below specifications.

305 Area Test File

The 305 Area Test File was operated on a one-shift, five-day week schedule during January. A total of 52 tests was run on canned slugs, 37 on billet eggs, 516 on graphite, and the following special work requests:

<u>Request No.</u>		<u>No. of Tests</u>
49	To obtain absorption cross section of Stoddard Solvent for 100 Area use.	1
50	To obtain dih of a series of specially treated graphite blocks.	6
51	To compare reactivity of 2S aluminum with commercially available magnesium.	4
52	To test certified armor plate paint #219 for reactivity characteristics.	4
53	To irradiate a sample of titanium.	1
54	Coincidence calibration of counters.	1
55	Coincidence calibration of counters.	1

The average dih on six special tests run on "FM" dimension canned slugs was -.168 and the dih on regular tests run to date was -.198.

Special Hazards

No unusual conditions developed during the month.

Development

Canning Furnaces: In order to conserve electricity during the peak load period, the controllers on all canning furnaces are being set to control metal temperatures rather than element temperatures. This revised method has resulted in reducing the peak load by approximately 200 KW.

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S DIVISION

JANUARY, 1949

OPERATING SECTION

I. GENERAL

Seventy-five batches were started in the Canyon Buildings and seventy batches were processed through the Concentration Buildings and the Isolation Buildings. The average purity for the completed batches was 98.9 percent.

The over-all material balance for the T and B Plants (including the Isolation Plant) averaged 98.3 and 101.7 percent, respectively, for a combined average of 99.9 percent. Waste losses for the two plants averaged 2.6 percent.

Canyon and Concentration Building Production Performance Data -
(1-1-49 - 1-31-49, inclusive)

	<u>B Plant</u>	<u>T Plant</u>	<u>Combined</u>
Number of charges started	35	40	75
Number of charges completed	33	37	70
<u>For completed charges:</u>			
Percentage of starting product in waste:			
This month	2.7(a)	2.5(a)	2.6
Last month	2.4(b)	2.8(b)	2.6
Cumulative to date	4.7(c)	4.5(c)	4.6
Percentage of starting product recovered:			
This month	96.7	91.5	94.0
Last month	96.6	93.2	94.9
Cumulative to date	97.2	92.3	96.4
Percentage of starting product accounted for:			
This month	99.4	94.0	96.5
Last month	99.0	96.0	97.5
Cumulative to date	101.9	99.8	100.9
Gamma decontamination factor (Log.)			
This month	7.73	7.69	7.71
Last month	7.67	7.74	7.71
Cumulative to date	7.34	7.32	7.33

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(a), (b), (c): Include waste from processing recycle. The recycle wastes are estimated as: (a) 0.017%-T Plant; 0.012%-B Plant.
 (b) 0.020%-T Plant; 0.013%-B Plant. (c) 0.124%-T Plant; 0.0081%-B Plant.

Isolation Building Performance Data (1-1-49 - 1-31-49, inclusive)

	% of Incoming Product			Material Balance
	Prepared for Shipment	Recycle	Losses	
Average for this month	97.2	6.04	0.07	103.3
Average for last month	94.6	5.92	0.04	100.6
Average to date	96.0	4.60	0.09	100.7

II. ORGANIZATION AND PERSONNEL

Number of employees on payroll:

Beginning of month	310
End of month	335
Net increase	25

Remarks: The changes which occurred in the S Division are listed below:

21 transfers from other divisions (10 Monthly Roll, 11 Weekly Roll)
 3 terminations (all Weekly Roll)
 1 transfer to another division (Weekly Roll)
 8 new hires (all Weekly Roll)

Changes in Supervisory Organization:

A. B. Snyder, D. C. Ashbaugh, B. F. Campbell, G. R. Harr, G. A. Halseth, J. F. Newland, R. W. Waldsmith, W. E. Gehring, G. M. Hesson and A. C. Morgenthaler were transferred from the Technical Division to the S Division as Supervisors-in-Training in preparation for the operation of new facilities.

C. B. Foster, Shift Supervisor, B Plant, was promoted to Senior Supervisor, B Plant.

W. Watson, Jr., Shift Supervisor, T Plant, was transferred to the 234-5 organization on loan to the Technical Division.

O. V. Smiset, formerly Assistant Chief Supervisor, Isolation Plant, assumed the duties of Contact Engineer for the proposed Rala Project.

F.A.R. Stainken, formerly Assistant Chief Supervisor, T Plant, assumed the duties of Assistant Chief Supervisor, T Plant and Isolation Building.

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III. AREA ACTIVITIESPRODUCTION PERFORMANCET and B PlantsVolume Reduction - Production Test 221-T-13

Evaluation of Production Test 221-T-13, involving the reduction of process volume at the end of the extraction step was continued at both plants with all runs being processed at 30 percent volume reduction. At T Plant decontamination factors through the Canyon Building were somewhat lower than desirable with resolution of the problem under study at month end. Over-all decontamination factors through the Concentration Building, however, were entirely satisfactory. At B Plant waste losses and decontamination factors were normal.

Extraction Waste Losses

With one exception all runs were processed through the extraction step at both plants in accordance with standard procedures. Extraction waste loss experience for the month is tabulated below:

	<u>T Plant</u> (39 runs)	<u>B Plant</u> (31 runs)*
Average original waste analysis	0.77%	0.78%
Number of runs reworked	36	21
Average throw away loss	0.38%	0.60%
Number of runs 100-B material	5	19
Average original waste analysis (December)	0.87%	0.67%
Average original waste analysis (November)	0.74%	0.60%
Average original waste analysis (October)	0.54%	0.44%

The cause underlying the high original extraction waste analysis has not been entirely explained. As mentioned in last month's report all material processed from the 100-B reactor since its reactivation has been reworked in the extraction step because extraction waste losses have been higher than normal. Investigation of the possibility of the existence of an alpha emitter other than normal plutonium is being continued by the Technical Divisions. Although no good correlation exists between the MWD/T level of the material processed and the waste analysis, the possibility remains that the increase may be due in part to the slightly higher enrichment of the metal now being processed. The average MWD/T level of the material processed through extraction during the month was 210.

* Run B-9-01-B-2 was excluded from the above average. This material was comprised of the metal heel removed from the 4-5L dissolver prior to its removal from service upon failures of the pot coils.

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The original extraction waste analysis of this material was 79.2 percent and is thought to have been caused by the presence of an excess of nitric acid which was necessary to effect the complete removal of the metal heel. The material was reworked by recentrifugation following a second reduction with an excess of sodium nitrite. The final waste loss was 0.76 percent.

First Decontamination Cycle By-Product Waste Losses

A T Plant difficulty with somewhat erratic and higher than normal first cycle by-product waste losses made it advisable to discontinue the practice of settling the precipitate to permit cake washing in the precipitator and to return to the original practice of agitating the slurry in the precipitator and washing the cake during centrifugation. This change has resulted in a reduction in waste losses with an accompanying reduction in decontamination as shown by the data below. Further investigation is being made in order to increase the first cycle decontamination. Over-all decontamination through the Concentration Building has not been affected.

	<u>13-4BP</u>	<u>17-4P Log DF</u>
15 runs with settling	1.16%	4.83
20 runs with agitation	0.95	4.09

Production Test No. 224-T-12 - Use of Single Distilled HF

In order to evaluate the savings possible through the use of single distilled anhydrous hydrofluoric acid instead of the double distilled acid now in use, a test involving ten batches in which single distilled material furnished by the Harshaw Chemical Company was completed. There was no effect upon the waste losses in either the lanthanum fluoride by-product or product sections. One cylinder of the test shipment has been returned to the vendor for analysis and a second cylinder has been delivered to the Technical Divisions for analysis on this site. Adoption of the single distilled material which will effect a savings of approximately \$10,000 per year will depend upon assurance by the Harshaw Chemical Company of their ability to furnish material of equivalent or better quality in carload lots.

Isolation Building

Production Test 231-8 - Reduction of Process Time Cycles

Evaluation of Production Test 231-8 involving a reduction in the first and second purification time cycles was completed during the month. The three phases of the test adopted involve (1) a reduction in the peroxide addition time, (2) a reduction in the plutonium peroxide precipitate settling time and (3) a reduction in the strike digestion time. As a result of the test, a reduction in the first purification

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S Division

cycle of from twelve to ten hours and a reduction in the second purification cycle of from ten and one-half to nine hours has been effected in Cell 3. The advantages of the test will be extended to Cell 4 providing no adverse effects develop following a more complete demonstration in Cell 3.

Retain Samples

In accordance with Document No. HU-11572 and as approved by the AEC in Document GEH-13,729, the practice of taking a retain sample of the product from each run processed was discontinued with runs T-9-01-D-6 and 13-9-01-B-3 until a satisfactory retain sample container and a satisfactory analytical method can be developed. Present retain samples are of no value insofar as providing a method of confirming the final product assay is concerned. Pending the development of the retain sample container and analytical method, one retain sample will be taken of the material from each 100 Area push plus those samples specifically requested by the 200 Area Plant Assistance Group of the Technical Divisions.

WASTE DISPOSAL

241-TX Tank Farm - Project C-163

Progress has continued on the installation of a permanent fence around the tank area on the subcontractor's phase (Part II) of Project C-163.

In the General Electric phase of the work (Parts I and III) overall completion is 87 percent. Six hundred twenty-five feet of encasement were poured and approximately 4,900 feet of stainless steel piping were installed between the 154-U and 155-TX diversion boxes. There was some painting of encasement cover blocks and four coats were applied to the 154-U and 155-TX diversion box pipe pits.

First Cycle Waste - T Plant

First cycle waste storage tank, X-106-T, was filled following the waste of Run T-9-01-D-21. The jumper changes necessary at diversion boxes 153-TX, 154-TX and 155-TX were effected and the waste was diverted to tank X-109-TX. This inaugurated the use of the 241-TX Tank Farm Area for waste storage.

Cribbing of Second Cycle Waste - B Plant

The disposal of second cycle waste supernate from tank X-106-B which was started on 12-14-48 continues. To date, 458,000 gallons have been jettied to the underground crib from this tank.

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DECLASSIFIEDIsolation Building Sump Tank Installation - Project C-305

The project covering the installation of an additional sump tank in the Isolation Building to permit the segregation of process wastes from laboratory wastes for control purposes was completed during the month when the drain header from Coils 4, 5, 6-A, 6-B and 6-C was tied into the new tank.

Waste Status

The status of the Waste Storage Areas as of January 31, 1949 is shown in the following table:

B Plant

Bldg. 241 Tanks	Waste	Percentage Full			Reserve Capacity in Batches to Process			
		B	C	BX	B	C	BX	Total
x101,2,3	Metal	100	100	100	0	0	0	0
x104,5,6	Metal	-	100	12.5	-	0	236	236
x201,2,3,4	Metal	0	100	-	-	0	-	0
x107,8,9	Metal	-	-	-	-	-	-	0
x107,8,9	1st Cycle	100	100	29.2	0	0	313	313
x110,11,12	1st Cycle	-	100	-	-	0	-	0
x104,5,6	1st Cycle	-	-	-	-	-	-	0
x104,5,6	2nd Cycle	31.0	-	-	438	-	-	438
x110,11,12	2nd Cycle	100	-	0	0	-	636	636

T Plant

Bldg. 241 Tanks	Waste	Percentage Full			Reserve Capacity in Batches to Process			
		T	U	TX	T	U	TX	Total
x101,2,3	Metal	100	100	0	0	0	379	379
x104,5,6	Metal	-	100	0	-	0	379	379
x201,2,3,4	Metal	0	0	-	-	37	-	37
x107,8,9	Metal	-	47.8	-	-	137	-	137
x107,8	Metal	-	-	0	-	-	252	252
x107,8,9	1st Cycle	100	-	-	0	-	-	0
x110,11,12	1st Cycle	-	100	-	-	0	-	0
x104,5,6	1st Cycle	100	-	-	0	-	-	0
x109,10,11,12	1st Cycle	-	-	1.8	-	-	805	805
x115,18	1st Cycle	-	-	0	-	-	410	410
x104,5,6	2nd Cycle	-	-	-	-	-	-	-
x110,11,12	2nd Cycle	84.4	-	-	91	-	-	91
x113,14,16, 17	2nd Cycle	-	-	0	-	-	1123	1123

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MECHANICAL PERFORMANCECentrifuge Failure - B Plant

The skimmer in the B Plant Section 7 extraction centrifuge which was an original equipment item and was therefore not equipped with a skimmer in the plow position failed on January 24, 1949 and was replaced by standard remote control methods. The new machine was equipped with dual reinforced skimmers. Excessive radiation prohibits repair to the machine which failed.

Hydrofluoric Acid Scale Tank - T Plant

While using the cylinders of single distilled hydrofluoric acid, the piping assembly at the 224-T hydrofluoric acid scale tank was dismantled and all valves closing against tank or line pressure were replaced with similar valves which had been pressure tested. The scale mechanism was overhauled and the pressure release valve and rupture disc were replaced.

Inspection of the piping showed it to be in excellent condition.

SPECIAL HAZARDSStack Gas Contamination

Operation of the sand filters was satisfactory during the month, there being no decrease in efficiency or through-put. Installation of an improved sampler in the dissolver off-gas lines at B Plant definitely indicates that the source of the bulk of the recontamination mentioned last month is almost wholly in the activity associated with the dissolver off-gas streams.

Experimental results using No. 55 fiberglass as filter medium indicate that this media has marked advantages over sand. The design of fiberglass filters for installation in the off-gas lines is progressing rapidly. Provisions are being made in the design which will permit the future installation of silver nitrate iodine removal facilities and facilities for the removal of active rare gases.

DESIGN AND CONSTRUCTION CONSULTANT'S SECTIONRala Program

The Atomic Energy Commission requested in Document GEH-13,324 that a project proposal be submitted to cover the construction of a permanent Rala Plant at Hanford and that the feasibility of using the head end of T Canyon to house the plant be studied. The Design and Construction Divisions have been requested by the Manufacturing Divisions to assist in the evaluation of the feasibility of using the head end and to prepare the project proposal. O. V. Smiset has been designated as Contact Engineer.

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DECLASSIFIEDRedox Development

During the past month initial construction work was started on the Redox Test Plant Building (201-R) in the 200 West Area. Construction fences have been completed and work is in progress on a portion of the building foundation and the column pits. The removal of the 10 ton crane from the U Plant has been completed and temporary construction tie-ins to some existing service lines have been made.

Consideration of a number of methods whereby vertical columns may be installed in a building designed primarily for mixer-settlers has led to the selection of an installation method whereby the upper portions of some columns are allowed to project through the cell cover blocks into the canyon deck area. Special shields will be provided in these cases. Difficulty was also encountered in locating some column feed tanks in a position giving sufficient head to insure no siphoning of process liquids into cold areas in the event of line breakage or complete pump failure. While mechanical devices could be installed to prevent such siphoning, it was recommended that the installation should be inherently safe design-wise and should not depend on safety devices alone.

Working models of the scaled down Hanford connectors as developed by the Crane Company were demonstrated in the presence of Design and Manufacturing Division representatives in Chicago. The present design of the connector appears acceptable from a general mechanical standpoint. Further testing will be continued. The development of scaled down connectors was necessitated by the large number and small size of the lines required for the Redox Test Plant.

In lieu of approval by the Manufacturing Divisions of specifications for the Redox Main Plant crane, the Architect-Engineer was requested to study the economic and practical aspects of utilizing all or portions of the spare C Building crane in the 202-S Building. Results of this study are not as yet available.

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POWER DIVISION
JANUARY 1949

GENERAL

Unusual cold weather during most of the month necessitated that considerable precautionary measures be taken to facilitate continuity of operations. In spite of these measures, considerable difficulty was experienced in unloading frozen coal, and in the operation of the barometric condensers. A minimum outside temperature of -11° F. and a minimum river water temperature of 32.7° F. was reported on January 25 and January 26, respectively, in the 100-B Area.

Through the coordinated efforts of the Power, Transportation, and Purchasing Divisions, the receiving and spotting of hopper bottom cars in the 100 B, D, and 200 Areas, resulted in the elimination of the crane and operator during the month at these locations.

PERSONNEL AND ORGANIZATION

Number of employees on payroll	Jan.
Beginning of month	448
End of month	<u>458</u>
Net Increase	10

The indicated net increase was the result of the hiring for 100-B Area, two supervisors and eight operators, the transfer into the Division of four operators, the transfer from the Division of one supervisor, and the termination of three operators.

100 AREAS

To retard ice formation in the reservoir pump house suction flumes the re-use water systems were put into service on January 12 in the B Area, and on January 14 in the D and F Areas. This change resulted in an increase in filtered water temperature of approximately 2.5° C.

Between January 3 and January 12, four 2000 H.P. synchronous motors were put into operation in the F Area and three in the D Area. These motors are being operated without load and are over-excited for power factor improvement.

The No. 8 filter plant supply pump in the D Area failed in service on January 15. Investigation revealed a stone in the pump casing, which had damaged the impeller. Repairs have not been completed.

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Power Division

On January 25 in the F Area, steam pressure dropped 25 psi below normal when the impulse pressure line to the master controller froze. To prevent a recurrence of this incident, the building doors adjacent to the master controller have been sealed and heat provided in the master controller panel.

200 AREAS

Repairs were completed on the 8-inch ash removal line at the power house which ruptured due to freezing, in the East Area on January 4.

A new temporary raw water line from the East Area serving the central concrete batch plant for the Construction Division was put into service on January 4 with an approximate flow of 50 gpm to prevent freezing. On January 25 this line was reported frozen. Thawing operations were immediately started and were completed January 31.

Due to increased steam demand in the West Area it was necessary to put a second unit into service on January 3.

On January 3 it was necessary to effect a complete steam outage of service for the entire East Area for approximately two and one-half hours to replace a blown gasket on the main steam header at the power house.

The installation of a new backwash pump in the West Area was completed, tested, and accepted for operation on January 16.

Excavation for a new tile field for the septic tank near the East Area badge house was started on January 10.

Installation of the new No. 4 Erie City boiler was completed with the exception of minor items, on January 31. It has been dried out and boiled out, and at the month's end was ready for capacity and efficiency tests prior to final acceptance for operation at an early date.

The installation of the new sedimentation basin, filter and pumps in the West Area is nearing completion at the month's end.

On January 27 a new 10-inch 225 psi steam connection for the Redox Test Plant was made near the West Area "U" plant.

300 AREA

On January 23 an incident occurred in the Cold Semi-Works Building which ruptured air, steam and water service lines, and resulted in unusual demands upon power facilities. Power service to this building was shut down until repairs are completed.

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Power Division

On January 11 the No. 4 well pump discharge line was frozen and ruptured. This line has been drained and blanked to prevent a recurrence.

WHITE BLUFFS

Ice in storage at the month's end is 2,934,000 pounds. All operations were normal.

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POWER DIVISION STATISTICS

From January 1, 1949

Through January 31, 1949

		<u>A R E A S</u>		
		100-B	100-D	100-F
<u>RIVER PUMP HOUSE (Building 181)</u>				
River stage	Feet above sea level	(max) 385.9	378.5	364.8
		(min) 385.4	378.4	364.6
		(avg) 385.7	378.4	364.7
River temperature	avg. °F.	35.1	36.4	36.7
Water pumped to Reservoir	gpm avg. rate	37859	40629	38004
Water pumped to Refg. Condensers	gpm avg. rate		0	0
<u>RESERVOIR (Building 182)</u>				
Water pumped to Filter Plant	gpm avg. rate	33009	35620	33490
Water pumped to Condenser System	gpm avg. rate	3032	3328	3548
Water pumped to Export System	gpm avg. rate	1818	1658	966
	gpm normal rate	4442	4442	4442
Chlorine added at #1 inlet	pounds	2847	9300	0
<u>FILTER PLANT (Building 183)</u>				
Filtered water to Power House	gpm avg. rate	341	342	314
Filtered water to Process	gpm avg. rate	31132	29910	29968
Filtered water to Fire & Sanitary	gpm avg. rate	89	187	125
Chlorine used in Water Treatment	pounds	9076	3900	10000
	ppm avg.	.94	.91	.80
Lime used in Water Treatment	pounds	12780	9750	12000
	ppm avg.	1.0	.7	1.0
Coagulant used in Water Treatment	pounds	106682	127500	138000
	ppm avg.	8.7	9.6	11.1
Raw Water pH	pH avg.	8.16	8.1	8.2
Finished Water pH	pH avg.	7.53	7.45	7.40
Alkalinity, M. O. - Raw	ppm avg.	60	62	58
	Finished	ppm avg.	58	54
Residual Chlorine - Settled	ppm avg.	.22	.21	.25
	Finished	ppm avg.	.11	.13
Iron - Raw	ppm avg.	.04	.04	.04
North Clearwell	ppm avg.	.02	.02	.02
South Clearwell	ppm avg.	.02	.02	.02
Hardness - Finished	ppm avg.	78	68	67
Turbidity - Raw	ppm avg.	2.3	2.0	2.0
Filtered	ppm avg.	0	0	0
<u>REFRIGERATION (Building 189)</u>				
Refrigeration produced	Tons per day	-	-	-
Temperature, Process Water In	avg. °F.	-	-	-
Temperature, Process Water Out	avg. °F.	-	-	-

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Power Division

From January 1, 1949

Through January 31, 1949

POWER HOUSE (Building 184)

Steam generated - Total	M pounds	118671	124372	117880
Average rate	lbs./hr.	159504	167166	158440
225 psi Steam to plant (est.)	M pounds	103254	108271	102969
15 psi Steam to plant (est.)	M pounds	1176	1176	765
Coal consumed	Tons	8851	9895	8668
Coal in storage (est.)	Tons	34638	42049	41578

DEAERATOR PLANT (Building 185)

Water flow	gpm avg. rate	30882	29660	29718
Chemicals consumed:				
Dichromate	pounds	24039	22000	21000
Sodium Silicate	pounds	118650	208360	212000
Chemical Analysis:				
pH	pH avg.	7.62	7.65	7.60
Dichromate	ppm avg.	1.9	2.0	2.0
Silica	ppm avg.	2.5	5.4	5.1
Dissolved Iron	ppm avg.	.02	.02	.02
Free Chlorine	ppm avg.	.09	.15	.15

PROCESS PUMP ROOM (Building 190)

Total water pumped	gpm avg. rate	30707	29485	29543
	gpm normal rate	31792	30970	31320
Water temperature	avg. °F.	40.2	40.6	40.9

VALVE PIT (Building 105)

Chemicals consumed:					
Solids	pounds	1600	2000	3800	
Chemical analysis:					
A, B, C, & D Headers					
Standard Limits					
pH	7.5-7.8	pH (max)	7.65	7.70	7.65
		(min)	7.59	7.60	7.60
		(avg)	7.61	7.65	7.60
SiO ₂		ppm (max)	3.0	6.0	6.0
		(min)	2.0	5.0	5.0
		(avg)	2.6	5.5	5.5
Na ₂ Cr ₂ O ₇	1.8-2.2	ppm (max)	2.0	2.0	2.0
		(min)	1.8	1.9	1.9
		(avg)	1.9	2.0	2.0
Iron		ppm (max)	.02	.03	.03
		(min)	.01	.01	.01
		(avg)	.02	.02	.02
Chlorides		ppm avg.	1.4	1.4	1.4

Power Division

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From January 1, 1949

To February 1, 1949

200 A R E A S

Reservoir (Building 282)

		<u>200-E</u>	<u>200-W</u>
Raw water pumped	gpm avg. rate	2120	2321

Filter Plant (Building 283)

Filtered water pumped	gpm avg. rate	405	510
Chlorine consumed	lb.	202	200
Alum consumed	lb.	2043	2160
Chlorine Residual - Sanitary Water ppm		.6	.625

Power House (Building 284)

Steam generated - Total	M lb.	32314	54663
Steam generated - Ave. rate	lb./hr.	43433	73471
Coal consumed (Est.)	tons	2339	3744
Coal in storage (Est.)	tons	14603	11335

300 A R E A

Power House (Building 384)

Steam generated - Total	M lb.	22,699
Steam generated - Avg. Rate	lb./hr.	30,510
Coal consumed - Total (Est.)	tons	1,662
Coal in Storage (Est.)	tons	1,989

Sanitary and Fire System

Well water pumped - Total	gal.	30,387,400
Well water per day	gal/day	980,239
Well water	gpm avg. rate	681
Chlorine residual	ppm	.57

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INSTRUMENT DIVISION

MONTHLY REPORT

JANUARY, 1949

GENERAL

In compliance with a specific request by the 105-DR Construction Division the operating personnel assigned to Instrument Acceptance Test Procedures were returned to a six-day week for the weeks ending January 16, 23, and 30. The group was returned to a five-day week with the announcement of a new complete withdrawal date, approximately five weeks hence. The instrumentation of 100-DR is practically complete. Some test work remains and a few miscellaneous items of installation are yet to be done.

The overall work load in the 300 Area shops continues to be abnormally high. Recently established priorities on equipment required for the 200 Area construction program preclude the acceptance of additional orders for immediate delivery before March 1, 1949.

100 AREAS (Reference Report HW-12337)

The vertical traverse completed on tube #4674, 100-D Area, on January 4, 1949, showed a maximum deflection of $3 \frac{9}{32}$ at 15 feet from the inlet Van Stone joint.

The installation and calibration of the G. E. inductance strain gauges was completed in 100-D Area.

Frozen instrument air lines caused some trouble in the inner and outer instrument rooms and the gas make-up equipment.

Three new pumps at 190-D have been satisfactorily put in service supplying process water to 105-D.

The process tube ion chamber in tube #4453 at 100-F failed on January 23, 1949, after approximately three months operation. Examination of the faulty chamber showed the lucite insulation had completely deteriorated, apparently due to neutron bombardment. Previous experience is lacking on the use of insulating materials in high neutron flux.

The new thermohm installation was completed and connected to the Leeds and Northrup power level recorder. Tests made during a 25 M.W. load drop showed an improvement in reduction of time lag in reading, following rod changes.

200 AREAS (Reference Report HW-12328)

Temperature recorders on the heat treating furnace, Building 273-E were originally provided with a range of 1000°F. One Leeds and Northrup eight point recorder was converted to a range of 400° to 2400° as requested.

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Instrument Division

200 AREAS (Cont.)

New poppy probes of Health Instrument Division design specifications were received. They have four lucite insulators that tend to shatter when cleaned with alcohol. It has been found heat treatment will relieve the stress in some instances.

Erratic results appeared in the counting rooms due to the recent frequency change of the power circuit effecting the electric timers.

300 AREAS (Reference Report HW-12339)

C-171 - Alterations to Crane Periscopes

This project was closed out with the exception of 400 hours. This time was allowed for the conversion of items removed during the alterations, which will be used as spare parts.

C-219 - Additional Health Instruments

Operating tests, of the prototype, of the probe-type Cutie Pie meter indicate that it is satisfactory. Preliminary approval has been received for the manufacture of eleven additional units.

Work on 180 bent pencil probes has been stopped as requested by the Health Instrument Divisions.

Assembly and shop checks completed on eight five-fold beta counters received from Technical Associates Inc., show that with minor alterations these instruments were ready for immediate service.

C-220 - Optical Shop Building 3708

Construction work is complete with the exception of minor additions and alterations. The optical group has moved from the 700 Area to the new building. Several weeks will be required to make efficient use of the new facilities.

Development Section

Cover Motion Recorder for 100 Areas - The temporary indicator was replaced with the permanent Bailey recorder on January 25, 1949. Information, to date, indicates the performance of the instruments is satisfactory.

Graphite Grain Detector - Design, manufacture and circuit alignment was completed and the instrument was delivered to 101 Building. Favorable reports have been received on its field operation.

Scale and Balance Section

Weighing problems of the 231-W Building were investigated during this period. Erratic reading of a gravity gram bench scale indicate that proper results cannot be obtained when the unit is consistently used for weighing batches in excess of normal capacity.

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Instrument Division

DESIGN AND CONSTRUCTION (Reference Report HW-12342)

C. F. Edens, who has been on loan from the DuPont Company, left on January 21, 1949, to return to Belle, West Virginia.

Schenectady advises they would require an appropriation of \$8000 to \$15,000 to conduct a feasibility study for development of a rapid scanning device for process tube exit temperatures.

Acceptance test procedures for all instruments for the 234-5 Building have been prepared. The operations group have begun acceptance test work on the new boiler instruments in the 234-W Building.

All thermocouples for 100-DR have been installed and checked. 100 spare thermocouples were tied off at the top of the rear face of the unit to replace any that prove defective.

The explosion on January 23, 1949, at the 321 Building, caused cessation of operations in this building. One instrument man on duty in the building at the time was uninjured. As far as can be determined there was little, if any damage, to any of the instrument installations.

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MAINTENANCE DIVISION

January, 1949

GENERAL:

A major injury occurred to a maintenance mechanic on January 13 in the 100-D Area carpenter shop when the left index finger of the mechanic's hand came into contact with a revolving power saw. A second major injury occurred to a maintenance shift mechanic on January 23 as a result of an explosion in the 321 Building, 300 Area.

As of January 31 the total Maintenance Division backlog amounted to 26550 man-days of uncompleted work of which 18191 man-days are Minor Construction work. This represents a decrease of 9% under the total for December.

100 Areas:

Replacement tubes were installed at positions #4583 and #1094 in the "B" Area pile. There was evidence that the damage to the tubes that were removed was caused during the process of removing stuck metal pieces. In the "D" Area pile tubes #4561 and #2287 were replaced due to damage to the vanstone flanges.

Due to a corrosive condition #10 vertical safety rod and rod guide, "D" Area pile, were removed and replaced with a stainless steel rod and chrome plated rod guide. For the same reason similar replacements were made on vertical safety rods #10 and #13 in the "F" Area pile.

Barometric condensers #7 and #16 in the Process Water Pumping Plant and #5 in the Reservoir Pumping Plant in the "B" Area were damaged due to the freezing of backed up condensate caused by frozen drain lines.

Reuse pumps #1 and #2 in the Process Water Pumping Plant, "B" Area, and #2 and #3 in the "D" Area were reactivated at the request of the Power Division to permit the pumping of warm condensate to the reservoir flume to raise the reservoir water temperature above the freezing point.

200 Areas:

Construction work was started on the decontamination stations in the 200 East and West Canyon Buildings.

Because of corrosion, replacement was made to the bottom of the 407 RB stainless steel scale tank in the operating gallery of the 221-T Canyon Building.

The #2 spare cell in the Isolation Building was prepared for operation.

40' of 8" ash pump discharge line required replacing due to failure caused by freezing.

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A new 5 GPM water still was installed in the Canyon Building, 222-B, replacing a still which was corroded to an extent which precluded its further use.

Eighteen cell pipe connectors were fabricated in the East Area shops for use as replacements in "B", "T", and "U" Canyon Buildings.

The re-bricking of the heat treating furnace was completed.

300 Area:

Construction work was completed on the Optical and Electrical shop during the month.

Construction was started on an area Telephone Exchange Building.

A complete chip pickling plant was installed in the 313 Building which included changes to facilities such as a new acid pump, stainless steel piping, and ventilator renovations.

Following the explosion in 321 Building on January 23 assistance was rendered in the form of restoring heat, closing openings, and protecting generally, in a temporary way, against the freezing weather which prevailed at the time.

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ELECTRICAL DIVISION

JANUARY, 1949

GENERAL

The backlog of unfinished work as of January 31, 1949 is 11,785.4 mandays, a decrease of 653.8 mandays from the previous month end. This reduction was mainly in the backlog of distribution and telephone work, both of which remain unusually heavy.

The attached load chart for the peakday of the month, January 10, shows a peak of 70,800 KW for the entire project with coincidental maximum demand of 32,000 KW for the 66 KV system. Both are new all time highs due to increase of housing load, and to unusually cold weather. The peak day occurred before initial load was picked up on the new 115 KV system. Continued efforts have been directed toward reduction of peak loads in the Village of Richland as well as in work areas, and of all unnecessary load, in line with similar efforts throughout the Pacific Northwest to relieve the critical power shortage.

After further study of present and future loads in North Richland, it was agreed with Design and Construction and the Atomic Energy Commission that plans for a proposed second 5000 KVA 66 KV step down station in North Richland would be abandoned.

The sections I and II of the 115 KV line from Benton Station (at Columbia River crossing) to the north station, including tap-off structure in North Richland, was inspected and accepted from Subcontractor and energized on January 17. The new 115 KV Stevens station was energized, and the first feeder tied in on January 19. One additional feeder was tied in before the month end, thus relieving the overloaded 66 KV system. Two 10,000 KVA transformers for the 115 KV Thayer station were received and placed in position but further work cannot be accomplished until both the line and the Subcontractor's portion of the station are ready, now expected for February 15.

The departmental Educational Committee reports 94 men enrolled in the course in electrical fundamentals, and 21 in the telephone course. Active and satisfactory progress is being made.

AREA ACTIVITIES

1. 100 Areas

Due to unusually cold weather, re-use pumps in each of the areas were readied for service at the request of the Power Division.

In order to assist in the reduction of system peak load, arrangements were made to shut down one 450 HP river pump motor in each area during the 5:00 to 9:00 p.m. peak, saving 1500 KW on plant demand. Studies are continuing to effect further permanent savings.

Because of changes in original plans, as well as extreme urgency for completion, ten Electricians have now been assigned to the P-10 project, 108-B Building,

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in a special effort to rush completion of lines 1 and 2.

Four refrigeration motors in the 189-D Building and four in the 189-F Building were put in operation as synchronous condensers during January, each operating to supply 1500 reactive (leading) KVA to improve the BPA system voltage. Arrangements were made through the Atomic Energy Commission to invoice the Bonneville Power Administration for the cost of this service.

2. 200 Areas

During the practice blackout in the 200 East and North Areas on January 11, all electrical equipment operated satisfactorily with the exception of the Kohler emergency plant at BY Telephone Exchange. Weak batteries, which have since been changed out, caused failure to start.

The preventive maintenance schedules of both East and West Areas have been revised in consideration of past maintenance experience so as to effect a net reduction of one Maintenance Electrician per area.

A final cathodic protection study report relating to stainless steel pipe was issued. Work orders are being issued to complete a final field survey in both areas; we are confident that all pipe is amply protected and such survey will provide positive proof that protection is complete.

3. 300 Area

The explosion which occurred in the 321 (Semi-Works) Building at 5:36 a.m. on January 23 has not been traceable to electrical source. However, the Division believes that closer control of electrical installations in hazardous areas should be enforced in both design and in operation, and efforts are being directed toward establishment of such control.

In the 3745 X-Ray Building, a complete investigation of short life of X-ray tubes was made. Excess failures were proved to result from high voltage. Recalibration should show substantial saving in tube costs through extended tube life.

The new Electrical Shop, Building 3708, is complete. The 300 Area maintenance crew and the 700 Area Minor Construction crew are now moving into this new headquarters.

4. Transmission and Distribution

There is no report other than continued unusually heavy backlog of work which is being reduced slowly. More than 70 percent of line work accomplished during the month is related to expansion programs in Village and work areas. Substation maintenance is being deferred because of assignment of crews to 115 KV substation electrical construction.

There were no important power interruptions during the month.

5. Telephone Section

Work on Project C-138 (Richland Dial Exchange) is not progressing as planned due to slow deliveries from equipment manufacturers. Delivery is being

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Electrical Division

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expedited actively by our representative at the factory, but, at best, initial operation is expected to be deferred until at least late May.

A two position, 200 line board is being installed in Kadlec Hospital.

A 100 line board (manual) has been reconditioned for Building 234-5 (200 West for inter-communications.

Trunks for the 300 Area to Richland have been increased from 10 to 18.

Under Project C-144, Increase of Telephone Cable Facilities in Richland, work continues at an accelerated rate and is now 40 percent complete.

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POWER STATISTICS - ELECTRICAL DIVISION
FOR MONTH ENDING JANUARY 31, 1949

ITEM	ENERGY - KW HRS.		MAX. DEMAND - KW		LOAD FACTOR - %	
	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.
<u>230 KV SYSTEM</u>						
A-2 Out (100-B)	7,260	7,490	11,200	12,000	87.1	83.9
A-4 Out (100-D)	7,740	8,160	13,000	15,000	80.0	73.1
A-6 Out (100-F)	7,170	7,260	11,300	11,400	85.3	85.6
A-8 Out (200 Areas)	2,860	2,990	4,600	5,000	83.6	80.4
TOTAL OUT	25,030	25,900	40,100**	43,400**	-	-
MIDWAY IN	25,475	26,161	38,800*	40,400*	88.2	82.0
Transm. Loss	445	261	-	-	-	-
Per Cent Loss	1.7	1.0	-	-	-	-
<u>66 KV SYSTEM</u>						
B1-S1 Out (Richland)	6,900	6,774	12,800	12,600	72.5	72.5
B1-S3 Out "	2,589	3,280	6,900	6,900	54.7	63.9
B1-S2 Out "	1,728	2,078	3,988	4,624	58.2	60.4
B3-S4 Out (300 A)	231	241	468	456	55.2	71.0
B3-S5 Out "	600	598	1,280	1,220	63.0	65.9
B1-S4 Out (N.R.)	2,980	3,470	5,011	5,644	79.9	82.6
B7-S10 Out (W.B.)	474	495	1,147	1,192	55.5	55.8
B9-S11 Out (100-H)	322	413	880	1,200	43.6	46.3
Hanford Out	333	352	500	500	89.5	94.6
TOTAL OUT	16,157	17,701	32,974**	34,336**	65.7	62.9
Hanford In	7,666	9,601	22,800*	19,300*	45.2	66.9
Pasco In	8,713	8,283	18,800*	19,200*	62.3	58.0
TOTAL IN	16,379	17,884	41,600**	43,300**	52.9	57.3
Transm. Loss	222	183	-	-	-	-
Per Cent Loss	1.4	1.0	-	-	-	-
<u>115 KV SYSTEM</u>						
BBI-S2 Out	-	570	-	4,680*	-	16.4
Benton In	-	576	-	4,600*	-	16.1
Transm. Loss	-	6	-	-	-	-
Per Cent Loss	-	1	-	-	-	-
<u>PROJECT TOTAL</u>						
230 KV (Item 5)	25,030	25,900	40,100**	43,400**	-	-
66 KV (Item 15)	16,157	17,701	32,974**	34,336**	65.7	62.9
115 KV	-	570	-	4,680*	-	16.4
TOTAL OUT	41,187	44,171	73,168**	82,416**	75.7	72.0
230 KV (Item 6)	25,475	26,161	38,800*	40,400*	88.2	87.0
66 KV (Item 18)	16,379	17,884	41,600**	43,300**	52.9	-
115 KV	-	576	-	4,600*	-	16.1
TOTAL IN	41,854	44,621	67,700*	70,800*	83.1	84.7
Transm. Loss	667	450	-	-	-	-
Per Cent Loss	1.6	1.0	-	-	-	-

*Coincidental Demand
**Non-Coincidental Demand

Average Power Factor - 230 KV System--100
Average Power Factor - 66 KV System--96.3

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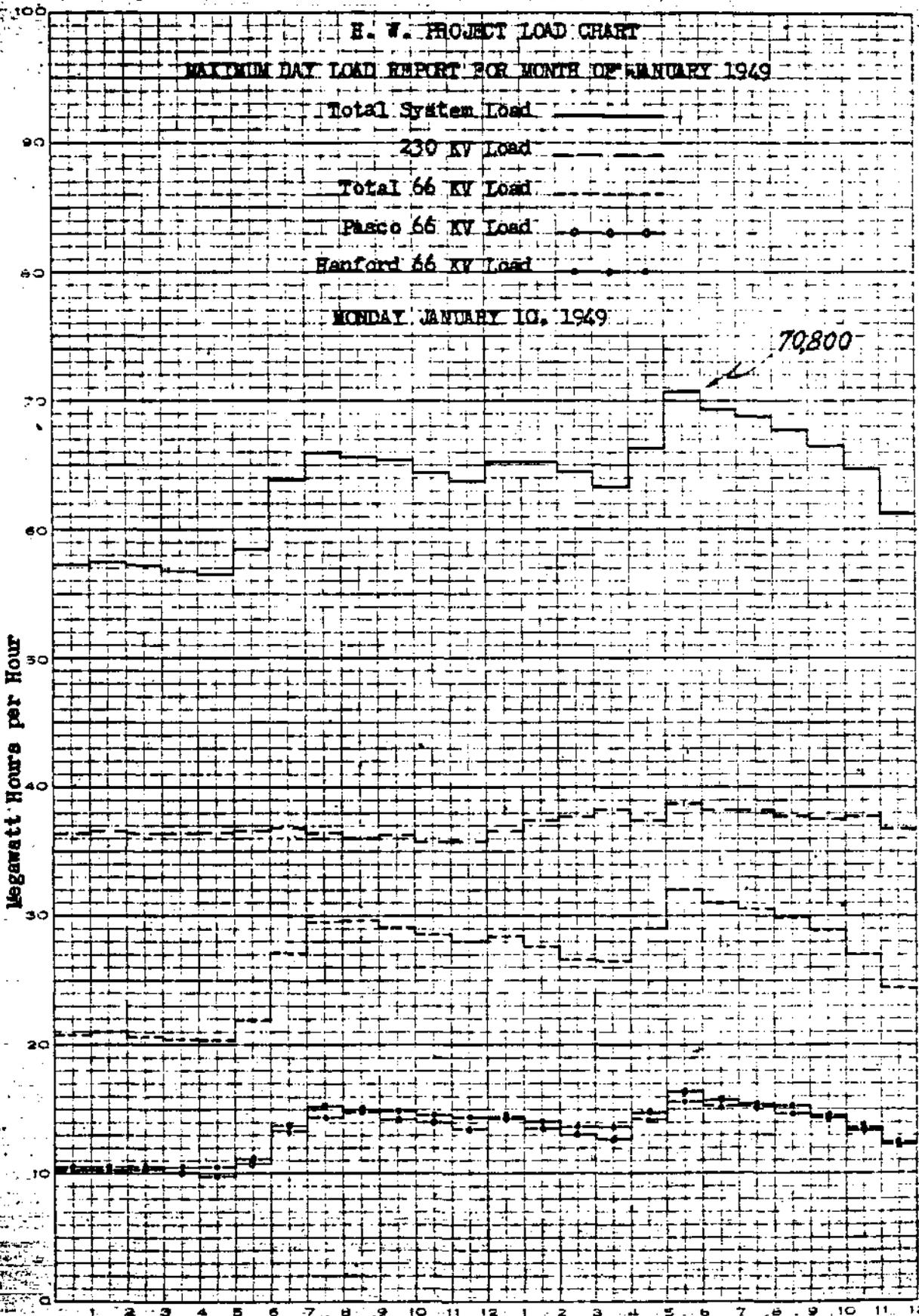


FIGURE 13-13

FIGURE 13-13 DIETZEN GRAPH PART 4
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TRANSPORTATION DIVISION
MONTHLY REPORT
January 1949

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General

Continued severe cold weather and snow were a serious handicap to work on outside projects. Frost levels average about 32 inches deep.

Railroad Activities

Commercial tonnage diminished about 12% from the previous month. There was a considerable increase in process service.

In order to cope with the domestic coal shortage in Richland, it was necessary to effect coal movements immediately upon arrival rather than on a regularly scheduled basis.

Flasher lights and an improved air horn were installed on one locomotive for test purposes.

Morrison-Knudsen, Track Maintenance Subcontractor, continued to make good progress on the Railroad Rehabilitation Program. Their total force as of January 31, 1949 was 186 which is a decrease of 14 over December.

Automotive Activities

Area and Village Local Bus Systems registered a combined increase of 9,508 passengers over December.

Effective January 24 the Richland Shuttle Service Routes were revised to provide greater service throughout the Village and to initiate service to the newly constructed residential sections.

Construction and Labor Activities

Labor and Transportation facilities were supplied for Suspense Codes 10225, and 10240; Projects C-133, C-163, C-177, C-238, C-268, C-269, C-273, C-276, C-279, C-291, C-294; and Well Drilling Operations.

Traffic

As a result of our request of September 17, 1948, the North Coast-California lines have approved a rate of 87 cents per cwt. from San Francisco Group and 102 cents per cwt. from Los Angeles, subject to X-168 increase, on Silicate of Soda to Hanford effective February 4, 1949. This will result in a savings of 12.6 cents per cwt. or approximately \$119.70 per car on shipments from Emeryville, California.

Effective January 25, 1949 the Water Carriers secured a five percent increase on intercoastal traffic.

As a result of rate reductions secured from the carriers, there was a total savings in freight charges for the month of January amounting to \$60,466.64.

Statistical information is attached to the file copies of this report.

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PROJECT ENGINEERING DIVISION

MONTHLY REPORT
January 1949

PRESENT STATUS OF WORK

Projects and Suspense Codes Authorized and Under Construction

<u>Project Number</u>	<u>100 AREAS</u>	<u>% Phys. Complete</u>	<u>Date Auth.</u>	<u>Est. Cost</u>
C-172	Dismantling of Equipment in Demineralization and Deaerating Plants	15	8-19-47	\$486,000
C-184	Experimental Animal Farm	0	10-27-47	286,000
C-222	Dismantling Unoperated Equipment in 105 Valve Pits	18	2-10-48	4,000
C-238	Effluent Sewer Line 105-F to 107-F	95	3-26-48	207,000
C-269	Temporary Radio - Botany Lab. 100-F Area (Part II in preparation for additional \$19,500 to cover overhead and other increased costs)	60	7-28-48	10,100
C-290	Fabricate & Install Spectrometer	0	9-29-48	9,000
C-294	Mock-Up Facilities for Metallurgical Studies	30	10-22-48	47,700
C-306	Revised Pile Shielding - Front Face Shield Nozzle Caps	0	11-30-48	88,000
C-316	Special Technical Laboratory (P-10)	80	1-17-49	228,000
SC 10239	Segmental Discharge Devices (Preliminary Program)	75	9-1-48	65,000
SC 10243	Special Technical Melting & Casting Facilities P-10 Alloy	0	1-28-49	<u>250,000</u>
TOTAL Estimated Cost 100 Area Projects				\$1,680,800

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Project Engineering Division

PRESENT STATUS OF WORK

Projects, Suspense Codes Authorized and Under Construction (Cont'd).

200 AREAS

<u>Project Number</u>		<u>% Phys. Complete</u>	<u>Date Auth.</u>	<u>Est. Cost</u>
C-133	Special Test Wells 200-E and W	89	1-30-47	\$180,600
C-163	Additional Waste Storage and Tie Lines 200-W (G.E. Portion Only - Subcontract not Included)	78	7-25-47	600,000
C-273	Water Supply and Plumbing - Bldg. 622-A	34	8-4-48	13,500
C-313	Stack Filtration Facilities	91	1-17-49	864,000
C-298	Decontamination Stations for Small Equipment - 221 T-B	0	11-15-48	33,000
TOTAL Estimated Cost 200 Area Projects				<u>\$1,691,100</u>

300 AREA

C-189	Building 3745-A X-Ray Facility	91	8-20-47	\$33,000
C-219	Construction of Additional H.I. Instruments	65	1-27-48	97,200
C-220	Optical Instrument Bldg. and Elect. Shop 3708 - 300 Area	96	1-30-48	82,000
C-227	Conversion of Offices to Labs Bldg. 3706 & Construction of 3707-C Change House	80	3-15-48	429,000
C-287	Experimental Metallurgy Lab. Bldg. 3730	0	12-2-48	140,000
C-308	Process Development Lab. Bldg. 3715	0	1-17-49	50,000
C-317	New Retention Basin for 300 Area Process Water	97	1-3-49	62,000
SC 10241	Increased Ventilation 313 & 314 Buildings	0	9-24-48	<u>200,000</u>
TOTAL Estimated Cost 300 Area Projects				<u>\$1,093,200</u>

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Project Engineering Division

Projects and Suspense Codes Authorized and Under Construction (Cont'd)

GENERAL PLANT AREAS

<u>Project Number</u>		<u>% Phys. Complete</u>	<u>Date Auth.</u>	<u>Est. Cost</u>
C-138	Richland Telephone Exchange Bldg. 702	60	5-12-47	\$470,500
C-144	Additional Telephone Cables - Richland	25	5-12-47	45,000
C-177	115 KV Power Transmission Line	60	8-14-47	1,364,000
C-195	Radio Communications for Rail-Road & Electrical Division	85	10-15-47	34,000
C-196	Electrical Distribution Headquarters Bldg. & Conversion of 2713-E to Garage	1	10-10-47	162,400
C-214	Rehabilitation of Plant Railroad	67	2-18-48	3,214,000
C-265	Additional Telephone Cable - Richland to Kennewick	45	7-29-48	30,000
C-276	Overall Plant Telephone Project	50	10-6-48	1,232,000
C-279	Improvements to Area Administration Buildings	35	8-20-48	98,200
C-291	Security Fences - All Areas	0	10-18-48	<u>246,800</u>
TOTAL Estimated Cost Plant General				\$6,896,900
<u>GRAND TOTAL Est. Cost Authorized Work - All Areas</u>				<u>\$11,362,000</u>

Projects Being Routed for Authorization

<u>E. R. No.</u>	<u>Project No.</u>		
A-502	(C-284)	Transportation Consolidation (Pending)	\$1,947,000
A-511	(C-322)	Osmose Treatment of Plant Elect. Poles & Replacements where Necessary	154,000
A-1057	(C-321)	Diversinary Outlet 100B & F	153,000
A-1076		Replace Vertical Rod & Guides 105 B, D, & F	<u>104,600</u>
TOTAL Estimated Cost of Projects Awaiting Authorization			\$2,358,600

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Project Engineering Division - AREA REPORTS

Status of Engineering Study & Design Work in Progress During
Month of January

100 AREAS

<u>E. R. No.</u>		<u>% Engineering Complete</u>
A-1004	Downcomer Design 105-F	20
A-1034	Alterations to Bldgs. 186 and 185	38
A-1044	Outlet Charging Device (through proposed Model III)	38
A-1059	Prepare Project for Steel Sewer Line at 100-B Area	43
A-1060	Increased Shielding of Front Nozzle Caps (Designs for Proj. C-306)	25
A-1062	Prepare Project for Mark II and Mark III Machines for Segmented Discharge	80
A-1063	Special Metal Splines	75
A-1064	Equipment Designs for Oxygen in Pile Atmosphere	10
A-1065	Equipment Designs for Large Scale CO ₂ Evaporator	90
A-1066	Mock-Up Facilities for Metallurgical Studies (Designs for Proj. C-294)	90
A-1067	Special Technical Laboratory (P-10)	90
A-1068	Design Special VSR - #27	95
A-1069	Prepare Project for Dismantling and Crating of York Refrigeration Units - 151, 181, & 189-D & F Buildings	5
A-1070	Prepare Project for Changes to Unit Motion Instruments	40
A-1071	Prepare Project "B" Hole Type Sample Loading Facilities	10
A-1072	Design Cask Storage Pad - 100-F Area	0
A-1074	Design Moisture Extraction System for Gas System - 105 Building	0
A-1075	Recommend Adequate Warehousing for 100 Areas	0

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Project Engineering Division - AREA REPORTS

Status of Engineering Study & Design Work in Progress During
Month of January

<u>E. R. No.</u>		<u>% Engineering Complete</u>
A-1076	Prepare Project to Replace V.S.R and Guides in 105-B,D,F	85
A-1077	Prepare a project for P-10 Alloy Facilities	5
A-1078	Study Maximum Loading Conditions For 105F Experimental Level	25
A-1079	Design Rod Drop Test - 185-F	100

200 AREAS

2279	Prepare Project for Regasketing Facilities - 221 T & B	85
2285	"B" Jet Assembly	75
2287	Study Rail Alignment of 200-N Cranes	75
2288	Special Test Wells - 200 E & W 70 Wells Complete	89
2327	Study Possibility & Redesigning Con- nector Head to Simplify Gasket Changing	90
2337R	Design Water Seal for Agitator Shaft	10
2353	Crane Alignment & Rail Elevation, 221T	100
2355	TX Waste Storage (Field Engr. for Project C-163)	75
2376	Cathodic Protection to Underground Waste Lines (Survey Work and As- Built Drawings)	100
2378R	Reinforce Precipitator Tank Jackets	75
2381	Design Acid Supply Tanks & Piping for 222-B	80
2385	Steel Stock Handling Equipment 272-E & W	100
2393	Steam Jet with Remotely Removable Features	10

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Project Engineering Division - AREA REPORTS

Status of Engineering Study & Design Work in Progress During
Month of January

<u>E. R. No.</u>		<u>% Engineering Complete</u>
2401	Maintenance Hoist for Cranes 212 N-P-R	35
2403	Revision of 222 T & B Control Labs	30
2421	Procure & Install Lab. Equip. in 271 T-U-B Central Labs.	65
2437	Prepare Project for the Study of Process Waste Separation 200 B-T-U - Cancelled	3
2438	Design and Estimate Improved Well Sampling Device	90
2442	Recommend Remedies for Tank Agitator Bearing Failures to Philadelphia Gear Works	100
2443	Design Piping for Parallel Operation of Cells in 221-T & B	100
2450	Design Disposal Sumps for 224-B Waste	25
2451	Check Crane Wheel Alignment - Bldg. 221-B	50
2454	Select Oil Filter for Compressed Air Line - 221 - T & B	100
2456	Prepare New Map of Underground Water & Sewer Lines - 200 - E & W	20
2457	Revise Piping Drawings for Cell #2, Bldg. 231	25
2458	Prepare Drawings for Conductivity Meter in Section 6R, Bldg. 221-B	95
2459	Design Facilities for Diluting Caustic Solution 221 Areas	75
2460	Design Filter for Dissolver Off Gas	5
2465	Design Jet Assembly For Cell 32 Bldg 221	0
2466	Design Cribs for 222B Waste	50

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Project Engineering Division - AREA REPORTS

Status of Engineering Study & Design Work in Progress During
Month of January

<u>E. R. No.</u>		<u>% Engineering Complete</u>
A-3058	Design Air Conditioning System - Bldg. 321	2
A-3059	Evaluate Construction of "P" Div. Change House in the 303 Area	75
A-3060	Temporary Metal Melting & Fabrication Building	68
A-3061	Increased Ventilation - 313 and 314 Bldgs.	25
A-3062	Installation of Rolling Mill in Bldg. 314	5
A-3063	Evaluate CO ₂ System for Rooms 4A and 6 - Bldg. 3706	95
A-3066	Revise Maps - 300 Area Water and Sewer Systems	0
A-3067	Billet Lifting Tongs	0
A-3068	Automatic CO ₂ Fire Extinguishers - Bldg. 3706	0
A-3069	Solvents Storage - 3706 Building	0
A-3070	Study 3706 Ventilation Requirements to Provide 40% Humidity	15
A-3071	Design C.W.S. Filters and Hoods for Room 55, Bldg. 3706, Exhaust System	0
A-3073	Design Glass Shop Gas System	5
A-3075	Design for Nine Tube Mock-Up for 105- B-D-F Design	5
A-3076	Design Facilities for Chip and Bar Pickling and Metal Fines and Oxide Recovery	5
A-3077	Design Installation for Three Auto- matic Screw Machines 313 Building	25
A-3078	Design Storage Cabinets 305A Bldg.	0
A-3079	Prepare Project for Hot and Cold Exponential Experiments	2

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Project Engineering Division - AREA REPORTS

Status of Engineering Study & Design Work in Progress During
Month of January

<u>E. R. No.</u>		<u>% Engineering Complete</u>
828	Bldg. 702 - Automatic Dial Exchange	97
872-R	Improvement to Area Admin. Bldgs.	95
941	Designs for Experimental Animal Farm - Project C-184	95
E-962	Designs for 115 KV Power Line Through Richland	85
973	Designs & Engr. for Elec. Dist. Hdqts. Bldg. near 251 Substation & Conversion of Bldg. 2713-E to Garage. Proj. C-196	80
990-R	Fencing All Areas	80
A-420	Engineering Work for Rehabilitation of Plant Railroad. Project C-214	90
E-452	Prepare Project for Expansion of Main Plant Telephone Sys. (Design Work Only)	90
E-463	Electrical Drawings for Charging Device	45
E-464	Metering of Power - All Process Areas	70
E-492	Preparation of Project Additional Tele- phone Cable - Richland to Kennewick Design Work Only.	98
A-496	Design Work for Temp. Biological Lab. Facilities - 100F Area (Proj. C-269)	100
E-499	Lighting Study - Rooms 2240-1-2-3, 703 Building	30
A-502	Prepare Project for Transportation Consolidation	6
E-505	Electrical Standards	15
A-507	Design Work for Workshop Addition to 313 Bldg. (Proj. C-308)	45
A-509	Drafting for 300 Area Planning Committee	50

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Project Engineering Division - AREA REPORTS

Status of Engineering Study & Design Work in Progress During
Month of January

<u>E. R. No.</u>		<u>% Engineering Complete</u>
A-510	Badge House Addition - 300 Area	50
E-511	Prepare Project for Butt Treatment of Power Line Poles	100
A-513	Study of Air Conditioning First Aid Bldgs. - 300 & 100-B & F Areas	80
E-514	Prepare Project for Improvement to Area Fence Lighting	0
A-518	Partitioning of Manufacturing Division Offices - 703 Building	90
A-519	Centerline Area Roads	20
A-523	Drafting for 300 Area Technical Div.	14
A-525	Survey of Locke Island	100
A-526	Field Information for 300 Area As- Builds	25
A-527	Shuttle Bus Route Map - Richland	100
A-528	Design Work for Instrument Division Building Project - 300 Area	5
A-529	Railroad Design Outside Building 2601-W (as requested by Construction Work Authority #PM-1198)	5
E-401	Study and Recommendations for Extension of Induction Heating in 314 Building	5
E-403	Install four traffic signals at Richland railroad crossings	15

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Project Engineering Division - AREA REPORTS

Status of Engineering Study & Design Work in Progress During
Month of January

ENGINEERING STUDIES GROUP REPORT

Studies Completed This Month

<u>E. R. No.</u>		<u>Date Completed</u>
4353	Telephone Cost Study	12-30-48
4349	Pistol Range Sanitary System	1-6-49
A-489-S	Improvement of Midway-Priest Rapids Road	1-15-49

Studies Added This Month

<u>E. R. No.</u>		<u>Date</u>
4357	Lubrication Specifications Bldg. 234-5	1-6-49
4358	Metal Handling 300 - 100 Area	12-29-48
4359	Concrete Placing Procedure	1-7-49

Active Studies

<u>E. R. No.</u>		<u>% Complete</u>
4318	Revise Packing & Gasket Standards	99
4326	Use of Inhibited Oil in Turbines	85
4327	Maintenance of Pitched Roofs	50
4336	Review Oil Coding System	5
4342	Analysis of Heavy Duty Lacquers	98
4346	Welding Line Analysis - 313 Building	80
4347	Improved Frost Test Line - 313 Bldg.	60
4348	Soft Water System - Kadlec Hospital	80
4349	Operating Standards for Hydrocranes	98
4352	Lubrication Survey - 105 DR Building	50
4354	Bronze Furnace Heating - 313 Building	40

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Project Engineering Division AREA REPORTS

Status of Engineering Study & Design Work in Progress During
Month of January

<u>E. R. No.</u>		<u>% Complete</u>
4355	Septic Tank J.I.	90
4356	P. E. D. Procedures	25
4357	Lubrication Survey - Building 234-5	0
4358	Metal Handling - 300-100 Areas	80
4359	Concrete Placing Procedure	5

BACKLOG SUMMARY

	<u>Work on Hand 12-31</u> <u>Estimated Man Days</u>	<u>Work on Hand 1-31</u> <u>Estimated Man Days</u>
Studies	216	204
Project & Design	<u>8,450</u>	<u>9,189</u>
TOTAL	8,666	9,393

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TECHNICAL DIVISIONS

JANUARY, 1949

SUMMARY

Pile Technology Division

The D Pile remained at 40% carbon dioxide concentration and the F Pile at 25%, while the B Pile advanced from 10 to 25%. Thermal and reactivity effects were in line with previous experience. Development of means for electrical annealing, for stress studies on the shields, and for stopping up the gap in the F Pile shield continued. Mockup studies of vertical safety rods in distorted thimbles, and of the operation of the third safety device at high temperatures, were planned.

Changes were made in the graphite purification process to reduce plugging of feeder tubes and orifices and to diminish nitrogen adsorption. Gadolinium, a strong absorber of neutrons, was found in unpurified graphite in significant quantities. The expansion and thermal resistivity of test hole graphite continue to increase linearly, but an unexplained upturn of the electrical resistivity has occurred, and the implications of this are being sought.

Zoning of metal in the piles has been shown to offer significant increases in reactivity.

In case of complete failure of electrical power, it has been shown that continuity of Product B production can be obtained by operating three piles on the steam pumps alone.

Practice runs on inert gas mixtures were made on the first extraction line for P-10 and operation is scheduled to begin next month. Satisfactory yields of tritium were obtained by Argonne from alloy slugs exposed two months.

Separations Technology Division

Production testing of agitation of the first by-product precipitation slurry during centrifugation, instead of the standard settling procedure, appears to have stabilized previously erratic waste losses at a slightly lower level but decreased decontamination has been obtained. Test runs with single instead of double-distilled HF in the Concentration process have uncovered no adverse effects on yields. Time cycle savings of more than two hours have been effected in the Isolation process by production testing. Sand filter performance has continued to obtain better than 99.8% efficiency of activity removal, with no measurable increases in pressure drops. Dissolver activity discharge has been confirmed as the cause of the apparent recontamination of sand filter discharge air. Steps are being taken to install fiberglass filters on the dissolver off-gas lines, as a result of extremely promising pilot plant studies.

At month-end, the 234-5 Building was approximately 55% completed in construction. A major portion of acceptance procedures has been issued and all operating procedure preparation is expected to be completed during the coming month. All operations task approvals of layout drawings for the Schenectady design of the Remote Mechanical Line have been granted. The ten gram-scale pilot line in Bldg. 231 has been essentially completed and calibration runs carried out.

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Separations Technology Division (continued)

Redox Demonstration Unit column runs made with dissolved uranium feeds following rigorous scouring and clean-out of the dissolver have evidenced no "fish-egg" interface emulsification. Investigation of uranium metal recently used for feed preparation points to an unusually high silicon content as the possible cause of the poor phase disengagement. Washing of Scale-Up recycled hexone with Na_2CO_3 and extensive purging of old LAW recycle solutions from the system have eliminated interface "foaming" in this unit. An explosion of an IAX pump test stand on January 23 damaged the 321 Bldg. Semi-Works seriously enough to cause at least a month's shut-down for repairs and rehabilitation, which are proceeding at an accelerated pace.

Redox research studies have continued to demonstrate encouraging promises for increased ruthenium decontamination by ozone volatilization and zirconium removal by glass wool adsorption. The possibility of coupling a reduced plutonium salt solution from a modified Redox process to the BiFO_3 process by intermediate closed-cycle extraction has been successfully demonstrated in the laboratory. An extremely stable oxidized plutonium for Column IIA feed has been prepared by ozonation. Removal of unknown components of dissolved uranium feed solution causing emulsification with hexone has been effected in the laboratory by adsorption on filter aids.

Metallurgy & Control Division

Production rolling of uranium rods for Hanford was conducted at Lockport, N. Y., and Aliquippa, Pa., under technical supervision by the 300 Area Plant Assistance Group. The AEC (New York Office) has arranged to assume this responsibility at Lockport in February and at Aliquippa in March.

Two 300 Area metal fabrication process changes which have been under technical development were put into practice: (1) The pickling of uranium turnings for reworking through the melt plant; and (2) A change in alpha rolled slug dimensions as required to compensate for the diameter increase and length decrease which this metal undergoes during triple-dip canning.

High frequency induction heating of uranium slugs is being investigated as an attractive alternate to the triple-dip method for effecting structural transformation. Very promising results are being obtained.

The T Plant Control Laboratory concluded a two-month trial use of rubber gloves for all analytical work involving radioactivity. Since gloves were found to reduce hand contamination without increasing equipment contamination, their use has been made standard in all 200 Area analytical laboratories.

Several steps were taken to meet the increasing needs for experimental fabrication work. Visits were made to the Bremerton Navy Yard and to several commercial machine shops with a view toward farming-out most items in the large backlog of work against the present small technical shop in Building 3706. Arrangements were made to place this shop and the Instrument Division Shop (Building 3717) on shifts as rapidly as additional machinists can be procured. A proposal for expanding the technical shops is in preparation.

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PILE TECHNOLOGY DIVISION

JANUARY, 1949

February 17, 1949

VISITORS AND BUSINESS TRIPS

J. C. Maguire, Argonne National Laboratory, Chicago, Illinois, was here for consultation on the P-10 Project from January 10 through 15, 1949.

Business trips of Pile Technology personnel during January were as follows:

J. B. Lambert visited Schenectady, N. Y. for consultation on the Special Request program from January 8 through 31, 1949.

C. W. Botsford visited National Carbon Company, Inc., Morganton, N. C. for consultation on the purification process from January 11 through 14, 1949.

J. M. West visited Argonne National Laboratory, Chicago, Ill., and Morganton, N. C., for consultations on graphite from January 10 through 14, 1949.

ORGANIZATION AND PERSONNEL

	<u>December</u>	<u>January</u>
File Physics Section	37	39
File Engineering Section	22	22
Administration	5	5
	<u>64</u>	<u>66</u>

During the month one Steno-Typist D, one Lab. Asst. D, and one Chemical Engineer were added, one Lab. Asst. D transferred into the Division from Metallurgy and Control Division, one Lab. Asst. D transferred to Metallurgy and Control Division, and one Chemical Engineer transferred to Project Engineering Division.

At month-end one Chemical Engineer and one Steno-Typist D were awaiting Q clearance.

PILE PHYSICS

Graphite Development

The erratic quality of GEF graphite, as discussed in previous reports, now appears to be caused by plugging of gas feeder tubes under the graphite bars and plugging of the orifices which feed these tubes. The plugging results from decomposition of the purifying gas with the subsequent deposition of carbon. Some lines have been found completely plugged after a run. Orifice sizes are being increased at the ends of the furnaces where the trouble is greatest, and the velocity of the gas is being increased.

Four experimental purification runs in which no nitrogen flushing was used during the cooling cycle were of slightly better quality than recent heats prepared in the

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normal way. These results confirm earlier data. Therefore, all nitrogen flushing during cooling is being eliminated during a one week period. If the resulting quality is good and no noxious gases accumulate in the furnace, flushing will be discontinued. If some flushing is found necessary, helium is economically competitive with nitrogen and is probably better from a nuclear standpoint. The possibility of using helium is under investigation.

Gadolinium has been detected in unpurified graphite by spectrographic methods. The exact concentration is not known, but it is of the order of 0.5 ppm. Although gadolinium has a high absorption cross-section, very little radioactivity is induced in it and detection is almost impossible by irradiation methods. The presence of europium and samarium has been reported earlier.

The effect of pile exposure on aromatic organic molecules is being studied to determine the number of carbon atoms displaced by neutron bombardment. The number of molecules destroyed by a given exposure to fast neutrons decreases with increasing molecular weight, being six times as great in benzene as in 1, 2 benzanthracene.

Graphite Monitoring

Recent data show that the dimensional expansion of graphite exposed in a cooled test hole is still increasing linearly with exposure at the rate of 0.8% per 1000 MD/AT. The highest exposure of this material was 1726 MD/AT. Thermal resistivity continues to increase linearly in agreement with previous data, but the electrical resistivity has begun to increase slowly above the value which it maintained over a wide range of exposure. The implications of this are not known, but other properties will be watched to determine whether this presages changes of importance to pile operation.

Metal Quality

It has been calculated that the zoning of metal in the piles according to functional test results would gain 6 inhours per pile, whereas segregation of slugs before canning, by visual inspection for porosity, and followed by zoning in the piles, would raise the gains to 12-15 inhours. These potential gains must be balanced against the increased operating costs of such zoning.

Shielding

Tests showed that the use of ship augers in thermal shield cooling tubes is unnecessary. With these tubes filled with water, no radiation hazard arises at any time; and when the pile is shut down and the tube is dry, no radiation was detectable at the pile face. Since these augers have produced a heavy rust deposit in the cooling tubes, it is likely that they will be omitted from the DR and H Piles.

Reactivity Coefficient Test

A coefficient test was run at the F Pile for the first time since the carbon dioxide concentration reached 25 per cent. There was a slight decrease in the over-all coefficient, in agreement with a similar effect previously observed at the D Pile. Behavior of the other coefficients was somewhat anomalous; however, difficulties encountered during the test made the determination of these other coefficients unreliable.

Miscellaneous

In the event of complete failure of the electrical supply system it would be possible

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File Technology Division

HW-12391-DEL

to operate the piles at 70 MW by using the steam-driven pumping facilities. Present production requirements for Product B could be met by operating three piles at this level and loading a total of 400 tubes.

Three of the four ionization chambers installed in the corner tubes of the F Pile in September have failed. Examination of one of the chambers revealed complete disintegration of a lucite insulator. Tests are in progress to determine a more suitable insulating material for use in future chambers.

Reactivity

At month-end the reactivity status of the three operating piles was as follows:

	B Pile	D Pile	F Pile
In rods	81 ih	70 ih	56 ih
In xenon	526	489	503
In over-all coefficient	-130	-150	-160
Total cold-clean reactivity	762	862	771

The B Pile gained 8 inhours, the D Pile 18 inhours, and the F Pile 8 inhours during the month.

Status of Special Irradiations

The status of the Special Request program on January 31 is given below. Those items which were active during the month are marked with an asterisk. Items completed last month will receive no further mention. The number under P. T. indicates the Production Test, series 105-P. The letter suffix after a tube denotes the pile. Under "Quantity", the number of pieces, if given, will indicate that the material has been received. Under "Tube and Pile" the initials BTHD, BTHF, DTHF mean the piece is charged into the "B" test hole at the D or F Pile or into the "D" test hole at the F Pile. The suffix T will denote a tentative schedule which may be changed. The abbreviations ORNL and ANL after the request number refer to Oak Ridge National Laboratories and Argonne National Laboratories respectively; KAPL refers to the Knolls Atomic Power Laboratory; UCRL refers to the Radiation Laboratories at the University of California.

Req. No. & Source	Material	Quantity	Exposure	Charged	Tube & Pile	Dis- charged	Shipped	P.T. sorbed ih cb-
12-B(UCRL)	Pu ²³⁹	1 slug	1 year	5/25/48	1769D			200 5**
**Tube 1769D also contains 1 pc. SR-64, 4 pcs. SR 63, UCRL-100-105, 1 pc. SR ANL-111, and 2 cobalt slugs.								
13-5(ORNL)	Be ₃ N ₂	53 slugs	6 mo.	5/12/48	2374F	10/20/48	1/5/49	
		53 slugs	6 mo.	5/12/48	1569F	10/20/48	1/5/49	

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Req. No. & Source	Material	Quantity	Exposure	Charged	Tube & Pile	Dis- charged	Shipped	P.T	ih sor
*13-5(ORNL)	Be ₃ N ₂	38 slugs	6 mo.	6/6/48	3169D	12/3/48			
		39 "	6 "	8/4/48	1569D			17	
		53 "	6 "	8/31/48	1579D			17	
		36 "	6 "	8/4/48	1474F	10/20/48	1/5/49		
		36 "	6 "	8/4/48	3274F	10/20/48	1/5/49		
15(ANL)	LiF	There has been no change in the SR 15 program since October 31.							
28-5(ORNL)	Iron Enriched	1 casing	Indef.	4/4/48	BTHD	2/7/49T		87C	0
28-7-12(ORNL)	Iron	6 casings	2 mo.	1 casing 12/22/48	BTHF			87D	0
29-5-10(ORNL)	P ₂ O ₅	6 casings	60 days	10/22/48	DTHF	(2 casings 11/24/48)	(2 casings 11/26/48)	96B	0
47(ANL)	BeO	4 slugs	1-15 da.	12/21/47	3169D	1/6/48	1/14/48	127	
			1-30 da.	Has not been rec'd					
			1-90 da.	12/23/47	2666F	4/4/48	4/14/48		
			1-180 da.	12/22/48	3476F			0	
48(ANL)	BeO	4 slugs	1-15 da.	12/21/47	3169D	1/6/48	1/14/48	128	
			1-30 da.	To be recanned at ANL					
			1-90 da.	12/23/47	2666F	4/4/48	4/14/48		
			1-180 da.	8/4/48	3876F			0	
49(ANL)	Graphite-U Oxide	4 slugs	1-15 da.	12/21/47	3169D	1/6/48	2/11/48	129	
			1-30 da.	11/5/48	3166B	12/7/48	1/5/49		
			1-90 da.	12/23/47	2666F	4/4/48	5/3/48		
			1-180 da.	Sample not received					
52(ORNL)	Al-U ²³⁵ Alloy	95 slugs	100 da.	7/30/48	100D	11/16/48		208	
		21 slugs	130 da.	7/27/48	2072F	1/21/49			
		25 slugs	160 da.	7/27/48	1983F				
		25 slugs	160 da.	7/27/48	2770F				
		26 slugs	160 da.	7/27/48	2778F				
		26 slugs	160 da.	7/27/48	3469F				
59(ORNL)	Antimony	1 casing		1/27/48	BTHF			139	0
50(ORNL)	KCl	1 casing	10 mo.	2/16/48	BTHD	1/4/49	1/12/49	140	
		2 casings	1 yr.	2/16/48	BTHD			0	
51(ORNL)	Co ₃ O ₄	1 casing		1/27/48	BTHF			141	0
52(ORNL)	Al-U ²³⁵ Stainless, Be, U, Al	3 slugs	1 mo.	11/5/48	3166B	12/7/48	1/21/49	145	
			5 mo.	4/25/48	2382F	12/6/48	1/21/49		
			5 mo.	11/5/48	3276B			5	
					(pc.U-1)				
					(pc.AL-U2)				
					(pc.U-2)				

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Req. No. & Source	Material	Quantity	Exposure	Charged	Tube & File	Dis- charged	Shipped	P.T.so	lt
ANL-107	Bi	1 recept.	6 mo.	8/4/48	2173F			211	C
ANL-108	ThO ₂	1 recept.	6 mo.	11/5/48	3271B			218	C
ANL-109	Pc ₂ O ₅	1 recept.	3 mo.	11/5/48	3378B	2/2/49T		218	
ANL-110	PuO ₂	1 slug	6 mo.	8/4/48	2974F			210	F
ANL-111	PuO ₂	1 slug	1 yr.	5/25/48	1769D			200	
*ANL-113	RcBr ₂	6 slugs	3 mo.	1/21/49	1482B			230	F
*ANL-114	ThO ₂	1 slug	1 mo.	11/5/48	3166B	12/7/48	1/5/49	215	
		1 slug	2 mo.	11/5/48	3181B	1/14/49	1/21/49		
		3 slugs	3 mo.	11/5/48	3378B	2/2/49T			
		1 slug	6 mo.						
		1 slug	1 yr.	11/5/48	1882B				
ANL-115	Mo	2 slugs	6 mo.	11/5/48	3276B			215	F
		2 slugs	1 yr.	11/5/48	1882B				
*ANL-116	Diamond, Be, C	1 casing	3 mo.	10/22/48	DTHF	1/28/49		211	
ANL-119	S.Steel	2 recept.	6 mo.	12/22/48	1866F			227	C
ANL-120	S.Steel	1 recept.	6 mo.	12/22/48	1866F			227	C
ANL-121	Nickel	1 recept.	6 mo.	12/22/48	1866F			227	C
ANL-122	Nickel	2 recept.	6 mo.	12/22/48	1866F			227	C
GECL-100	Various, Non-metallic	10 slugs	3 mo.						
UCRL-100	Pu	1 slug	1 1/2-5 yr.	5/25/48	1769D			200	
UCRL-101	Pu	1 slug	1 1/2-5 yr.	5/25/48	1769D			200	
UCRL-102	Pu	1 slug	1 1/2-5 yr.	5/25/48	1769D			200	
UCRL-103	Am	1 slug	2 yrs.	5/25/48	1769D			200	
UCRL-104	Pu	1 slug	1-3 yr.	5/25/48	1769D			200	
UCRL-105	Am	1 slug	2 yrs.	5/25/48	1769D			200	
*UCRL-106	Tissue Ash	72 casings	2-3 wks.	1/21/49	BTHF			189	C
UCRL-107	Osmium	1 slug	1 mo.	12/22/48	3066D			229	F
UCRL-108	Tantalum	1 slug	1 mo.	12/22/48	3066D			229	
UCRL-109	Phosphorus	1 slug	1 mo.	12/22/48	3066D			229	
UCRL-110	Selenium	1 slug	1 mo.	12/22/48	3066D			229	
UCRL-111	Palladium	1 slug	1 mo.	12/22/48	3066D			229	
UCRL-112	Rhenium	1 slug	1 mo.	12/22/48	3066D			229	
UCRL-113	Iridium	1 slug	1 mo.	12/22/48	3066D			229	
UCRL-114	Tungsten	1 slug	1 mo.	12/22/48	3066D			229	
UCRL-115	Am.Oxide	1 slug	2 yr.					229	
ORNL-100	CaCO ₃	8 casings	18 no.	9/3/48	DTHF			182	O
ORNL-102	Zr	1 slug	6 mo.	8/4/48	3876F			204	
*ORNL-103	Be	30 slugs	3 mo-1 yr.	10/22/48	(1980F (2385F (3473F	12/13/48	1/5/49	217	1 1
*ORNL-104	Metal	4 recept.	3 mo.	11/5/48	3378B	2/2/49T		223	O
		4 recept.	6 mo.	12/22/48	3385F				O

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File Technology Division

HW-12391

Req. No. & Source	Material	Quantity	Exposure	Charged	Tube & File	Dis-charged	Shipped	P.T.	It ab-sorbed
ORNL-105	NaCl	3 casings	6 mo.-1 yr.	10/22/48	DTHF			219	
ORNL-106	Th	1000 slugs	125 da.					228	
		40 slugs	125 da.	11/14/48	3179B				31
		40 slugs	125 da.	11/14/48	2374B				31
		40 slugs	125 da.	11/14/48	1579B				31
*ORNL-107	Cobaltic Alloy & Cobalt	3 slugs	1 mo.	12/6/48	2382F	1/5/49	(2)1/12/49 (1)1/21/49	229	
*ORNL-108	Cu ₃ Au Alloy	2 slugs	1 mo.	12/13/48	1980F	1/21/49		232	
ORNL-110	Iron (Enriched)	6 slugs	3-6 mo.					232	
ORNL-112	U(normal)	6 slugs	24 hr.					239	

The following requests have been approved but the samples have not been received:

ANL-105, ANL-112, ANL-117, ORNL-101, ORNL-109, ORNL-111, UCRL-116.

PILE ENGINEERING

Graphite Expansion

The concentration of carbon dioxide in the D Pile atmosphere was held at 40% during the month. Measurements indicate that no further expansion occurred during the month. The graphite temperatures and thermal effects on the biological shields remained constant within normal limits. The carbon dioxide required to maintain 40% concentration has been greater than 40/60 of the volumetric rate of helium consumption. Several months ago it was reported that the excess carbon dioxide consumption was approaching saturation; but further data during the past four months have shown that the consumption curve has not saturated. The total excess carbon dioxide added to date amounts to 0.23 weight per cent of the graphite. The mechanism by which this disappears into the pile is not known; however, the Physics Section has shown that considerable quantities of an inert gas are evolved when irradiated graphite is exposed in a carbon dioxide atmosphere in the pile, and it is possible that an adsorption exchange is responsible for this effect.

The carbon dioxide concentration was held at 25% in the F Pile and was increased from 10% to 25% in the B Pile. These experiments have not been continued long enough nor at high enough concentrations to determine the effect on graphite expansion. Thermal effects appear to be in line with previous experience at the D Pile.

Annealing of expansion by induction heating has progressed to the extent that water-cooled coils have been designed and fabricated for use at 3000 and 9600 cycles. Tests on resistance heaters showed that outputs as high as 2 KW/ft. are obtainable. This output, though lower than that obtainable by induction heating, may be sufficient to heat the adjacent graphite to 500°C.

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HW-12391-DEL

Shielding

Methods of inserting shielding materials into the gap between the far side and top biological shields are being developed on a mockup. A feasible method is to insert a bag into which paraffin and steel shot are poured. The unobstructed crack through the biological shield at the center of the F Pile is now about two inches wide.

Materials and equipment were assembled for mockup tests of an angle iron assembly which simulates the angle iron which retains the face shields of the piles. These tests will evaluate gauges for determining the forces on these angle irons and the degree of distortion which can be tolerated.

Safety Rod Studies

Interdivisional plans have been made to install a vertical rod mockup in Bldg. 185-F. This will simulate the distortion of vertical thimbles in the piles. Calculations are being made for a second mockup to test the operation of the third safety mechanism under conditions of temperature and heat flow similar to those in the present piles. Consideration is also being given to the substitution of high-boiling organic liquids for the present aqueous solution used in the third safety system.

D-DR Problem

In collaboration with the P Division, a study of factors involved in the operation of the D and DR Piles is in progress.

P-10 PROJECT

The first extraction line has been completed and is being used for practice runs on hydrogen-helium mixtures until construction in 108-B is completed about February 10. The second line is complete except for glassblowing which is now in progress.

A yield of _____ and a purity of _____ was obtained by Argonne for alloy slugs irradiated _____. These results are in line with results reported last month on slugs irradiated _____ for which the yield was _____ and the purity was _____. No pressure buildup in the cans could be detected. These favorable results indicate that irradiations should be permissible.

A total of _____ slugs are now being irradiated. The total is scheduled to be increased to _____ during the next week.

INVENTIONS

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

Inventor

Item

H. H. Greenfield and
S. S. Jones

Aluminum-jacketed thermocouple and accessory equipment.

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Pile Technology Division

HW-12391

Inventor

Item

T. P. Heckman

Segmented Discharge: Improved gripper slug.

T. P. Heckman

Segmented Discharge: Use of magnets to guide gripper slug

T. P. Heckman

Vertical thimble traverse mechanism.

H. W. Ritchey

Use of bituminous materials in shields.

Signed



C. W. J. Wende
Division Head

CWJW:sr

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SEPARATIONS TECHNOLOGY DIVISION

JANUARY, 1949

VISITORS & BUSINESS TRIPS

W. B. Allred, AEC, Oak Ridge National Laboratory, visited this site from January 22 to 27, and D. G. Reid and N. G. Rigstad, Carbide & Carbon Chemical Corp., Oak Ridge, from January 22 to 31 for technical consultations on Redox process development.

The following men are visiting the Hanford Works from the E. I. duPont Company, Wilmington, Del., for a Redox and metal recovery survey: R. M. Evans, R. P. Genereaux, and I. Perlman from January 21 to February 5; J. N. Tilley, B. H. Mackey, L. Squires, J. E. Cole, F. B. Vaughn, S. L. Handforth and J. E. Willard from January 24 to February 5.

C. C. Nelson of Standard Oil Development Co., Bayway, N.J., and J. E. Marsden of General Electric Co., Schenectady, visited this site from January 27 to 30 to assist in the investigation of the recent Bldg. 321 explosion. Rear Admiral G. L. Schuyler, USN (ret.), was a visitor during January 27 to 31, as the major consultant engaged for this investigation.

G. W. Watt, Professor of Chemistry at the University of Texas, visited the Division from January 17 to 29, for advisory consultation on Redox, metal recovery, and 234-5 Project research and development programs.

R. E. Burns and F. J. Leitz visited the Oak Ridge National Laboratory and the Carbide & Carbon Chemical Corp. K-25 Plant from January 10 to 14 for a conference on waste disposal.

The following employees visited the Los Alamos Scientific Laboratory for training in DP West operations, including Bldg. 5: H. A. Moulthrop from January 4 to 7, W. B. Kerr and F. J. Quinn from January 4 to 14, R. A. Carlson from January 11 to 19, and E. G. Pierick from January 18 to 28.

G. W. Pomeroy has been loaned to the Oak Ridge National Laboratory from January 9 to April 1 to assist in the Redox Pilot Plant Operations.

From January 5 to 12, P. E. Collins visited the General Engineering & Consulting Laboratory, Schenectady, for consultations on the 234-5 Project.

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W. A. Brown visited the Los Alamos Scientific Laboratory from January 25 to February 4 to check equipment and for training in operations at DP West, including Bldg. 5.

B. Weidenbaum is visiting the Los Alamos Scientific Laboratory on January 31 and February 1 for a discussion of design problems.

ORGANIZATION AND PERSONNEL

Effective January 1, 1949, O. F. Hill, F. J. Leitz, and C. M. Slansky were appointed Assistant Group Heads in the Research Section. C. Groot, transferring from the Research Section, was appointed Assistant Group Head in the Development Section as of January 17, 1949.

Personnel totals in the Separations Technology Division may be summarized as follows:

	<u>December</u>	<u>January</u>
Administration	2	2
Process Section	24	30
Development Section	91	95
Research Section	26	29
Tech. Grads. in Training	<u>28</u>	<u>0</u>
	171	156

New hires were as follows: One Chemical Engineer was added to the Research Section and one Technical Graduate was added to the Process Section.

Two Chemists and one Laboratory Assistant D were transferred from the Metallurgy & Control Division to the Research Section. Nine Technical Graduates from the Training Section were transferred to the monthly roll, three being assigned to the Process Section and six to the Development Section. Nine Technical Graduates from the Training Section were transferred to the "P" Division, and ten were transferred to the "S" Division. One Steno-Typist D was transferred from the Development Section to the Maintenance Division. One Chemical Engineer was transferred from the Development Section to the Process Section.

One Chemical Engineer terminated and one returned from a leave of absence. At month-end no employees were awaiting security clearance.

200 AREAS PLANT ASSISTANCE

Canyon Buildings

An extraction waste loss of 78% was encountered on Run B-9-01-B-2. This was presumed due to a high nitric acid concentration resulting from the removal of the metal heel from a dissolver which was necessarily replaced. The extraction waste was reworked to a final loss of 0.82% and the product solution was combined with that from the first precipitation. The combined product solutions were divided approximately equally and processed as runs B-9-01-B-2 and B-2A.

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Thirty runs were processed at B Plant under production test 221-T-14, using ammonium silicofluoride high in insoluble material. Although no increase in the occurrence of turbid product solutions and no significant increase in waste losses were noted, the use of this off-standard material was discontinued temporarily in order to re-determine process performance with standard silicofluoride.

For a year and a half the Section 13 first by-product precipitation procedure has involved allowing the precipitate to settle in the Precipitator Tank prior to centrifuging. The precipitate has then been washed in this tank and transferred to the Centrifuge for final cake separation and dissolution. This procedure was placed in effect routinely after it had been shown that improved decontamination resulted and that less Centrifuge wear occurred due to the smaller number of slurryings required. Early reports had suggested some yield improvement, also. In the course of recent months, however, it has become apparent that very erratic 13-4BP yield losses accompanied this settling procedure. It was shown that these variations, particularly at B Plant, were caused by hold-up of cake between runs in the 13-1 Precipitator. It was recently shown that cake removal from the 13-2 Centrifuge could be efficiently carried out with fewer slurryings than was formerly used. This made it possible to revert to the old Section 13 procedure of centrifuging with agitation in the Precipitator without overloading the Centrifuge during cake washing operations. This change was made at T Plant in the middle of January. On the first 16 runs processed with these conditions, the average by-product precipitation loss was 0.94%, as compared with an average of 1.18% for the previous 10 runs in which the settling procedure was used, and also as compared with previous monthly averages ranging from 0.7 to 1.1%. It has been indicated that return to the old procedure has resulted in more consistent losses but it is too soon to determine if there are significant differences in average loss levels. Decontamination through the Canyon Buildings has run consistently low, however. Although this poor decontamination is compensated for in the Concentration Buildings, an attempt is being made to improve the factors in the Canyon Buildings by such means as increasing the skim heel in Centrifuge 13-2 or increasing the weight of scavengers used in the precipitation.

Initiation of the use of Sections 7 and 8 in parallel in order to decrease Canyon Building time cycles has resulted in two separate bases being used for accountability purposes. It is planned to eliminate this situation by using the 6-3MR analysis as the basis for all runs. This change will be made as soon as the reliability of the 6-3MR sample is established.

Extraction waste losses have been somewhat erratic at T Plant recently. In addition to the effect of processing old metal from the B pile (which appears to cause higher extraction losses), there have been indications that the use of bismuth nitrate solution prepared by dissolving elemental bismuth may have contributed to the erratic loss conditions. Thus, excluding runs made with B pile metal, the average extraction loss for 25 runs made with bismuth subnitrate sale solution was 0.43%, whereas the succeeding 40 runs made with dissolved bismuth metal averaged 0.53%. This possibility will be studied further.

Concentration Buildings

A test series of runs was made at T Plant with the metathesis centrifugation rate increased from 12 to 15 pounds per min. This produced a time cycle reduction

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of approximately 50 min. without causing a significant increase in waste loss. The change was therefore tested at B Plant where comparable results were found.

Twelve runs were processed at T Plant under Production Test 224-T-12, "Use of Harshaw Single-Distilled Anhydrous HF, Specification 102." Losses on these runs were not significantly different from those of the runs preceding or following made with regular double-distilled anhydrous HF. Testing of this grade of acid on a larger scale has been delayed pending receipt of analyses on the material which was used for the preliminary test.

Isolation Building

All four items of Production Test 231-8 were successfully applied to the first peroxide precipitation, reducing the cycle time by more than two hours. The pertinent changes were also made in the second cycle. No deleterious effect on the weight of product recycled to the Concentration Building has been noted.

REDOX DEVELOPMENT

Demonstration Unit Studies

During the month a series of three IA simple extraction column runs was made in the 3-in. glass column using IAFS feeds prepared for the 8.42-in. Scale-Up column, and a series of four compound column IA runs was made in the same column using four separate dissolver cuts from a single dissolver charge of uncanned slugs. A pronounced packing surface effect (2 to 3 times normal H.E.T.S.) has been observed for the initial 30 to 60-hr. running-in period using 1/4-in. stainless steel Raschig rings which have been pickled with 30 to 60% HNO₃ (4 hr. at 100°C). Bad emulsification was absent using the four dissolver cuts which were made after chemically cleaning all black sludge (primarily silica) from the dissolver using 2 M HF and 20% HNO₃ (100°C for ten minutes). Pertinent data are summarized below.

THREE-INCH IA GLASS COLUMN

Packing: 1/4-in. by 1/4-in. Raschig Rings
(12.3-ft. in the extraction section
for all runs; 7.6-ft. in the scrub
section for compound column runs).

Run No.	Purpose	Volume Velocity Gal./ <u>(Hr.)</u> <u>(Sq.Ft.)</u>	Short Tons <u>U/24 Hr.</u>	Feed Source	Disengagement Time of IAFS <u>and IAX seconds</u>	Uranium H.E.T.S. <u>(Extr. Sect.)</u>
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Simple Extraction Column Runs:

35	H.E.T.S.	173	0.07	{ IAFS & X	25	1.5
35	Flooding	515	0.19	{ from 8"-12-U.	25	---
36	H.E.T.S.	179	0.07	{ IAFS from	15	1.4
36	Flooding	655		{ 8"-13-U.	15	---
37	H.E.T.S.	179	0.07	IAFS & X from 8"-14-U.	17	3.1*

* Initial run with pickled packing.

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Run No.	Purpose	Volume Velocity Gal./.(Hr.) (Sq.Ft.)	Short Tons U/24 Hr.	Feed Source	Disengagement Time of IAFS and IAX seconds	Uranium H.E.T.S. (Extr. Sect.)
<u>Compound Column IA Runs** (Pretreated hexone, 0.1 M Na₂Cr₂O₇):</u>						
38	H.E.T.S.	178	0.07	1st Cut	19	1.8
38	Flooding	770	0.33	1st Cut	19	---
39	H.E.T.S.	172	0.07	2nd Cut	25	1.5
39	Flooding	690	0.25	2nd Cut	25	---
40	H.E.T.S.	177	0.07	3rd Cut	13	1.4
40	Flooding	610	0.3	3rd Cut	13	---
41	H.E.T.S.	87	0.034	4th Cut	16	3(Approx.)

** For runs 38 through 41, IAF entered through a 1/8-in. nozzle instead of the previous 0.31-in. i.d. tube.

During run 3"-35-U, a 5-ft. head of emulsion was observed on the interface, indicating a pronounced tendency for the feed solutions (from 8"-12-U) to foam. Excessive emulsification was entirely absent during runs 3"-36-U through 3"-41-U, including run 3"-39-U for which the "disengagement time" by the established empirical test was 25 seconds (approximately 50% higher than normal; possibly no emulsion because hexone left the packing in streams instead of discrete globules).

Visual observations made during run 3"-37-U indicated maldistribution of the dispersed (hexone) phase and a tendency for this phase to wet the packing (not normal). A gradual change, approaching normal appearance, was noted throughout the 65 hours of operation (over a 6-day period) encompassing runs 3"-37-U through 3"-40-U. The progressive improvement in H.E.T.S. and decline in flooding capacity for runs 3"-38, 39, 40-U is tentatively believed due to the changing dispersed-phase flow pattern during the packing conditioning period, although further studies are necessary to establish whether or not successive dissolver cuts exhibit different mass-transfer performance. Although the 1/8-in. IAF nozzle (discharging upward) which was tried for improved feed-scrub mixing does not appear to have made a significant improvement in H.E.T.S. at 177 gal./.(hr.)(sq.ft.), the preliminary 3-ft. H.E.T.S. for run 3"-41-U at 87 gal./.(hr.)(sq.ft.) suggests some improvement over run 3"-30-U (4.2 ft. at a similar volume velocity, using a 0.31-in. i.d. IAF inlet nozzle).

Values for the "Heights of a Transfer Unit" (HTU) have been calculated for uranium transfer below the feed-point in the 2-in. IB column. These H.T.U. values (calculated on an "overall water-film basis") are on the order of 1 ft., compared with H.E.T.S. values (reported previously) of approximately 3 ft. Preliminary indications are that H.T.U. values for most of the IA, IB, and IC runs made to date will be in the approximate range of 1 to 2.5 ft., indicating smaller variations among the IA, IB, and IC systems than are exhibited by corresponding H.E.T.S. values.

Three IC service runs (4"-20-21, and 22-CUS) were made in Demonstration Unit equipment during the month.

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Scale-Up Studies

Two additional IA simple extraction column runs were carried out during the month in the 8.42-in. column packed with 19.9 ft. of 1/4-in. stainless steel Raschig rings. Pertinent data are summarized below.

EIGHT-INCH IA SIMPLE EXTRACTION COLUMN

Run No.	Purpose	Volume Velocity Gal./(hr.) (sq.ft.)	Short Tons U/24 Hr.	Disengagement Time of IAFS and IAX seconds	Uranium H.E.T.S. (Extr. Sect.) Ft.
12	H.E.T.S.	509	1.5	25	7.9
12	Flooding	825	2.5	25	---
13	H.E.T.S.	631	1.9	15	2.2
14	H.E.T.S.	535	1.6	16	2.1

Low "disengagement times" for the 8"-13 and 14-U feeds, and the absence of emulsions in the column during these runs, are taken as indications that the program of purging all IAW solutions from the Scale-Up system and washing all ICW solutions with 10% aqueous Na₂CO₃ has succeeded in removing substantially all of the unknown foaming agent from Scale-Up solutions. Runs 8"-13 and 14-U did not reproduce the high H.E.T.S. of run 8"-12-U, which is now believed to have been 3 to 4-fold too high because the new, pickled 1/4-in. packing had not yet been surface-conditioned. Aliquots of the 8"-12-U IAFS and IAX used for run 3"-35-U in old (not freshly pickled) 1/4-in. rings resulted in a nearly normal H.E.T.S. (1.5 ft.) and a slightly low flooding capacity (515 gal./(hr.)(sq.ft.)) with excessive foaming. The higher flooding capacity and lack of foaming during 8"-12-U may both be explained by the assumption that hexone was wetting the freshly-pickled packing and leaving the top of the packing in streams instead of discrete globules (as was actually observed in the 3-in. glass column using freshly-pickled packing). Unless a projected 50-hr. IA run in the 8.42-in. column results in an H.E.T.S. of less than approximately 1.5 ft., it appears that 1/4-in. rings in an 8.42-in. diameter column are too small to maintain adequate phase redistribution for IA extraction section operating conditions.

During the month, five IC flow sheet studies were conducted in the 8.42-in. column packed with 19.9 ft. of 1/4-in. stainless steel Raschig rings. Pertinent data for these IC runs are abstracted below:

FLWSHEET IC STUDIES: EIGHT-INCH COLUMN

Packing: 19.9 ft. of 1/4-in. by 1/4-in. rings.

Run No.	Volume Velocity Gal./(Hr.) (Sq.Ft.)	ICF & ICX Temperatures, °F	Short Tons U/24 Hr.	ICW Loss, % of U In Feed	Uranium-Transfer H.E.T.S., Ft.	H.T.U., Ft.(1)
10	664	75(Approx.)	1.4	0.03	6.6	2.4
11	445	95	1.0	0.005	5.2	1.8
12	357	95	0.7	0.003	5.0	2.3
14	329	75(Approx.)	0.7	0.005	5.3	1.9
13	229	75(Approx.)	0.5	0.02	6.6	2.2
13	229	92	0.5	0.05	6.4	2.5

(1) H.T.U. values calculated on an "overall hexone-film basis".

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Over the above 3-fold range of operating rates, the H.E.T.S. and H.T.U. values do not appear to vary as much as for the IA system, and runs 11, 12, and 14 bettered the A.N.L. June, 1948, Flow Sheet ICW loss of 0.01 per cent. A similar series of runs will be made using 1/2-in. rings in the 8.42-in. column. The decrease in ICW waste losses which would be expected employing feeds at higher than normal temperatures was not encountered.

Two service runs were made in Scale-Up columns during the month (5ⁿ-13-US and 8ⁿ-15-CUS).

Equipment Modifications and Development

No significant changes or additions to the Demonstration or Scale-Up Units were completed during the month. The use of automatic flow control equipment (Fisher vane pump--Fischer & Porter controlling rotameter--Hammal-Dahl control valve) on the 2-inch and 3-inch columns has resulted in improved column stability and performance. Steps are underway to eliminate the displacement pumping system by direct control of the IAF or IAFS streams. A Schutte & Koerting controlling rotameter permitted control of the Scale-Up organic feed stream to within $\pm 2\%$. The installation of a steam stripper for hexone removal from ICU and IAW streams is about 50% complete. The IAF precontactor for crud removal by countercurrent contacting with equilibrated hexone is essentially complete and shakedown studies are contemplated in the near future. Assembly of the modified S.O.D. 21-stage box mixer-settler equipped with vibrating perforated plates was completed during the month.

Studies in the 2 ft., 1.5-inch diameter steam stripper packed with 1/4-inch Raschig rings indicate that at IAW rates of about 2175 lbs./(hr.)(sq.ft.) and steam rates of 307 lbs./(hr.)(sq.ft.), 99.5% of the hexone is removed. Studies with ICU feeds are contemplated.

By decreasing the rate of plate agitation to 450 cycles/min., uranium stage efficiencies of 80% have been attained in the 14-stage modified A.N.L. box mixer-settler (labyrinth horizontal extractor) at total phase flows of 240 ml./min. Following a high-spot evaluation of the performance variables of this unit, a series of equilibrium studies is planned. Such a method of equilibrium data determination will be much more rapid than the present laboratory method of phase contacting in a separatory funnel battery.

Performance characteristics of the Roth Turbine Pump with water have been completed. The G.E. submerged turbine pump completed 430 hours of life testing with IAX. At 5:37 a.m. January 23, the unit was apparently the point of origin of a low intensity explosion and subsequent deflagration. The circumstances surrounding this incident will be covered by a separate report. The cause is believed to be due either to a violent HNO₃-hexone reaction or to an ignition within the IAX reservoir vapor space induced by seized shaft bearings. Evidence at the moment appears to favor the latter theory.

Process Laboratory

Progress has been made toward understanding the cause of high "disengagement time" IAFS feeds prepared for Demonstration Unit studies from uncanned slugs. The previously reported accumulated dissolver sludge was found to contain about 12% Si and 12-13% Sn. In addition, it has been determined that uncanned slugs

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during the past few months have been recastings and contained a higher than normal Si content. A slug containing ca. 180 ppm of Si (normal = 10-20) upon dissolving in the laboratory produced a second-cut IAFS having a "disengagement time" with IAX of about 38-40 seconds (normal = 10-15 seconds). It is felt that previously reported emulsification problems might have been due to (1) Si entrance into IAFS via dissolver crud, and (2) Si entrance via the original slug. Such studies are preliminary and will be carried further. Laboratory slug dissolvings spiked with quantities of Sn and Cu resulted in IAFS feeds with "disengagement times" of 17-20 seconds—slightly higher than normal.

Studies of HNO_3 removal via batch distillation indicate an operating temperature range of 100 to 170°C. to effect the required HNO_3 removal from ICU.

Studies of the photochemical reaction between uranium and hexone are in progress. Prolonged exposure of hexone-saturated IAFS (no chromium) to sunlight results in production of an as yet unknown quantity of quadrivalent uranium (green color). Samples exposed in this manner have indicated IAFS-IAX "disengagement times" as high as 87 seconds. The uranium (IV) usually oxidizes when removed from the sunlight, but there is evidence to indicate that prolonged exposure renders the reduction permanent.

A study of HNO_3 -hexone solutions 0 to 4M HNO_3 has indicated absence of reaction in the presence of nitrite catalyst over the range of 22-35°C. Below 60°C, no self-sustaining reaction was possible.

Special Note

The damage to the 321 Bldg. Semi-Works resulting from the explosion of the IAX pump test stand referred to in the foregoing was sufficient to force a suspension of all Redox column studies for at least all during the coming month of February. Although less than 0.1% of the experimental equipment was damaged, the major part of the operating gallery and service areas must be either extensively overhauled or rebuilt. Repair and rehabilitation is proceeding at an accelerated pace, however.

REDOX RESEARCH

Decontamination from Ruthenium by Distillation of RuO_4

Nine consecutive distillations have been performed in the same all-stainless steel still without clean-up between runs. An average of 89.4% of the tracer activity was recovered and the amounts recovered in different distillations were constant within experimental error. Evidently, no "saturation" of the surface was reached. Extensive cleansing treatments resulted in recovery of an additional 3.36% from the still surfaces. In view of the low material balance of only 93%, a 3 - 4% hold-up of activity on the walls of the still must be tentatively assumed. This assumption may, however, be in error, since stainless steel coupons subjected to the same treatments as the still walls were satisfactorily cleaned up.

A study of activity hold-up by coupons of a variety of materials would indicate that the deposition is one of reaction rather than adsorption. Platinum and gold hold up only about 1% of the activity that is held up by stainless steel.

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An investigation of the distillation of RuO₄ with ozone from IBP and ICU solutions has been started. The lower activity levels in these solutions should make it easier to cope with the problem of deposition of ruthenium activity on stainless steel.

Glass Wool Scavenging

Using dissolver metal solution, continued investigation of the adsorption of zirconium and gross gamma activities on glass wool have verified that adsorption decreases as the solution ages. Over a one-month period, adsorption was found to decrease by a factor of two or more at pH values of 0.0, 0.5, and 1.0.

Water washing of the glass wool appears to be as good or better than other preliminary surface treatments tried. Soaking in 2% NH₄ OH, 0.3 M HNO₃, 2% sodium silicate, glacial acetic acid, 2% NaOH, 2% NH₄F, and 2% NaHCO₃ have been investigated.

One portion of glass wool was successfully recycled through four adsorption and leaching (10% oxalic acid) cycles without intermediate treatment.

Low adsorption from dissolver metal solutions with 30 minute contacts suggests that longer contact times may be necessary. Exploratory experiments indicated an increase of about 50% in the adsorption when the contact was increased to 60 minutes.

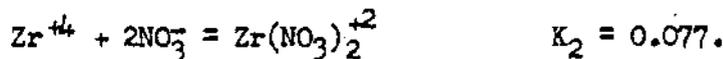
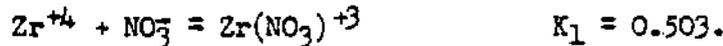
Experiments in which glass wool treatments are followed by batch extraction and scrubbing contacts are in progress.

Zirconium Species

The nitrate complexing of trace concentration of zirconium in 4 M acid has been continued. Distribution ratios of zirconium were measured between a benzene-TTA phase and an aqueous phase having nitrate ion concentration ranging from 0 to 4 M. The data may be represented by the following equation:

$$E = \frac{E^0}{1 + K_1(NO_3^-) + K_2(NO_3^-)^2}$$

where E⁰ is the distribution ratio (benzene/aqueous) at zero nitrate ion concentration, E the distribution ratio at a nitrate ion concentration (NO₃⁻), and K₁ and K₂ the equilibrium constants for the reactions represented by the equations:



The above algebraic equation may be re-arranged to read

$$\frac{E^0 - E}{E(NO_3^-)} = K_1 + K_2(NO_3^-)$$

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A plot of $\frac{E^0 - E}{E(\text{NO}_3^-)}$ versus (NO_3^-) gave a straight line with an intercept at $(\text{NO}_3^-) = 0$ of 0.503 (K_1) and a slope of 0.077 (K_2). The plot appeared to be linear over the range studied, indicating that higher complexes are unimportant. The value of K_1 is probably good to $\pm 5\%$.

Redox-Phosphate Coupling

In the proposed coupling of the Redox and Bismuth Phosphate processes, plutonium is separated in the aqueous effluent from an extraction column operated at low acidity and under reducing conditions. The feasibility of removing plutonium from this effluent by means of a closed-cycle extractor prior to bismuth phosphate extraction has been demonstrated on a laboratory scale. The scheme employed comprises oxidation of Pu(III) to Pu(VI) in the effluent by means of dilute dichromate or ozone at low acidity, followed by several cycles of extraction by hexone and stripping into a low-acid sulfate solution. Experimental results may be summarized as follows:

1. The low-acidity oxidation of Pu(III) to Pu(VI) by dichromate is complete after heating for 1/2 hour at 60°C.
2. The rate of reduction of Pu(VI) in the solutions employed is very slow.
3. Transfer of Cr(VI) from the effluent into the strip solution is negligible at low acidities.
4. The presence of 0.01 M UNH in the aqueous effluent reduced E_h^h for Pu(VI) by greater than a factor of two. This is conveniently overcome by adding more $\text{Al}(\text{NO}_3)_3$ to the effluent, in order to reduce the number of cycles needed for quantitative plutonium extraction.
5. Using dichromate, transfer of 99.25% of the plutonium into a 1.5 M Na_2SO_4 strip solution with a ten-fold volume reduction was demonstrated in four batch extraction and stripping cycles. Volume ratios were 1:1:0.1; effluent:hexone:strip. Higher recovery could have been obtained by use of more cycles or a larger hexone volume.
6. Using Ozone - 0.01 M AgNO_3 as the oxidizing agent and other conditions the same as in (5) except for a slightly higher $\text{Al}(\text{NO}_3)_3$ salting strength, 99.7% recovery of plutonium was obtained.
7. Bismuth phosphate extraction of plutonium from strip solutions proceeds normally after stabilizing the (IV) state with NaNO_2 .

All attempts to co-precipitate Pu(IV) with BiPO_4 in the aqueous effluent without recourse to a preliminary closed-cycle extraction procedure were unsuccessful. Even after destruction of sulfamic acid and ferrous ion with an excess of nitrite, carrying was only of the order of 0.3 to 4.0%. Incomplete precipitation of BiPO_4 in the presence of aluminum salts is believed to be responsible.

Use of Ozone as an Oxidizing Agent for Plutonium

The stability under Column IIA conditions of Pu(VI) formed by ozone oxidation of IBP solution has been tested. A synthetic IBP solution of flow sheet composition

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containing ca. 0.4 g Pu(III)/l was ozonated for six hours at room temperature with 0.01 M AgNO₃ present and then sparged free of ozone. Following this oxidation to 100% Pu(VI), the solution was extracted with successive equal-volume portions of plutonium-free but otherwise pre-equilibrated hexone. The total time of contact was three hours and the total time of rigorous stirring was about one hour. After the fourth extraction, less than 0.03% of the original plutonium was left in the aqueous phase and E₃⁰ still favored the hexone. These results are in good agreement with those of a similar experiment reported last month.

A similar experiment was performed to test the use of ozone as a replacement for dichromate in Column IA operation. IAF solutions of flow sheet concentration containing ca. 0.1 g Pu/l were oxidized to 100% Pu(VI) by ozonation for one hour at 75°C, as well as by six hour ozonation at room temperature, employing 0.01 M AgNO₃ as catalyst in both cases. These solutions were diluted with equal volumes of 1.3 M ANN to yield IAFS solutions and repeated extractions then carried out as above. In both cases, however, partial reduction of the Pu(VI) occurred during the contacting and 20% of the initial plutonium was still left after the sixth extraction. It thus appears that ozone holds little promise as an oxidizing agent for IAF solutions under ANL flow sheet conditions. The applicability of ozone oxidation to a IA column operating at low acidity and in the presence of sulfamic acid is under investigation.

Calorimetric Measurements

The heat of solution of water in hexone has been found to be about +1800 cal/mole H₂O and a value of about -2.250 cal/mole hexone has been found for the dissolution of hexone in water. These quantities were not taken into account in the calculation of previously reported values for the heats of transfer of HNO₃ and of uranium (VI) from aqueous solutions into hexone. Corrected values of the latter quantities are now being calculated and will be reported at a later date.

Estimates of the heat of crystallization of Al(NO₃)₃·9H₂O (ANN) in water and in 66% HNO₃ were obtained by measuring the heat of solution of Al(NO₃)₃·9H₂O at 25°C. Results are tabulated below. All heats are positive; i.e., heat absorbed.

Initial Composition		Final Composition		Δ H Solution (cal/mole ANN)
HNO ₃ (g/l)	ANN(g/l)	HNO ₃ (g/l)	ANN(g/l)	
923	0	917	16.5	15,100
917	165	914.4	23.0	11,700
0	0	0	6.6	7,200

Emulsion Formation in Column IA Systems

The program of H.E.T.S. versus flow rate studies with the 3" IA Demonstration Column was interrupted by emulsion formation during Run 3-33-U. To avoid flooding, flow rates had to be reduced to 1/2 of those previously found permissible in this IAFS-IAX extraction, and even at these reduced flow rates a 4-foot column of fish eggs persisted immediately below the interface at the top of the column.

Using the disengaging time after shaking a IAFS-IAX system as a measure of the tendency toward emulsification, the agent(s) responsible was found to be present in the plant IAFS feed and absent in plant IAX extractant. Further, this

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emulsifying agent(s) was shown to originate in the dissolver tank and was not derived from the ANN, HNO₃, or water from the plant.

A method for the removal of the emulsifying agent(s) from plant IAFS was developed involving adsorption on the filter aids, Super-Cel or Super Filtrol, the latter being more effective. Stirring the plant IAFS with 1% by weight Super Filtrol (0.1 #/gal.) for 12 hours at room temperature reduced the disengaging time 4-fold, corresponding to that of a reagent grade IAFS. Less exacting conditions for adsorption may suffice; the minimum Super Filtrol concentration and contacting time required, and the optimum temperature were not determined. Coconut charcoal and hydrated alumina were found unsatisfactory as adsorbents.

Spectrographic analysis of the Super Filtrol adsorbent did not afford an identification of the emulsifying agent(s). Other attempts to isolate and identify the material(s) have been made by (a) centrifugation at ca. 10⁴ G, (b) adsorption on pyrex glass wool, (c) ion-exchange with Dowex A-1, A-2, and 50, (d) solvent extraction of the IAFS-IAX systems, and (e) dialysis. The last two appear to show most promise for the isolation and characterization of the emulsifying agent(s); e.g., dialysis experiments suggest that the material(s) is colloidal.

STACK GAS SUMMARY

Sand filter evaluation was continued at both plants. At T Plant, frozen lines precluded monitoring during much of the period. At B Plant, frozen lines prevented operation of the 50-ft. level sampling point for several days. Results of the routine monitoring at B Plant indicated activity removal efficiencies in the range of 99.8 to 99.95% at a pressure drop of 7.3 to 7.4 inches of water with 26,300 cfm of air flow. The few results obtained at T Plant indicated 99.9% efficiency at 4.8 inches of water pressure drop and a flow of 26,500 cfm. In spite of the high efficiency of the sand filters, the activity level of the air sampled at the 50-ft. level in the B Plant stack continued to show recontamination by factors ranging from 80 to 175. Further evidence that the off-gas lines were the source of the recontamination was gained by running one vent jet with all dissolvers shut down and with the vent line broken on the vacuum side of the jet so that outside air was drawn in. The recontamination factor was less than 10 on this day. Since previous samples taken directly from the off-gas sampling line at B Plant had indicated activity levels too low to account for the concentrations shown at the 50-ft. level sampling point and since the off-gas sampling points at B Plant considered poorly designed, new sample off-take lines were welded into the off-gas vent lines. Concurrent filtering and scrubbing runs with gas taken from the 50-ft. level sampling point and from the new off-gas sampling point checked within a factor of 2 to 3, whereas similar samples taken with the old off-gas sampling system had differed as much as 10,000-fold. This final confirmation of the source of the stack recontamination levels presently encountered has led to the initiation of the design of fiberglass filter units to be installed in all plant dissolver off-gas vent lines.

Pilot plant evaluation of No. 55 fiberglass as a filter medium for ventilation air was continued. The program of runs at 6 lbs. per cu. ft. packing was carried through the planned 4-ft. depth of packing for linear velocities ranging from 1.8 to 15 ft. per minute. Efficiencies of the various thicknesses of packing were significantly greater than for comparable depths of sand and pressure

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drops were much lower. For example, 5 linear ft. per minute of air flow through a 2-ft. sand bed has given pressure drops of the order of 4 inches of water, whereas a similar depth of fiberglass at the same flow rate gives values in the neighborhood of 0.8 inches of water. Currently a similar set of runs is being made with a packing of 3 lbs. of fiberglass per cu. ft. Early results indicate less efficient operation for 1 and 2-ft. depths of this material, with 2 ft. of the lighter density giving efficiencies well below those of 1 ft. of the denser packing.

Early in the month the rectifier unit of the electrostatic precipitator test model was replaced by a new one which had been purchased, and the rented unit was crated and returned to the vendor. Numerous mechanical difficulties were encountered with the unit when the new rectifier was started up. It was necessary to stop several runs to have maintenance work done. At the end of the month no satisfactory runs had been made with the new unit but the last repairs appeared to put it in shape for satisfactory operation.

Routine activity traverses of the plant sand filters with ionization chambers lowered into the vertical monitoring risers have indicated greater activity level build-up in the B Plant unit than at T Plant. In both cases the maximum readings occurred at the bottom of the layer of fine sand (Type G), as would be expected.

A qualitative study of the gases evolved during coating removal and slug dissolution reactions has been started with the objective of determining hydrogen concentrations at various points in these reactions. Results are not yet available.

Assistance has been given to the Project Engineering Division in laying out fiberglass filters for the direct off-gas filtration. It has been pointed out that the evolution of ammonia from coating removal operations and of nitrogen oxides from slug dissolution reactions could cause deposition of ammonium nitrate in the system. This has indicated that separate filters will be required for each dissolver in order to avoid the possibilities of plugging the filter or of depositing a potential explosive.

234-5 PROJECT

Operations Group

Six members of the 234-5 Project Group were sent to Los Alamos during the month for operational training. A total of seven have now completed their Los Alamos training period. Acceptance testing and inspection procedures for the power house, filter plant, outside steam lines, underground water lines, elevated water storage tank, electrical facilities (except for elevator and alarm systems), and the crucible shop were issued. Building procedures and operating procedures were in preparation during the month. It is expected that these will be in final form by the middle of February. Tentative agreements were reached at meetings with the A.E.C. and G.E. security offices relative to product transfer between 231 and 234 Buildings and with regard to vault controls in the 234-5 Building. About 90% of the protective clothing required for start-up has been obtained.

At month-end, the 234-5 Bldg. was estimated to be 55% complete. Eight hoods for the Rubber Glove Line were received during January, bringing the total received to date to 22. Four hoods were inspected at the 272-Z shop by the Technical

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Group and accepted with minor exceptions. Installation of hoods in the 234-5 Bldg. process bay began on January 6. At month-end, ten hoods were in various stages of installation in the process line.

Schenectady Liaison

With approval of the powder conveyor principle for transfer from Task 2 to Task 3, all operations task approvals of layout drawings have been given by Hanford. Instrumentation recommendations on three of the eight tasks have not yet been submitted to Hanford for approval, however, and such additional items of equipment for the R. M. Line as wet-cleaning hood and equipment, canning hood and equipment, preliminary inspection hood and equipment, and final inspection hood and equipment are not included in these eight tasks. Schenectady personnel plan to visit Hanford February 14 to demonstrate the uses of the plastic bag using a hood mock-up. It is hoped that this equipment can be tested with product compounds in order to evaluate the equipment.

Means by which the Hanford 234-5 Technical Group can assist Schenectady in detail design work during the ensuing three months have been discussed. It appears that at least one Hanford representative should be sent to Schenectady to assist the design group there during this period. This assistance would consist largely of review of hazard control and accessibility characteristics of the equipment.

Development Group

The ten gram-scale pilot line in Bldg. 231 has been essentially completed. Following calibration runs, satisfactory reduction of uranium tetrachloride was achieved with a resistance furnace. After the induction furnace for this line arrives and the strip coating of the hood is completed, the line will be ready for testing with plutonium.

In agitation tests on an allocated sample can, complete dissolution was achieved in 45 minutes. Aliquots of the solution were set aside for later purification runs.

A sample of ground calcium has been submitted to the Essential Materials Group of the Metallurgy and Control Division for evaluation. Samples of metal and of fluoride from DP West have been submitted to the Analytical Development Group for analysis.

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INVENTION AND DISCOVERY STATEMENT

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 M</u>	<u>Title of Invention or Discovery</u>
None	None

R. H. Beaton

R. H. Beaton, Head
Separations Technology Division

Date: February 10, 1949

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METALLURGY & CONTROL DIVISION

JANUARY 1949

VISITORS & BUSINESS TRIPS

The Division had no off-site visitors during January.

Business trips to other locations were as follows:

J. H. Bach, R. E. Savidge and R. Ward attended an Atomic Energy Commission metallurgical meeting at Battelle Memorial Institute at Columbus, Ohio, on January 18-20. J. H. Bach visited the General Electric X-Ray Corporation, Milwaukee, Wisconsin, on January 17 to discuss technical aspects of the new General Electric XRD unit which is to be installed here in 3-4 months. He also visited the Knolls Atomic Power Laboratory, Schenectady, on January 21 and 24 and Argonne National Laboratory on January 25-26 for discussions on X-ray diffraction techniques and results with uranium metal. R. Ward visited Argonne National Laboratory on January 21 to discuss the metallurgical development program on P-10 alloy (lithium-aluminum).

R. Teats and T. S. Jones followed the rolling of uranium rods for Hanford at Lockport, N. Y. on January 10-18. R. M. Padden followed the rolling of uranium rods at Aliquippa, Pa. on January 3-15.

R. J. Schier attended an Atomic Energy Commission Conference on uranium metal quality at Mallinckrodt Chemical Works, St. Louis, Mo. on January 17-18. He also attended the metallurgical meeting at Battelle Memorial Institute on January 19-20. He spent January 21 at Argonne National Laboratory discussing the fabrication of Li-Al alloy slugs in connection with the P-10 Project.

A. H. Bushey visited the Knolls Atomic Power Laboratory on January 17-19 to discuss analytical methods and programs. He spent January 20-21 at the Pittsburgh Analytical Symposium, Pittsburgh, Pa., and January 21 and 24 at the Carbide and Carbon Chemical Corporation (Y-12 and K-25 Divisions) at Oak Ridge discussing analytical methods and programs. While there, he reviewed Rala analyses at the Oak Ridge National Laboratory.

R. E. Curtis visited the Puget Sound Naval Yard, Bremerton, Wash., on January 19, and three commercially-owned machine shops in Portland, Oregon, on January 24, to determine the feasibility of fabricating special laboratory apparatus in off-site machine shops.

ORGANIZATION & PERSONNEL

Personnel totals in the several subdivisions are summarized below:

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Metallurgy & Control Division

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	<u>December 31</u>	<u>January 31</u>
300 Area Plant Assistance Group	12	12
Metallurgy Laboratory Section	18	19
Analytical Section	428	430
Statistics Group	9	10
Information Group	54	54
Administrative	<u>3</u>	<u>3</u>
Totals	524	528

Two weekly-roll chemists and seven laboratory assistants were employed by the Analytical Section. This section transferred the following: One exempt chemist and one weekly-roll chemist to the Separations Technology Division, two weekly roll chemists to the Health Instrument Divisions, one laboratory assistant to the Pile Technology Division, and one laboratory assistant to the Metallurgy Laboratory Section. Two laboratory assistants were transferred into the Analytical Section, one from the Pile Technology Division and one from the Information Group. The Information Group employed one non-exempt technical graduate for technical abstracting. The Statistics Group employed one typist. There were a total of three terminations, all by non-exempt personnel; none was due to lack of housing.

At month-end, this division had five non-exempt personnel on the rolls awaiting security clearance for classified work. Three of these were laboratory assistants in the Analytical Section, and the other two were Files personnel.

300 AREA PLANT ASSISTANCE

Uranium Melting and Casting

The use of briquettes prepared from pickled uranium turnings was started in the melt plant during the month. Turnings are being pickled on one slug pickle line temporarily converted for this use. The weight loss during pickling is averaging 5.5%. Casting yields as high as 94.9% were obtained, although the average yield for 27 heats was only 91.9% due to operating difficulties.

An investigation of the source of the recent high silicon contents in billets cast from remelted scrap has been partially completed. Interpretation of the data must await completion of the study. P.T. 314-59-M, covering the determination of furnace pressure effect on billet yield and quality, has been tabled until this silicon question can be resolved.

Uranium Rolling

Uranium billets were rolled at Lockport, N. Y., and at Aliquippa, Pa., during the month under the supervision of 300 Area Plant Assistance personnel. Starting with the February production rolling run, the AEC (New York Office) will assume full technical supervision of uranium fabrication at Lockport, N. Y.

Four billets were preheated in lead during the run at Lockport to determine whether this method of preheating would reduce the overall uranium oxidation during rolling. With lead preheating, the weight loss determined after rolling was 0.3% less than the 1.8% normally obtained. These rods will be checked for

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lead inclusions at Hanford.

Slug Canning

Since trials made under P.T. 313-107-M, Supplement A, showed that both reduced can wall penetration and improved canning yield were obtained with rolled uranium slugs machined smaller in diameter than FA size (due to the diameter expansion of this metal during triple-dip canning), the machining specifications for these slugs were changed to 1.350" (+ .001", - .002") diameter by 4.045" (+.010") length, starting with Lot 1168S on Jan. 4. This new slug size has been termed "FM" and was authorized in document HW-12072 (issued 1-7-49). Inspection results of FM slugs canned since Jan. 4 show the anticipated reduction in non-seat and frost test rejects, and in can wall penetration.

The 1739 FA slugs machined (under P.T. 314-58-M) from rods produced by forging-rolling at Vulcan were remachined to M diameter. Since these slugs are only 4" long instead of the 4.045" required to maintain an FA slug weight, they will have subnormal reactivity. However, their dimensions will not affect the desired pile check on dimensional stability.

High frequency induction heating trials with uranium slugs were started in the 300 Area, using the Malt Plant 3000-cycle motor-generator set and a specially designed work coil. It was found that slugs could be heated satisfactorily with this equipment. Pilot scale mechanical equipment is being constructed for passing slugs through the work coil at controlled speeds, and when suitable conditions have been developed, slugs structurally transformed in this manner will be prepared for pile testing.

P-10 Alloy

Design work and operational planning for the melting and casting facilities for preparing lithium-aluminum alloy were continued. This process is to be located in Bldg. 108 in the 100-B Area, and its initial operation is to be a responsibility of the 300 Area Plant Assistance Group. Suspense Code 481 is being used until the required project proposal can be prepared and approved.

Miscellaneous

In an AEC conference on uranium metal quality at St. Louis on January 17 and 18, it was learned that the increase in reactivity of Types J and S uranium supplied by Mallinckrodt resulted principally from a change in their ore refining process. In addition, Mallinckrodt has undertaken a thorough investigation of their melting technique in an attempt to increase the reactivity of their virgin metal still further. Billets prepared under this investigation were rolled at Lockport this month and will be evaluated at Hanford.

Since results of corrosion studies with aluminum-silicon coated stainless steel indicated this coating to be effective for reducing the corrosion of Van Stone flanges in the piles, an investigation has been in progress to determine methods of applying this coating (and 2S aluminum) to stainless steel nozzles. A very promising method of coating, which consists of first galvanizing stainless steel and then coating with Al-Si (and aluminum), is being investigated at present.

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Project C-308 was approved for the construction of a small Plant Assistance field office and workshop in the metal fabrication area adjacent to Building 303-C.

METALLURGY LABORATORY

Uranium Alloys

Uranium alloys received from Battelle, and containing a nominal 0.01 and 1.0 atomic percent zirconium and 1.0 atomic percent each of chromium, molybdenum, silicon, and iron, previously showed a fine grain size resulting after a water quench from a heat treatment of 725° C for 15 minutes. Examination of different samples of these same uranium alloys which had been heat treated at 725° C for 15 minutes, quenched in a tin bath at 600° C and held 5 minutes, and then quenched to room temperature, showed only the nominal 1.0 atomic percent molybdenum to remain fine grained. All of the other alloys exhibited the usual coarse unstable beta structure.

Metallographic examination of Vulcan rolled uranium with an extremely large grain size, presumably obtained as a result of alpha rolling at a temperature approaching the alpha-beta transformation, shows the apparent grain size to be considerably refined by the triple-dip process and very similar to any other alpha rolled triple-dipped uranium. On the other hand, gamma extruded uranium with its characteristic large grains (or patches) appears to be only slightly refined by the triple-dip process. The reasons for these anomalous results are not yet clearly understood.

Investigation of a number of samples removed from uranium rods induction heated into the beta phase and water quenched indicates that a relatively small grain size (approximately 0.090 mm. diameter) can be obtained by this technique.

X-Ray Crystallography

Longitudinal and transverse samples of uranium rod alpha rolled according to regular production schedules were examined in the as rolled, alpha annealed, and beta quenched conditions, and as normal triple-dipped material. The intensities of the reflections from different planes observed on the spectrographic tracings were compared with the intensities calculated from theoretical values for these same planes assuming a random orientation. Preferred orientations are readily evident when this ratio for each of the planes involved is plotted in histogram form.

Results of this investigation indicate that, for these particular samples, (1) the rolling direction lies between the (020) and the (110) poles, (2) annealing in the alpha phase appears to cause no appreciable change of orientation, but (3) samples heated into the beta phase, and quenched, exhibit a close approach to a random orientation. Examination of samples heated into the gamma phase are awaiting completion of the laboratory revisions being made under Project C-227.

Irradiated Materials

Considerable progress has been made on the conversion of Building 111-B to a hot neck-up metallurgy laboratory (Project C-294).

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The wooden mock-up of the hot metallurgy cell was moved from Building 189-F to Building 108-B for purposes of closer liaison with the work in Building 111-B. Two remote control mechanical manipulators were received from J. Payne of the Knolls Atomic Power Laboratory, and will be tried in the wooden mock-up cell as soon as the proper power sources are available.

The ruptured slug from tube 0569 of B Pile, and the cap from this slug, were canned and stored in the B pile basin. Attempts made to decontaminate this cap had been unsuccessful, although photographs of it were made through a lucite shield. Present radiation readings indicate 28 Rep/hr (including 280 mr/hr) for the cap at 8" in air and 2 R/hr for the slug at 10 feet in air. The latter is equivalent to 18 curie material.

Dilatometry

Dilatometric tests were completed on the 1.0 atomic percent copper and 1.0 atomic percent manganese uranium alloy rods. The copper had no effect on thermal properties. Results with the manganese alloy were conflicting. Laboratory revisions in Building 3706 caused an early interruption of sample preparation for this program.

Redox Corrosion Testing

Corrosion tests of stainless steels (T-309 SCB, T-347, T-316 ELC and T-318) in IA and IB Redox solutions are continuing according to schedule with one exception. In view of the Building 321 explosion on January 23, all dynamic tests involving IAX solution in Building 3706 were discontinued on January 24.

Corrosion test specimens examined during the month according to schedule are listed below:

- (1) IBX: 90-day inspection period of the above stainless steels revealed no significant changes.
- (2) Alternate-immersion tests: 30-day inspection period of welded specimens of the above stainless steels revealed no significant changes.
- (3) SAE 1020 in IAW (pH 10-11): 30-day exposure period at 162° F revealed no pitting and only slight rusting.

Tests of machine-welded T-347 with T-309 wire in IAW solutions (pH 0, 2, and 10) were begun. Initial 48-hour and 1-week inspection periods revealed no significant changes. A Huoy corrosion test did not reveal any harmful carbide precipitation during welding.

After 14-day exposure in IAF and IAX, Fluorothene A - Graphite Filled and Corrosion Resistant Graphitar revealed no apparent changes in physical characteristics with the exception of weight gains.

Miscellaneous

Examination of beryllium samples show definite stress relaxation, by creep, to have taken place. All samples were removed, examined, and returned to test to obtain more points on the curves. One sample, plotted in its original

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condition and after 37 days exposure to stress, relaxed from 47,800 psi to 16,500 psi. One or two more points will establish the creep rate at room conditions without neutron irradiation.

The uranium creep and damping program is awaiting the availability of more space. Final orders for the temperature limiters have been placed.

The 10% Mg-Al alloy (age hardening) program preliminary work has been started in determining the liquation temperature of this alloy. A temperature of 450° C indicated the start of liquation in small segregated areas about the size of single grains. This temperature is the desired one for heat treating the alloy prior to age hardening. Consequently, more specimens were treated at this temperature for 2, 4, 8, and 16 hours to see if a healing effect (by diffusion) will take place.

Service Work

The following work was done for the Pile Technology Division:

- (1) A tension test was made on ribbon for the segmental discharge apparatus.
- (2) Tensile tests on four aluminum thermocouple tubes were performed.
- (3) Compression tests were made on eighteen specimens of graphite and the results tabulated.

A laboratory examination of the pickling tank steam coil which recently suffered a corrosion failure in the 200 Areas is being conducted for the Maintenance Division. Corrosion tests of Hastalloy C in the present HNO₃-HF pickling solution show it to be undesirable for use. T-309 SCB and Durimet 20 are currently under test.

Laboratory tests showed the austenitic stainless steel (347) welds from Building 234-5 to have normal corrosion resistance. Evidently the unusual magnetic attraction displayed by these welds is without adverse effect.

ANALYTICAL LABORATORIES

Work Volume Statistics

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

	<u>December</u>		<u>January</u>	
	<u>Samples</u>	<u>Determinations</u>	<u>Samples</u>	<u>Determinations</u>
Routine Control - 200	2895	4597	3196	5176
Routine Control - 300	1173	5049	484	1645
Water Control - 100, 700	13512	25562	13512	25562
Redox Control	2469	8124	1991	7754
Process Reagents	1260	2394	1497	2838
Essential Materials	133	658	138	741
Special Samples	3125	6895	3571	6423
Stack Gas Filters	4532	7800	126	182
TOTALS	29099	61097	24515	50321

200 Area Process Control

Routine measurements of the methane proportional alpha counting instruments (accepted geometry value 50.50%) in the 200 Area Laboratories were as follows:

<u>Laboratory</u>	<u>Ave. Geometry (%)</u>	<u>No. Tests</u>
B Plant (222-B)	50.55	110
T Plant (222-T)	50.48	96
Isolation Bldg. (231)	50.56	49

Some difficulty in maintaining the counting instruments at the accepted geometry value was experienced during the month due to fluctuations in the current frequency. To compensate for these fluctuations, a counting correction was applied. The actual frequency was determined from recording charts maintained by the Electrical Division.

The precision of the analytical results of the canyon starting solution (8-1-MR), the Isolation Building starting solution (P-1), and the final product solution (AT) may be summarized as follows:

<u>Sample</u>	<u>Period Ending December 31</u>		<u>Period Ending January 31</u>	
	<u>Precision (+%)</u>	<u>Weeks Covered</u>	<u>Precision (+%)</u>	<u>Weeks Covered</u>
8-1-MR	1.41	20	1.39	24
P-1	2.57	26	2.64	30
AT	2.03	26	2.02	30

The results of the synthetic 8-1-MR assays are tabulated below. The standard precipitation procedure, CA-2a, was used, and the percent recovery based on 2.077×10^6 c/m/ml.

<u>Month</u>	<u>Laboratory</u>	<u>Ave. Results ($\times 10^6$)</u>	<u>No. Assays</u>	<u>% Recovery</u>
December	222-B	2.054	12	98.9
	222-T	2.037	11	98.1
January	222-B	2.046	11	98.5
	222-T	2.038	17	98.1

The standard iron solution used in the Isolation Bldg. Laboratory to check the chemical titration of plutonium was analyzed a total of 54 times during the month. There were 26, 24, and 4 results inside $\pm 1\%$, $\pm 2\%$ and outside $\pm 2\%$ of the assay value, respectively. The average precision for duplicate titrations was ± 2.06 as compared to ± 2.26 for December.

<u>Assay Value</u>	<u>Group Ave.</u>	<u>% Diff.</u>	<u>No. Determinations</u>	<u>Precision (+%)</u>	
				<u>Single</u>	<u>Duplicate</u>
14.98	14.76	- 1.5	10	1.65	1.17
12.65	12.52	- 1.0	14	2.48	1.75
10.79	10.70	- 0.8	16	5.15	3.64
11.06	10.95	- 1.0	14	2.36	1.67

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300 Area and Essential Material Control

General

Satisfactory progress has been made in the development of methods for the analysis of essential materials for the 234-5 project. Although most of the work is completed, difficulties are being encountered in the determination of boron in nitric and oxalic acids.

Application of spectrochemical techniques to the analysis of alloys continued. Promising results were obtained for the determination of impurities in 2S aluminum and for the determination of relatively large amounts of tin (0.5 to 3.0%) in aluminum-silicon. Analyzed standards are now being prepared for both procedures.

Redox Process Control

At month end, there were 103 people assigned to the Redox program, 87 of whom were permanently assigned to the 3706 Building. The remaining 16 are in training in the 100 Area laboratories.

The scheduled activities of this group were sharply reduced on January 23 as a result of the explosion in 321 Building. To date, the time of the employees affected has been utilized by various training programs, and by analytical schedules designed to furnish statistical information as to the precision and accuracy of existing methods.

Methods Adaptation

The adaptation of a polarographic procedure to the determination of UNH in Redox solutions has proved difficult. A fairly satisfactory calibration curve has been obtained for the range 10 to 100 g/l of UNH, but the instrument must be completely recalibrated below this range. To date, the characteristics and the condition of individual mercury electrodes seem to have the greatest effects on the precision of results.

The vacuum distillation separation of organic acids from mineral acid solutions has been further refined. The subsequent determination of the separated organic acids by titration with caustic has been improved by the elimination of the reagent blank. This was accomplished by using specially prepared and standardized alcoholic KOH.

Miscellaneous Analyses

An attempt to detect the presence of rare earth elements in graphite ash by spectrochemical methods was successful. The presence of europium was confirmed and a trace of gadolinium was detected, but no samarium was found in either spiked or unspiked samples.

The analysis of a sample of human blood for protein-combined iodine was completed. The total protein fraction was separated by precipitation; the iodine was then isolated by distillation and determined by titration with thio-sulfate.

Several samples of neo-synephrine HCl solutions were analyzed for the major constituent and for impurities.

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Traces of hydrogen were detected in several samples of radioactive gases taken from the 291 Building stack.

Experimental Shop Program

Steps were taken to farm-out all possible items in the large backlog of work against the present small shop in Bldg. 3706. The Bremerton Navy Yard was investigated, and may take some of this work. Commercial machine shops in Portland, Oreg., also were visited, and a purchase requisition was issued covering jobs which they can handle. Arrangements were made whereby the Instrument Division will add machinists to their Bldg. 3717 Shop to assist with this experimental fabrication work. The Bldg. 3706 Shop will be placed on shifts as soon as additional machinists can be procured.

A specially shielded capsule opener was fabricated for the Pile Technology Division. This implement, housed in a lucite box, is so designed that irradiated capsule samples can be easily manipulated without the risk of exposure.

Special Hazard Control

A 2-month surgeon's glove test in the 222-T laboratory to determine whether the use of such gloves would reduce the number of cases of hand contamination without an attendant increase in the number of non-regulated items found contaminated was completed. On the basis of the results of this test, gloves are now being worn in all 200 Area laboratories during the performance of analytical work where radioactivity is involved.

Analytical Research and Development

In a study of methods applicable to the determination of low concentrations of plutonium in Redox solutions, very inconsistent results were obtained with the lanthanum fluoride carrying procedure. An investigation revealed that the lack of precision was due, not to the presence of hexone, but to the high nitric acid content of the samples. This resulted in greater co-precipitation of uranium and consequent high and variable background counts. Washing the precipitated lanthanum fluoride with water instead of dilute nitric acid eliminated the difficulty.

The sensitivity of the lanthanum fluoride procedure has been investigated to learn if that procedure might be applied to the determination of one part of plutonium in 10^8 parts of uranium; such a determination is required for uranium recovered by the Redox process. It was found that the quantity of uranium carried is proportional to the quantity of lanthanum precipitated but is unaffected by an increase of sample size. Application of this latter fact produced a technique giving a satisfactorily low background to total count ratio.

An indirect aluminum determination has been developed and tested; it involves a polarographic measurement of the aluminum - oxine system. Dichromate interferes but may be removed by cathodic reduction. The method shows a range of about $\pm 3\%$.

A program has been inaugurated to establish the precision and accuracy of Redox control samples. Carefully standardized synthetic solutions have been prepared and submitted as blind samples for routine analysis. Determinations of specific

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gravity, nitric acid and UNH were found to be satisfactory. The newly initiated LNN procedure was found to produce widely scattered results that tended to give a true average; investigations have led to improved techniques and precision.

To determine the impurities in plutonium materials (234-5 project), a method has been established in which the plutonium is precipitated with cupferron and separated; the impurities are then evaluated spectrographically. This procedure has been found satisfactory for the determinations of aluminum, sodium, lithium, beryllium and magnesium. Standards have been prepared to test its effectiveness in the determination of a number of other elements. A gloved box has been prepared to accommodate the plutonium separation step.

The cells used with the X-ray photometers were improved by making the thin aluminum windows more rigid; this was accomplished by backing them up with a 1/16 inch sheet of lucite.

In a study of the effect of neutron irradiation on the structure of cyclic hydrocarbons, it was found that benzene, naphthalene, anthracene and 1,2 benzanthracene were destroyed to the extent of about 50%. During the treatment of benzene, an insoluble compound was formed that was apparently a polymer.

Analyses by radioactivation technique have shown that samarium is present in pile graphite to the extent of 0.18 p.p.m. Preliminary studies indicate that the gadolinium content is probably less than 0.1 p.p.m.; this estimate is not certain because the activation cross section of this element appears to be greater than reported in the project literature.

STATISTICAL STUDIES

Slug Distortion

A statistical study of the dimensions of 141 exposed 8-inch gamma extruded slugs of A, MZ, Z and X diameters fabricated during 1945-1946 and recently discharged from B pile, showed no significant difference from the nominal pre-exposure dimensions of these slugs.

300 Area Statistical Quality Control Program

Non-sect rejects are now in a state of statistical control and are no longer the largest single causing reject cause. A study was made to determine the frequency of canned slug rejects for marred surfaces, after certain unit operations, as the initial step in reducing those rejects by bringing them into a state of statistical control.

Precision and Accuracy Studies

A statistical study of the 8-1-MR sampling and analytical errors revealed an overall precision of $\pm 5.4\%$. This includes sampling, between chemist, and within chemist errors. The within chemist error of this study was in agreement with the previously established $\pm 1.4\%$. A similar study of Redox sampling and analytical errors also revealed a high overall error as compared to the within chemist error alone. Both of these studies indicate the desirability in general of having two chemists run a single determination on each

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of two plant samples.

The Analytical Section adopted a proposal to use statistical regression analyses as a means of controlling 8-1-MR accuracy. To control the accuracy of Redox chemical analyses, a program of routing standard synthetic samples intermingled with regular routine samples has been inaugurated.

Blood Count Data

At the request of the Medical Division, a program to follow blood count data routinely for medical control purposes is being developed.

Other Statistical Studies

Other studies in progress include: Hanford-Los Alamos product measurement differences; graphite quality data; relationship between pH and concentration of Redox solutions; quality control of 300 Area frost test, autoclave, penetration, and bad weld rejects, and of machining and scrap yields.

LIBRARY AND FILES

Plant Library

Work on the acquisition, cataloging and circulation of books proceeded without incident. The principal effort during the month was expended on additions to the Library's collection of bound periodicals. Outstanding additions were fine runs of "Zeitschrift fur Analytische Chemie", the rare "Zeitschrift fur Physik", the statistical journal "Biometrika", and "Helvetica Physica Acta". In line with the Library's policy of acquiring extensive holdings in the abstract field, a run of "Physiological Abstracts" and the "Quarterly Cumulative Index Medicus" was also added. Thirty-two books were cataloged for the Kadlec Hospital Library.

Library statistics, reflecting a steady rise in books circulated and reference questions answered, were as follows:

	<u>December</u>	<u>January</u>	
Number of books on order received	127	92	
Number of books fully cataloged	275	174	
Number of bound periodicals processed but not fully cataloged	42	274	
Pamphlets added to pamphlet file	200	53	
Miscellaneous material received, processed, and routed (Included maps, photo-stats, patents, etc.)	61	55	
Books and periodicals circulated	990	1104	
Reference services rendered	934	1008	
	<u>Main Library</u>	<u>W-10 Branch</u>	<u>Total</u>
Number of books	3746	1444	5190
Number of bound periodicals	2776	100	2876

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Classified Files

Daily work on the receipt and issuance of documents proceeded on schedule. A revised procedure for handling the records on classified notebooks was developed and put into effect. The format and arrangement of the listings in the "Bi-Weekly List of Additions to the 300 and 700 Area Classified Files" was reviewed and revised effective with the issue covering the period January 3 to January 14, inclusive.

As a result of action initiated at a meeting in September of Files' personnel, Plant Security, and the Richland Postmaster concerning certain conflicts between the prevailing Security requirements on the packaging of classified mail and certain postal regulations (as reported in the monthly report for September 1948), a letter was received from the Third Assistant Postmaster General's Office clarifying this matter. The procedure for the wrapping of classified mail was altered to conform to the requirements outlined therein.

A second Technical Abstractor was added to the Group. This addition will expedite the program for indexing and abstracting the early literature onsite, without delaying the treatment of current reports as written. The revision of the reports index to align it with the 3rd revision of CA-1927 (List of Current Subject Headings For The Indexing of Reports) was begun. It is expected that this revision of the catalog will occupy approximately a year's time. The reference value of the index was greatly augmented by the addition of index cards covering the "N" reports indexed in the early days of the Project by the Metallurgical Laboratory in Chicago. Due to the unavailability of these index cards, arrangements were completed with the Technical Information Branch, AEC, Oak Ridge, Tennessee, to supply photostat copies from their files which were then duplicated here. Many of these so-called "N" reports are early Hanford Works Technical Progress Letters assigned "N" numbers by the Metallurgical Laboratory in Chicago.

Work statistics for the Classified Files were as follows:

	<u>December</u>	<u>January</u>
Documents routed	10,225	11,375
Documents issued	5,247	5,200
Reference services rendered	5,375	5,591

Files Assistance Unit statistics were as follows:

	<u>December</u>	<u>January</u>
Ditto masters run	854	853
Mimeograph stencils run	626	483
Ditto master copies prepared	39,013	44,362
Mimeographed copies prepared	41,290	23,225

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Metallurgy & Control Division

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INVENTIONS

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

Inventor(s)

Item

L. D. Turner

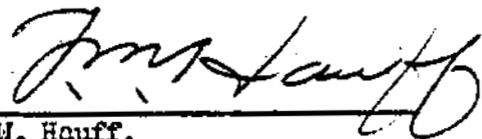
C. R. Runke

T. J. Birchill

"Retobin" cask for transport and easy transfer of irradiated materials.

Capsule Opener

Signed



T. W. Hauff,
Division Head.

TWH:mcs

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MEDICAL DIVISION

JANUARY 1949

General

The Medical Division roll remained practically unchanged at 522.

Industrial

There was no evidence of injury to any employee during the month due to radiation.

Admiral C. J. Brown, Assistant Chief of Research & Special Services Division of the Navy, was a visitor of the Medical and H. I. Divisions. Dr. B. C. Scudder attended the information meeting for biology and medical directors at Rochester.

Employee physical examinations continued to decrease slightly, while the number of first aid treatments remained practically constant.

Total absenteeism was 2.81% while that due to sickness only was 1.85%, as compared to 1.73% for December.

Fourteen major and seventy-five sub-major injuries were treated. Of these, two majors and five sub-major injuries were sustained by G. E. employees.

The health topic for January was "Heart Disease".

Community - Hospitals & Clinics

The average daily hospital census was 115, a new peak. This was a 14% increase over December, and a 30% increase over January, 1948. The average daily census at the North Richland Hospital was 19 (17% of the total 115).

Clinic visits increased by 20% to 10,071. This was a 77% increase over January, 1948; 30% of this total was treated in the North Richland Medical Center.

Dental clinic visits increased by 3% to 3,218.

Public Health

Chickenpox continued to be the leading communicable disease. Sanitary conditions were satisfactory.

Costs

The net cost of operating the Medical Division, before assessments were made to other divisions, for December, 1948 was \$138,750., a decrease of \$13,000. or 8.6%. The improvement was largely due to a decrease in transferred expense together with a \$3,000. increase in revenue.

The net expense of hospitals and clinics was down from \$31,000. to \$10,000., a 69% improvement. The hospitals showed a loss of \$13,881. while the clinics showed a profit of about \$4,000.

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MEDICAL DIVISION

JANUARY 1949

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Plant Medical Section

General

The number of examinations decreased from 4,491 in December to 3,648 in January, 1949. The number of examinations done during January, 1948 was 6,009. The number of first aid treatments remained fairly constant, 17,279 for December, and 17,806 for January, 1949. In January, 1948, there were 12,209 first aid treatments. Two General Electric major injuries and five sub-major injuries were treated during the month. Sub-contractor major injuries numbered 12, and sub-major 70.

Admiral C. J. Brown, Assistant Chief of Research and Special Services Division of the Navy, was a visitor of the Medical Division on January 12th. He was given information on the general functions of the Medical Division and accomplishments of the industrial and clinical medical program.

One member of the industrial medical section was sent to the A. E. C. Information Meeting for biology and medical laboratory directors at Rochester, N. Y. on January 11th and 12th. Papers and proceedings of this meeting were then reviewed at a meeting for all industrial physicians by this member and the acting head of the Biology Section of the H. I. Division, who also attended the meeting.

The Health Activities Committee met on January 20th and were given general information in reference to medical service available, including accomplishments of the past year, and explanation of fees as compared to other locations in this vicinity. The health topic on "Heart Disease" was presented to the group and information on this subject was distributed throughout the plant for discussion.

<u>Physical Examinations</u>	<u>Dec. 1948</u>	<u>Jan. 1949</u>
Pre-employment (G.E.).....	186	199
Annual.....	504	486
Sub-contractors & food handlers.....	2708	2012
Rechecks.....	437	423
Interval Rechecks (Area).....	538	435
Terminations & Transfers (G.E.).....	110	90
Army & Government.....	8	3
Assist to A & H Ins., Clinic, Etc.....	0	0
Total.....	4491	3648

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MEDICAL DIVISION

JANUARY 1949

Laboratory Examinations Clinical Laboratory

	<u>Dec. 1948</u>	<u>Jan. 1949</u>
Government.....	35	7
Pre-employment, terminations, transfers.....	7230	7894
Annual.....	3197	2961
Rechecks (area).....	2891	2386
First Aid.....	51	46
Plant Visitors.....	10	0
Clinic.....	3276	3691
Hospital.....	3632	4013
Public Health (Inc. food handlers).....	683	604
Total.....	<u>20985</u>	<u>21602</u>

X-Ray

Government.....	8	3
Pre-employment, terminations, transfers.....	1180	1328
Annual.....	502	501
First Aid.....	328	316
Clinic.....	426	416
Hospital.....	314	361
Public Health (Inc. food handlers).....	107	116

MEDICAL DIVISION

JANUARY 1949

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<u>Sub-major Injuries</u>	<u>Dec. 1948</u>	<u>Jan. 1949</u>
General Electric.....	6	5
Sub-contractors.....	58	70
Total.....	64	75

Absenteeism

Weekly employees, all causes.....	2.63%	2.81%
Weekly employees, sickness only.....	1.73%	1.85%
Total days lost by males due to sickness.....	1199	1982
Total days lost by females due to sickness.....	913	1204
Total days lost due to sickness.....	2112	3186
Investigation:		
Total calls requested.....	22	36
Total calls made.....	22	36
No. absent due to illness in family.....	0	0
No. not at home when call was made.....	1	2

Village Medical Section

General

Clinic visits increased to 10,071, a 20% increase over Dec. 1948, and a 75% increase over Jan. 1948.

Patients admitted to the hospital totalled 644, which is 20% more than for Dec. 1948, and 25% more than a year ago. Average daily hospital census was 114.6, an all-time high. This is 30% higher than a year ago.

Net cost of operations of the Medical Division (before assessments are made to other divisions) for Dec. 1948 was \$138,750., a reduction of about \$13,000. as compared to Nov. 1948. This reduction is primarily due to decrease in transferred charges from other divisions. Revenue remained about the same.

Net cost of operating both hospitals (after assessments) for Dec. 1948 was \$13,881., a reduction of about \$14,000. as compared to Nov. 1948, while the clinics showed a profit of \$3925. as compared to a loss of \$34.68. for Nov.

<u>Clinic Visits</u>	<u>Dec. 1948</u>	<u>Jan. 1949</u>
Medical.....	2008	2134
Pediatrics.....	776	934
Well Babies.....	244	292
Surgical.....	718	876
Gynecological.....	589	555
Obstetrics (New).....	96	103
Obstetrics (Rochack).....	802	853
Venereal Disease.....	375	320
Ear, Nose & Throat.....	586	584

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MEDICAL DIVISION

JANUARY 1949

<u>Clinic Visits (continued)</u>	<u>Dec. 1948</u>	<u>Jan. 1949</u>
Eye.....	176	162
Visits handled by nurses.....	1223	2120
Night clinic visits.....	805	1138
Total.....	8398	10071
 Average clinic visits per day.....	 323	 388
 <u>Home Visits</u>		
Doctors.....	424	488
Nurses.....	290	826
Total.....	714	1314
 <u>Kadlec Hospital</u>		
<u>Census</u>		
Admissions.....	533	644
Discharges:		
Surgical.....	122	115
Medical.....	131	163
Obstetric & Gynecologic.....	116	117
Eye, Ear, Nose, Throat.....	58	62
Pediatrics:		
Children.....	47	81
Newborn.....	73	73
Total Discharges.....	547	611
Patient Days.....	3122	3553
Average Stay.....	5.8	5.5
Average Daily Census.....	100.7	114.6
Discharged against advice.....	7	3
One-day cases.....	87	92
 <u>Operations</u>		
Transfusions.....	53	53
Eye, Ear, Nose, Throat.....	39	44
Dental.....	1	3
Casts.....	24	20
Minors.....	65	61
Majors.....	53	57
 <u>Vital Statistics</u>		
Deaths.....	10	11
Deliveries.....	71	77
Stillborn.....	0	0

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MEDICAL DIVISION

JANUARY 1949

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	<u>Dec. 1948</u>	<u>Jan. 1949</u>
<u>Physiotherapy Treatments</u>		
Clinic.....	150	136
Hospital.....	97	71
Industrial:		
Plant.....	355	325
Personal.....	60	52
Total.....	662	584
 <u>Pharmacy</u>		
Number of prescriptions filled.....	3944	4505
 <u>Patient Meals</u>		
Regulars.....	4222	5292
Lights.....	147	185
Softs.....	1580	1938
Surgical Liquids.....	72	149
Tonsils & Adenoids.....	118	111
Specials.....	1336	1035
Liquids.....	319	310
Total.....	7794	9020
 <u>Cafeteria Meals</u>		
Breakfast.....	6	0
Noon.....	2709	2720
Night.....	336	322
Total.....	3051	3042
 <u>Nursing Personnel</u>		
First Aid Nurses.....	52	54
Clinic Nurses.....	17	16
Public Health Nurses.....	13	13
Hospital General Nurses.....	82	82
Aides & Orderlies.....	57	58
Total.....	221	223

Public Health Section

General

Chickonpox continued to be the leading communicable disease during January. Morbidity visits increased 65% over the previous month.

Sanitation of milk supply and eating establishments has continued to be satisfactory. In the near future it is anticipated that regulations adopted by the county will be applicable in Richland. This will materially aid in enforcing regulations heretofore questionable under the present system.

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MEDICAL DIVISION

JANUARY 1949

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General (continued)

Permanent increased sewage disposal facilities in Richland will be completed in about sixty days. Construction has been limited due to weather conditions. The Imhoff tank at North Richland at present is functioning at a minimum efficiency, thus increasing the load on existing facilities at Richland.

At a recent meeting of the Mosquito Control Committee, plans were formulated for the 1949 program. Field work has been started in outlying areas, and equipment is being put in readiness for spraying operations as soon as it becomes necessary.

<u>Administration</u>	<u>Dec. 1948</u>	<u>Jan. 1949</u>
Newspaper Articles.....	25	28
Committee Meetings.....	4	15
Attendance.....	26	200
Staff Meetings.....	9	3
Lectures & Talks.....	0	0
Conferences.....	36	36
Attendance.....	70	150
 <u>Immunizations</u>		
Diphtheria.....	45	89
Influenza.....	12	5
Smallpox.....	11	39
Tetanus.....	0	2
Typhoid.....	0	1
Whooping Cough.....	0	1
Total.....	<u>68</u>	<u>137</u>
 <u>Social Service</u>		
Cases carried over.....	77	82
New cases admitted.....	18	16
Total.....	<u>95</u>	<u>98</u>
Cases closed.....	13	24
Remaining case load.....	<u>82</u>	<u>74</u>
 <u>Sources of referral:</u>		
Public Health.....	3	3
Doctors.....	5	9
Interested Person.....	1	0
Personal application.....	1	4
Housing.....	1	0
Industrial Relations.....	1	0
Other agency.....	4	0
Miscellaneous.....	2	0
Total.....	<u>18</u>	<u>16</u>

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MEDICAL DIVISION

JANUARY 1949

<u>Sanitation</u>	<u>Dec. 1948</u>	<u>Jan. 1949</u>
Inspections made.....	340	376
<u>Bacteriological Laboratory</u>		
Treated Water Samples.....	261	186
Milk Samples (Inc. cream and ice cream).....	111	106
Other bacteriological tests.....	257	382
Total.....	<u>629</u>	<u>674</u>
<u>Communicable Diseases</u>		
Chickenpox.....	113	127
German Measles.....	11	13
Gonorrhoea.....	29	8
Impetigo.....	4	2
Influenza.....	0	2
Measles.....	3	8
Mumps.....	3	2
Pediculosis.....	0	1
Pinkeye.....	6	5
Ringworm.....	2	5
Scabies.....	6	5
Scarlet Fever.....	9	3
Syphilis.....	28	15
Tuberculosis.....	1	0
Vincent's Infection.....	0	1
Total.....	<u>215</u>	<u>197</u>
Total No. Nursing Field Visits.....	1512	1754

Dental Section

General

The number of dental patients treated was 3% higher than the previous month and 20% higher than a year ago.

Patients treated	3143	3218
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MEDICAL DIVISION PERSONNEL SUMMARY

January 31, 1949

AREAS	Physicians	Dentists	Nurses	Aides & Orderlies	Technicians	Office Workers	Others
100-DR			1			1	
100-H			4				
234-5			4				
White Bluffs			2				
101			1				
3000	12	2	15	7	6	32	14
100-B			5			1	
100-D					2*		
100-F					2*		
200-E			4		2*	2	
200-W			4		2**		
300			2		2**		1
Plant General	7		18				
700-1100	20	10	105	50	28	90	72
Total	39	12	165	57	36	127	86
Grand Total - 522							

No. of employees on payroll:
 Beginning of month 522
 End of month 522
 Net increase or decrease 0

* One day per week
 ** Two days per week

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HEALTH INSTRUMENT DIVISIONS

JANUARY 1949

Summary

The force increased by fifteen. One Class I Special Hazards Incident was reported, and did not involve serious consequences.

The Operational Division reported survey findings that indicated increased frequency of contamination of personnel and work areas. This is notably true in the 100 Areas.

In the Control and Development Division, analytical results on samples of water, air, and vegetation, were normal. The Bioassay Laboratory production was stopped for three days to determine the specific cause of failures in the process, and to eliminate these causes. The maximum uranium content found in the urine of the 300 Area workers was 82 $\mu\text{c}/\text{liter}$.

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Health Instrument Divisions

HEALTH INSTRUMENT DIVISIONS

JANUARY 1949

Organization

The composition and distribution of the force as of 1/31/49 was as follows:

	<u>100-B</u>	<u>100-D</u>	<u>100-F</u>	<u>200-W</u>	<u>200-E</u>	<u>300</u>	<u>700</u>	<u>P.G.</u>	<u>Total</u>
Supervisors	1	1	3	8	4	17	5	0	39
Engineers	4	4	8	16	14	8	1	1	56
Clerical	0	0	1	1	1	5	6	0	14
Others	11	14	21	63	38	59	9	6	221
Total	16	19	33	88	57	89	21	7	330

Number of Employees on Payroll

January 1949

Beginning of month	315
End of Month	<u>330</u>
Net increase	15

Additions to the roll were six technical graduates, four laboratory assistants, five general clerks, and two steno-typists. Deletions were one field clerk transferred, and one laboratory assistant temporarily removed from the roll.

General

Further data on active particle deposition in the plant areas continued at a factor of about 10 lower than the results obtained immediately prior to the installation of the sand filters. Active particle concentration in the air, as measured by filter samples was reduced by a factor of about 100. This discrepancy is not yet understood.

The General Electric Nine-Point Job Improvement Program Part II was completed during the month.

Meetings were attended by C.C. Gamertsfelder in Washington, D.C., J.W. Healy in New York City, and H.A. Kornberg at Rochester, New York. Other trips for purposes of consultation were made to Seattle, and to the University of California Radiation Laboratory.

One Class I, Special Hazards Incident was investigated and involved a spill of radioactive iodine in the H.I. laboratories. No serious exposure occurred.

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Health Instrument Divisions

In biological monitoring, a Botany Field Station was established for studies of the effects of radioactivity present in irrigation water, on edible crops, and a program for the determination of biological hazards due to active particles is underway. Construction of the temporary botany laboratory at the 100-F Area continued, and plans for revamping the 108-F Building to a biological laboratory were started.

During the period covered by this report, all persons in the Health Instrument Divisions 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>
R.C. Thorburn	"A Process for Monitoring Tritium in Liquid Wastes".

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Health Instrument Divisions

OPERATIONAL DIVISION

100 Areas

General Statistics

	<u>December 1948</u>				<u>January 1949</u>				<u>1949 To Date</u>
	<u>B</u>	<u>D</u>	<u>F</u>	<u>Total</u>	<u>B</u>	<u>D</u>	<u>F</u>	<u>Total</u>	
Special Work Permits	563	667	762	1992	607	751	779	2137	2,137
Routine & Special surveys	420	491	499	1410	482	477	677	1636	1,636
107 Effluent Surveys	90	78	105	273	98	90	93	281	281
Air Monitoring Samples	164	43	100	307	123	131	146	400	400

Retention Basin Effluent

The activity of the water leaving the retention basin was as follows:

	<u>100-B</u>	<u>100-D</u>	<u>100-F</u>
Power Level	275	275	275
Average beta dosage-rate (mrep/hr)	0.8	1.0	1.1
Average gamma dosage-rate (mr/hr)	1.8	2.4	2.3
Average total dosage-rate (mrep/hr)	2.6	3.4	3.4
Average integrated dose in 24 hrs. (mrep)	62	82	82
Maximum integrated dose in 24 hrs. (mrep)	74	94	94
Maximum integrated dose in 24 hrs. (mrep) 1949	74	94	94

At the 100-B Area, a large leak in the effluent line or retention basin was evidenced by water bubbling up through the ground near the southwest corner of the basin. Several large leaks in the North basin were attributed to thermal effects.

100-B Area

Six S.R. pieces, each containing 5 grams of radium, were charged into process tube #1482 by means of special equipment. Difficulty was encountered during the charging of the sixth piece, and one of the lead shielding pieces was remotely replaced. Exposure rates were nominal during the work due to a well-planned and executed procedure.

During the retrieving of spacers from the "B" experimental hole, a dosage-rate of 5 roentgens per hour was observed, at the end, and 100 mr/hr at the side, of the loading mechanism. Contamination was spread to the gloves of personnel and to a spot on the paper floor covering beneath the hole.

A vertical safety rod tip was inadvertently pulled from the thimble, and exposed personnel standing 1-1/2 feet away to 3 roentgens per hour for about 30 seconds. The incident was caused by an inexperienced employee who was operating the block and tackle at the basket level.

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High airborne activity was encountered in the storage area, transfer area, and at the wash pad when the #4 storage area drain was not plugged. Four "P" Division operators had high hand and shoe counts after working in the transfer area, and the personal clothing of one showed 400 to 800 c/m with a portable G.M. counter. The contaminating material showed half-lives of about 10 and 40 minutes, which is the characteristic findings on effluent water vapor. An estimated permissible concentration for this airborne contamination is 10^{-2} $\mu\text{c}/\text{liter}$, and air samples did not exceed this. High air contamination was also encountered in the "D" elevator machinery room, and was corrected by adjustments to building air flow.

Gas leaks at the base of the pile were observed on both the near and far sides. Gas activity in the work area was generally alleviated by the operation of the third exhaust fan.

An identification system for respirators was indicated when three were found contaminated and it was not learned where they were used.

100-D Area

Graphite samples, irradiated in process tubes, were discharged into special casks in the discharge area. Personnel was exposed for a brief period to 300 mr/hr , while the samples were being removed from their containers.

A new process tube was inserted in hole #2287. When the end cap was removed from tube 2287 for insertion of a new tube, a gust of air blew out of the open hole. No process tube was in place as it was previously removed and six foot sleeves inserted at either end. An air sample taken immediately showed a beta concentration of 1.5×10^{-5} $\mu\text{c}/\text{liter}$. Personnel was wearing respirators. Contamination to the extent of 1000 c/m was spread to the work area floor, but was easily cleaned up.

High airborne activity similar to that reported at 100-B was observed in the storage and transfer areas. Several cases of hand and clothing contamination resulted, with a maximum of 1000 c/m observed on clothing exposed to steam from the #2 storage area drain.

Empty casks returned from the consignee were contaminated to a maximum of 12.5 mrep/hr on the outside surfaces. Ten spots of contamination, ranging from 1 to 35 mrep/hr at surface, were observed on one express car (Mil.#1074). All spots were decontaminated and the car released.

One case of shoe contamination was reported following work in the discharge area, and was attributed to contamination spread at the step-off pad. Decontamination was successful.

The radiation beam emerging from the biological shield at the top, far edge of the pile showed no significant change in dimensions or intensity.

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100-F Area

An octant monitoring chamber was removed from process tube #4553 and placed in a lead shield. An Instrument mechanic handled the tube by hand at an estimated exposure-rate of 60 to 100 rep per hour. The handling time was about 4 seconds and the dose to the hands was estimated at less than 120 mrep.

The radiation beam emerging from the biological shield at the top, far edge of the pile increased in dose-rate to more than 2 r. per hour. The combined fast and slow neutron dosage-rate was about 250 mrem/hr. These dosage-rates represent an increase by more than a factor of two in approximately two months.

The hands and faces of four men were contaminated during the raising of the Neoprene bumper plates on the discharge face. Nose smears were taken promptly, and one from a Maintenance mechanic showed an uncorrected count of 265 c/m. Hand and face contamination was successfully removed.

During the installation of thermocouples on the discharge face, two men were contaminated. Exposure-rates as high as 12.5 mrep/hr were observed on the forearms of one man. Decontamination of both men and their clothing was successful. Several cases of hand and shoe contamination were reported following other work in the discharge area, and this contamination was spread to the step-off pad in the cushion chamber corridor. Decontamination in all cases was successful.

High airborne activity similar to that reported at 100-B was observed in the air-conditioning room and in the transfer area.

Dosage-rates above 100 roentgens per hour were observed on the experimental level during work at the "D" and "E" experimental holes, and personnel was exposed momentarily to 3 roentgens per hour.

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DECLASSIFIED200 Areas, T and B PlantsGeneral Statistics

	<u>December 1948</u>			<u>January 1949</u>			<u>1949 To Date</u>
	<u>T</u>	<u>B</u>	<u>Total</u>	<u>T</u>	<u>B</u>	<u>Total</u>	
Special Work Permits	414	441	855	349	495	844	844
Routine & Spec. Surveys	572	244	816	533	309	842	842
Air Monitoring Samples	625	508	1133	507	591	1098	1098
Thyroid Checks	64	38	102	74	73	147	147

Canyon Buildings

In the T Plant, eleven 13-4 samples and six 8-4 samples required monitoring by H.I. when high radiation levels were encountered, and were handled with a maximum exposure-rate of 5 rep per hour. When cells 13L and 14L were opened for the remote installation of thermocouples, a maximum air concentration of 4.4×10^{-6} $\mu\text{c f.p./liter}$ was obtained at the deck. When Section 17 was opened for the removal and unplugging of two jets, an air concentration of 1.1×10^{-10} $\mu\text{g Pu/cc}$ was obtained at the deck. Contamination from this work was confined to paper on the deck and was successfully removed. A jet assembly was removed from cell 15R, and regasketed with a maximum exposure-rate of 1 rep per hour. Waste drums with maximum surface dosage-rates of 3 rep per hour were removed from the canyon to the burial ground with a maximum exposure-rate of 600 mrep/hr.

In the B Plant, the entire canyon deck was effectively decontaminated with nominal exposure-rates. A wooden platform was placed around the 10-2 centrifuge at the tachometer level to facilitate tachometer repairs. High level contamination was noted on the motor cooling fan blades, with maximum dosage-rates of 2.5 rep per hour surface, including 300 mr/hr at 2 inches encountered. The 7-2 centrifuge failed due to a broken skimmer, and was replaced with the 18-2 centrifuge. Deck contamination resulted from this interchange, and was promptly cleaned. Steam was noted escaping from the 12L cell block cracks, which may have resulted from a stuck exhaust valve from a 12-7 to 13-1 transfer operation, as the exhausts now vent to the cells. An air sample taken shortly thereafter indicated concentrations of 1.6×10^{-6} $\mu\text{c f.p./liter}$, and 10^{-10} $\mu\text{g Pu/cc}$. A total of 24 canyon air samples showed significant concentrations, with the maximum of 5.6×10^{-6} $\mu\text{c f.p./liter}$ obtained while cell 10R was open. Floor sweepings from the craneway showed a surface dosage-rate of 75 mrep/hr.

Control Laboratories

In the T Plant, 183 items, not regulated with respect to handling, were found contaminated on surveys by Technical and Health Instrument Divisions personnel. In addition, 96 contaminated floor locations were reported. With the practice continued of wearing surgical rubber gloves for radiochemical operations, only two cases of product and one case of fission product hand contamination were

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reported during the month; both successfully decontaminated. Disposal of the high level samples from the T Plant canyon was accomplished with a maximum exposure-rate of 2.5 rep per hour.

In the B Plant, 326 items, not regulated with respect to handling, were found contaminated on surveys by Technical and Health Instrument Divisions personnel. In addition, 80 contaminated floor locations were reported. Twelve cases of fission product, and 25 cases of product hand contamination were reported, and cleaned; and during the last few days of the month the practice of wearing surgical rubber gloves was initiated. Bench waste cartons were noted with dosage-rates as high as 11 rep per hour surface, and the need for closer chocking of these items and immediate disposal is indicated. A ruptured slug end cap from the 100-B Area was decontaminated, with a maximum exposure-rate of 2.7 rep per hour at 12 inches. The liquid waste dry well plugged, and waste liquid samples are temporarily taken to 222-T for disposal. The construction of replacement cribs near the laboratory to receive this waste was immediately started.

Concentration Buildings

In the T Plant, an estimated 650 micrograms of product was found during routine cell surveys by H.I. Distribution by cells showed:

<u>Cell</u>	<u>Estimated μg Pu</u>	<u>Position of maximum concentration</u>
A	30	Top of A-1 tank
B	10	Floor near B-1 tank
C	100	Top of C-7 tank
E	250	Top of E-4 tank
F	250	F-2 to F-10 trench

In the B Plant, product contamination was noted in D Cell, with measurements of greater than 500,000 d/m on the top of D-2, and up to 300,000 d/m on top of the D-3 tank. Decontamination is in progress. A disc from the C-8 to 241 gang valve showed 16,000 d/m when removed.

Stack Areas

In the B Plant, fluid was observed leaking under the #3 fan shield wall on the floor of 291-B, and survey showed dosage-rates of 1.5 rep per hour surface including 30 mr/hr at 2 inches. This was cleaned, and did not recur. It was postulated that this liquid may be carried over from the sand filter water seal by the air stream. Leaks were noted in the stack pit from flanges on the sampling line jets, and surveys showed ground contamination of up to 10 rep per hour, including 3.5 roentgens per hour at 5 inches.

Waste Disposal Area

In the B Plant, metal waste was diverted from the 101-BX series to the 104-BX series. During this work, radiation levels of 500 mr/hr over the open 151-B diversion box, and 2 mr/hr over the open 153-BX diversion box were recorded.

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DECLASSIFIEDNorth Areas

Well car #41, carrying a regular load of process material from the North to the West Area, spread about 150 feet of track but remained upright on the roadbed. Investigation by H.I. showed no unusual survey measurements, and the car was placed back on the rails without incident.

Development Laboratory

A spill of 500 μc of I^{131} occurred in Room 6, resulting in floor contamination of 3.5 rep per hour surface, which was cleaned to 300 mrep/hr surface. A beam of 15 rep per hour including 6 roentgens per hour at 6 inches was found at an open lead cave. The front lead brick had been removed and was not replaced.

General

All thyroid checks were below the warning level.

In the T Plant, radioautographs of 90 Dustfoe filters showed 22 particles, with a maximum estimated individual activity of 20 μc . Radioautographs of air sample filters from the process buildings showed the following particle concentrations:

<u>Building</u>	<u>Approx. Cubic Feet of Air Sampled</u>	<u>Particles</u>
221-T Galleries	115,000	70
221-T Canyon (normal)	54,000	459
222-T Laboratory	107,000	293
224-T General	165,000	28

The Isolation BuildingGeneral Statistics

	<u>December 1948</u>	<u>January 1949</u>	<u>1949 To Date</u>
Special Work Permits	58	37	37
Routine and Special Surveys	230	262	262
Air Monitoring Samples	811	321	321

Air Monitoring

There were 225 spot air samples taken, of which seven were above 10^{-11} $\mu\text{g Pu/cc}$. All seven of the significant samples were obtained in Cell #4 during normal operations when assault masks were not worn, and showed a maximum concentration of 3.9×10^{-10} $\mu\text{g Pu/cc}$. The policy of wearing assault masks for all entry to Cell #4 was initiated on 1/31/49, as this maximum concentration was over a period of eight hours, and previous tests had indicated that the periods of significant air contamination were of short duration - of less than an hour. Since no correlation was found between high air concentrations and cell operations, an attempt to locate the source in the cell by running three Little Suckers simultaneously indicated higher concentrations at the center of the

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greenhouse. It was recommended that a recording manometer be installed on the greenhouse to detect occurrence of any backpressure.

There were 87 continuous Little Sucker air samples taken, and all eight significant results occurred in Cell #4, in general verifying the spot sample results and showed a maximum concentration of 1.5×10^{-10} $\mu\text{g Pu/cc}$ over a forty hour sampling period. Nine samples of the 903 exhaust system air showed 5.6×10^{-12} $\mu\text{g Pu/cc}$ as a maximum concentration.

Surface Contamination

A total of 277 items, not regulated with respect to handling, was found contaminated on surveys by Technical, Health Instrument, and "S" Division personnel. Fifteen items above 20,000 d/m were reported, and one of these was greater than 80,000 d/m. A total of eight incidents of floor contamination were reported, five of which originated in the laboratories, and three of which originated in the operating cells. The maximum amount involved in an incident was about 0.03 $\mu\text{g Pu}$ in both Cell #3 and in Room 34.

All six of the product skin contamination cases were successfully cleaned. The maximum individual amount involved was about 0.03 $\mu\text{g Pu}$.

Gamma Radiation

P.R. Container	17 mr/hr (maximum)
Process Hood	3 mr/hr (maximum)
S.C.	5 mr/hr (maximum)

Laundry Monitoring

A total of 70 spot air samples and 42 continuous Big Sucker air samples was taken during Plant Laundry operations. The maximum concentration, calculated as uranium, was 1.9×10^{-7} $\mu\text{g U/cc}$, at washer #2, during the washing of clothing from 300 Area operations.

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The 300 Area

General Statistics

	<u>December 1948</u>	<u>January 1949</u>	<u>1949 To Date</u>
Special Work Permits	244	138	138
Routine and Special Surveys	127	121	121
Air Monitoring Samples	187	149	149

Metal Fabrication Plant

Thirty five of 66 air samples taken showed a concentration greater than 5×10^{-5} $\mu\text{g U/cc}$, as follows:

<u>Location</u>	<u>Number Taken</u>	<u>Number above 5×10^{-5} $\mu\text{g U/cc}$</u>	<u>Maximum Concentration ($\mu\text{g U/cc}$)</u>	<u>Conditions</u>
Melt Plant	19	18	7×10^{-3}	In burn-out room - Crucible cleanout
Melt Plant Exhaust	12	3	1.2×10^{-4}	"B" furnace heating
Other parts of 314	3	3	1.2×10^{-3}	Automatic operation
Oxide Burner	1	1	7.2×10^{-3}	Unloading & cleanup
Machining Area	13	0	---	---
Chip Recovery	18	10	2.1×10^{-4}	At press-during operation

Six pieces, each containing 5 grams of radium, were tested for leaks by means of special equipment in the 313 building. Technical Division personnel was exposed for short periods to rates as high as 200 mr/hr.

Technical Building

All air samples taken (48) showed concentrations below 5×10^{-5} $\mu\text{g U/cc}$, or below 2×10^{-11} $\mu\text{g Pu/cc}$.

Technical Division personnel removed dry waste from rooms #66 and #98. Dosage-rates up to 1.5 rep per hour were encountered for short periods.

A surface dosage-rate of 100 mrep/hr was reported on radioactive material found in a file drawer during a routine survey in room 35. With the file drawer closed, dosage-rates were very low.

Cold Semi-Works Building

Two of 28 air samples taken showed a concentration above 5×10^{-5} $\mu\text{g U/cc}$. The maximum concentration was observed in A-cell over the A-2 centrifuge, and showed a concentration of 6.3×10^{-5} $\mu\text{g U/cc}$.

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An explosion in this building occurred on January 23, 1949. Notification was given to the H. I. Emergency Supervisor by the First Aid nurse at the Kadlec Hospital approximately one hour after the explosion occurred. Surveys of the injured personnel and their clothing, carried out at the hospital, indicated no significant uranium contamination. Air samples, taken in the building after the explosion, showed no airborne uranium contamination. However, water samples taken as indicated showed the following results:

<u>Location</u>	<u>µg U/liter</u>
Flooded tank farm, N.E. corner	3800
Flooded tank farm, S.E. corner	3800
Pool, center of operating gallery	1280
Pool, east end of operating gallery	6000
Firepit, east of tank farm	46

A total of 352 lbs. of uranium was discharged to the pond through January 20, of which about 70 lbs. were added this month. About 63 lbs. of uranium has been disposed of to the 300 North crib.

Test Pile Building

Indium and titanium samples were irradiated in the test pile. A maximum dosage-rate of 1.75 rep per hour, including 165 mr/hr at 2 inches, was observed, but personnel exposure was maintained at a low level by remote handling.

Plant General

A total of 88 frames exposed on the reservation and at Benton City and Pasco showed a deposition rate of 1.4×10^{10} particles per month. Frame studies completed in the 200 Areas during the month indicated deposition rates of 1.2×10^8 particles per month in 200 West, and 2.2×10^8 particles per month in 200 East.

Nineteen particle traps exposed Off-project during November and December showed the following results:

<u>Location</u>	<u>Psf/Mo.</u>	<u>Location</u>	<u>Psf/Mo.</u>
Ritzville, Wash.	1.9	Mesa, Wash.	0.8
* Sprague, Wash.	0.3	Connell, Wash.	0.5
* Harrington, Wash.	0.8	Othello, Wash.	0.5
Coulee Dam, Wash.	1.4	Eureka, Wash.	0.8
* Spokane, Wash.	1.1	Waitsburg, Wash.	0.5
Ephrata, Wash.	4.6	Walulla, Wash.	0.3
Ellensburg, Wash.	0.9	The Dalles, Oregon	0.3
Yakima, Washington	0.9	Arlington, Oregon	0.3
Zillah, Wash.	1.7		
* Prosser, Wash.	0.6		
* Eltopia, Wash.	0.8		

* Those films looked doubtful and were refilmed.

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Particle inhalation, estimated by the use of filters, showed the following results at certain key locations. (October, November and December results are included for comparison).

<u>Location</u>	<u>Inhalation rate particles per month</u>			
	<u>October</u>	<u>November</u>	<u>December</u>	<u>January</u>
200-E. Area Gatehouse (outside)	30.0	3.0	0.3	0.1
200-E. Area Gatehouse (inside)	6.0	1.0	0.4	0.3
B Plant Excl. Gatehouse (outside)	45.0	10.0	1.0	0.5
200-W. Area Gatehouse (inside)	35.0	1.0	1.0	0.4
200-W. Area Gatehouse (outside)	50.0	2.0	1.0	0.4
T Plant Excl. Gatehouse (outside)	30.0	1.0	1.0	0.3
3 ft. Level Meteorology Tower	10.0	3.0	1.0	0.1
150 ft. " " "	25.0	4.0	1.0	0.3
250 ft. " " "	50.0	3.0	1.0	0.2
400 ft. " " "	40.0	3.0	1.0	0.3
100-F Area	4.0	1.0	1.0	none
100-D Area	3.0	1.0	1.0	0.1
100-B Area	4.0	1.0	none	0.1
Benton City	5.0	1.0	1.0	0.1
Richland	5.0	1.0	none	0.1

Air samples taken inside various 200 Area buildings showed the following estimated inhalation rates as compared with December results:

	<u>Inhalation rate particles per month</u>	
	<u>December 1948</u>	<u>January 1949</u>
2707-EA Site Survey	1.0	0.1
East Area Maintenance Shop	1.0	0.1
West Area Maintenance Shop	1.0	0.4
222-T Hall	5.0	5.0
224-T Air Conditioning room	1.0	0.3
622 Meteorology Building	1.0	none
2704-E Administration building	1.0	0.3
222-B Hall	5.0	4.0
B Plant Operating gallery, Sect. II	2.0	1.0
West Area Garage	1.0	0.1

Off-area filters failed to show detectable particles except Boise, Idaho, which showed one particle per 141,000 cubic feet of air. Based on inhalation rate of man, this would be 0.18 particles per month.

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Hand Score Summary

There were 40,192 alpha and 49,747 beta hand checks recorded. About 0.22% of the alpha and about 0.15% of the beta scores were high. No attempt at reduction was recorded in 5 instances of alpha contamination and in 5 instances of beta contamination, all in the 300 Area. Where decontamination was attempted, it was successful in all cases.

<u>PERSONNEL METERS</u>								1949
<u>Pencils</u>	<u>100-B</u>	<u>100-D</u>	<u>100-F</u>	<u>E&N 200</u>	<u>200-W</u>	<u>300</u>	<u>Total</u>	<u>To Date</u>
Pencils read:	13,095	12,486	14,930	31,523	51,800	41,067	164,901	164,901
Single Readings:								
(100 - 280 mr)	36	27	34	35	130	97	359	359
Paired Readings:								
(100 - 280 mr)	0	0	0	0	0	0	0	0
Single Readings:								
(Over 280 mr)	14	21	27	28	88	103	281	281
Paired Readings:								
(Over 280 mr)	0	0	0	0	2	3	5	5
Paired Readings Lost:	2	0	0	0	0	5	7	7

No significant pencil result was confirmed by the badge result. Investigation of lost readings where required showed no possibility of an overexposure.

Badge Resume, Construction Areas

	<u>105-DR</u>	<u>241-TX</u>	<u>384 115-XV</u>	<u>241-BY</u>	<u>Total</u>	1949 <u>To Date</u>
Badges Processed	5,707	8,047	349	767	14,870	14,870
No. of Readings:						
(100 - 500 mreps)	37	9	2	3	51	51
No. of Readings:						
(Over 500 mreps)	0	2	0	0	2	2
Lost Readings:	3	1	0	0	4	4

The two readings of over 500 mreps were due to defective film and use of X-ray in the field.

Lost readings were occasioned as follows:

Lost badge	-	3
Sensitive film not packaged	-	1
(Insensitive film read 0-0)		

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Badges	RRT.							Total	1949
	100-B	100-D	100-F	200-E	200-N	200-W	300		To Date
Badges Processed:	1,899	2,109	2,104	2,479	425	4,116	6,561	19,693	19,693
Number Readings: (100 - 500 mrep)	2	6	14	16	1	17	268	324	324
Number Readings: (Over 500 mrep)	0	0	0	0	0	0	1	1	1
Lost Readings:	3	1	0	2	0	4	2	12	12

The one result of over 500 mrep was due to defective film. Lost readings were accounted for as follows:

Destroyed by survey	-	2
Overdeveloped	-	4
Badge lost in Area	-	3
Stuck film	-	1
Contaminated	-	1
Lost in processing	-	1
		<u>12</u>

Badges processed, 1949	-	Operations	19,693	
"	"	-	Construction	<u>14,870</u>
		Total	34,563	

In addition, 2,552 items of non-routine nature were processed.

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CONTROL AND DEVELOPMENT DIVISIONWater Monitoring

Two hundred and eighteen 500 ml. samples and fifty 12 liter samples of drinking water were analyzed for radioactive contamination during the month. The maximum alpha activity detected in any drinking water sample was 29 and 28 dis/min/liter from the Benton City Chevron Station and Water Company, respectively. Samples from the Richland Durand Wells, Sanitary Water at 100-H Area and White Bluffs Area continued to indicate trace quantities of uranium comparable in magnitude to that detected in the past months. The beta activity measured in the above samples was less than 5×10^{-5} $\mu\text{c/liter}$ except from one sample taken from the 100-H Area water system; the value for the maximum sample was 1.2×10^{-4} $\mu\text{c/liter}$ although the average for the month was less than 5×10^{-5} $\mu\text{c/liter}$. One sample from Pasco also indicated about 8×10^{-5} $\mu\text{c/liter}$ of beta activity with the monthly average activity level falling below the reporting level of 5×10^{-5} $\mu\text{c/liter}$.

A total of twenty test well samples was taken the past month. The maximum alpha activity detected in any sample was 59 dis/min/liter taken from 300 Area Well #4. The 300 Area Wells #1 and #2 indicated values of 8 and 10 dis/min per liter, respectively, with 300 Area Well #3 dropping below 6 dis/min/liter; this trend is an anticipated one previously noted with the decreasing flow rate of the Columbia River. The two test wells in White Bluffs, Q1439 and Q1440 indicated average alpha activity levels of 17 and 11 dis/min/liter. The beta activity in all the above samples was 5×10^{-5} $\mu\text{c/liter}$.

Fifty-three routine samples of Columbia River water were taken during the month. The alpha activity in all samples was about 6 dis/min/liter except from the river near 300 Area and Richland where the average alpha activity was 7 and 8 dis/min/liter, respectively. The maximum beta activity in the river was detected in a sample from near Hanford, the level measured was 2.2×10^{-3} $\mu\text{c/liter}$. As weather permits, samples are being taken from the river at various locations at surface levels, and different depths, in an effort to estimate the relative distribution of the radioactive contamination in the river.

Sixty-four mud samples were also taken from the Columbia River. The maximum beta activity measured in any river sample was 2.6×10^{-2} $\mu\text{c/liter}$ from near the 300 Area. Alpha activity as high as 13 dis/min/gram was detected in samples from the river near Wills Ranch and the Allard Pumping Station; all other samples indicated less than 6 dis/min/gram of alpha activity. Because of the ice jam on the Yakima River, no samples were taken from that location.

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The integrons and C Chambers indicated average dosage-rates as follows:

<u>Location</u>	<u>Integrans (mrep/24 hrs.)</u>		<u>C Chambers (mrep/24 hrs.)</u>	
	<u>December</u>	<u>January</u>	<u>December</u>	<u>January</u>
100-B Area	0.3	< 0.1	0.3	0.3
100-D Area	0.9	0.3	0.4	0.4
100-F Area	1.1	0.4	0.4	0.4
200-West Area	0.4	0.2	0.7	0.4
200-East Area	0.4	0.2	0.7	0.5
Riverland	0.6	0.1	--	--
Hanford	2.5	1.7	--	--
300 Area	0.9	0.6	0.6	--
700 Area	0.4	0.2	--	--
Kennewick	< 0.1	< 0.1	--	--
Pasco	0.3	< 0.1	--	--
Benton City	0.2	0.2	--	--

Two new 614 Buildings were added to the current program. The new buildings are located at the extreme south and north ends of the 3000 Area.

Detachable chamber readings at Hanford, 100-DR, and White Bluffs, averaged 0.82, 0.91, and 0.58 mrep/24 hours, respectively. The maximum eight-hour reading on a constant air monitor was 4.8×10^{-7} $\mu\text{c/liter}$ at the southeast corner of 200 East Area. The maximum reading for I^{131} as determined using a scrubber solution was 2×10^{-10} $\mu\text{c I}^{131}/\text{liter}$ air sampled in the 200 West Area. The maximum rain sample was about 9 millimicrocuries/liter collected inside the 200 West Area. The maximum Off-area rain sample was 0.3 millimicrocuries/liter collected in the 700 Area.

Land and Vegetation Contamination

The average I^{131} and non-volatile longer half-lived radioactivity measured in vegetation samples during January was:

 I^{131} CONTAMINATION IN VEGETATION

<u>Location</u>	<u>Jan. 1949 $\mu\text{c I}^{131}/\text{kg}$</u>		<u>Dec. 1948 Average</u>
	<u>Average</u>	<u>Maximum</u>	
North of 200 Areas	0.005	0.033	0.005
Near the 200 Areas	0.041	0.798	0.072
South of 200 Areas	0.004	0.021	0.002
Richland	< 0.002	0.004	< 0.002
Pasco	< 0.002	0.003	< 0.002
Kennewick	< 0.002	0.004	< 0.002
Benton City	0.003	0.005	< 0.002
Richland Y	0.002	0.003	< 0.002
Hanford	0.003	0.006	0.002
Ringold to Pasco	< 0.002	0.003	----
Wahluke Slope	< 0.002	0.005	0.002

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NON-VOLATILE OTHER BETA ACTIVITY IN VEGETATION

<u>Location</u>	January 1949 $\mu\text{c}/\text{kg}^*$		<u>Dec. 1948 Average</u>
	<u>Average</u>	<u>Maximum</u>	
North of 200 Areas	0.014	0.037	0.011
Near the 200 Areas	0.055	0.400	0.045
South of 200 Areas	0.014	0.035	0.011
Richland	0.009	0.016	0.013
Pasco	0.007	0.013	0.009
Kennewick	0.007	0.018	0.010
Benton City	0.012	0.015	0.006
Richland Y	0.009	0.012	< 0.005
Hanford	0.008	0.015	0.012
Ringold to Pasco	0.008	0.013	0.012
Wahluke Slope	0.012	0.030	0.012

*These values include the beta activity from K^{40} known to be present in trace quantities in the vegetation.

Twenty-two vegetation samples taken from Plymouth-Kennewick road and Pasco-Eltopia road indicated less than $0.002 \mu\text{c I}^{131}/\text{kg}$ upon analyses; the beta activity from other long half-lived material was in the order of magnitude one would expect from natural K^{40} in the vegetation.

Ninety samples were collected from the Wahluke Slope on January 7, 1949. The average I^{131} in the vegetation was less than $0.002 \mu\text{c I}^{131}/\text{kg}$, with the beta activity from other longer half-lived elements indicating an average of about $0.012 \mu\text{c}/\text{kg}$.

Waste Monitoring

Maximum values of 3250 and 1340 dis/min/liter of alpha activity were detected in samples from the old and new 300 Area waste ponds, respectively. The maximum beta activity detected in the old and new ponds was 0.22 and 0.63 millimicrocuries/liter, respectively.

Twelve samples were taken from the 200 Area retention basins; the maximum beta activity detected was $4 \times 10^{-4} \mu\text{c}/\text{liter}$ measured in a sample from the 200 West Area retention basin. The alpha activity in all the samples was less than the detectable amount. The maximum alpha contamination in the water of the 200 Area Swamps was 1080 dis/min/liter measured in a sample from the south side of the T Swamp Area; the maximum beta activity was $4.2 \times 10^{-4} \mu\text{c}/\text{liter}$ detected in a sample from the same location.

Seventy-eight samples of 100 Area effluent water were analyzed for alpha and beta activity during the month. The alpha activity in all the waste samples was less than the detectable quantity; the average beta activity in the 107 basins of B, D, and F, was 0.29, 0.29, and $0.35 \mu\text{c}/\text{liter}$, respectively.

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Maximum activities for the above were 0.37, 0.39, and 0.51 $\mu\text{c/liter}$, respectively. Eight samples of 107 waste water were analyzed for polonium with no sample indicating alpha activity from polonium exceeding the detection limit of 6 dis/min/liter. Three samples of condensate from the 100-B Area drier room indicated an average activity level of about 1.1 $\mu\text{c S}^{35}/\text{ml. condensate}$. The maximum beta activity from S^{35} detected in the 107 basins was 24 milli-microcuries/liter.

Geology

The average contamination in water samples taken during the month from the wells showing contamination is as follows:

<u>Location</u>	<u>$\mu\text{c/liter}$ (fission products)</u>	<u>dis/min/liter (alpha)</u>
Well 361-B-1	1.1×10^{-3}	111
Well 361-B-3	7×10^{-5}	12
Well 361-B-9	0.56×10^{-3}	47

The levels of radioactivity are steadily decreasing, as noted in earlier reports along the determined curves of activity. No appreciable alpha or beta-gamma activity was found in a 300 cubic foot air sample obtained with a Queenie air filter from Well 361-B-9. Air was escaping from the well during a period of low barometric pressure at the time the sample was taken. A fission products analysis is being run on the rust separated from a 4 gallon water sample from Well 361-B-9. The results will be reported at a later date. Essentially, all the alpha activity in the water in Well 361-B-9, 50 feet from the 241-B-361 dry or reverse well, is due to uranium and not to plutonium. Sample results

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Meteorology

Eight-hour Production Forecasts - ninety-two were made. The average accuracy was 86.4%. Twenty-four hour General Forecasts - sixty-two were made. The average accuracy was 82.1%. Special Forecasts - three were made, and all of these were correct 100%.

January, 1949, was completely dominated by cold, dry, air of polar continental origin. The month was by far the coldest of any month since records began at 622 building. Precipitation was very light and skies were clearer than normal.

Mean temperature for the month was 14.0. The previous coldest month at 622 building was December, 1948, with a mean of 26.8. The previous coldest January was in 1947 when the mean temperature was 27.3. The extreme low for January 1949 was -11, and this occurred on the 25th. The minimum temperature was below freezing on all 31 days of the month, and below zero on 9 days. Only on three days (the 1st, 7th, and 17th) did the maximum temperature go above the freezing mark.

In spite of the extreme cold, there were in the 32 years (1913-1944) in which records were kept at Hanford, three years in which January temperatures averaged a little lower than those of the past month. These were as follows:

<u>Year</u>	<u>Mean Temperature</u>	<u>Extreme Lowest Temperature</u>
1916	11.5	- 23
1930	12.2	- 22
1937	13.0	- 23

Only one Chinook occurred during the past month. This was on the 7th, when the month's highest temperature (48 degrees) was reached. Precipitation for the month totaled 0.13 of an inch, all of which was from melted snow. Mean cloudiness was only 0.4, and there was no fog. Wind speed was much below normal, averaging only a little more than 2 m.p.h. at the 7-ft. level. Only on the 1st and 7th was there any appreciable wind, and even in these cases the wind was of short duration.

Bioassay

Three hundred and ninety-five urine samples were analyzed for plutonium during the month. A total of eight hundred and eighty-two samples were analyzed for plutonium; most of these were run in conjunction with the investigation of the current T.T.A. process to determine the cause of the low yields.

There were one hundred and fifty-seven high urine samples this month. One hundred and thirty-nine of these high samples were due to low spike returns. All the high samples have already been resampled. In addition, there were sixty-six urine samples that will have to be resampled because the samples were run during a period in which it was determined that there was an error in

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the process: Production was stopped for three days to determine the specific cause of the failure in the process and to eliminate the cause. Experiments were conducted to investigate the variation in the plutonium extraction yield as affected by urine salts, concentration of lanthanum, concentration and temperature of the hydroxylamine, concentration of sodium nitrite, and such physical operations as technique and length of time in "shaking" the samples. The experiments revealed that the current process for plutonium extraction is correct from a chemical point of view. It was shown, however, that yields varied with varied shaking techniques. Controlled experiments are now underway to determine specific "shaking effects", although a satisfactory time was arrived at on a preliminary study. The procedure is now modified to incorporate the new shaking technique based on the preliminary study, and final adjustments will be made upon completion of the controlled experiments.

A series of spikes were run to determine counting effects and pipetting effects on the ultimate yields obtained. It was shown that the pipetting operation and counting on the current low background alpha counters were not factors in causing the sporadic low recovery yields encountered in the current T.T.A. process.

Two hundred and six urine samples were analyzed for uranium by the fluorophotometer method. The uranium detected in these samples is tabulated below:

<u>Location</u>	<u>µg U/liter Urine</u>	
	<u>Maximum</u>	<u>Average</u>
Melt Plant	64	20
Material Handling	23	5
Machining	82	6
Canning and Dipping	14	2
Inspection	14	3
305 Building	6	2

Methods Development

Five I¹³¹ sources were calibrated with the coincidence counter. Chemical tests on these sources indicate a 74% yield for the current I¹³¹ extraction process. Additional work using Pd as the precipitant instead of silver indicates that yields of 85% may be obtained. Pd, in addition to being a more complete precipitant, has no interfering ions allowing the process to be shortened. The attempt to purify lanthanum nitrate by ion column separation is continuing. More data on the buildup of activity in these samples is needed before any conclusions may be drawn. A method of detecting tritium in waste samples by evolving tritium in acetylene and monitoring the gas with the vibrating reed was developed. The investigation as to the cause of the low yields in the Bioassay process has continued. Design for a multiple precipitator and for cages were completed for the Biology group.

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Studies of the effect of sample size on beta counter geometries have been continued with values obtained for Co and I^{131} . Attempts to reconcile the discrepancy between the Bureau of Standards beta source and the sources here are continuing with studies of the effect of sample size and coincidence losses in the alpha counters. Preliminary work indicates a coincidence loss higher than normal. A geometry of 0.093 was found for the Thin Walled Glass Tube mounted in the rectangular aluminum holder. Absorption coefficients were measured for I^{131} and Sr^{90}, Sr^{89}, Y^{90} . The geometry of six GM Tubes was established using the Bureau of Standard sources. A study as to the day-to-day reliability of the standard alpha counters at counting rates other than the control has been initiated.

Methods Control

Four standards were prepared for use at 100-B Area. Four samples from Bikini were analyzed for fission products at the request of the University of Washington. Seven air filters were analyzed for total alpha activity and beta activity, and in most cases the specific radioisotopes were identified. An analysis of the contamination on the cask lid from the 100 Area showed the activity to be Po. In addition, two samples of liquid waste, two vegetation samples, a sample of dust, and a soil sample, were analyzed for specific beta emitters. Less than 1 d/m of alpha was found in a 440 gram sample of Hg submitted by the 300 Area. Some of this mercury had been swallowed by a laboratorian. Shavings from a box are currently being analyzed for beta emitters.

Currently, all vegetation is analyzed specifically for 8-day iodine (I^{131}) and for longer half-lived components. The detection limits for each type of analysis is now fairly well set at 0.002 $\mu\text{c } I^{131}/\text{kg.}$, and 0.005 μc (longer half-lived elements)/kg. vegetation. Each analysis has been checked chemically as well as by absorption curves and decay curves to insure a reliable analysis. A total of five thousand, six hundred and two measurements were made for the combined alpha and beta activity in samples. In addition, about twelve hundred measurements were made to confirm readings with an additional one thousand measurements made for counter checks, decay curves, and other miscellaneous checks.

Physics

Several errors have been found in the treatment of problem which was presented in the feasibility report on decay products on air filters. A report is in preparation which corrects these errors, and presents an analysis of the probable limits of error in the method. The analysis shows that even under the most favorable conditions, the method will be subject to limitations so great that the method is not considered practical for the measurement of long-lived alpha emitters in concentrations of the order of tolerance.

At the request of a member of the Technical Division, an attempt was made to determine the total photon flux from a cobalt sample which had been irradiated in one of the piles. The determination was made by comparing the cobalt

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source to a certified radium source of comparable activity by means of a GM counter and also X-ray film. Absorption coefficients for the gamma radiation from the cobalt source were measured in both lead and aluminum. The coefficients observed corresponded in both cases to an energy of about 0.85 MEV, considerably below the expected value of about 1.2 MEV. A figure for the total photon flux was obtained which is considered to be accurate to about 10%.

Instrument Development

There are six Neuts in service, and one awaiting calibration testing before being placed in service. One balance circuit has been changed to permit cancelling about 650 mr/hr. All difficulties thus far have been mechanical or battery failures, not associated with instrument design.

An electrical flow meter using thermistors as sensitive elements was designed and built for the portable electrostatic precipitator. The maximum air flow which can be measured by this method is about nine cubic feet per minute.

Construction of the laboratory pulse generator is about 85% complete. The beta sample changer design project is about two-thirds complete.

Pulse analyzer investigations were concerned with a study of the available methods for reducing noise to allow more precision at low counting rates.

The 8 in. x 18 in. floor probe project was completed, and operates satisfactorily in the laboratory.

The totem pole survey meter circuit has been altered to permit range changing with Victoreen VX-10 switching tubes.

A super Zeuto circuit designed by the K-25 Instrument Division was built and laboratory tested. It was found to have full-scale sensitivities of 0.48 and 0.029 volt on the two ranges. While the sensitivity is satisfactory, the instrument in its present form is not usable because of excessive zero drift.

The atmospheric pressure soft-beta counter was built into a hot dog grille. Changes necessitated by component placement and the required cable length for field operation are in progress.

The Berkeley Scaler was tested after repair by the manufacturer. Its input sensitivity changed with pulse shape and was slightly less than the manufacturer claims, when operated by a Hanford pulse generator. The maximum regular counting rate was 450,000 counts per minute instead of the 300,000 counts per minute claimed by the manufacturer. Recorded counts from a GM tube agreed closely with those obtained from a Higginbotham scaler.

A Keleket alpha counter was tested, and found to be more microphonic than the standard alpha counters; to have a geometry of about 48%; and resolution losses of about 0.25% per 1000 counts. The background was 1.3 counts per minute on a sixteen-hour run.

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Six Radiation Counter Laboratories GM Tubes AEC Number BG-2A1C were tested. Three were tested for temperature dependence, and found to be satisfactory from room temperature to 120° F. However, at -4° F. all failed. The other three were tested for useful life, and found to be capable of delivering approximately 10⁸ counts before failure, instead of 10⁹ counts as claimed by the manufacturer. Test was run at about 5,000 c/m.

Calibrations

The routine calibrations were:

<u>RADIUM CALIBRATIONS</u>	<u>Number of Calibrations</u>	
	<u>December 1948</u>	<u>January 1949</u>
Fixed Instruments		
Gamma	<u>573</u>	<u>623</u>
Portable Instruments:		
Alpha	177	37
Beta	281	175
Gamma (Radium)	807	683
X-ray	15	0
Neutron	6	10
Total	<u>1,286</u>	<u>905</u>
Personnel Meters:		
Beta	987	1,120
Gamma (Radium)	6,487	7,401
X-ray	6,900	371
Neutron	--	0
Total	<u>14,374</u>	<u>8,892</u>
GRAND TOTAL	<u>16,233</u>	<u>10,420</u>

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BIOLOGY DIVISION

Aquatic Biology

1. Effect of Pile Effluent Water on Aquatic Life

Development of the chinook salmon fry has been retarded by the extremely cold water. In addition, high mortality is being experienced among the fry exposed to pile effluent, and to 20% pile effluent, and the condition of the fry being exposed to pre-process water is such as to expect negligible survival to the feeding stage.

Fish held in pile effluent have shown a two-fold decrease in radioactivity as compared with last month. Those exposed to 2% effluent have increased 5-fold.

Ability of the common caddis fly larvae to accumulate radioactive elements from pile effluent is being studied. Early results indicate that after two weeks of exposure they are approximately thirty times more radioactive than the water in which they are being reared.

2. Biological Chains

The activity accumulated in snails, crayfish, carp, and algae from pile effluent, is being observed concurrent with the activity transferred to small trout and shiners being fed these organisms. Activity transferred has decreased during the month due to the unusually low water temperatures. However, bones, scales, and fins are the most active, while fat and muscle are the least active. Trout have been found to accumulate 3 to 4 times more activity from snails than from carp.

3. Radiobiological Survey

Radioactivity of the river water below the pile areas are at a comparatively high level, due, presumably, to a progressive decline in river flow. Bottom algae collected below Hanford showed 1.4 μc activity/kg. Activities of various insect larvae was from 0.4 to 1.0 μc /kg. Weights of larvae per unit bottom area are being determined. More complete studies on the activity and quantity of plankton in the river have been initiated.

Zoology

1. Chronic Toxicology of I^{131} in Stock Animals

The sheep and rabbit feeding of I^{131} has been terminated until better facilities and equipment for animal and isotope work becomes available. Summary reports of work to date will be prepared. The activity noted last month in sheep wool from Washington State College has been found due to K^{40} present in the wool suint which normally contains relatively large quantities of potassium.

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2. Biological Monitoring

Geese, ducks, quail, and coyotes, trapped on the project and assayed for beta activity (and uranium in several instances) showed no tissue contents above permissible limits. One rabbit captured in 200-Weest had approximately the recommended permissible concentration present in its thyroid.

3. Special Studies

Latest observations in the one-year study of active particle implantations in rabbits indicate no clearcut pathology in tissue surrounding the subcutaneous implants. The particles appear to be encapsulated in a thin layer of fibrous tissue showing little or no evidence of foreign body reaction.

The histology of normal and abnormal (I^{131}) thyroids is underway. Representative slides and photomicrographs are being prepared.

4. Miscellaneous

A comparison of two assay methods for Na^{24} involving spiking tissue with labeled Na_2CO_3 indicated that more consistent percent recoveries result from a wet ashing process ($HNO_3 - H_2O_2$) than from simple drying. Although the latter yielded greater total percent recovery, it varied inversely and considerably with the quantity of tissue present.

Botany

1. Agronomy

Arrangements have been made to plant crested wheat grass (*Agropyron spicatum*) in locations within the 200 Areas which offer particular erosion problems. Crested wheat grass has been shown to be a desirable perennial grass for controlling erosion under the climatic conditions of the Columbia River Basin.

2. Botany Field Station

The Foster Ranch (CC-133), three miles above the Hanford Ferry on the east bank of the Columbia River, has been secured as a test plot to give information on, (1) the rate of accumulation of radioactive materials in the soil from Columbia River irrigation water, and (2) the possible accumulation of radioactive substances in crops irrigated with river water containing 100 Areas effluent.

Rapid progress in re-establishing the farm for use by this group is being made.

3. Plant Toxicology

Seeds were gathered from the Russian thistle found growing in the contaminated area near the 200-East Separation Building in an attempt to determine effects of radioactivity on viability. The attempt proved fruitless. Satisfactory laboratory facilities for the germination of seed were not available.

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Biochemistry

1. Percutaneous Absorption of Plutonium

Although this work was begun, it had to be abandoned for lack of space to work and to set up equipment. It will be activated as soon as facilities become available for low level product work on biological materials. Two approaches will be used: (1) absorption through cornified skin followed by analyses of sections; and (2) absorption through the skin of animals with subsequent tissue analyses for plutonium.

2. Permissible Exposure for Orally-Ingested Plutonium

Because of the necessity for using very small quantities (by weight) of plutonium in order to simulate real conditions, it is necessary that short-lived plutonium be used in well controlled chronic feeding experiments. Needed facilities for doing this necessary work include a hood, dry-boxes, and some means of active waste disposal.

3. Active Particles

Arrangements have been made with the University of Rochester for collaboration in the study of the biological hazards of active particles. Chambers for exposing rabbits to stack gases at 200-East are being fabricated, with the assistance of the Methods Development group. One lung from each animal so exposed will be sent to Rochester while the other will be studied locally. Microscopy and autoradiography will be used to determine points of deposition within the bronchial tree of the particles.

By means of a bank of electrostatic precipitators being set up by the Industrial Hygiene group, a sufficient quantity of representative particles will be collected for forwarding to Rochester for particle-size determinations, chemical composition, and tracheal intubation studies. The latter is designed to supplement the animal exposures to be done locally, and give additional data on the biological half-life and possible pathological consequences.

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GENERAL ACCOUNTING DIVISIONS

JANUARY 1949

GENERAL

Financial Statements for Hanford Works and for the Nucleonics Department were prepared and issued on January 26, 1949 for the month of December, 1948.

Operating Reports for the month of December, 1948 for the General Divisions were issued on January 21, 1949.

Year-end work for which the Payroll Divisions were responsible necessitated a planned overtime schedule of 48 hours per week for four weeks during January. Approximately 6200 Pension Plan contribution record cards were balanced and reports to the Pension Division were made; Withholding Statements (form W-2) were prepared and issued to 10 573 employees and former employees on January 14; Federal Social Security tax reports (form SS-1-B) for the fourth quarter of 1948 were prepared and forwarded to Schenectady; and the annual report of taxable earnings by individuals for the State of Washington was prepared.

Following is a comparison of unreimbursed expenditures as of December 31, 1948 and January 31, 1949:

	<u>December 31, 1948</u>	<u>January 31, 1949</u>
Billed on Public Vouchers	\$ 1 937 078	\$ 5 026 544
Submitted on Pre-Billing Audit Vouchers	4 978 234	5 938 914
Unbilled *	<u>7 392 514</u>	<u>6 304 407</u>
Total	<u>\$14 307 826</u>	<u>\$17 269 865</u>

The first item represents vouchers which have been forwarded to the government Finance Office in Portland for which we have not yet received reimbursement checks. The increase in the second item represents a backlog of vouchers in the AEC Audit Branch awaiting pre-billing approval.

* Preliminary totals prior to final closing entries.

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General Accounting Division

STATISTICS

<u>Employees and Payroll</u>	<u>Total</u>	<u>Monthly Payroll</u>	<u>Weekly Payroll</u>
Employees on Payroll at beginning of month	8 627	1 732	6 895
Additions and transfers in	182	8	174
Removals and transfers out	(115)	(22)	(93)
Transfers from Weekly to Monthly Payroll	--	42	(42)
Transfers from Monthly to Weekly Payroll	--	(3)	3
Employees on Payroll at end of month	<u>8 694</u>	<u>1 757</u>	<u>6 937</u>

<u>Employees on Payroll at end of Month</u>	<u>December</u>	<u>January</u>
Manufacturing	3 156	3 212
Design & Construction	1 199	1 178
Community	971	965
Other	3 301	3 339
Total	<u>8 627</u>	<u>8 694</u>

<u>Overtime Payments</u>		
Weekly Paid Employees	\$ 96 998	\$ 81 547
Monthly Paid Employees	33 464	26 652
Total	<u>\$130 462</u>	<u>\$108 199</u>

<u>Number of changes in Salary Rates and Job Classifications</u>	829	850

<u>Gross Amount of Payroll</u>		
Manufacturing	\$1 090 568	\$1 090 528
Design & Construction	428 532	413 790
Community	294 712	292 454
Other	983 190	966 174
Total	<u>\$2 797 002*</u>	<u>\$2 762 946*</u>

<u>Annual Going Rate of Payroll</u>		
Manufacturing	\$13 917 427	\$13 862 261
Design & Construction	5 380 516	5 229 947
Community	3 691 445	3 759 507
Other	12 312 132	12 249 129
Total	<u>\$35 301 520</u>	<u>\$35 100 844</u>

<u>Average Salary Rate Per Hour</u>	<u>December</u>			<u>January</u>		
	<u>Weekly</u>	<u>Monthly</u>	<u>Total</u>	<u>Weekly</u>	<u>Monthly</u>	<u>Total</u>
Manufacturing	\$1.927	\$2.607	\$2.031	\$1.930	\$2.585	\$2.034
Design & Construction	1.470	2.591	1.810	1.472	2.594	1.807
Community	1.712	2.261	1.804	1.716	2.255	1.808
Other	1.547	2.489	1.730	1.544	2.477	1.731
Total	<u>\$1.701</u>	<u>\$2.526</u>	<u>\$1.860</u>	<u>\$1.702</u>	<u>\$2.514</u>	<u>\$1.861</u>

*Includes four weeks in case of weekly paid employees.

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General Accounting Division

Employee Plans

Pension Plan

	<u>December</u>	<u>January</u>
Number participating at beginning of month	5 886	5 960
New participants and transfers in	107	193
Removals and transfers out	(33)	(25)
Number participating at end of month	<u>5 960</u>	<u>6 128</u>
% of eligible employees participating	94.8%	94.9%

Employees Retired

	<u>January</u>	<u>Total to Date</u>
Number	1	43
Aggregate Annual Pensions including Supplemental Payments	\$391	\$7 944
Amounts contributed by employees retired	\$ 96	\$2 580

Group Life Insurance

	<u>December</u>	<u>January</u>
Number participating at beginning of month	5 930	6 271
New participants and transfers in	399	247
Cancellations	(9)	(20)
Removals and transfers out	(49)	(39)
Number participating at end of month	<u>6 271</u>	<u>6 459</u>
% of eligible employees participating	75.6%	78.3%

Insurance Claims

	<u>January</u>	<u>Total to Date</u>
Number of deaths	4	21
Amount of insurance	\$17 935	\$108 408
Premiums paid by employees who died	\$ 372	\$ 1 195

Group Disability Insurance - Personal

	<u>December</u>	<u>January</u>
Number participating at beginning of month	7 255	7 179
New participants and transfers in	131	145
Cancellations	(12)	(13)
Removals and transfers out	(195)	(72)
Number participating at end of month	<u>7 179</u>	<u>7 239</u>
% of eligible employees participating	89.1%	88.3%

Group Disability Insurance - Dependent

	<u>December</u>	<u>January</u>
Number participating at beginning of month	4 343	4 319
Additions and transfers in	73	56
Cancellations	(13)	(17)
Removals and transfers out	(84)	(20)
Number participating at end of month	<u>4 319</u>	<u>4 338</u>

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General Accounting Division

Employee Plans (continued)

<u>Group Disability Claims</u>	<u>December</u>	<u>January</u>
Number of claims paid by insurance company:		
Employee Benefits		
Weekly Sickness and Accident	95	93
Daily Hospital Expense Benefits	84	111
Special Hospital Services	81	94
Surgical Operations Benefits	58	66
Dependent Benefits Paid		
Daily Hospital Expense Benefits	90	134
Special Hospital Services	81	130
Amount of claims paid by insurance company:		
Employee Benefits	\$ 8 634	\$11 722
Dependent Benefits	3 232	4 742
Total	<u>\$11 866</u>	<u>\$16 464</u>

Group Disability Insurance - Premiums

Personal - Employee Portion	\$12 054	\$12 451
- Company Portion	7 469	7 252
- Total	<u>\$19 523</u>	<u>\$19 703</u>
Dependent- Employee Portion	\$ 3 857	\$ 3 961
- Company Portion	426	362
- Total	<u>\$ 4 283</u>	<u>\$ 4 323</u>
Grand Total	<u>\$23 806</u>	<u>\$24 026</u>

Annuity Certificates (For du Pont Service)

	<u>January</u>	<u>Total to Date</u>
Number Issued	0	55

<u>U. S. Savings Bonds</u>	<u>Mfg.</u>	<u>D&C</u>	<u>Comm'y</u>	<u>Other</u>	<u>Total</u>
Number participating at beginning of month					
	2 126	545	494	1 663	4 828
New Authorizations	20	10	8	38	76
Voluntary Cancellations	(76)	(24)	(35)	(49)	(184)
Removals and Transfers out	(3)	(7)	(4)	(9)	(23)
Transfers in	9	4	2	1	19
Number participating at month end	<u>2 076</u>	<u>528</u>	<u>465</u>	<u>1 647</u>	<u>4 716</u>
% participating	<u>64.4%</u>	<u>44.9%</u>	<u>48.2%</u>	<u>49.3%</u>	<u>54.2%</u>
Bonds issued					
Maturity Value	\$99 325	\$22 875	\$18 075	\$68 300	\$208 575
Number	2 196	480	426	1 522	4 624
Refunds issued	59	18	23	54	154
Revisions in authorizations	19	6	11	45	81
Annual going rate of deductions					
New Plan	\$ 869 861	\$200 456	\$185 759	\$659 721	\$1 915 797
Old Plan	273 230	58 412	33 551	160 193	525 386
Total	<u>\$1 143 091</u>	<u>\$258 868</u>	<u>\$219 310</u>	<u>\$819 914</u>	<u>\$2 441 183</u>

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General Accounting Division

Employee Plans (continued)

<u>Suggestion Awards</u>	<u>January</u>	<u>Total to Date</u>
Number of Awards	23	281
Total Amount of Awards	\$280	\$2 830

Employee Sales Plan

	<u>January</u>		
	<u>Total</u>	<u>Major Appliances</u>	<u>Traffic Appliances</u>
Certificates Issued	255	49	206
Certificates Voided	17	4	13

<u>Salary Checks Deposited</u>	<u>December</u>	<u>January</u>
Monthly	862	894
Weekly	1 007	1 072
Total	<u>1 869</u>	<u>1 966</u>

Special Absence Allowance Requests

Number submitted to Pension Board	3	10
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Absenteeism (Weekly Paid Employees)

January 1 to January 23	1948 2.08%	1949 3.27%
-------------------------	---------------	---------------

PERSONNEL ANC ORGANIZATION - GENERAL ACCOUNTING

	<u>December</u>	<u>January</u>
<u>Number of Employees</u>		
On Payroll at beginning of month	185	180
Removals and transfers out	(10)	(4)
Additions and transfers in	5	5
Number at end of month	<u>180</u>	<u>181</u>
Net increase (or decrease) during month	(5)	1
% of terminations and transfers out	5.4%	2.2%
% of absenteeism	3.01%	4.10%

Changes by division in number of Accounting Division employees during January were as follows:

General Accounting - General: No Change

Accounts Payable: No Change

Cost: No Change

General Accounts: Decrease of one employee

One transfer to General Administrative (Accountability)

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General Accounting Division

PERSONNEL AND ORGANIZATION - GENERAL ACCOUNTING (continued)

Property Accounting: No Change

One returned from Leave of Absence
One termination

Weekly Payroll: Increase of three employees

Four new hires
One termination

Monthly Payroll: No Change

One transfer from Special Assignments
One transfer to Manufacturing Divisions

Special Assignments: Decrease of one employee

One transfer to Monthly Payroll

<u>Injuries</u>	<u>December</u>	<u>January</u>
Major	0	0
Sub-major	0	0
Minor	1	1

Number of Accounting Division employees as of January 31, 1949, were as follows:

	<u>Number of Employees</u>		
	<u>Non-Exempt</u>	<u>Exempt</u>	<u>Total</u>
General Accounting - General	3	3	6
Accounts Payable	27	1	28
Cost	8	1	9
General Accounts	17	1	18
Property Accounting	19	3	22
Weekly Payroll	75	5	80
Monthly Payroll	13	1	14
Special Assignments	1	3	4
Total	<u>163</u>	<u>18</u>	<u>181</u>

Open employment requests as of January 31, 1949, were as follows:

General Clerk B	2
General Clerk C	3
Office Machine Operator B	1
Steno-Typist C	1
Steno-Typist D	1
Total	<u>8</u>

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General Accounting Divisions

	<u>December</u>	<u>January</u>
<u>Accounts Payable*</u>		
Balance at Beginning of Month	\$ 52 232	\$ 2 981 Dr.
Vouchers Entered	882 068	1 164 031
Cash Disbursements	1 011 237 Dr.	1 250 647 Dr.
Cash Receipts	4 734	19 835
Miscellaneous Credits	<u>69 223</u>	<u>74 727</u>
Balance at End of Month	<u>\$ 2 981 Dr.</u>	<u>\$ 4 965</u>
Number of Vouchers Entered	2 336	2 142
Number of Checks Issued	1 719	1 653
Number of Freight Bills Paid	223	289
Amount of Freight Bills Paid	\$ 14 993	\$ 6 016
Number of Purchase Orders Received	1 048	867
Value of Purchase Orders Received	\$ 326 135	\$ 212 026

Public Vouchers (1034) Submitted to AEC

Not Reimbursed at Beginning of Month	\$ 3 307 437	\$ 1 937 078
Submitted During the Month	<u>17 694 243</u>	<u>16 097 562</u>
Sub Total	\$21 001 680	\$18 034 640
Reimbursements During the Month	<u>19 064 602</u>	<u>13 008 096</u>
Not Reimbursed at End of Month	<u>\$ 1 937 078</u>	<u>\$ 5 026 544</u>

Public Vouchers (1034) Submitted to AEC

Not Reimbursed at Beginning of Month	100	114
Submitted During the Month	<u>480</u>	<u>478</u>
Sub Total	580	592
Reimbursements During the Month	<u>466</u>	<u>442</u>
Not Reimbursed at End of Month	<u>114</u>	<u>150</u>

* General Divisions Only.

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General Accounting Divisions

	<u>December</u>	<u>January</u>
<u>Pre-Audit Vouchers (1035) Submitted to AEC</u>		
<u>Not Yet Approved</u>		
Community	\$ 66 739	\$ 28 314
Design and Construction	2 724 338	3 931 332
General	2 161 560	1 951 504
Manufacturing	25 597	27 764
Sub Total	<u>\$ 4 978 234</u>	<u>\$ 5 938 914</u>
<u>Not Submitted to AEC on Pre-Audit Vouchers</u>		
Community	93 212	18 163 cr.
Design and Construction	4 673 155	4 118 617
General	2 332 049	1 460 370
Manufacturing	294 098	743 583
Sub Total	<u>\$ 7 392 514</u>	<u>\$ 6 304 407</u>
Total Unbilled Items	<u>\$12 370 748</u>	<u>\$12 243 321</u>
<u>Bank Balances at End of Month</u>		
Chemical Bank & Trust Co., Contract Account	\$ 3 257 758	\$ 3 985 809
Seattle 1st National Bank - Richland Contract Account	4 955 595	1 705 034
Salary Account No. 1	20 152	20 000
Salary Account No. 2	30 000	30 000
U. S. Savings Bonds Account	202 366	245 221
Seattle 1st National Bank - Seattle Salary Account No. 3	5 000	5 000
	<u>\$ 8 470 871</u>	<u>\$ 5 991 064</u>
<u>Cash Disbursements</u>		
Community	\$ 214 558	\$ 136 157
Design and Construction	13 598 970	11 795 626
General	3 419 885	3 221 755
Manufacturing	948 267	882 773
Total	<u>\$18 181 680</u>	<u>\$16 036 311</u>
Accounts Payable	\$15 558 934	\$13 821 977
Payrolls (Net)	2 408 648	1 971 109
U. S. Savings Bonds	214 098	243 225
Total	<u>\$18 181 680</u>	<u>\$16 036 311</u>

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General Accounting Divisions

	<u>December</u>	<u>January</u>
<u>Number of Checks Written</u>		
Community	235	231
Design and Construction	1 253	1 372
General	1 719	1 653
Manufacturing	610	541
	<u>3 817</u>	<u>3 797</u>
 <u>Cash Receipts</u>		
Community	\$ 104 733	\$ 156 431
Design and Construction	35 698	279 430
General	19 145 326	13 108 423
Manufacturing	11 734	12 219
	<u>\$19 297 491</u>	<u>\$13 556 503</u>
 <u>Detail of Cash Receipts*</u>		
U. S. Government	\$19 064 602	\$13 008 096
Hospital	69 143	74 667
Scrap Sales	585	225
Miscellaneous Accounts Receivable	919	533
Educational Program	63	2 149
Employees Sales	1 364	791
Refunds from Vendors	2 696	16 631
All Other	5 954	5 331
	<u>\$19 145 326</u>	<u>\$13 108 423</u>
 <u>Travel Advances and Expense Accounts</u>		
Cash advance balance at end of month	\$ 9 316*	\$ 10 105
Cash advance balance Outstanding over one month	119*	496
Traveling and Living Expenses:		
Paid Employees	18 243	14 065
Billed to Government	17 735	14 441
Balance in Variation Account at end of month	1 964 cr.	2 340 cr.
 <u>Hospital Accounting</u>		
Balance at Beginning of Month	\$ 69 264	\$ 77 484
Invoices Issued	107 029	117 351
Refunds	396	401
Cash Receipts	(69 143)	(74 667)
Payroll Deductions	(20 350)	(25 859)
Billings to Subcontractors	(9 712)	-0-
Miscellaneous Journal Entries	-0-	(10)
	<u>\$ 77 484</u>	<u>\$ 94 700</u>

* General Divisions Only

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General Accounting Divisions

	<u>December</u>	<u>January</u>
<u>Property</u>		
Number of Transfer Notices Received	538	608
Number of Items Affected	1,909	2,184
Number of Receiving Reports Classified	9,688	8,407
Number of Items Tagged at beginning of month	93,784	90,642
Number of Items Tagged this Month--Metal	1,091	1,759
Number of Tagged Items dropped from record	<u>(4,233)</u>	<u>(1,536)</u>
Total Tagged Items Recorded	<u>90,642</u>	<u>90,865</u>
Number of Items Recorded in quantity only at beginning of month	13,958	13,816
Items added to record during month	45	58
Dropped from record during month	<u>(187)</u>	<u>(341)</u>
Total Items Recorded in Quantity	<u>13,816</u>	<u>13,533</u>
Total Items on Record	<u>104,458</u>	<u>104,398</u>

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General Accounting Divisions

ACCOUNTS PAYABLE

Although the number of accounts payable vouchers entered during January (2142) was less than the number entered the previous month (2336), the amount of these vouchers was greater. (January - \$1 164 031, December - \$882 068).

Vouchers on hand at the end of the month which were in the process of being processed for billing to AEC numbered 707 and amounted to \$134 395. This represents slightly more than 10 days' receipts.

Expediting of the billing of accounts payable vouchers to AEC continued during January. At the end of the month, unbilled vouchers totaled \$845 530, of which \$373 576 is in the hands of other divisions representing vouchers which were booked prior to October 1, 1948 for which they are responsible. Unbilled vouchers older than 60 days, excluding those in the hands of other divisions, total \$155 670. Accounts payable disbursements in January amounted to \$1 250 647.

COST

December Operating Reports were completed and distributed on January 21, 1949.

In order that the amount budgeted by each division for various accounts could be entered on the January Operating Reports, considerable time was spent during the month in segregating this information by individual accounts. Calculations for amounts not included in divisional budgets were also made for items such as Purchased Electricity, Washington Business and Occupation Tax, and Continuity of Service Expense.

Codes to accumulate operating costs in connection with the P-10 Project and costs in connection with the manufacture of P-10 Alloy were established during the month. Three IME codes were also established to accumulate charges for Telephone Expense, Consultants Services, and Other Operating Expenses.

Reviews of methods of determining amounts to be assessed other divisions continued during January. Two individuals who are working on special assignments have been given the responsibility of analyzing assessment procedures and further revisions and improvements in methods will be made at the completion of these studies.

GENERAL ACCOUNTS

General ledger trial balances were received from all divisions by January 25. Hanford Works and Departmental Financial Statements were completed and distributed on January 26, 1949.

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General Accounting Divisions

GENERAL ACCOUNTS (Cont'd)

Preliminary figures, prior to the receipt of final entries, indicate that the amount of unbilled expenditures decreased by approximately \$1 000 000. Even though unreimbursed expenditures at the end of the month showed an increase of \$3 000 000, bank balances during the month were always adequate to meet current demands.

The \$3 411 874 representing General Divisions' unreimbursed expenditures is principally comprised of \$845 530 in unbilled accounts payable (of which \$373 576 represents items booked prior to October 1, 1948 for which other divisions are responsible for billing) and \$2 467 164 in unbilled salary rolls. Of this unreimbursed total, vouchers amounting to \$1 951 504 are in the hands of AEC for pre-billing audit (on Form 1035).

MEDICAL ACCOUNTING DIVISION

Invoices issued during January totaled \$117 351, which was an increase of \$10 322 over the previous month. However, cash receipts in the amount of \$74 667 increased by \$5 524 and payroll deductions in the amount of \$25 859 increased by \$5 509 over the previous month.

Two changes in accounting procedures were made effective in January. They are:

1. Since the collection of accounts of CPFF subcontractors' employees have not been made through reduction of reimbursements since October 1, 1948, the policy of preparing red accounts payable vouchers once a month which credit Accounts Receivable - Hospital was discontinued. Daily billings, fully supported by invoice copies and payroll deduction authorizations are now being made. In making this change, the balance in the receivable account will reflect an increase at the end of the month by the amount of unpaid billings to CPFF subcontractors, as credits will not be entered until cash is actually received from the subcontractor.
2. A procedure calling for the use of key-sort cards has been installed in connection with the preparation of payroll deduction lists. This procedure facilitates the preparation of these lists and the pulling and re-filing of payroll deduction authorizations. At the present time, it is estimated that a minimum of five hours time per week will be saved.

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General Accounting Divisions

PLANT ACCOUNTING

A new plant-wide procedure in connection with handling and recording of the movement of plant and equipment was established. An instruction letter outlining this procedure was issued on January 27.

Consulting accountants and engineers, who have been engaged by the Atomic Energy Commission to make an appraisal of government property at Hanford Works, arrived early in the month. Much time was spent during the month with these individuals in discussing and planning new plant accounting procedures. In some instances work which had been done in the past has been discontinued pending determination of new procedures which are now under consideration.

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General Accounting Divisions

PAYROLLS

There were no errors reported to us by the A.E C. Audit Section in connection with their audit of Weekly Payrolls for December 1948. Weekly and Monthly Payrolls have been billed through the week ended January 16, 1949 and the month of December 1948 respectively.

Weekly Payrolls have been reimbursed by the Government through the week ended January 9, 1949 and Monthly Payrolls have been reimbursed through the month of October 1948.

During one week in December there were only 10 time cards received late in Payroll. However, during the balance of the month there were as many as 105 cards received late in one week. While this condition has improved considerably during the past few months, nevertheless, the number of cards received late is still sufficient to retard the preparation of the payroll. Therefore, all cases of late cards are being brought to the attention of the interested divisions.

There were 4 951 U. S. Savings Bonds and Custody Receipts delivered to the divisions on January 7, 1949 for delivery to employees. These bonds and custody receipts covered purchases made by employees by payroll deductions during the month of November 1948.

In connection with decentralization, new suffix letters were assigned to the Plant Security and Service Division as follows:

<u>Division</u>	<u>Suffix Letter</u>
General and Office Services	SO
Patrol and Security	SS
Safety and Fire	SF

This change required a correction on approximately 1000 addressograph plates.

In addition to regular payroll addressograph work, the following material, for distribution to employees, was addressographed during January:

1. Notification concerning power conservation.
2. Public Health Bulletin relative to Richland Medical and Dental Clinic appointments.
3. G. E. monogram for January.
4. Three sets of envelopes for mailing of letters to employees by Employee and Community Relations Division.
5. List of all weekly paid employees for use of Labor Relations and Wage Rate Division in connection with the N.L.R.B. election on February 8 and 9, 1949.

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General Accounting Divisions

PAYROLLS (CONT.)

Employees contributions to the Pension Plan for the year 1948 were reported to the Pension Division on Employee Contribution Record Cards. The contribution cards were checked with the Employee Pension Plan Application Cards to verify names, pay numbers, SS numbers, etc. Employee contributions for the year were then posted to the cards and balanced with the general ledger. There were approximately 6 200 contribution record cards checked, posted and balanced.

Withholding statements for 1948 (form W-2) were prepared for all Hanford Works employees who had earnings in 1948. The earnings and tax withheld, as shown on the forms were balanced with our records and an adding machine tape of the forms was prepared and forwarded to the comptroller's office in Schenectady with Federal copies of the withholding statements. Employee copies of the W-2 form were delivered to employees on January 14, 1949. A total of 10 573 withholding statements were issued to employees for 1948. In addition, it was necessary to re-issue 200 statements to employees who had lost the original which had been delivered at the time of their separation from the company during 1948.

Federal Social Security Tax Report (Forms SS-1-B) for the fourth quarter of 1948 were prepared and forwarded to the General Office to be included with the over-all company report. The SS-1-B forms were prepared on National Cash Register Payroll Machines and were balanced with taxable earnings figures for the fourth quarter. This operation required the handling of approximately 7 000 individual employee earnings record cards.

The annual report of taxable earnings by individuals for Washington State Unemployment Insurance was prepared during the month. Taxable earnings of 10 707 employees were shown on this report. State Unemployment Insurance reports were also prepared for ten states other than Washington, covering employees who spent the major portion of their time in other states.

Employee Withholding Exemption Certificates (Form W-4) filed by employees in December 1948 were summarized and a report was prepared showing employees claiming residence in Washington by cities, and employees claiming residence outside the State of Washington. This summary involved a review of 8 589 W-4 forms.

Due to the above described year-end work, employees of the Weekly and Monthly Payroll worked a planned overtime schedule of eight hours on four Saturdays during January.

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SERVICE DIVISIONS

SUMMARY - JANUARY 1949

PURCHASING AND STORES DIVISION

Final settlement of a group of orders cancelled at the request of the Project Engineering Division was made during the month. Total cancellation charges amounted to \$26,343.45.

The Commission notified us that the Voluntary Steel Allocation Plan had been extended to cover the period March 1, 1949, through August 31, 1949. Orders were placed for first quarter delivery of seven car-loads of black and galvanized steel pipe.

Further evidence of a definite trend toward a buyers' market in some lines was noted during the month.

Some trouble was experienced with our Village coal supply which was adjusted through the cooperation of the vendors in supplying lumps of a larger size.

Responsibility for the Pasco General Depot was to be assumed by the Surplus, Salvage and Scrap Division as of February 1, 1949, with the exception of Warehouse No. 7 which is used by the National Guard and Warehouse No. 1 containing Construction materials.

Surplus materials amounting to \$338,154.89 were disposed of during the month.

PLANT SECURITY AND SERVICES DIVISION

There were two major injuries in January.

A total of 13 fire alarms, ten of which were in Construction areas, resulted in losses totaling \$170.

Effective January 3, 1949, the 200-West Area Laundry returned to a five-day week operation.

Through a combination of duties of Patrolmen and Firemen at the Pasco Warehouse Area, a reduction of ten firemen was effected.

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PURCHASING AND STORES DIVISION
JANUARY 1949

GENERAL

Purchasing

The work load remained stable throughout the month. 1,425 purchase orders were placed as compared to 1,427 placed in December. 2,246 purchase requisitions were received as compared to 2,185 received during December. Requisitions on hand at month end totaled 578 as compared with 553 at the end of the previous month.

As previously reported we have been negotiating the cancellation of a group of orders at the request of the Project Engineering Division. Final settlement was made during the month. Total cancellation charges paid amounted to \$26,343.45.

Thirty-four additional orders were placed during the month for Project P-10. With the exception of the orders placed during the last week of the month all outstanding orders for this Project are now 97 per cent complete. The Project Engineering Division notified us of another important Project to be known as P-10-A and requested the same type of special handling as has been given to P-10. Assurance was given of our full cooperation in meeting the requirements of the new Project.

Orders were placed for first quarter delivery of seven carloads of black and galvanized steel pipe under the Voluntary Steel Allocation Plan. The Atomic Energy Commission notified us that the Plan has been extended to cover the period of March 1, 1949 through August 31, 1949.

New evidences of a definite trend toward a buyers' market in many lines were noted during the month.

Additional samples of aluminum cans were received from Victor Industries and these proved satisfactory. An inspector was sent to the Victor Plant to instruct their personnel in the proper method of inspection. Scovill Manufacturing Company has not started producing cans as yet but estimate production will begin about February 15, 1949.

The Housing Division notified us that the domestic coal was being consumed far in excess of their estimate, which was based on past experience, due to the more severe weather we are experiencing this year, also the coal appeared to be burning more rapidly than might normally be expected and the tenants were unable to hold their fires overnight.

Both Continental Coal Company and Big Horn Coal Company, our suppliers of domestic coal, were advised of the situation and both companies sent men here to determine what was causing the high consumption. Representatives of the Housing Division, Purchasing, and the coal vendors inspected the coal as it was being unloaded at the coal yard and also as it was delivered to the houses. It was the consensus of all concerned that a larger size coal; namely, 3" x 5" or 3" x 6" would be the answer to our problem. The larger size was tried and consumption was reduced. The remaining tonnage on both contracts will be supplied in the larger sizes.

Stores

The weather during the month of January, 1949 presented new problems in the Stores Division. Below zero temperatures worked a hardship on employees as well as causing some material damage in perishable items carried in Stores stock. Temporary

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PURCHASING AND STORES DIVISION

GENERAL (Cont.)

Stores

solutions were arrived at by installing an oil furnace in our receiving warehouse office; by installing three new steam radiators in Building 713; by installing a steam line into the spare parts warehouse 200-W Area, and by running two new electrical service lines into spare parts warehouse, 100-B. All materials, primarily medicals and pharmaceuticals, which could be identified as perishable were moved into an air conditioned wing of the North Richland Hospital.

Major strides were taken in the analysis of Stores stock with the objective being to excess unneeded materials. Various division managers were furnished listings of no-movement items for their review prior to formal declaration as excess. It is noteworthy that 2,542 items were either deleted from Stores stock during the month or were consolidated with like items, as was the case in several instances where spare parts and extra machinery were involved.

With the completion of the month of January, the Stores Division ends a five-year period of operations in the 700 Area without a lost-time or major injury.

Surplus, Salvage and Scrap

Excess Lists No's. 46 through 53 were transmitted to the Atomic Energy Commission during the month. Lists of materials available are of course circulated to all divisions and CPFF subcontractors prior to their being listed as excess materials to the Atomic Energy Commission. These lists circulated totaled sixteen for the month.

Twenty-two representatives of Government agencies and private businesses were escorted through our various warehouses and scrap yards prior to the sale of scrap or transfer of excess materials. A register of all visitors to the project interested in various materials and scrap is maintained by the Listing and Disposal section.

The sale of scrap material located in the yard in Richland previously used as a burning ground will be effected next month. This one lot of miscellaneous scrap has been accumulating for three or four years, and has been the source of considerable criticism emanating from various inspection committees. Judging from the accumulating stock piles of various scrap material, we anticipate a considerable increase in volume of scrap sold. The results will be reflected in the statistical report for next month.

Effective January 31, 1949 all material in warehouses at the Pasco General Depot except No. 7 (National Guard) and No. 1 (Construction materials not excessed) was declared to us as excess. On the same date thirteen employees were transferred to us from Construction rolls.

The practice of assessing a ten per cent packing and handling charge on excess materials shipped to Government installations is being reviewed by the Atomic Energy Commission. Lack of funds of other Government agencies to pay the handling and packing charge has resulted in the cancellation of several shipping orders. The possibility of jeopardizing shipments of excess materials for the above reason is very slight and a definite ruling by the Atomic Energy Commission is expected in the near future.

Reference is made to "Material for Pile Areas" in the statistical report. This

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PURCHASING AND STORES DIVISION

GENERAL (Cont.)

Surplus, Salvage and Scrap

material and also controlled equipment and tools are being warehoused and controlled in accordance with the Atomic Energy Commission's request.

PERSONNEL

<u>Administrative Supervision</u>	1
<u>Purchasing</u>	
Employees Exempt	8
Employees Non-Exempt	26
<u>Stores</u>	
Employees Exempt	8
Employees Non-Exempt	108
<u>Surplus, Salvage & Scrap</u>	
Employees Exempt	8
Employees Non-Exempt	46
TOTAL	205

SAFETY AND SECURITY

<u>Purchasing</u>		
Safety and Security Meetings Scheduled	1	
Number of Employees attending	33	
Minor Injuries	0	
<u>Stores</u>		
Safety and Security Meetings Scheduled	10	
Number of Employees attending	103	
Minor Injuries	2	
<u>Surplus, Salvage & Scrap</u>		
Safety and Security Meetings Scheduled	11	
Number of Employees attending	52	
Sub-Major Injuries	1	
Minor Injuries	2	

STATISTICS

<u>Purchasing</u>		
Requisitions on hand 1-1-49 (includes 90 assigned to Govt.)		653
Requisitions received during January		2,246
Requisitions placed during January		2,221
Requisitions on hand 1-31-49 (includes 59 assigned to Govt.)		678
EV Orders placed		1,425
TPS Orders placed		226
M.O.'s placed		0
O.R.'s placed		8
Alterations issued		164
Orders Expedited		230

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PURCHASING AND STORES DIVISION

STATISTICS (Cont.)

Stores

Number of items added to Stores Stock	222
Number of items deleted from Stores Stock	2,542
Items in Stores Stock at month end	49,790
Receiving Reports issued	4,092
Store Orders filled	21,107
Emergency Store Orders filled	14
Returnable Containers on hand at month end	5,855
Returnable Containers on hand over six months	1,156
Shipments processed (containers and material) during the month	166
Inventory Valuation (903 - all captions, 906 and 912) Stores at month end	\$2,988,085.16
Inventory Valuation (Spare Parts) at month end	1,550,759.41
Total Value Inventories at month end, including Spare Parts	4,538,844.57
Value of Disbursements, not including Cash Sale items	250,853.65*
Value of Transfers from Excess and Salvage to Stores	5,888.86
Value of Materials declared excess and removed from Stores Stock	5,237.63

*Includes \$20,169.59 disbursed to Construction and CPFF subcontractors.

Surplus, Salvage & Scrap

Excess Account #10.10 Balance 12-25-48 \$1,519,836.20

Receipts - 12-26-48 to 1-25-49

Automotive Equipment	\$ 97,213.73	
Office Furniture, Machines, etc.	4,258.53	
Household Furniture, etc.	24.92	
Material and Supplies	1,169,250.51	
Miscellaneous Equipment	42,471.77	
Material for Pile Areas	14,380.00	
	<u>\$1,327,599.46</u>	1,327,599.46
		<u>2,847,435.66</u>

Disbursements: - 12-26-48 to 1-25-49

Project:

Office Furniture, Machines, etc.	6,190.00
Material and Supplies	7,906.36
Miscellaneous Equipment	120.00

Off Project:

Office Furniture, Machines, etc.	3,385.50
Household Furniture, etc.	26,210.40
Material and Supplies	292,654.04
Miscellaneous Equipment	1,688.59
	<u>338,154.89</u>

Balance of Account #10.10 as of 1-25-49

338,154.89
\$2,509,280.77

Value of Excess Lists to AEC

Automotive Equipment	123,301.07
Office Furniture, Machines, etc.	3,911.84
Household Furniture, etc.	703.43
Material and Supplies	15,588.89
Miscellaneous Equipment	4,902.26
	<u>148,407.49</u>

\$148,407.49

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PURCHASING AND STORES DIVISION

STATISTICS (Cont.)

Surplus, Salvage & Scrap

Receiving Reports (HW 1.54A) issued (3,471 items)	500	
Store Orders processed	140	
Shipping Orders processed	127	
Lists transmitted to AEC	8	
Purchase Requisitions screened	3,588	
Scrap Sales completed	1	
Value received from Scrap sold	\$225.00	
Scrap sales pending - Approved	6	
Scrap sales pending - Not Approved	2	
Salvage Material disbursed prior to Excessing		
Richland Salvage Yard		
Number of Store Orders	135	
Total Value	\$3,292.60	
Leazer Spur Salvage Yard		
Number of Store Orders	6	
Total Value	35.23	
Total of Salvage Material disbursed		\$3,377.83
Total Receipts to date	\$2,982,110.59	
Total Disbursements to date	472,829.82	
Percentage of turnover	15.8%	

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PLANT SECURITY AND SERVICES DIVISION

MONTHLY REPORT - JANUARY - 1949

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	-	-
Patrol and Security	700	705	5 (a)	-
Safety & Fire Protection	186	189	3 (b)	-
Office Services (General & Clerical)	<u>312</u>	<u>315</u>	<u>3 (c)</u>	-
TOTAL	1200	1211	11	

NET INCREASE - 11

- (a) - 15 - New Hires (Patrolmen)
 - 1 - Transfer from Community (Patrolman)
 - 1 - Return from Leave of Absence (Clerical)
 - 7 - Terminations (Patrolmen)
 - 1 - Transfer to Manufacturing Division (Clerical)
 - 1 - Transfer to Community (Patrol)
 - 3 - Transferred to "S" Division (Patrolmen)
- (b) - 4 - New Hires (Firemen)
 - 1 - Termination (Fireman)
- (c) - 14 - New Hires (4 General - 10 Clerical)
 - 3 - Return from Leave of Absence (1 Clerical - 2 General)
 - 3 - Terminations (Clerical)
 - 1 - Retirement (General)
 - 2 - Removed from roll due to Leave of Absence (1 Gen. - 1 Cler.)
 - 8 - Transferred to other Divisions (3 General - 5 Clerical)

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Service Divisions
Plant Security and Services

SAFETY AND FIRE PROTECTION

Plant Safety Record - 8 days

Injury Statistics

	<u>December</u>	<u>January</u>	<u>Year to Date</u>
Major Injuries	1	2	2
Non-Tabulatable Major Injuries	0	0	0
Sub-Major Injuries	3	4	4
Minor Injuries	458	444	444

Cumulative 1949

<u>Exposure Hours</u>	<u>Major F/R</u>	<u>Major Severity</u>	<u>Minor F/R</u>
1,486,237	1.35	0.007	2.99

Major Injury No. 59

January 13, 1949 at approximately 9:30 a.m., an employee of the Maintenance Division in the 100-D Area, suffered a serious injury to the index finger and thumb of his left hand. The employee was operating a power driven arbor saw. He completed his cut and when attempting to shut off the saw, he reached under the table top with his right hand to push the stop button and laid his left hand on the table top near the saw. While in bending position, his left hand slipped into the saw. The safety guard on the saw had not been completely closed and had hung up approximately three inches above the table.

Major Injury No. 60

January 23, 1949 at 5:35 a.m., an employee of the Maintenance Division, 300 Area, suffered severe bruises to the muscles of the back. The accident was caused by a low velocity explosion beyond injured's control and is being investigated by others.

Sub-Major Injur. No. 134

January 13, 1949, at approximately 9:20 a.m., an employee of the Instrument Division 300 Area, incurred a tuft fracture, index and middle fingers, right hand. The injured had been assigned a general clean up of the shop. During the course of his work, it was necessary for him to disassemble a temporary equipment setup, which consisted of a temperature recording instrument placed on a portable tool and instrument table. It had been necessary to counter-balance the instrument because of the weight of the door when open. This was done with a lead brick. In removing the lead brick, the injured pushed it to the edge of the instrument with his left hand, placing his right hand along the edge of the instrument near the top so that he could catch the brick as it was pushed to the edge. The weight of the brick was too much to handle with his right hand and he failed to get a good hold on it as it came over the edge of the instrument. The brick and his hand fell approximately 14 inches catching his fingers between the brick and the unturned lip of the table edge, causing the fracture.

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Sub-Major Injury No. 133

January 8, 1949 at 11:15, an employee of the Village Labor Division, 1100 Area, incurred a comminuted fracture, right thumb. The injured and truck driver were preparing to hook a four wheel trailer to the back of a dump truck by means of a trailer tongue and hitch. As the injured held the trailer tongue at the proper height, the driver backed the truck into the hitch. The injured did not realize he was holding the trailer tongue in such a manner that his thumb was in a potential pinch point and when the hitch and tongue came together the brake mechanism sliding section of the trailer tongue was pushed back to the stop where employee had placed his right thumb.

Sub-Major Injury No. 135

January 13, 1949 at approximately 3:00 p.m., a trackman working as laborer until cleared, on loan to the Purchasing and Stores Division, incurred a chip fracture, third and fifth finger, left hand. Injured and three others were loading excess desks into a box car for shipment at Pasco. The desks were being stacked three high, bottom one right side up and the top two inverted. As the top desk was being placed on a tier the desk was thrown off balance as the two men on one end released their grasp. One of the inverted legs on the second desk broke and the top desk fell between the legs of the second, catching the injured's left hand.

Sub-Major Injury No. 136

January 16, 1949, an employee of the Separations Technology Division 300 Area, incurred a fracture of the right ring finger, distal phalanx. The injured was engaged in moving an empty 55-gallon drum from the area in which it had been used, to the area where the drums are cleaned for re-use. It is necessary to move these drums through two doorways and over two cement sills. The injured had placed one end of the drum over the first sill. With his right hand on the top rim and his left hand on the upper roller band, he was attempting to slide the drum, at an angle, on its bottom rim. As he applied the necessary push to start it moving, the drum rolled to the right, catching his right hand between the top rim of the drum and the door jam. The force that had been applied to the drum was sufficient to cause the injury.

Safety Meetings

There were 681 safety meetings held during the period of January 1 through January 31, 1949, with a total attendance of 7,661.

Safety Spectacles

There were 21 pairs of prescription safety spectacles ordered during the period of January 1 through January 31, 1949; 61 pairs of prescription safety spectacles were checked, received, and fitted; and 193 adjustments and repairs were made to all types of safety spectacles.

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100 Areas Activities

Special Investigation of two Maintenance Division accidents were held during the month--a major injury which occurred in 100-D Area and a near-serious accident in 100-B Area.

A survey of "stop" and "start" buttons on various machines in Maintenance Shops revealed that location and type in many instances can be improved. This has been recommended to the Maintenance Division.

The revision of Safety Bulletin No. 11 to clarify designated responsibility for various duties included therein, was submitted by this office for final approval

It has been found that lifting equipment is being used to handle materials of greater weight than the listed capacity. This has been brought to the attention of the Divisions concerned and the Richland Safety Office advised, requesting that action be taken.

200 Areas Activities

Inspections of the Labs in the 200 East and 200 West Areas were made.

Safety Glasses in the 300 Area were adjusted.

Gas mask clips were delivered and measurements taken.

A near-serious accident in the 200 West Area was investigated.

Safety orientation was given to five "S" Division employees.

300 Area Activities

A safety and housekeeping inspection was made in the 3706 Building.

A safety and housekeeping inspection was made of the Health Instrument & Lab facilities.

An article was written for the Hanford Works News.

700-1100 Areas Activities

Considerable time has been spent in coordinating the safety celebration to be held on February 10, 1949. After a rough layout, a meeting was called of the area council and necessary persons to assist in putting on a good performance.

Checks were made on several pieces of new equipment to set up operating procedures and provide needed safety devices before approval.

Assistance was given the engineering section in establishing safe use of liquid envelope for experimental tests. Not completed.

Attended several safety meetings in as many Divisions as possible. Talks were given at all attended.

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Plant Security and Services

Assistance given on suggestions and those feasible were expedited.

Fire inspection and check of lines made in 703 Building to assure safety from freezing.

General

The 1948 Annual Safety Report was prepared and distributed.

The Traffic Accident Investigating Committee met three times for January accidents.

A new form showing the minor injury analysis for each day by Divisions is being used.

A representative of the Safety Division is a member of the committee which is conducting a complete investigation of the explosion which occurred in the 300 Area. The investigation is not complete as of the date of the report.

FIRE PROTECTION

<u>Fires</u>	<u>Number of Fires</u>		<u>Estimated Damage</u>	
	<u>December</u>	<u>January</u>	<u>December</u>	<u>January</u>
Plant Area	4	3	\$ 10.00	\$ 20.00
Miscellaneous	0	0	No Damage	No Damage
Construction Fires	3	10	\$ 60.00	\$150.00

Routine Duties

Fire Extinguishers

Inspected	3,338
Installed and Relocated	113
Refilled	202
Resealed & Repaired	144
Winterized	5

Gas Masks

Inspected	107
Serviced	50

Fire Drills and Lectures

Outside	17
Inside	189
Auxiliary Brigade	129
Safety Meetings	40

All fire alarm boxes in the Industrial Areas were tested.

All fire hose houses, hydrants, and lines in Plant Areas were inspected.

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SAFETY DIVISION - INJURY AND ACTIVITY STATISTICS

	300 Area	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	700-1100 Area	Misc. Area	3000 Area	Pasco Area	TOTAL
Minor Injuries	104	21	17	41	58	85	80	9	28	1	444
Sub-Major Injuries	2	0	0	0	0	0	1	0	0	1	4
Major Injuries	1	0	1	0	0	0	0	0	0	0	2
Days since last Tabulacable Major Injury	8	250	18	42	445	178	246	74	140	550	
Days since last Sub-Major Injury	15	213	80	468	418	56	23	116	95	18	
Days without a Minor Injury	8	19	18	8	8	5	6	24	12	30	
Safec. Meetings Conducted	68	62	69	70	57	71	215	22	25	22	681
Number in Attendance	804	426	581	531	531	635	3172	239	622	120	7661
Safety Spectacles Delivered	22	4	7	7	4	5	12	0	0	0	61
Safety Spectacles Serviced	25	22	28	23	35	40	20	0	0	0	193

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MONTHLY INJURY ANALYSIS

Period - December 16, 1948 through January 15, 1949

Minor Injuries

	Burns	Abrasions	Contusions	Lacerations	Punctures	Splinters	Strains & Sprains	Foreign Body	Blisters	Unclassified	TOTAL	
											JANUARY	LAST MONTH
"P" DIVISION	10	6	7	4	3	1	0	2	0	3	36	34
"S" DIVISION	5	6	0	4	1	2	1	0	0	0	19	20
POWER	2	4	2	1	0	3	0	0	1	0	13	10
MAINTENANCE	14	32	13	29	6	11	4	7	1	1	118	126
PROJECT ENGINEERING	0	0	0	0	0	0	0	0	0	0	0	1
ELECTRICAL	3	7	0	4	8	1	1	0	0	5	29	20
INSTRUMENT	1	3	0	5	3	3	0	0	1	0	16	21
TRANSPORTATION	0	6	10	4	2	1	4	3	1	2	33	29
COMMUNITY	0	5	7	6	2	6	5	3	2	6	42	34
ACCOUNTING	0	0	1	1	0	0	0	0	0	0	2	1
TECHNICAL	13	15	0	10	5	3	1	1	0	4	52	47
MEDICAL	0	1	3	2	6	1	2	1	0	3	19	16
HEALTH INSTRUMENT	2	2	1	5	3	0	0	0	0	0	13	11
SERVICE	1	5	3	10	2	8	0	1	0	2	32	37
EMPLOYEE AND COMMUNITY RELATIONS	0	0	0	0	0	0	0	0	0	0	0	1
DESIGN & CONSTRUCTION	0	2	4	5	3	2	3	1	1	3	24	26
TOTAL	51	94	51	90	44	42	21	19	7	29	448	
LAST MONTH	49	74	50	128	24	23	30	19	10	27		434

Service Divisions
Plant Security and Services

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OFFICE SERVICES DIVISION

General Services Division

Laundering volumes were as follows:

	<u>December</u>	<u>January</u>
<u>Plant Laundry (Building 2723)</u>		
Coveralls - Pieces	30,558	29,532
Towels - Pieces	7,288	6,915
Miscellaneous - Pieces	<u>65,861</u>	<u>59,782</u>
Total Pieces	103,707	96,230
Total Dry Weight - Lbs.	141,263	130,504
<u>Richland Laundry (Building 723)</u>		
Flatwork - Pieces	150,685	136,960
Rough Dry - Pieces	29,904	32,300
Finished - Pieces	<u>5,495</u>	<u>5,097</u>
Total Pieces	186,084	174,357
Total Dry Weight - Lbs.	120,955	113,132
<u>Monitoring Section (Building 2723-W)</u>		
Poppy Check - Pieces	63,132	50,293
Sealer Check - Pieces	<u>98,301</u>	<u>88,366</u>
Total Pieces	161,433	138,659

Effective January 3, 1949, the 200-West Area Laundry returned to two five-day shifts. The sixth day of scheduled overtime was discontinued on a trial basis by increasing our monitor and folder personnel. During this period it was possible to successfully handle the volume on this basis.

Clerical Services Division

Telephone

Eight additional lines were installed to the 300 Area on January 17, 1949, which should relieve heavy traffic conditions between 700 and 300 Areas.

Traffic is still much too heavy for the existing twenty lines to White Bluffs, but this condition cannot be corrected until the cut-over is made.

Traffic counts for three days in January were 32,353 calls, 31,577 calls and 32,847 calls.

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Service Divisions
Plant Security and Services Division

Line distribution of the Telephone Exchange is as follows:

	<u>December</u>	<u>January</u>
Lines working as 1 - O Lines	630	642
2 - O	59	62
0 - PBX	24	24
1 - N	24	24
2 - N	2	2
2-3-R Combination	<u>1</u>	<u>1</u>
Total Official Lines	740	755
Lines working as 1 - F Lines	92	92
2 - F	16	22
F - PBX	16	4
1 - R	8	8
2 - R	1277	1199
2 - RF	19	85
3 - RF	<u>2</u>	<u>2</u>
Total Non-official lines	1420	1412
Vacant lines	<u>40</u>	<u>33</u>
Total lines in Multiple Bank	2200	2200

Mail Room and Stationery

	<u>December</u>	<u>January</u>
Pieces of First Class Mail received	36,653	28,206
Pieces of Parcel Post Mail received	1,715	1,527
Pieces of Registered Mail received	353	392
Pieces of Insured Mail received	267	198
Pieces of Special Delivery Mail received	<u>328</u>	<u>302</u>
Total	39,316	30,625
Pieces of mail sent out	18,159	40,737
Amount of money used in Postage Meter	\$ 1,022.12	\$ 1,808.54
Teletypes sent out	1,847	1,705
Teletypes received	<u>1,633</u>	<u>1,581</u>
	3,480	3,286

Office Equipment

The 357 typewriters which were purchased from Federal Bureau of Supply and which were not acceptable have been turned over to Excess and Sales Division by instructions of the Atomic Energy Commission. The A.E.C. Purchasing Section has advised us that the order has been re-entered for other machines and that they have located a number of typewriters and as soon as they can secure sufficient information it will be passed on to us for determining if we can use the machines.

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Plant Security and Services

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The Operations Purchasing and Stores Division has made available to us sufficient space for our office equipment in Warehouse 8 in Pasco.

	<u>December</u>	<u>January</u>
Machines repaired in shop	270	243
Machines serviced in calls	276	213

Printing Section

	<u>December</u>	<u>January</u>
Multilith orders received	220	159
Multilith orders completed	242	167
Multilith orders on hand at month end	31	23
Mimeograph orders received	1929	2122
Mimeograph orders completed	1929	2122
Mimeograph orders on hand at month end	0	0
Ditto orders received	3370	3038
Ditto orders completed	3370	3038
Ditto orders on hand at month end	0	0

Records Service Center:

	<u>December</u>	<u>January</u>
Cartons of material received for storage	90	165
Cartons of material processed	90	137
Cartons of material shipped	0	0

Summary of persons viewing records for the month of January, 1949:

General Electric	75	98
du Pont	17	19
Atomic Energy Commission	<u>16</u>	<u>16</u>
Total	108	133

PATROL AND SECURITY

General

During the month the Emergency Officer's Room, 770-B Building, Richland, was accouatically treated to improve radio transmission and reception.

H. W. Instructions Letter No. 108, "Procedure for Transmitting Classified Documents and Material", was issued to all Operations personnel on January 12.

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Plant Security and Services

Effective January 12, 1949, one Process Section of the 234-5 Building, 200-West Area, was designated as an "exclusion" area, with revised post procedures being issued. An additional process room was later established with manpower requirements totaling three.

A procedure was issued January 17, 1949, to all Division Heads on "Visits to Nucleonics Facilities" of the General Electric Company in Schenectady".

On January 17, 1949, a procedure was issued to all Supervisors, Area Blueprint Files by R. E. Jaynes entitled "Procedure for Clearance of Personnel through Area Blueprint Files".

H. W. Instructions Letter No. 109, "Security Orientation of New Employees" was issued to all Operations personnel January 18, 1949, with the initial orientation being conducted January 26, 1949, by a representative of the Security Div.

A portion of the 200-W Operations Area was fenced off and designated as the "Redox Construction Area," to be termed a construction "controlled" Area with a "P" clearance requirement, effective January 19, 1949. At 12:01 A.M. this date, this Area was made a permanent three-man post, one man assigned to the badge house, one to the vehicle gate and one to handle fence gates leading into the Operations Area. As traffic increases, an additional clerk will be assigned to the badge house.

An evacuation plan for the "Central Mix Plant" was issued to all supervision January 25, 1949.

Industrial Patrol Bulletin No. 1, entitled "Plant Traffic" was issued by T. B. Farley on January 20, 1949, through the plant.

Industrial Patrol Bulletin No. 2, entitled "New Operations Schedule for Hanford Ferry" was issued to all Operations personnel by T. B. Farley.

Effective January 3, 1949, Procedure Memorandum No. 25 was issued to Patrol covering the proper manner of handling traffic at railroad crossings.

Effective 12:01 A.M., January 10, 1949, the Pasco Patrol went on an eight-hour schedule, with shifts beginning at 8:00 a.m., 4:00 p.m. and 12:00 midnight. No shifts overlap. Patrol personnel assigned to this area will be under the direct supervision of the Fire Department Shift Supervisor. Operating policies and procedures will continue to be issued from the 300 Area Commander who is responsible for the operation of the Pasco Patrol.

On January 12, 1949, Revision No. 1 on General Orders No. 33, was issued covering the change of working hours of the straight-day men in the 700 Area. This is a change from 8-3/5 hours to 8-1/5 hours.

One patrolman will be posted daily from 7:30 a.m. to 8:00 a.m. at the bus exit lane in the 300 Area North Parking Lot to prevent vehicles from entering the parking lot at this point. This post will also be covered from 3:30 p.m. to 4:00 p.m. to keep vehicles from parking in the bus exit lane from the badge house.

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Service Divisions Plant Security and Services

Beginning January 13, 1949, in addition to the straight day badge house clerk in the 300 Area, two men from each Company have been assigned to work this post at various times as it is desired to have two men on duty at all times who are familiar with all procedures.

Patrol Procedure Memorandum No. 26, entitled "Lost or Forgotten Pass Procedure", was issued January 13, 1949.

Patrol Procedure Memorandum No. 27, entitled "Court Citation Tickets", was issued January 13, 1949. The Plant Patrol is now handling all plant citation tickets and the 700 Area Sergeants are serving as Appearance Officers in court.

Patrol Procedure Memorandum No. 28, was issued January 18, 1949, covering "Emergency Equipment". Each Patrol car will be equipped with a blanket, rolled up and placed in rear seat of the car, to be used in case of shock. A Tourniquet will be included as soon as received from the Medical Division.

Effective January 20, 1949, an addition to the 241-TX Badge House, 200-W Area, was completed which will increase the efficiency of handling construction personnel during shift change.

On January 24, 1949, the post formerly known as "Post No. 624", in the 200-W Area, and located at the intersection of Third Street and the Construction Fence, was re-located 200-feet west and will be known as "Gate No. 625". This post is manned by one patrolman on all shifts.

PATROL

The 200 Areas handled 188 process escorts between the Areas.

Requests handled totaled 590, mainly consisting of opening doors, gates, and escorts for employees of other departments.

A total of six construction employees were escorted into areas for First Aid treatment.

There were 124 unusual incident reports received, consisting mainly of contraband picked up at barricades, lost badges, pencils, traffic violations and fires.

There were 16 classified escorts handled during the month.

Practice evacuations were held as follows:

100-F	1/11/49	2:07 P.M.
200-West	1/24/49	9:15 P.M.
200-West	1/25/49	10:17 A.M.
200-West	1/27/49	2:04 A.M.
100-D	1/27/49	10:35 A.M.
200-West	1/28/49	8:28 P.M.

Practice blackouts were held as follows:

100-F	1/31/49	2:05 A.M.
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Plant Security and Services

Training

Basic and advanced training at the Patrol Small Arms Range was continued. Qualifications in Army "L" Course firing was eliminated as it is felt the proper handling of the revolver is more important than the score of the individual.

The Nine-Point training program was continued as scheduled, instructions being given to Sergeants and Lieutenants.

An accident investigation class is being conducted consisting of instructions on the vital points to cover while investigating an accident and the proper methods of writing an accident report.

Instructions were given on the Garand M-1 Rifle consisting of nomenclature and the firing of eight rounds per man.

Safety meetings included the topic-of-the-month, "The Supervisors Responsibility for Safety".

Security meetings covered "The value of security enforcement".

Health talks were given and included the topic-of-the-month, "Humidify your homes".

A drainage system was installed on the Army "L" range and two Coleman oil heaters were installed in the range building during the month.

Due to unusually cold weather at the range, instructions were discontinued on January 10 and 11.

A "Field Instruction Grading Sheet" was put in use in lieu of the score cards formerly used at the target range.

SECURITY

Operations Section

There were 341 Security Meetings held and attended by 6,430 General Electric employees.

Security Education talks by M. J. Headley - 28 meetings - 1,116 attendance.

There were 400 Security Posters distributed throughout the Plant with the following inscription: "The Main Attraction - Atomic Secrets".

The following G. E. Security Bulletins were issued:

- Bulletin No. 33 "Photo Identification Passed", January 11, 1949
- Bulletin No. 34 "Criteria for Security Clearance", January 27, 1949.

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Employee Clearances

Class "Q" clearance received on old employees this month	45
Class "Q" clearances received on old employees to date	4,399
Class "Q" clearances received on new employees this month	137
Class "Q" clearances received on new employees to date	5,617
Class "Q" clearances received on both old and new employees since February 17, 1947	10,016
Formal "F" clearances awaiting change to "Q"	126
Authorization clearances issued this month to employees	50

Statistical Summary of Outstanding Area Badges

<u>December</u>				<u>January</u>					
	<u>A</u>	<u>B</u>	<u>C</u>	<u>Total</u>		<u>A</u>	<u>B</u>	<u>C</u>	<u>Total</u>
100-B	707	1421	697	2825	100-B	719	1514	654	2887
100-D	807	1468	666	2941	100-D	798	1546	634	2978
100-F	750	1467	674	2891	100-F	753	1551	633	2937
200-E	1121	1534	505	3160*	200-E	1114	1624	489	3227*
200-W	1337	1604	513	3454	200-W	1392	1670	479	3541
200-N	45	832	166	1043	200-N	42	843	169	1054
300	1499	1530	391	3420	300	1460	1628	364	3442
100-DR	4917	482		5399	100-DR	4997	494		5491
234-5**	1618	332		1950	234-5**	3089	322		3411
					241-BY	324	124		448

* Includes 51 "A" badges at Riverland Yards

* Includes 50 "A" badges at Riverland Yards

** Due to the change-over of 241-TX Area, this area now called 234-5

Visitors or Temporary Badges

<u>Area</u>	<u>December</u>	<u>January</u>
100-B	190	216
100-D	306	368
100-F	346	437
200-E	302	351
200-W	484	592
200-N	200	211
300	657	749
100-DR	443	489
234-5	221	285
241-BY		62
Redox		19
Total	3149	3779

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Service Divisions
Plant Security and Services

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Special Clearances Section

Following is a statistical summary of emergency clearance status of vendor and consultant vendor companies:

Total companies forwarded to AEC this month:	14	Personnel:	39
Total companies forwarded to AEC to date:	180	"	1960
Total companies cleared for restricted data this month	18		137
Total companies cleared for restricted data last month	18		68

One new company forwarded to the AEC this month:

Concrete Products Association of Washington
416 Arche Building
Seattle, Washington

Number and type of clearance granted by the AEC this month to vendors and consultants:

Formal "Q"	108
Formal "P"	28

Emergency clearances requested this month for General Electric employees: 0
Emergency clearance received this month for General Electric Employees: 1
Emergency clearances requested this month for General Electric consultants: 7
Emergency clearances for General Electric employees have been requested to date: 159
Emergency clearance for General Electric employees have been received to date: 118

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HANFORD WORKS
General Electric Company
Richland, Washington

REPORT OF VISITORS FOR PERIOD ENDING JANUARY 31, 1949

Restricted Data
Classified Unclassified

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	
MEDICAL DIVISION					
I. Visits to other Installations					
B. C. Scudder, M. D. to: Rochester University Rochester, New York	Directors meeting in biology and medicine	H. A. Blair	1-10-49	1-12-49	X
CONSTRUCTION DIVISION					
I. Visitors to this Works					
G. E. Detweiler Ingersoll - Rand Company Seattle, Washington	Check installation of of equipment purchased from his firm	G. E. Hotaling	1-3-49	Still here	X
L. Kent Westinghouse Supply Company Seattle, Washington	Check Westinghouse tur- bine	G. E. Hotaling	1-3-49	Still here	X
D. Williams Diebold Company Seattle, Washington	Install vault doors in 200 Areas	G. E. Hotaling	12-28-48	1-7-49	X
M. Aberle Rankin Equipment Company Yakima, Washington	Supervise installation of pumps	G. E. Hotaling	1-6-49	1-20-49	X
W. B. Clements American District Telephone & Detroit, Michigan	Check alarm system on vault doors in 234-5 Building	G. E. Hotaling	1-31-49	Still here	X

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Name - Organization Purpose of Visit Person Contacted Arrival Departure Restricted Data
Classified Unclassified

G. E. Hotaling
to: Kellex Corporation
New York, New York Discuss procurement pro- J. J. Cuniffe 1-18-49 1-18-49 X

L G. Jones
to: Puget Sound Sheet Metal Works
Seattle, Washington Discuss production pro- G. T. Dexter 1-26-49 1-27-49 X

DESIGN AND CONSTRUCTION ADMINISTRATIVE GROUP

I. Visits to other Installations

F. R. Creedon
to: Kellex Corporation
New York, New York Design liaison H. H. Willis 1-5-49 1-7-49 X
W. H. Denne, Jr.
N. A. Specter

E. W. Seckendorff
to: Kellex Corporation
New York, New York Design liaison H. H. Willis 1-5-49 1-7-49 X
W. H. Denne, Jr.
N. A. Specter

DESIGN DIVISION

I. Visitors to this Works

C. Smith
Northwestern Laboratories
Seattle, Washington Research and develop- F. W. Wilson 1-7-49 1-9-49 X
ment discussion O. H. Pilkey
W. E. Johnson

D. Winters
Jensen Machinery Company
Oakland, California Discussion of design A. J. Karnie 1-12-49 1-13-49 X
of equipment

S. D. Peterson
Johnson Service Company
Seattle, Washington Discuss 234-5 Building W. W. McIntosh 1-14-49 1-14-49 X
ventilation

C. M. Howard (Consultant)
4207 Bagley Avenue, Seattle Inspection of concrete W. C. Royce 1-18-49 1-20-49 X
pipe

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Restricted Data
Classified Unclassified

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data</u> <u>Classified Unclassified</u>
M. M. Gilman to: Ralph M. Parsons Company Los Angeles, California	Discussion of joint venture contract	F. W. Wilson W. H. Clymer	1-19-49	1-20-49	X
W. W. Smith C. C. Moore Company San Francisco, California	Conference	A. E. Rhodes	1-26-49	1-26-49	X
C. V. Marten C. C. Moore Company San Francisco, California	Conference	A. E. Rhodes	1-26-49	1-26-49	X
W. B. Clements American District Telegraph Co. Salt Lake City, Utah	Discuss contracts	J. A. Carlen	1-31-49	1-31-49	X
K. D. Greenhalgh General Electric Company Schenectady, New York	Design inspection	F. W. Wilson	1-10-49	Still here	X
C. E. Lapple E. I. du Pont de Nemours & Co. Wilmington, Delaware	Contamination and filter 200 Areas Production Division	F. R. Croedon G. P. Church	1-10-49	Still here	X
G. M. Read E. I. du Pont de Nemours & Co. Wilmington, Delaware	Inspection	F. R. Croedon	1-10-49	1-15-49	X
II. Visits to other Installations					
J. R. Wolcott to: Oak Ridge National Laboratory Oak Ridge, Tennessee	Technical consultation	J. E. English	1-1-49	1-9-49	X
J. R. Wolcott to: Brookhaven Laboratory Upton, Long Island, New York	Technical consultation	M. Fox R. D. Conrad	1-1-49	1-9-49	X

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Restricted Data
Classified Unclassified

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data</u> <u>Classified</u> <u>Unclassified</u>
J. R. Wolcott to: Massachusetts Inst. Technology Cambridge, Massachusetts	Technical consultation	A. R. Kaufman	1-1-49	1-9-49	X
J. R. Wolcott to: General Eng. & Consulting Laboratory Schenectady, New York	Technical consultation	H. A. Johnson	1-1-49	1-9-49	X
J. R. Wolcott to: Knolls Atomic Power Laboratory Schenectady, New York	Technical consultation	W. E. Beuchler	1-1-49	1-9-49	X
D. D. Streid to: General Electric Company Schenectady, New York	Engineering conference	D. H. Marquis B. R. Prentice	1-10-49	1-18-49	X
F. C. McInerney to: Waldript Engineering Co. Hollydale, California	Equipment fabrication inspection	E. M. Wagner	1-8-49	1-12-49	X
A. G. Silvester to: Revena Metals Seattle, Washington	Consultation with vendor	Mr. Hyatt	1-9-49	1-11-49	X
A. G. Silvester to: Gunderson Brothers Portland, Oregon	Consultation with vendor	Mr. Johnson	1-9-49	1-11-49	X
L. H. Hildebrandt to: Western Foundry Company Portland, Oregon	Discuss fabricating difficulties	E. Huffschmidt	1-13-49	1-14-49	X
W. R. McKenna to: Western Foundry Company Portland, Oregon	Discuss fabricating difficulties	E. Huffschmidt	1-13-49	1-14-49	X

TOP SECRET



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Restricted Data
Classified Unclassified

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data</u> <u>Classified</u> <u>Unclassified</u>
J. J. McCullough to: Kellex Corporation New York, New York	Review of designs	H. H. Willis	1-22-49	2-1-49	X
W. E. Johnson to: Ralph M. Parson Company Los Angeles, California	Consultation	N. Durkee	1-24-49	1-29-49	X
W. W. McIntosh to: Valley Iron Works Yakima, Washington	Inspection of filtration control panels	Mr. Price	1-29-49	1-30-49	X
ELECTRICAL DIVISION					
I. Visitors to this Works					
J. S. Quill General Electric Company Schenectady, New York	Conference on steam plant investigation	H. A. Carlberg F. J. Mollerus E. E. Weyerts	1-10-49	1-14-49	X
W. A. Dittmer Bonneville Power Administration Portland, Oregon	Conference	H. A. Carlberg	1-19-49	1-19-49	X
R. Richmond Bonneville Power Administration Walla Walla, Washington	Conference	H. A. Carlberg	1-19-49	1-19-49	X
II. Visits to other Installations					
L. H. Holden to: General Electric Company Seattle, Washington	Availability of material	Mr. Siebert	1-15-49	1-16-49	X
O. Magechon to: General Electric Company Seattle, Washington	Availability of material	Mr. Siebert	1-15-49	1-16-49	X

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1-22-49



Nemo - Organization Purpose of Visit Person Contacted Arrival Departure

EMPLOYEE AND WAGE RELATIONS DIVISION

I. Visitors to this Works

R. M. Ramey General Electric Company New York, New York	Employment and labor relations	C. C. Tallman	1-10-49	1-21-49	X
G. H. Pfeif General Electric Company New York, New York	Employment and labor relations	C. C. Tallman	1-10-49	1-21-49	X

HEALTH INSTRUMENT DIVISION

I. Visitors to this Works

Rear Admiral Brown Biology & Research-Marine Forces Atomic Energy Commission Washington, D. C.	Health Instrument con- sultation	J. M. Smith, Jr.	1-12-49	1-14-49	X
M. E. Ensminger Washington State College Pullman, Washington	Consultation	K. E. Herde	1-20-49	1-20-49	X
W. B. Allred Atomic Energy Commission Oak Ridge, Tennessee	Technical consultation	C. M. Patterson	1-22-49	1-22-49	X
D. G. Reid Carbide & Carbon Chemical Corp. Oak Ridge, Tennessee	Technical consultation	C. M. Patterson	1-22-49	1-22-49	X
N. G. Rigstad Carbide & Carbon Chemical Corp. Oak Ridge, Tennessee	Technical consultation	C. M. Patterson	1-22-49	1-22-49	X

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Classified Unclassified

Person Contacted

Purpose of Visit

Name - Organization

X

1-24-49

1-25-49

D. E. Jenne
F. P. Seymour

Consultation

P. E. Church
University of Washington
Seattle, Washington

X

1-18-49

1-19-49

C. C. Gamertsfelder

Consultation

W. C. Ury
Atomic Energy Commission
Washington, D. C.

II. Visits to other Installations

X

1-2-49

1-11-49

K. Z. Morgan

Technical consultation

C. C. Gamertsfelder
Oak Ridge National Laboratory
Oak Ridge, Tennessee

X

1-2-49

1-11-49

-

Attend AFSWP meeting

C. C. Gamertsfelder
to: Atomic Energy Commission
Washington, D.C.

X

1-3-49

1-7-49

Waste disposal and hoods

Waste disposal and hoods N. Garden

F. P. Seymour
to: Radiation Laboratory
Berkeley, California

X

1-3-49

1-7-49

Waste disposal and hoods

Waste disposal and hoods N. Garden

J. W. Healy
to: Radiation Laboratory
Berkeley, California

X

1-25-49

1-26-49

R. I. Butenhoff

Joint meeting on collection and measurement of radioactive air contaminants

J. W. Healy
to: Atomic Energy Commission
Operation Office
New York, New York

X

1-27-49

1-28-49

L. I. German

Study on health problems

J. W. Healy
to: Knolls Atomic Power Laboratory
Schenectady, New York

X

1-10-49

1-12-49

H. A. Blair

Directors meeting in biology and medicine

H. A. Kornberg
to: Rochester University
Rochester, New York

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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 Classified Unclassified</u>
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H. C. Money to: Remington Rand Company Seattle, Washington	Consultation	- -	1-13-49	1-16-49	X
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R. F. Foster to: University of Washington Seattle, Washington	Consultation	L. R. Donaldson	1-18-49	1-21-49	X
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INSTRUMENT DIVISION

I. Visitors to this Works

K. E. Atwood Bailey Meter Company Seattle, Washington	Check and inspect Bailey Meter equipment	W. M. Mathis E. Hilgeman	1-19-49	1-26-49	X
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II. Visits to other Installations

C. O. Glemetson to: Kollex Corporation New York, New York	Expedite instrument design information to architect engineers	J. D. Hagy J. Shilane	1-28-49	Still gone	X
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PROJECT ENGINEERING DIVISION

I. Visitors to this Works

E. F. Dawson Dawson Machinery Company Seattle, Washington	Consultation on E.R. 4346G. R. Moore		1-12-49	1-13-49	X
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C. E. Lapple E. I. du Pont de Nemours & Co. Wilmington, Delaware	Stack gas 200-Areas and 314 ventilation	V. W. Wood	1-13-49	1-25-49	X
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II. Visits to other Installations

H. J. Bellarte to: Puget Sound Naval Shipyard Bremerton, Washington	Regarding cadmium plated steel tape on draw- ing H-1-1700	S. R. Allison	1-11-49	1-13-49	X
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Restricted Data
Classified Unclassified

Name - Organization Purpose of Visit Person Contacted Arrival Departure

MANAGEMENT

I. Visitors to this Works

T. G. J. Glason Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-17-49	1-21-49	X
H. C. Foust Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-17-49	1-21-49	X
W. F. McKennhan Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-17-49	1-21-49	X
J. H. Holmes Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-17-49	1-21-49	X
L. A. Welsh Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-17-49	1-21-49	X
J. G. Gratton Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-17-49	1-21-49	X
F. C. Steiner Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-21-49	1-25-49	X
E. Leahy Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-21-49	1-25-49	X
F. N. Schell Knolls Atomic Power Laboratory	Concerning the handling of radioactive materials (same as above)	W. I. Patnode	1-21-49	1-25-49	X

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Restricted Data
Classified Unclassified

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Classified</u>	<u>Unclassified</u>
V. B. Coplan Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-21-49	1-25-49	X	
G. E. McCullough Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-21-49	2-4-49	X	
R. J. Simon Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-21-49	2-4-49	X	
W. J. Cooley Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-31-49	2-4-49	X	
A. M. Holzberg Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-31-49	2-4-49	X	
E. F. Palmer Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-31-49	2-4-49	X	
C. J. Paurowski Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-31-49	2-4-49	X	
J. W. Gorman Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-31-49	2-4-49	X	
D. M. Lewis Knolls Atomic Power Laboratory Schenectady, New York	Concerning the handling of radioactive materials in order to operate SPRU	W. I. Patnode	1-31-49	2-11-49	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>Classified Unclassified</u>
II. Visits to other Installations					
P. F. X. Dunigan to: Argonne National Laboratory Chicago, Illinois	Education conference	J. E. Schumacher	1-10-49	1-11-49	X
P. F. X. Dunigan to: Oak Ridge National Laboratory Oak Ridge, Tennessee	Education conference	J. Curts	1-12-49	1-14-49	X
P. F. X. Dunigan to: Brookhaven National Laboratory Upton, Long Island, New York	Education conference	R. A. Patterson	1-17-49	1-17-49	X
P. F. X. Dunigan to: Knolls Atomic Power Laboratory Schenectady, New York	Education conference	R. S. Neblett	1-18-49	1-20-49	X
P. F. X. Dunigan to: Pittsfield Chemical Department Pittsfield, Massachusetts	Education conference	C. H. Kline, Jr.	1-21-49	1-21-49	X
POWER DIVISION					
I. Visitors to this Works					
S. T. Powell Shepherd T. Powell Company Baltimore, Maryland	Regarding Water Plant Studies GEO-3 and GED-13	H. F. Measley	1-10-49	1-14-49	X
H. E. Bacon Shepherd T. Powell Company Baltimore, Maryland	Regarding Water Plant Studies GEO-3 and GED-13	H. F. Measley	1-10-49	1-14-49	X
A. F. Sherzer Shepherd T. Powell Company Baltimore, Maryland	Regarding Water Plant Studies GEO-3 and GED-13	H. F. Measley	1-10-49	1-14-49	X

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Name - Organization Purpose of Visit Person Contacted Arrival Departure Classified Restricted Data
Unclassified

R. F. Giffels Giffels and Vallet Detroit, Michigan	Regarding Water Plant Studies GEO-3 and CED-13	H. F. Measley	1-10-49	1-14-49	X	X
W. D. Rausch Giffels and Vallet Detroit, Michigan	Regarding Water Plant Studies GEO-3 and CED-13	H. F. Measley	1-10-49	1-14-49	X	X
M. M. Bush Giffels and Vallet Detroit, Michigan	Regarding Water Plant Studies GEO-3 and CED-13	H. F. Measley	1-10-49	1-14-49	X	X

TECHNICAL DIVISION

I. Visitors to this Works

J. C. Maguire Argonne National Laboratory Chicago, Illinois	Consultation on P-1C Project	A. A. Johnson	1-10-49	1-15-49	X	X
W. B. Allred Atomic Energy Commission Oak Ridge, Tennessee	Technical consultation on Metal Waste Recovery	R. H. Beaton	1-22-49	1-27-49	X	X
D. G. Reid Carbide & Carbon Chemical Corp. Oak Ridge, Tennessee	Technical consultation on Metal Waste Recovery	R. H. Beaton	1-22-49	1-31-49	X	X
N. G. Rigstad Carbide & Carbon Chemical Corp. Oak Ridge, Tennessee	Technical consultation	R. H. Beaton	1-22-49	1-31-49	X	X
R. M. Evans E. I. du Pont de Nemours & Co. Wilmington, Delaware	Redox Survey	R. H. Beaton	1-21-49	2-5-49	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 Classified Unclassified</u>
R. P. Geronoux	Redox Survey	R. H. Beaton	1-21-49	2-5-49	X
E. I. du Pont de Nemours & Co. Wilmington, Delaware					
I. Perlman	Redox Survey	R. H. Beaton	1-21-49	2-5-49	X
E. I. du Pont de Nemours & Co. Wilmington, Delaware					
J. N. Tilley	Redox Survey	R. H. Beaton	1-24-49	2-5-49	X
E. I. du Pont de Nemours & Co. Wilmington, Delaware					
B. H. Mackey	Redox Survey	R. H. Beaton	1-25-49	2-5-49	X
E. I. du Pont de Nemours & Co. Wilmington, Delaware					
L. Squires	Redox Survey	R. H. Beaton	1-25-49	2-5-49	X
E. I. du Pont de Nemours & Co. Wilmington, Delaware					
J. E. Cole	Redox Survey	R. H. Beaton	1-25-49	2-5-49	X
E. I. du Pont de Nemours & Co. Wilmington, Delaware					
F. B. Vaughn	Redox Survey	R. H. Beaton	1-25-49	2-5-49	X
E. I. du Pont de Nemours & Co. Wilmington, Delaware					
S. L. Handforth	Redox Survey	R. H. Beaton	1-25-49	2-5-49	X
E. I. du Pont de Nemours & Co. Wilmington, Delaware					
J. E. Willard	Redox Survey	R. H. Beaton	1-25-49	2-5-49	X
E. I. du Pont de Nemours & Co. Wilmington, Delaware					
C. C. Nelson	Technical consultation on Redox	R. H. Beaton	1-27-49	1-30-49	X
Standard Oil Development Co. Bayway, New Jersey					

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Restricted Data
Classified Unclassified

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Classified Unclassified</u>
R. M. Padden to: Vulcan Crucible Steel Aliquippa, Pennsylvania	Supervise production rolling	J. Flower	1-1-49	1-19-49	X
R. J. Schier to: Mallinckrodt Chemical Co. St. Louis, Missouri	Attend AEC conference on metal quality	H. Thayer	1-14-49	1-18-49	X
R. J. Schier to: Battelle Memorial Institute Columbus, Ohio	Attend metallurgy in- formation meeting	H. W. Russell	1-19-49	1-20-49	X
R. J. Schier to: Argonne National Laboratory Chicago, Illinois	Discuss P-10 alloy manu- facture	F. Foote	1-21-49	1-23-49	X
R. Ward to: Battelle Memorial Institute Columbus, Ohio	Metallurgical meeting	H. W. Russell	1-18-49	1-20-49	X
R. Ward to: Argonne National Laboratory Chicago, Illinois	Metallurgical consul- tation	F. G. Foote	1-21-49	1-21-49	X
J. H. Bach to: General Electric X-Ray Corp. Milwaukee, Wisconsin	Metallurgical consul- tation	Mr. Pickett	1-17-49	1-17-49	X
J. H. Bach to: Battelle Memorial Institute Columbus, Ohio	Metallurgical meeting	H. W. Russell	1-18-49	1-20-49	X
J. H. Bach to: Knolls Atomic Power Laboratory Schenectady, New York	Metallurgical consul- tation	H. Harker	1-21-49	1-24-49	X
J. H. Bach to: Argonne National Laboratory	Metallurgical consul- tation	Dr. Ringo	1-25-49	1-26-49	X

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Restricted Data
Classified Unclassified

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Classified</u>	<u>Unclassified</u>
R. E. Savidge to: Battelle Memorial Institute Columbus, Ohio	Metallurgical meeting	H. W. Russell	1-18-49	1-20-49	X	
A. H. Bushey to: Knolls Atomic Power Laboratory Schenectady, New York	Discussion of analytical- Laboratory cal methods and programs	J. W. Flagg	1-17-49	1-19-49	X	
A. H. Bushey to: Pittsburgh Analytical Symposium Pittsburgh, Pennsylvania	Discussion of analytical - cal methods and programs		1-20-49	1-21-49	X	
A. H. Bushey to: Carbide & Carbon Chemical Corp. Oak Ridge, Tennessee	Discussion of analytical C. E. Larson Corp. methods and programs	F. W. Hurd	1-21-49	1-24-49	X	
R. E. Curtis to: Puget Sound Naval Shipyard Bremerton, Washington	Inspection of machine shops	Captain McKee	1-18-49	1-19-49		X
R. E. Curtis to: Scientific Research Company Portland, Oregon	Inspection of machine shops	J. L. Misenhimer	1-23-49	1-24-49		X
R. E. Curtis to: Paul Brong Machine Works Portland, Oregon	Inspection of machine shops	P. Brong	1-23-49	1-24-49		X
R. E. Curtis to: Electric Steel Foundry Portland, Oregon	Inspection of machine shops	J. M. Wilcox	1-23-49	1-24-49		X
R. E. Burns to: Carbide & Carbon Chemical Corp. Oak Ridge, Tennessee	Waste disposal confer- ence	R. B. Korsmoyer F. W. Hurd J. A. McLaren	1-10-49	1-14-49		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>Classified</u>	<u>Restricted Data</u> <u>Unclassified</u>
F. J. Laitz to: Carbide & Carbon Chemical Corp. Oak Ridge, Tennessee	Waste disposal confer- ences	R. B. Korsmeyer F. W. Hurd J. A. McLaren	1-10-49	1-14-49	X	
H. A. Moulthrop to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Training in DP West Oper- ations, including Build- ing 5	E. R. Jette R. D. Baker I. B. Venable	1-4-49	1-7-49	X	
W. B. Kerr to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Training in DP West Oper- ations, including Build- ing 5	E. R. Jette R. D. Baker I. B. Venable	1-4-49	1-14-49	X	
F. J. Quinn to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Training in DP West Oper- ations, including Build- ing 5	E. R. Jette R. D. Baker I. B. Venable	1-4-49	1-14-49	X	
G. W. Pomeroy to: Oak Ridge National Laboratory Oak Ridge, Tennessee	Assist Redox Pilot Plant Operations	D. G. Reid	1-9-49	4-1-49	X	
P. E. Colline to: Gen. Eng. & Consulting Lab. Schenectady, New York	Technical consultation on 234-5 Project	D. H. Marquis	1-5-49	1-12-49	X	
R. A. Carlson to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Training in DP West Oper- ations, including Build- ing 5	E. R. Jette R. D. Baker I. B. Venable	1-11-49	1-19-49	X	
E. G. Pierick to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Training in DP West Oper- ations, including Build- ing 5	E. R. Jette R. D. Baker I. B. Venable	1-18-49	1-28-49	X	
W. A. Brown to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Equipment checking and training in Operations at DP West, including Building 5	E. R. Jette R. D. Baker I. B. Venable	1-25-49	2-5-49	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>Classified</u>	<u>Unclassified</u>
B. Weidenbaum to: Los Alamos Scientific Lab. problems Los Alamos, New Mexico	Discussion of design problems	M. Roy	1-31-49	2-1-49		X

"P" DIVISION

I. Visits to other Installations

R. K. Wahlen to: Victor Can Company Brooklyn, New York	Inspection of aluminum can manufacturing process	Manufacturing personnel	1-28-49	2-3-49		X
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ENGINEERING CONSULTANT REQUESTED BY DESIGN DIVISION - E. W. Seckendorff

I. Visits to other Installations

J. Gordon Turnbull J. Gordon Turnbull, Inc. to: Radiation Laboratory Berkeley, California	Inspect construction of laboratory hoods in the Chemistry Building	Dr. Cooksey	1-3-49	1-5-49		X
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EMPLOYEE AND COMMUNITY RELATIONS DIVISION

SUMMARY - JANUARY, 1949

Discussions of Employment practices and procedures, and employee benefit plans, were conducted by representatives of Employee Services with the instructors in the 9-Point Job Improvement Program. Statement of Charles E. Wilson before the Joint Committee on the Economic Report, and one set of questions and answers were distributed to all supervisors participating in the Program.

Open requisitions for additional personnel decreased from 388 at the beginning of the month, to 262 at the end of January. This reduction is due primarily to transfer of requisitions for scientific personnel to the Technical Personnel Recruiting Group. Total plant roll increased during January by 60 employees.

Employee Services Counselors made 1,938 contacts during January. One employee retired, and four employee deaths occurred during January. Two hundred thirty seven awards, totaling \$280.00, were granted during the month. A conference between representatives of the Atomic Energy Commission, Washington State Department of Labor and Industries, and the General Electric Company, resulted in a decision to make no change in the present special workmen's compensation agreement with the State.

Letters were sent to the Community Thought Leaders, to whom Mr. Frout spoke in December, enclosing copies of the Works News and informing them of their being placed on our mailing list.

Assistance was given to the Retail Committee of the Chamber of Commerce in the development of an institutional advertising campaign which will be launched in the spring.

Two letters to employees were prepared concerning the union election to be held on February 8 and 9.

Informative newspaper releases were made to the local list of newspapers as well as several radio stations. Newspaper releases were also sent to 41 of the leading daily newspapers in the Pacific Northwest.

Several Works News stories were published concerning the details of the union election to be held in February.

Several hundred booklets entitled "Northwest Industries", published by the Seattle First National Bank, were sent out by Mr. Frout to various company officials.

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Employee and Community Relations Division

Summary

A member of the Community Relations Division attended the annual Newspaper Institute, sponsored yearly by the School of Journalism of the University of Washington for publishers and editors of weekly newspapers in this state. At this meeting many of the problems of weekly newspaper editors and publishers were discussed, and it gave our representative an opportunity to determine where our news service could better fit in with weekly newspapers.

Considerable help was given to the power conservation program during the month in the nature of newspaper articles, reminder cards, photographs, etc.

Beginning and brush-up shorthand courses are scheduled for completion during the month of February, and plans are already under way to start new classes.

A member of the Community Relations Division is working with the Administrator of Kadlec Hospital in setting up a training program for receptionists.

Several meetings were held with representatives of the National Labor Relations Board and representatives of the Atomic Metal Trades Council. As a result of these meetings, a stipulation for a consent election was filed on January 26. The election to determine whether certain employees of the Manufacturing, Services, Community, and Technical Divisions wanted the Atomic Metal Trades Council to represent them in collective bargaining matters was scheduled for February 8 and 9.

Several talks were made by members of the Wage Rate Division to supervisory groups for the purpose of clarifying the wage payment system in effect at the Hanford Works.

General reviews of all non-exempt job classifications in the Accounting, "P", and "S" Divisions were completed during the month.

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EMPLOYEE AND COMMUNITY RELATIONS DIVISION

JANUARY, 1949

ORGANIZATION AND PERSONNEL

Employee Relations

Effective January 1, N. E. Thompson, technical recruiter, was transferred to the Technical Personnel Group to assist in the procurement and placement of scientific and engineering personnel.

Effective January 10, one stenographer-typist "C" was added to the Investigations and Files Group as a replacement.

Effective January 13, one general clerk "D" terminated voluntarily.

Effective January 24, one stenographer-typist "D," assigned to the Procurement Group, was transferred to the Electrical Division of the Manufacturing Divisions as a general clerk "C".

Community Relations

Effective January 24, one general clerk "B" was added to the Community Relations Division.

Labor Relations and Wage Rates

No organization changes were made in this Division during January.

Number of employees on payroll:	<u>January, 1949</u>
Beginning of month	93
End of month	92
Net loss	1

This loss was due to a voluntary termination.

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Employee and Community Relations Division

ACTIVITIES

Employee Relations

General

During the month of January, discussions on Employment Practices and Procedures, and Employee Benefit Plans, were held in the instructors' classes of the 9-Point Job Improvement Program. Individuals from the Employee Relations Group led the discussions on these subjects.

The Statement before the Joint Committee on the Economic Report, made by Charles E. Wilson, President of the General Electric Company, was distributed to all supervisors participating in the 9-Point Job Improvement Program, as supplementary information for their economic sessions. One set of questions and answers were also distributed to the supervisors during the past month.

Employment

In order that more special attention might be given the procuring and placing of women employees, Miss Shirley Kreimeier, formerly a clerical working leader in the Employment Group, was upgraded to employment interviewer and investigator, effective January 3. Miss Kreimeier will also assist in the transfer and upgrading of women clerical employees.

	<u>December, 1948</u>	<u>January, 1949</u>
Applicants interviewed	1,126	1,565
Open Requisitions	<u>December, 1948</u>	<u>January, 1949</u>
Exempt	26	11
Non-exempt	<u>362</u>	<u>251</u>
Total	388	262

Of the non-exempt open requisitions at the beginning of January, 177 were covered by interim commitments, and 15 of the individuals on exempt requisitions had accepted offers, 4 had been made offers but had not accepted, and the remainder were in the process of investigation. At the end of January, 139 non-exempt requisitions were covered by interim commitments, and 10 of those individuals on exempt requisitions had accepted offers, and one had been made an offer but had not accepted.

It should be noted that a majority of the requisitions for exempt personnel, now being processed by the Employment Group, are for technical personnel. This Group will continue to process these cases to a successful conclusion. In the future, however, all applicants included in the scientific and technical category will be processed by the Technical Personnel Office.

Employee and Community Relations Division

The open requisitions for non-exempt personnel, in this category, for which no applicants have been placed in process, have already been transferred to the Technical Personnel Office.

	<u>December, 1948</u>	<u>January, 1949</u>
Employees added to the rolls	162	177
Employees removed from the rolls	<u>125</u>	<u>117</u>
Net Gain	37	60

During the month of January, the Construction Division advised the Employment Group of notices of lay off, due to lack of work, being given to three exempt employees, after it had been determined that the Company did not have other suitable openings. Two of these individuals were successful in gaining employment with sub-contractors on this Project. The third individual has not been placed. Of the two exempt employees given notice of lay off by the Construction Division during December, and who remained unplaced at the end of the month, one voluntarily left the Project, and the other obtained employment with a Project sub-contractor.

On January 28, the Employment Group was notified that sixteen non-exempt employees of the Construction Division had been given notice of lay off, due to lack of work. These employees are assigned to the Layout Section, and efforts are being made at the present time to locate other suitable openings for them.

During the month of January, forty new requests for inter-Divisional transfers were received and reviewed by the Employment Group. As a result of these requests, thirty-nine of these employees were interviewed. As a result of these interviews, fourteen of these employees were transferred to other work.

A lack of applicants for positions as Stenographers, Typists, and I.B.M. Operators, resulted in the Employment Office conducting a recruiting trip to Spokane on January 12th, 13th, 14th, and 15th, to obtain additional personnel in these categories. As a result of this recruiting trip, a total of fifty-four applicants were interviewed, and offers made to twenty-five. These offers included ten Typists, six Stenographers, five Office Machine Operators, and four General Clerks.

Need for additional Stenographers is still critical. As the employment experience at this Works has indicated, the rates for such employees offered at this Works are being equaled in the surrounding community, and in some instances even higher. The supply of individuals with such qualifications has not as yet equaled the demand on the entire West Coast. Accordingly, in order to meet the requirements at this Works, arrangements have been made to expand our advertising for such applicants to newspapers in the South West. In the event the response to these advertisements is above average,

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Employee and Community Relations Division

consideration will be given to a recruiting trip.

Employee Services

During the month of January, there were a total of 1,938 contacts made by Employee Services Counselors. These contacts resulted in 2,087 inquiries. 439 of these inquiries were made by exempt employees. Of this number, 104 inquiries were on Company policies; the majority of these inquiries on policy were made by exempt employees in the "P" Division, Maintenance Division, Technical Division, and Plant Security and Services Division. 1,648 of the total number of inquiries were made by non-exempt employees. 1,224 of these inquiries were attributed directly to income tax questions. Of the 424 remaining inquiries, the major portion were on Group Disability Insurance, Company Policy plans, Savings plans, and Employee Sales Plan.

Exit interviews were given to 90 terminating employees. 159 new employees were given orientation. Of this latter number, 62% elected to participate in the Group Life Insurance Plan, and 74% elected to participate in the Group Disability Insurance Plan.

Employee Services Counselors attended four Area Council Meetings during January. These meetings had a total of 77 employees in attendance.

Five meetings were conducted by the Employee Services Group, with a total of 144 employees in attendance. Three of these meetings covered information on income tax, and two of these meetings covered information on the Group Life and Group Disability Insurance Plans.

The following employee retired during the month of January:

Eddie Hance, Community Maintenance Division.

This employee was participating in the Pension Plan, and was interviewed prior to his retirement, and fully informed as to the benefits he would receive under this Plan.

Four employee deaths occurred during January. These employees were as follows:

Manufacturing Instrument Division
Purchasing & Stores Division
Plant Security & Services Division
Manufacturing Maintenance Division

In each of these cases, the employees' families were contacted by an Employee Services Counselor, and all arrangements, relative to insurance benefits, social security forms, and pension refunds, were furnished at that time. In

Employee and Community Relations Division

addition salary checks for these employees were given to their families.

A review of the Group Disability and Hospitalization Plan, as well as discussion with individuals in other Divisions, for the purpose of arriving at a more liberalized Group Disability Plan, was conducted during the past month, and as a result a draft, together with recommendations, concerning a more liberalized plan has been submitted for consideration.

The Revised Rating System, as received from Schenectady, has been carefully reviewed, particularly with respect to our exempt rating plan, and a proposed Instructions Letter, changing our present exempt rating system to conform with the revised plan has been prepared in draft form, and submitted for approval. Copies of this Instructions Letter, together with rating forms, are being distributed to all Division Managers for their consideration.

Two employees of the Employee Services Group have assisted instructors in the 9-Point Job Improvement Program during the past month by appearing before these instructors' classes, and furnishing information concerning the various employee benefit plans.

Two contacts with employees, absent because of illness, were made by Employee Services Counselors during January.

Suggestion System

At the end of January, the volume of work in the Office of the Secretary of the Suggestion System was as follows:

	<u>December</u>	<u>January</u>	<u>Total since July 15, 1947</u>
Suggestions received and acknowledged	145	174	3,144
Investigation reports completed	86	158	2,795
Awards granted by Suggestion Committee	13	23	283
Cash awards	\$ 115	\$ 280	\$ 2,830

The Secretary of the Suggestion System, upon request, discussed the Suggestion System operation before four groups of Community Division Maintenance supervisors participating in the 9-Point Job Improvement Program, and one group of Manufacturing Division supervisors.

Both the Tri-City Herald and the Hanford Works News carried articles on suggestion award winners during the month of January.

Insurance

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1. Insurance Coverage -- Public Liability

bodily injury, North Richland

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Employee and Community Relations Division

Barracks Fire -- Approval for settlement of this claim, in the amount of \$ 7,500.00 was received from the Atomic Energy Commission, and the Travelers Insurance Company so advised. From information received from the insurance company, this settlement was agreeable with the complainant, and payment has been made accordingly.

-- As the result of the objection of the Travelers Insurance Company to propose compromise in this case, together with a recent examination by an orthopedic surgeon in Spokane indicating that this complainant's back condition existed prior to this injury, a trial date has been set in this case by the Superior Court for February 15 and 16.

2. Life Insurance

Code information used by insurance companies in issuing insurance to employees of this Works was furnished to 28 insurance companies and investigation agencies during January.

3. Compensation

A member of the Insurance and Compensation Group attended a conference held in Olympia, Washington, on January 6, which was attended by members of the Atomic Energy Commission, General Electric Company, and the Washington State Department of Labor and Industries. The purpose of this conference was to determine the feasibility of additional legislation in connection with the War Projects Rating Plan as passed by the State Legislature in 1943. This plan briefly provides for a special working agreement between the Washington State Department of Labor and Industries and the prime contractor of the Hanford Works, relative to the handling of workmen's compensation claims under the State Industrial Insurance and Medical Aid Acts. As a result of this conference, it was decided that no attempt to request any additional legislation, which would change the present arrangements, would be made at this time.

During the past four years, it has been the practice of the Washington State Department of Labor and Industries to permit replacement or repair of eye glasses broken during work, even though there has been no injury. At the request of the Department of Labor and Industries, claims for such damage were reported and allowed by that organization. In view of the number of such cases, which have been submitted for claim, it is the Company's feeling that this practice should be reviewed, together with the existing law, to determine if such claims should be allowed only when the eye glasses are broken at the time that an injury occurs. A letter requesting this review and an opinion returned has been submitted to the Chief Claim Agent of the Department of Labor and Industries.

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Employee and Community Relations Division

STATISTICS

Employee Relations

<u>Number of employees on rolls</u>	<u>12-31-1948</u>	<u>1-31-1949</u>
Exempt	1,706	1,734
Non-exempt	<u>6,912</u>	<u>6,944</u>
Totals	8,618	8,678

ADDITIONS

	<u>Exempt</u>	<u>Non-exempt</u>	<u>Total</u>
New Hires	7	149	156
Re-engaged	-	1	1
Re-activations	-	18	18
Transfers from other plants	<u>1</u>	<u>1</u>	<u>2</u>
Actual Additions	8	169	177
Payroll Exchanges	<u>42*</u>	<u>3**</u>	<u>45</u>
Gross Additions	50	172	222

TERMINATIONS

Actual Terminations	18	76	94
Removals from roll	1	22	23
Payroll Exchanges	<u>3***</u>	<u>42****</u>	<u>45</u>
Gross Terminations	22	140	162

Approximately 80% of all terminations were on a voluntary basis, and most of these were for the following reasons: (a) Another job, (b) To return or remain home, (c) Personal reasons.

GENERAL

	<u>12-1948</u>	<u>1-1949</u>
Applicants interviewed	1,126	1,565
Photographs processed	3,461	3,987
Fingerprint impressions taken (in duplicate)	313	398
Procurement Letters written	989	806

- * Transferred from Weekly Salary roll
- ** Transferred from Monthly Salary Roll
- *** Transferred to the Weekly Salary Roll
- **** Transferred to the Monthly Salary Roll

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Employee and Community Relations Division

ABSENTEEISM STATISTICS (Weekly Salary Roll)*

	<u>12-1948</u>	<u>1-1949</u>
Male	2.03%	2.71%
Female	3.45%	4.77%
Total plant average	2.41%	3.26%

INVESTIGATIONS STATISTICS

	<u>12-1948</u>	<u>1-1949</u>
Cases pending at beginning of month	1,435	1,330
Cases received during the month	288	261
Cases closed	393	349
Cases pending at month end	1,330	1,340
Number found satisfactory for employment	232	172
Number found unsatisfactory for employment	11	10
Cases closed before investigation completed	12	15
Special investigations conducted	87	56

Compensation and Insurance

CLAIMS

	<u>Reported in</u> <u>January, 1949</u>	<u>Reported in</u> <u>December, 1948</u>	<u>Total since</u> <u>Sept. 1, 1946</u>
Workmen's Compensation	133**	117	2,023
Liability	10	6	275

COMPENSATION PAYMENTS APPROVED -- Department of Labor and Industries

	<u>December</u>		<u>November</u>		<u>Total since</u> <u>Sept. 1, 1946</u>
	<u>No. of Claims</u>	<u>Amount</u>	<u>No. of Claims</u>	<u>Amount</u>	<u>Amount</u>
Medical Aid	43	\$ 784.51	47	\$ 1,508.13	\$ 16,518.66
Accident Fund	142	12,665.48***	131	7,110.01****	118,608.40
Pension	29	1,305.32	28	1,280.32	38,823.87

* Statistics furnished by Weekly Payroll Division.

** This total includes 36 broken glass claims which were forwarded direct to the Department of Labor and Industries

*** This amount includes \$ 1,030.00 for Administrative Expenses

**** This amount includes \$ 969.17 for Administrative Expenses

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LIABILITY PAYMENTS APPROVED -- Travelers Insurance Company

	<u>December, 1948</u>	<u>Total amount paid out since Sept. 1, 1946</u>
Bodily injury - excluding auto	\$ 0	\$ 67,154.29
Bodily injury - auto	31.17	
Property damage - excluding auto (credit)	121.06	
Property damage - auto	216.30	

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Community Relations

A letter was mailed to Richland's ministers and to the staff of the superintendent of Richland schools referring to the meeting in December during which Mr. Prout spoke with them. It was pointed out in the letter that we have endeavored to find ways of keeping them informed about matters of mutual interest which affect Hanford Works operation. The letter stated that one method decided upon for keeping them better informed was to place their names on the mailing list of those who receive each week's Works NEWS.

Letters have been received, and personal comments have been received which indicate that the decision to mail the Works NEWS to community thought leaders has met with public acceptance.

In reply to a question concerning the series of lectures entitled Basic Physics on Atomic Energy which is being given through the G. E. Education Program, a detailed answer was prepared and forwarded to the member of the Richland school superintendent's staff who originated the question.

During January the work with Richland merchants has been principally concerned with the development of institutional advertising campaign which they will launch early during the spring of this year. This particular phase of community relations work has necessitated several meetings with the Retail Committee of the Chamber of Commerce during which the overall plans of the campaign were laid. No effort has been made by the Division Head, Community Relations, to dominate these meetings, but it is interesting to note the readiness with which Richland merchants have looked to this office for advice and counsel on such matters.

Two letters were prepared during the month concerning the election on February 8 and 9 for distribution to all employees. Provision was made for mailing these letters to Hanford Works Supervisors at their plant addresses. Supervisors received their letters before employees received their copies at their homes.

Public Information -- Community

Informative newspaper releases made during the month to the "Local List" of newspapers and radio stations served, which includes the VILLAGER, TRI CITY HERALD, SPOKANE CHRONICLE, HANFORD WORKS NEWS, WALLA WALLA UNION BULLETIN, radio stations KPKW and KIT, including release dates were as follows:

- 1/6 This story explained that courses in typing, comptometer operation, and machine calculation still had open enrollment in Columbia High School's Adult Evening School.
- 1/13 Announcement of three electrical interruptions in Richland for the coming week.

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1/13 This story announced the classes in women's physical education,
and that not all work was still not filled in the Adult

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for each story, and they are as follows:

- 1/4 A news story announcing that G. R. Prout became General Manager of the Nucleonics Department on the first of the year was released with a photograph of Mr. Prout. The photo was sent to 12 selected daily newspapers.
- 1/20 H. M. Parker, Manager of the H. I. Divisions, was quoted in this story to the effect that employees at Hanford Works are in no danger of contacting cataracts while at work.
- 1/27 This story summarized developments of the commercial portions of the Richland Master Plan, since that part of the plan was disclosed. The story included considerable information about the new central business district.
- 1/27 It was announced that John Gerdes had been awarded a long-term ground lease for the construction and operation of a service station in Richland.
- 1/27 It was announced that a NLRB election to determine whether or not eligible employees want to be represented by the Hanford Atomic Metal Trades Council (AFL) in collective bargaining matters with the Company to be held on February 8 and 9. This story was telephoned to the Richland VILLAGER at Spokane where the paper is printed. It was sent to Ap, UP and INS in Seattle, the General News Bureau in Schenectady and the Company's Advertising and Publicity representative in San Francisco by telegraph. It was distributed by mail to our daily list of newspapers, as well as to our weekly list which contains approximately 140 papers.

The informative releases mentioned above concerning Columbia High School's Adult Evening School were supplemented by spot announcements over KPKW.

The Seattle First National Bank publishes a series of booklets entitled Northwest Industries. A booklet in this series prepared and published recently concerned Hanford Works. This Division helped to clear the copy before publication. We received approximately 500 copies of which about half were sent with a letter signed by Mr. Prout to Company officials. Arrangements have been completed for printing 16,000 copies of this booklet in a revised edition for further distribution.

A suitable heading has been printed on 8½" x 11" mimeographed white stock for use for the first page of future news releases to be sent by the Nucleonics Department News Bureau.

A letter was prepared to be sent to all members of Richland and Industrial Patrol, and AEC and GE Security for suggesting a procedure through which the members of these groups can organize a social and recreational club. This letter has been distributed and its recipients have taken the initial steps of such an organization.

A member of the Division attended the 36th Annual Newspaper Institute which is sponsored yearly by the School of Journalism of the University of Washington for publishers and editors of weekly newspapers in this state. The

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Employee and Community Relations Division

member of this Division attended many social and instructive meetings with this group. Many of the problems of weekly newspaper editors and publishers were explained, as well as methods through which this office can help with such problems and in other ways serve weekly newspapers. The member of this Division became personally acquainted with many representatives of Washington newspapers on this trip. He explained that the Division should be able to improve its service to weekly newspapers because of information gained on this trip. At Seattle it was suggested that the Institute hold its convention scheduled for September 1949 at Richland. After returning to Richland it was determined that this would be impossible because of limited overnight accommodations here.

Employee Information -- Special Programs

Special emphasis was placed on power conservation publicity during January because the power shortage became so critical that there was grave danger of a power failure throughout the Pacific Northwest.

Small reminder cards reading, "Lights Out When You're Out -- Help Conserve Power," were printed and placed near each light switch throughout the plant areas, in Richland and North Richland business houses, and in school and club buildings. The cards were designed by a member of this division who also prepared the artwork. To publicize the reminder cards and the need for power conservation, a photograph of two G-E women employees holding reminder cards was released with appropriate caption to local newspapers. A similar picture and caption appeared in the Hanford Works NEWS.

Other power conservation newspaper publicity released to local newspapers and radio stations included a story requesting housewives not to wash clothes on Monday; and a story publicizing the large amount of power consumed by electric water heaters and heaters in electrically heated houses. A human interest picture with caption of a small boy looking at a pile of light bulbs on top of a water heater was used to emphasize the need for using as little hot water as possible during peak load hours. Also released with caption was a picture of the patrolmen who toured Richland on the evenings of January 11 and 12 in a jeep equipped with a public address system requesting residents to curb use of electricity in every way possible to help avert a power failure throughout the Northwest. A news story informing residents that some Richland store buildings were rewired to enable merchants to turn out all but a minimum of necessary lights was released to local papers. The story pointed out that prior to rewiring, some merchants were unable to cooperate fully in the power conservation program. Full cooperation of Richland merchants was felt necessary due to the adverse psychological effect on residents caused by many lights and neon signs burning at night.

At the request of the Richland SPOKANE CHRONICLE representative, a statement by the General Manager was prepared. It explained that within the plant, everything possible is being done to conserve power but that due to security regulations, the power conservation measures being taken could not be disclosed.

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Employee and Community Relations Division

The display case in front of the Municipal Building was redecorated with a power conservation display. The display consists of a large reproduction of a light switch reminder card with additions and necessary revisions due to the size of the display case.

A printed folder was prepared and mailed to all Richland residences which explained why it is necessary to leave certain lights burning in the 700 area and in other Company locations in Richland. The folder explained that the Company is doing everything possible to save power, and again requested residents' full cooperation during the power shortage.

To inform Richland residents of a reduction of available power on Sunday, January 30, a large post card type mailing piece was prepared and mailed to residents. The card explained that it was necessary for all residents to curtail use of power on that date from 9 a.m. to 3 p.m. The curtailment was necessary to avoid leaving approximately half of Richland without power during those hours when a new power line would be brought into Richland. After the major portion of the mailing pieces were posted, this division was informed by the Electrical Division that due to conditions beyond its control, installation of the new power line would have to be postponed one week.

During January the following recruiting advertising was prepared and placed for publication in the following newspapers and magazines on the dates indicated:

Stenographers, Typists, and Key-punch or I.B.M. Operators --
SPOKANE CHRONICLE, SPOKESMAN-REVIEW -- January 11 through January 14.

Mechanical Designers -- Seattle TIMES, Seattle POST-INTELLIGENCER; Portland OREGONIAN; Denver POST; San Francisco CHRONICLE, San Francisco EXAMINER; Los Angeles EXAMINER, Los Angeles HERALD & EXPRESS -- January 16 through January 18. ENGINEERING NEWS RECORD Magazine -- January 27 issue.

Instrument Mechanics -- Chicago TRIBUNE -- January 30 through February 1; Buffalo COURIER-EXPRESS -- January 30; Buffalo NEWS -- January 30 through February 1; Cleveland PRESS -- January 31 through February 2; Cleveland PLAIN DEALER -- January 30 through February 1; Los Angeles WANT AD NEWS -- January 30 through February 1.

Employee Information -- WORKS NEWS

Four issues of the WORKS NEWS were published during the month of January. "Candid Camera" was inserted in the January 28 issue. The January 7 issue contained a full-page mat on the nine elements in the Job Improvement Program especially written for Hanford Works. A copy of this mat was made and sent out for outside release and starting with this issue the WORKS NEWS was distributed to educators and ministers and also to all other Works NEWS editors. This practice will continue from now on.

In view of the current power shortage a story was run in the January 14 issue thanking all Hanford Works people for their cooperation in conserving

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power and urging them to continue conservation as long as this critical period exists. The criteria established by the Atomic Energy Commission for loyalty check on personnel in atomic plants which was given both national and local publicity was also contained in this issue.

To offset any injurious results from other publicity regarding cataracts being caused from atomic radiation, a story was run in the January 21 issue explaining that atomic radiations have caused no cases of eye damage at Hanford Works, which quoted Health Instrument Divisions Manager H. M. Parker.

Announcement of the election to be conducted by the National Labor Relations Board to determine whether or not employees in certain job classifications desire to be represented by the Hanford Atomic Metal Trades Council (AFL Affiliate) was run in the January 28 issue. Tentative dates of the election were also announced. Notice of 700 Area's first injury-free year since start-up and the date that ceremonies would be held observing this event were also announced in this issue.

Employee Information -- Women's Activities

The beginning and brush-up shorthand courses which have been set up by this office will be completed in February. Plans have been made to send letters to immediate supervisors of the girls completing the course, notifying them of the effort and achievement of the girls under their supervision. Wallet-size Proficiency Cards were designed, and have been printed to give to qualified girls as a certificate. G. E. Women in the class who are not stenographers will be considered for up-grading to fill G. E. requisitions for stenographers. A number of G. E. application blanks will be on hand for those women in the class who are not now employed.

During the month, many requests were received for information about future classes, and it is contemplated that the courses will be offered again.

Upon request, assistance is being given in reading over the Employee Handbook with attention to clarity, readability, style, and errors.

A program for receptionists has been discussed with Mr. Pullen, Administrator of Kadlec Hospital, and H. H. Jones of the Design and Construction Divisions. It became obvious that the needs of different Divisions are quite diverse and localized. These topics were considered in developing the program:

- Thorough knowledge of security regulations
- Knowledge of plant organization, village, and, more specifically, the Division set-up.
- Emphasis on the importance of the receptionist's job
- What the public needs and expects from the receptionist
- What G. E. needs and expects from the receptionists
- Development of self-sufficiency on the job.

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Employee and Community Relations Division

Assistance was given to a free-lance writer and photographer who had the assignment of depicting the "Life of a G. E. Working Girl at Hanford Works." A number of girls were considered and introduced to the writer. Considerable time was spent taking pictures of the girl who was selected, at her job, shopping in Richland, with friends in a dormitory room, at the folk dancing club, partying, at dinner, riding horseback, and walking along background scenes of Richland.

Interior decoration has become of tremendous importance in Richland because many houses are exactly the same on the exterior, and many people are now furnishing their new homes. A number of booklets were requested and 14 pamphlets have been received on color combinations, furniture design and structure. They will be available to anyone requesting such information.

"Today's G. E. Woman" appeared in three issues of the Hanford Works NEWS during January. One issue devoted the page to a full page mat of timely importance. There have been many requests for the knitting and sewing patterns that have been published from time to time.

Daily orientation talks were given to a total of 72 women coming to work for General Electric. The purpose of this discussion is to introduce these new employees to G. E., the village of Richland, the educational opportunities, the clubs in Richland, security, and dormitory regulations and accommodations.

Exit interviews were held with women terminating from the Company for a portion of the month. On January 24, this assignment was turned over to a member of the Employee Relations Division. Nineteen interviews were conducted in this office up to that date.

One hundred sixty-eight (168) calls were received to locate rides and riders for various points in Washington as well as a few out-of-state destinations. The volume has dropped some due to the inclement weather and road conditions. Destinations included Spokane, Seattle, Portland, Yakima, Salt Lake, Los Angeles, Denver, San Francisco, and Texas.

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LABOR RELATIONS AND WAGE RATES

JANUARY, 1949

ORGANIZATION AND PERSONNEL

No organization changes were made in this group in January:

Number of employees on payroll	<u>January</u>
Beginning of Month	10
End of Month	<u>10</u>
No Change	0

ACTIVITIES

Labor Relations

The principal activity of this division relative to labor relations has been directed toward matters pertaining to organizational activities of the Atomic Metal Trades Council.

On January 13 a meeting was held by company officials with the representatives of the NLRB for the purpose of exchanging information on such matters as the position and responsibilities of the company and the union and the NLRB. In addition to the above, the status of interveners and preliminary arrangements regarding the bargaining unit were discussed.

On the morning of January 14 a second meeting was held between officials of the company and representatives of the NLRB for the purpose of discussing developments which grew out of the previous day's meeting. On the afternoon of January 14 a meeting was held between officials of the company, the Atomic Metal Trades Council and the NLRB during which the company's and the union's positions were discussed and clarified in regard to arrangements for the appropriate unit and a consent election. On the morning of January 15 officials of the company, the Atomic Metal Trades Council and the NLRB met, agreed, and drafted the Consent Stipulation. A factor in the company's acquiescence to a consent election was the union's complete acceptance of the unit proposed by the company. The Stipulation was signed at that time by the union officials. The company later signed the Stipulation on January 26 after receiving approval of the AEC and the Stipulation was forwarded to the NLRB who also approved it and returned signed copies to us.

The election is scheduled for February 8 and 9. The balance of the month has been spent in making arrangements for the mechanics of the election, involving voting procedure, location of polls, etc.

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Wage Rates

Copies of the completed Community Survey have been reproduced and forwarded to the various participating companies throughout the northwest.

Nine talks were given by members of this division to supervisory groups participating in the 9-Point Program for the purpose of clarifying the history and mechanics of the wage rate structure at this works.

Studies have been conducted for the purpose of determining whether or not certain portions of the current wage rate procedure should be modified and also preliminary work relative to setting up and requesting approval for a number of new classifications has been done.

General reviews of all non-exempt classifications in the Accounting, "P" and "S" Divisions have been completed. A review of all the non-exempt classifications in the Community Division is still in progress. In addition to the above a large portion of work performed by this division remains that of contacting and working with various divisions on their day to day labor relations and wage rate problems.

STATISTICS

Transfers from Weekly to Monthly Payroll	13
Transfers approved	47
Job Re classifications Approved	155
Automatic Increases	443
Merit increases	55

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COMMUNITY DIVISIONS

SUMMARY - JANUARY, 1949

ORGANIZATION AND PERSONNEL

Number of employees on roll:	<u>Beg. of Month</u>	<u>End of Month</u>
Community Administration	8	6
Community Accounting	29	28
Community Public Works	563	558
Community Safety Division (Previously listed on Administration)	0	2
Community Commercial Facilities	18	17
Community Housing	41	43
Community Fire	151	154
Community Patrol	149	146
Community Activities	<u>12</u>	<u>13</u>
	971	967

GENERAL

A request for preparation of a project proposal was issued to the Project Engineering Division to cover air horn warning signals for Richland and North Richland.

Recommendations were made by this committee covering improved layout and bumper logs or blocks in the downtown parking lot at the rear of the barber shop.

Mr. P. O. Crowder, Community Safety Supervisor, was appointed Chairman of the Community Safety Committee, replacing E. S. Baker.

COMMUNITY PATROL

Traffic accidents increased forty per cent during January, 1949. This increase was due largely to snow and ice on the streets.

Ninety-one prisoners were processed through the Richland jail and \$1,822.00 in fines were collected during the month.

COMMUNITY FIRE

Twenty-seven alarms in Richland and seventeen in North Richland were answered. These fires resulted in damage of \$2,972.64 to project property and \$1,163.98 to personal property.

The responsibility for fire prevention at the Government Air Port was taken over on January 24th, by the Community Fire Division.

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COMMUNITY COMMERCIAL FACILITIES

Locations were awarded for the following facilities in Richland:

- Apparel Shop
- Women's Wear
- Bakery
- Skating Rink
- Dry Cleaning
- Shoe Store

COMMUNITY PUBLIC WORKS

Thawing services were required in approximately 1,200 individual cases as a result of prolonged sub-freezing weather.

Responsibility for maintenance of all warehouses at the Pasco Reconsignment Point, except #7 warehouse, will be assumed by Public Works February 1, 1949.

Fuel deliveries were extremely heavy. Over 10,000 tons of coal being delivered during the month. Also, 245,553 gallons of fuel oil were delivered.

COMMUNITY HOUSING

Two hundred twenty-eight newly constructed ranch type houses were completed and made available for occupancy. Three hundred forty-four leases were written during the month.

COMMUNITY ACTIVITIES

Considerable progress is being made by several churches toward completion of their respective church structures.

COMMUNITY ACCOUNTING

Rental revenue showed an increase of \$35,355.17 over December, 1948.

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COMMUNITY DIVISIONS PUBLIC WORKS DIVISION JANUARY 1949

ORGANIZATION & PERSONNEL

Number of employees on payroll:	<u>Exempt</u>	<u>Non-exempt</u>	<u>Total</u>
December 31, 1948	66	496	562
January 31, 1949	66	492	558

Personnel changes made during the month of January:

Terminations	3
Sick Leave	1

GENERAL

Work is still progressing on preparation of the project proposal for the 200 one bedroom and 300 two bedroom apartments. Present indications are that the 300 units can be constructed within the budget figure estimated for this purpose, but that the one bedroom units cannot be constructed within the amount designated for this purpose in the 1949 construction budget. It is possible that it will be necessary to redesign the units to come within the budget.

The report concerning the study made by Greeley & Hansen, Engineers, on the garbage collection and disposal system has still not been received. Contact has again been made with the firm, and they have indicated that the report will be submitted in February.

A satisfactory supervisor for the road maintenance crew has been located and will report to work the first part of the month. After a reasonable period of training negotiations will be resumed with the Transportation Division to take over labor functions pertinent to village work.

An economy has been effected during the month in reducing the cost of new range installations in ranch type houses. This has been accomplished by installing the range couplers, tightening electrical connections and inspecting the range at the warehouse instead of at the home. This allows installation of the range by the truckers. It is estimated that the saving resulting from this procedure will amount to approximately \$400.00 in completing the installation at the balance of the houses now under construction. As well as making this direct saving the arrangement also eliminates possible loss of time of the labor crews who might have to wait for the electrician to complete the job at the house.

In the interest of economy plans are being made to eliminate the two existing maintenance shift foremen working on the 4-12 shift and days Saturday and Sunday shift. It is intended that the shift supervisor in the Utilities section will assume responsibility for all emergency work arising in the Labor Section, Maintenance Section and Utilities

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Community Public Works Division

GENERAL (Continued)

Section of the Public Works Division at all times other than normal work week hours, and will be responsible for calling out additional supervision or weekly personnel as necessary to handle emergencies. Provisions are being made to obtain a car radio to be installed in the shift supervisor's car so that contact can be made at any time with this supervisor on the patrol frequency. Since this was being planned and there was need for additional supervision in the plant maintenance division one of the foremen was transferred Feb. 1, but the complete elimination of the existing system will not be completed until sufficient time has been allowed to train the shift supervisor in the additional responsibility of the new plan.

PROJECTS

C-134 - RICHLAND VILLAGE DUST CONTROL AND LANDSCAPING. No stock was added to or removed from the nursery during the month due to the cold weather. An inventory of nursery stock was made. Considerable attention was given to possible damage resulting from the prolonged period of sub-zero weather. Damage is apparent on some plants, but final report cannot be made until after the dormant period has been broken.

An inspection reveals that 90% of the areas seeded by contractor are acceptable at this time. The contractor expects to resume seeding operations about March 1, 1949.

C-146 - EXTENSION TO PRESENT IRRIGATION SYSTEM. Work is progressing on the plans for the Marcus Whitman school irrigation system. Studies on equipment are complete. A plan is being prepared for permanent installation of lateral from irrigation main on Swift at Men's Dormitories to hospital grounds. A plan is also being prepared for extension of irrigation outlets in blocks between Abbot and Adams so that this area may be seeded to grass by sub-contractor this spring.

MAINTENANCE SECTION

Organization & Personnel

Number of employees on payroll:	<u>Exempt</u>	<u>Non-exempt</u>	<u>Total</u>
December 31, 1948	25	274	299
January 31, 1949	25	274	299

During the month the following personnel changes were made:

Terminations	1
Transfers: From Labor Section	2
Sick leave	1

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Community Public Works Division

MAINTENANCE SECTION (Continued)

General

During the month 53 renovations were completed, of which 27 were permanent type houses, 26 were prefabs. Twenty two of the permanent type houses were complete paint jobs, 4 were partially painted, and one was cleaned only. Of the prefab renovations 12 were complete paint jobs, 9 were partially painted, and 5 were cleaned only. There were on hand at the end of the month 20 orders for renovations not completed.

The interiors of 111 conventional type units were completed. With the completion of Division 2, painting expected in the first week of February will then be in Divisions 1 and 3. Of 2500 permanent houses, 562 are remaining on our inside painting program. Of 1332 prefabs, 857 are remaining.

Laundry tubs were replaced in 14 conventional type houses, kitchen sinks in 11, and water tanks in six.

Maintenance work on sewer lines was required because of faulty installation during construction at 95 Goethals, 95 Goethals, 101 Geo. Washington Way, 103 Geo. Washington Way and 1901 Williams. In each instance sewer lines were broken and sections omitted so that sewage removal has been by natural drainage only.

Thawing operations have been required in approximately 1200 individual cases as well as several dormitory radiators. This work has been performed with the use of 3 welding machines, 2 specially purchased thawing transformers, M-Scope and also compressors and jack hammers for digging up the frozen ground. In some instances we have found that: some tract house water service lines are less than one foot under ground, water lines in the outside walls of all types of newly constructed houses have been a large portion of these freeze ups, cast iron fittings used by the contractors in some precut houses resulted in the more serious cases because of the bursting that accompanied the freezing. Two plumbers have been continually busy following the thawing operations and the replacement of broken pipe line, fittings and fixtures. Many freeze up were repeated in the same houses because the tenants would not keep water running, or close the vents and access openings under the precut houses.

There are two serious and general conditions that contribute to the difficulties being experienced with the approximately 800 oil burners in the first season of operation. The first condition is that resulting from voltage fluctuations from the electrical service to these homes. This causes improper operation of some of the vital parts of the oil burner such as the fuel pump motor, the ignition system, the protector relay and other controls. The second contribution is that resulting from a high percentage of solids in the fuel oil now being used. Although it appears that present purchase of this fuel conform to government specifications for No. 3 oil, we still find that it affects the operation of the burner by clogging of filters and nozzles. To the two above mentioned conditions we attribute 254 of our 450 oil burner service calls made during this month.

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Community Public Works Division

MAINTENANCE SECTION (Continued)

Within the 2188 electrical patrol orders for the month our attention falls on the 326 water heater repairs. This, after checking, however, does not indicate a serious problem in that 174 of the calls were on checking and adjusting thermostats. It should also be noted that many of such calls have come from ranch type houses where the water heater elements are regulated by thermostats on limited demand.

Installation was made on 188 new ranges for ranch type houses. 121 calls were made on various types of refrigeration services.

All controls and motors were cleaned, inspected and overhauled in the 1182 pump house. All pump motors have been returned to service except No. 4 which shows excessive wear on the bearings and for which new bearings have been ordered. This pump is in operating condition for emergency use only.

The job of shipping 4,000,000 board feet of lumber on 122 car loadings has been completed. The loading of these cars involved binding, blocking and stacking, which work was performed by our carpenter forces. Four cars of furniture and machinery were loaded and prepared for shipment at the Pasco storage depot. Additional orders are expected to handle another 11,000,000 feet starting about March 1.

Unloading, movement, and placing of two 45 ton transformers was performed during the month.

The summary of work performed in the furniture and upholstery shop is as follows: 31 mattresses, 6 davenos, 16 rockers, 139 chairs, 113 box springs, 11 dressers, 24 tables, 39 desks, 33 bed ends and 32 upholstered cushions.

Work of installing fire partitions and attic access ladders, as well as additional attic walk ways, has been completed in the men's dormitories. New partitions to facilitate office space have been completed in the 703 building, 761 building, 716 garage, 1131 dispatcher's building and in the Marcus Whitman school.

A metal hut was erected beside the 1131 dispatcher's office.

703 building rubber tile flooring is 98% complete. Six more exit landings are all that remain on this job.

Fire damage repairs have been completed at 510 Van Giesen and are approximately 60% complete at 618 Cottonwood. Considerable damage to ceiling and walls caused by freezing and bursting of water pipes has been completed with the exception of some painting.

Responsibility for the maintenance of all warehouses at the Pasco Reconsignment depot, except warehouse No. 7, will be assumed the first of the coming month. This is necessary since this maintenance work was being handled by the Atchison & Jones Construction Company and it has been

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Community Public Works Division

MAINTENANCE SECTION (Continued)

decided that they should discontinue this work. Steps are being taken by the Commission to turn the responsibility of buildings outside of the barricade fence to others. Until these steps are completed it will be necessary for maintenance to be furnished to these locations upon approval from the Commission.

UTILITIES SECTION

Organization & Personnel

Number of employees on payroll:	<u>Exempt</u>	<u>Non-exempt</u>	<u>Total</u>
December 31, 1948	9	63	72
January 31, 1949	9	62	71
Terminations		1	

General

Steam facility operations were normal. Only routine maintenance work was done during the month. Steam consumption was very high throughout the month, and the peak load of 101,000 pounds per hour was handled without difficulty.

Operations were normal at 1131 garage boiler house. Two boilers are in service.

Domestic water operations were normal. Water consumption increased considerably during the month. This increase was due to water being wasted through mains and service lines to prevent freeze ups.

The pumping capacity of the 3000 area well field has been cut down considerably. This was made necessary because of water table dropping down to where well pumps were pumping air intermitently. This information is being passed on to the Design & Construction Division for use in their further studies on the water system.

Normal operations of sewage facilities were carried on. The sewage flow has increased to where it has been necessary to discontinue most of our normal recirculation. The new digester and boiler house at the disposal plant will be ready for operation about March 15th. The remainder of the plant will not be ready before May 15th.

Normal operations were carried on in the Pasco Warehouse Area. Some difficulty has been encountered in keeping emergency fire pumps at River Pumping Station from freezing up. Sanitary water service lines to warehouses #3 and #4 have been frozen most of the month.

Plans have been made for the Utilities Section to take over the operation of the temporary boilers at the multiple housing unit at the corner of George Washington Way & Williams on February 7. Four men are being transferred from the Labor Section to operate these boilers.

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MONTHLY REPORT OF UTILITY OPERATIONS
700,1100 AREAS & NORTH RICHLAND

Period From 1-1-49 to 1-31-49, Inc.

784 BUILDING	Total M. Gal.	Total M. Lbs.	Rate	Unit
Water Softened	5403.0	45,061.	1 121.03	G.P.M.
Steam to Auxiliaries		6,437	8652.	Lbs./Hr.
Boiler Feedwater		51,498	69218.	" -
Steam Generated		45,370	60981.	"
Blowdown		6,128.	11.90	Percent
Steam Leaving Plant		38,933.	52329.	Lbs./Hr.
Coal Consumed		6,906.	9282.	"
Coal Received		6,930.7		
Coal in Storage		9,378.6		
B.T.U./Lb. Dry Coal		11,896		
Evaporation/Lb. Coal		6.57		
Average CO ₂ - %		7.7		
Salt Used, Lbs.		6,750		
Sulphuric Acid Used, Lbs.		18,857		
Phosphate Used, Lbs.		384		
Sulphate Used, Lbs.		200		

WATER ANALYSIS - PPM

	RAW Avg.	Soft Avg.	Boiler	
			Maximum	Minimum
Phenolphthalein Alkalinity	0		220	88
Methyl Orange Alkalinity	200	23	280	122
Chlorides	18	22	350	142
Hardness	142			
Phosphate			100	0
Sulphite			55	4

RICHLAND AND NORTH RICHLAND DOMESTIC WATER (PRODUCTION)

	Richland	North Richland	Combined
Total Pumpage, Million Gals.	86.250	109.038	195.288
Avg. Daily Flow, Million G.P.D.	2.782	3.517	6.299
Rate of Flow, G.P.M.	1932	2443	4375
Chlorine Used, Lbs. 515			
Avg. Chlorine Residual, PPM - 0.25			
300 AREA WATER	30.387 Million Gal. 1,000,000 G.P.D.		

SEWAGE DISPOSAL PLANT

Sewage Flow: 131.600	Million Gals. Total.	4.245	Million G.P.D Avg.
Sewage Flow: 2948	G.P.M. Average		
Chlorine Used 8425	Lbs. Lime Used	1550	Lbs.
Chlorine Residual, Average 2.5	PPM		
Average B.O.D. 177	Raw Sewage	73	Final Effluent.
Average Suspended Solids 133	Raw Sewage	54	Final Effluent.

Signed. Harold N. Petty.

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Community Public Works Division

ENGINEERING SECTION

Organization & Personnel

Number of employees on payroll:	<u>Exempt</u>	<u>Non-exempt</u>	<u>Total</u>
December 31, 1948	16	12	28
January 31, 1949	16	12	28

General

The normal duties of inspection, and follow-up consultation and general planning were performed during the month. Contacts with members of the Construction Group were continued relative to Richland houses, facilities, and dormitories. Necessary liaison work was performed with Design Division, where we were designated as the contact engineer.

A total of 42 back charge estimates were prepared during the month of January.

This group was represented at the meeting of the Electrical Standards Committee. Discussions and recommendations were made regarding the metering design for new facility construction.

The mid-monthly project status report was completed and distributed.

The following routine items were handled by Material Control Section during January:

Requisitions	63
Store Stock Requests	18
Store Stock Adjustments	2
Purchase orders expedited	24

Work was continued on survey of items to be set up in Store's Stock for maintenance of new housing units, to include small hardware and lighting fixtures.

Several requests for price and availability information on new materials were processed for Maintenance and Engineering Sections.

The following major alterations, authorized by Alteration Permits, were reviewed and approved during the month for Commercial Facilities and Community Activities Division:

1. Richland Thrifty Drug - Install neon signs.
2. Village Pharmacy - Rearrange fountains & install neon sign.
3. Richland Laundry - Install sign
4. Diamond Variety Store - Install sign on marquee.
5. Central United Protestant Church - Installation of electrical sign for displaying church service schedules.
6. American Legion - Contract new partitions, and change electrical fixtures.

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Community Public Works Division

ENGINEERING SECTION (CONTINUED)

Proposals are now being considered requesting the assignment of ground space and preliminary approval for the following;

1. Latter Day Saints
2. Men's Wear Store - Dawson & Richards, Block #6.
3. Sporting Goods, Block #6
4. Service Station at Williams & Jadwin
5. Women's Apparel, Block #3
6. Warehouse for Thrifty Drug.

Building Alterations were completed and inspected at the following facilities during the month:

1. Castle Club - Vestibule to be enclosed with plywood and increase size of guest register window in vestibule, installing plate glass and plywood drop doors.
2. Safeway Stores - Install 10' Tyler meat case with refrigerator unit. Install signs on exterior of buildings.
3. Safeway Store - Install green Colctyle back of meat counter and check stand.
4. Safeway Stores - Change size of door opening in store room. Install one frozen food cabinet and one ice cream cabinet.
5. Pennywise Drug - Remove existing grease hood in kitchen and replace with stainless steel hood.

Technical information and instructions were furnished prospective facility operators subsequent to notice of award for the following types of occupancy:

1. Morning Sun Dairy Company - Milk Depot.
2. Roller Skating Rank
3. Coffee Shop, Plot 18-A, Dwg. #G.
4. Men's Wear - Dawson & Richards
5. Women's Apparel - Barr
6. Sporting Goods - Yakima Tent & Awning
7. Service Station - Williams & Jadwin

Technical information and instructions were furnished the following churches and clubs prior to preparation of detailed working drawings and specifications.

1. Assembly of God Church
2. V.F.W. Club
3. Latter Day Saints Church
4. Coordinate Club.

The following plans and specifications were reviewed and approved:

1. Standard Service Station Addn - Revised plan to be resubmitted.
2. Desert Printing Co. - Frayn, approved.
3. Latter Day Saints Church - Revised plans to be re-submitted.
4. Village Pharmacy Alteration - approved.

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Community Public Works Division

ENGINEERING SECTION (Continued)

Building permits were issued to the following:

1. Desert Printing - Frayne
2. Latter Day Saints
3. Village Pharmacy Alteration

Facility Sponsored Construction approximates the following schedule:

<u>FACILITY</u>	<u>Const. Started</u>	<u>% Complete</u>	<u>Est. Date of Compl.</u>	<u>Comments</u>
Cahoon Motors	11-29-48	70	2-19-49	
Frayn Printing		0	4-15-49	Constn. not started.
Richland Electric		99		Windows being repaired
Richland Supply	12-6-48	95		Awaiting exterior painting

Community Activities sponsored construction approximates the following schedule:

South Side U.P. Church	11- 5-48	65	3- 1-49	Work delayed by weather.
Baptist Church	11-27-48	60	3-1- 49	"

Spaulding Grade School, Marcus Whitman School and Lewis & Clark Grade School were inspected and accepted with exceptions. The exceptions which were noted will be corrected.

A total of 32 Alteration Permits were inspected during the month for the Housing Division.

A total of seven electrical inspections were conducted and letters of recommendation forwarded.

The Marvair Unit at 635 Cedar is operating and regular inspections are being made.

The inspection and acceptance of new houses is as follows:

Ranch Type: Y-1, Y, Z, & Z-1 - Previously Accepted - 576
Accepted during Jan.- 227
Accepted to date - 803

185 ranch type houses were inspected but not accepted. This makes a total of 988 ranch type houses inspected.

PROJECT PROPOSALS

<u>Job No.</u>	<u>Description</u>	<u>% Complete</u>	<u>Remarks</u>
11	Hourwatt metering, Richland Housing	50	Adjusted completion job reopened. Project proposal to be prepared using different method of approach.

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COMMUNITY PUBLIC WORKS DIVISION

ENGINEERING SECTION (Continued)

<u>Job. No.</u>	<u>Description</u>	<u>% Complete</u>	<u>Remarks</u>
<u>PROJECT PROPOSALS</u>			
59	Installation of Roads, Walks & Seeding, 700 Area.	50	A colored map was prepared to accompany proposal.
60	Cover outside of 703 Bldg. with Transite Grey Shingles	80	Preliminary proposal completed.
74	Recreational Facilities - Eqpt. for schools & Parks.	10	Work is progressing.
75	Proposed renovation - South end of Recreation Hall	15	Preliminary drawings started.
<u>STUDIES & SPECIFICATIONS</u>			
18	Painting exterior of Commercial facilities.	97	Final draft being checked.
22	Condition of roof & Roof framing, Lutheran Church	90	Preliminary work to be performed by Maintenance to establish cost & method of repair.
29	Excavation procedure	90	Preliminary draft sent to others for comments.
35	Roof specifications - Commercial Facilities.	50	Held up for more urgent work.
37	Standards - Tenant installation of linoleum & Tile	75	Linoleum Specs. returned by housing with comments.
42	Tenant Service Obligations	80	Adjusted completion. Returned for additional work.
44	Governors - Roll-up doors, Col. & Jefferson Schools.	75	Waiting for information from door manufacturer.
56	Municipal Bldg. Add'l lighting & circuit alterations.	100	Complete 1-21-49
66	Study of Landlord responsibilities on Business Buildings.	100	Complete 1-3-49
77	Residential Painting (Interior)	10	Work progressing.
78	Study of Heating Plant in Ranch Type Houses.	98	

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Community Public Works Division

ENGINEERING SECTION (Continued)

<u>Job No.</u>	<u>Description</u>	<u>% Complete</u>	<u>Remarks.</u>
STUDIES & SPECIFICATIONS (Continued)			
79	Wood Rot - 1117 McPherson	90	Supplementary reports to be made after completion of repair by maintenance.
85	Red Cross Bldg. Alterations	100	Complete 1-26-49
88	Thermostatic Control of Central U.P. Church	100	Complete 1-31-49
89	Thermostatic Control of Dormitory Air Conditioning	75	
90	Richland Bank, Electrical Installation	100	Complete 1-28-49
95	High School Area Improvement	10	
103	Tract House L-901 (Oil Burning Furnace.	100	Complete 1-28-49

COST ESTIMATES AND/OR DRAWINGS:

*17	Renovation of Tract House NN-1040	40	Preliminary Drawings returned to Housing for comments.
20	As built drawings - Water & Service Mains.	55	Work on water main map started. To be used as fill-in job.
31	Painting Estimate - High School Baseball Bleachers	100	A new estimate to include overhead completed 1-26-49
48	Cost Estimate - Fire door & Window, Marcus Whitman & Jefferson Schools	90	Information received from window mfg.
*51	Addition & Alter. to Bldg. 1182	60	Preliminary plans being revised.
*56	Municipal Bldg. Alterations to house tenant services	75	Reason sheet for A&B Committee approval completed & sent to ES Baker 1-13-49
*57	Installation of circular Mixer in Sewage Disposal Plant.		Cancelled by Instruction letter HA-3

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Community Public Works Division

ENGINEERING SECTION (Continued)

<u>Job. No.</u>	<u>Description</u>	<u>% Complete</u>	<u>Remarks</u>
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COST ESTIMATES AND/OR DRAWINGS (Continued)

58	Repair, Reconditioning, Enlargement of Air Cond.	10	Held up for more urgent work.
61	Paint & Re-roof Bldg. 723	95	Estimate to Services & Security 1-26-49
62	Paint & Re-roof Bldg. 717	100	Complete 1-25-49
64	Lighting Study - 720 Bldg.	80	Completed original drawing.
68	Alarm System - Bldg. 720	100	ESR forwarded to EA Monson
*70	Fire Alarm Systems - Jefferson & Sacajawea schools	85	Preliminary drawing issued.
71	Painting all School Exteriors	5	
72	Classroom lighting study	100	Complete 1-13-49
73	Hot water for Jefferson	100	Complete 1-4-49
80	Relocation of Masonic Temple	5	Estimate for moving received from Catlow Trans. Co.
81	Relocation of Castle Club Bldg.	5	" " "
82	Map of Richland showing all buildings.	5	
86	Water Shut-off valves & Sewer Clean outs under U & V Houses	5	
87	Installing Dishwasher in Lewis & Clark school.	25	Work completed on a drawing.
91	Heat for Jefferson Grade School kitchen.	10	
106	Revisions to Hut #722-J for office for Labor Section.	85	Preliminary drawing returned with comments.

* These Projects are no longer of Project Proposal Status, as per Instruction Letter HA-3, Revised.

Jobs completed this month	8
Jobs received this month	16

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Community Public Works Division

ENGINEERING SECTION (Continued)

Six property description leases were issued during January.

Man hours spent by Transportation Division on	
Street Maintenance	1198.2
Road signs & Striping	252.4
Parking Compounds	15.4

LABOR SECTION

Organization & Personnel

Number of employees on payroll:	<u>Exempt</u>	<u>Non-exempt</u>	<u>Total</u>
December 31, 1948	13	145	158
January 31, 1949	13	142	155
Terminations		1	
Transfers: To Maintenance Section		2	

General:

Some cleaning of brush in the orchards was performed. The majority of the crew assisted in cleaning and repairing the irrigation system.

Garbage collection continued on a five day schedule with the exception of eating facilities, which require Saturday service.

Sawing and stockpiling of kindling continued during the month with an exceptionally large amount of kindling being consumed by tenants.

Weather conditions have necessitated considerable overtime this month. Work consisted of assisting community maintenance in thawing frozen water mains.

The canal tenders have been exceptionally busy throughout the month keeping water flowing to the 3000 area well field.

A total of 26 personal furniture moves were accomplished. 220 refrigerators and 200 electric ranges were installed in new houses.

Fuel deliveries were extremely heavy during January, necessitating the coal crews being scheduled for a 10 hour day Monday through Friday, and an eight hour day for Saturday and Sunday. A total of 9,420 tons of coal was delivered to tenants and facilities, and 803 tons to Pasco.

Fuel oil deliveries continued high throughout the month with a total of 245,553 gallons delivered to tenants and facilities.

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Community Public Works Division

LABOR SECTION (Continued)

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Fuel Inventory

Fuel Oil

Beginning inventory		35,925
Receipts		309,390
Consumed in Village	234,181	
North Richland	7,268	
J. A. Terteling	8,097	
Jefferson School	10,912	
Pasco Fire Station	294	
G. E. Engineers	177	
Pasco adm. Bldg.	1,548	
#8 Warehouse (Pasco)	2,050	
Pasco Base	10,750	
#6 Warehouse	410	
1125 Warehouse	50	
White Bluffs	5,596	
	<u>281,333</u>	
On hand 2-1-49		63,986

Coal

Beginning Inventory		2,843,000
Receipts		26,475,000
Consumed in Village	17,546,000	
Lewis & Clark	196,000	
Marcus Whitman	270,000	
Sacajawea	180,000	
Spalding	302,000	
American Legion	38,000	
Drug Center	22,000	
Pennywise	18,000	
Campbells	12,000	
Garmos	12,000	
Groceteria	22,000	
Village Food Store	20,000	
United Protestant	34,000	
Catholic	18,000	
700 Area	1,566,000	
Columbia Camp	896,000	
Heavy Equipment Garage	46,000	
1131 Garage	364,000	
Prosser Barricade	8,000	
1125 Warehouse	30,000	
#6 Warehouse	24,000	
#2 Fire Station	24,000	
1182 Tower	18,000	
Pasco T-131 Garage	138,000	
Pasco Patrol Hq.	12,000	
Pasco Fire Station	2,000	

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Community Public Works Division

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LABOR SECTION (Continued)

Morris Knudson	39,000
J. A. Terteling	54,000
200 West	6,000
Dam Tender	8,000
200 East	18,000
Automotive Warehouse	10,000
Electrical Distribution	10,000
Lutheran Redeemer	4,000
Railway Express	8,000
Hanford Ferry	6,000
Pasco T-201	16,000
#5 Warehouse	2,000
Sacajawea Pistol Club	6,000
3000 Area	1,156,400
101	1,043,300
White Bluffs	1,633,100
Riverland	103,900
	<hr/>
	22,005,000

ON HAND 2-1-49

3,376,300

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COMMUNITY COMMERCIAL FACILITIES DIVISION

January 1949

ORGANIZATION AND PERSONNEL

JANUARY

Number of employees on payroll:

Beginning of month	18
End of month	17
Net decrease	1

COMMERCIAL FACILITIES

The following figures indicate trends in commercial activities as related to various basic items:

	<u>DECEMBER</u>	<u>JANUARY</u>
Cafeteria meal customers	83,676	77,456
Percent of room-day occupancy - Desert Inn	85%	96%
Gallons of ice cream sold	5,228	5,228
Carnation milk and cream deliveries	97,773	98,308
Darigold milk & cream deliveries (wholesale only)	8,454	7,867
Theater customer count	51,961	62,829
Gallons of gasoline sold	192,891	179,832

Total number of commercial facility operators' employees, full and part-time, as of December 31, 1949, is 1,088.

The Richland Bank was issued an Alteration Permit to remove a partition between officer's quarters and conference room, and to repaint walls in this area. This work, which was done at the operator's expense, has been completed.

The name of Drug Store "A" was changed from Drug Center to Village Pharmacy.

Village Pharmacy was issued an Alteration Permit to rearrange and install a new fountain and was authorized to alter and modernize the existing facility building, at the expense of the operator.

Pennywise Drug was issued an Alteration Permit to remove existing range hood and install a stainless steel one at operator's expense.

Pennywise Drug completed installation of walk-in refrigerator, dishwasher, Slimline Fixtures, and rearrangement of kitchen and storeroom.

Pennywise Drug held its official opening in enlarged sales quarters on January 27, 28, 29, 30, after completing part of its expansion program.

Richland Supply has completed addition to building, at operator's expense. This provides more sales and warehouse space.

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Government-owned fixtures and equipment have been sold to the operators of the following facilities: Hurt's, Richland Supply, Carnation Milk Depot, Robley Johnson, and Richland Bank.

The Arctic Fur Company completed modernization of its display room in the Desert Inn.

CONTRACTS AND NEGOTIATIONS

An Operating Agreement dated December 16, 1948, was entered into by and between General Electric Company and Richard R. Grossley, covering the operation of the North Richland Billiard Room.

Supplemental Agreement No. I, dated December 29, 1948, was entered into by and between General Electric Company and Carnation Company, covering alteration of the term of the fiscal year applicable to the payment of rent under Paragraph 5 of the basis agreement of the Milk Depot.

Supplemental Agreement No. III, dated December 10, 1948, was entered into by and between General Electric Company and Richland Supply Company, covering alteration and modernization of the existing structure, and construction of an addition.

An Operating Agreement dated November 1, 1948, was entered into by and between General Electric Company and Chalmer D. Joseph, General Delivery, North Richland, and Hugh S. Cannon, 5020 Roosevelt Way, Seattle, Washington, covering the installation and operation of one coin-operated washing machine in each of the Richland dormitories.

An Agreement dated October 19, 1948, was entered into by and between General Electric Company and The Western Union Telegraph Company, covering the operation of a branch telegraph office in North Richland.

A Women's Wear and Fur Shop location was awarded to Mark Barr, Barr's Apparel, 213 Pacific Avenue, Bremerton, Washington, who will construct his own building.

A Women's Wear Shop location was awarded to Angerman Company, Inc., 519 8th Avenue, New York 18, New York, who will construct their own building, and operate under the name of "Hughes".

A bakery location was awarded to E. O. Barnhart, 300 East First, Aberdeen, Washington, who will construct his own building.

A Skating Rink location was awarded to Frank Ferrara, Skateland, McDougal & California Streets, Everett, Washington, who will construct his own building.

A Dry Cleaning Plant location was awarded to Travis D. House, Travis Laundry & Dry Cleaners, Ephrata, Washington, who will construct his own building.

A Shoe Store location was awarded to Block's Shoe Stores, 417 E. Pine, Seattle, Washington, who will construct their own building.

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Invitations to Bid were mailed on the following prospective facilities to be established in Richland:

Fuel Dealership (2)
Concrete (Ready-Mix)
Optical Shop
Auto Supply Store

Bids were received on the following facilities and the operators will be selected in the near future:

Theater - Richland
Concrete (Ready-Mix) - Richland

It is anticipated that invitations to bid for additional facilities to be established in the new commercial area will be sent out during February.

INVENTORY AND PROPERTY

The following final inventories of Government-owned property in commercial facilities were taken:

Ganzel's Barber Shop
Richland Electric Appliance Company
Robley L. Johnson Photographic Studio
Columbia Service Company
Style Center
Hurt's Apparel

The following regular yearly inventory was taken:

Church of Christ the King

REQUESTS FOR ESTABLISHMENT OF BUSINESSES IN RICHLAND

A number of individuals expressed a desire during the month to establish and operate businesses in Richland. The types of establishments desired are shown in the following list:

Amusement Park	Hobby Shop
Auto Agency	Insurance Agency
Auto Supply Store	Luggage & Gifts
Barber & Beauty Shop	Luggage Shop
Boat Sales & Service	Launderette
Contracting & Cabinet & Mill Work	Lumber & Fuel Dealership
Coal and Oil Delivery	Music Store
Cold Storage Plant	Meat Market
Delicatessen	Men's & Women's Wear
Draperies	Photography & Photo Supply
Drugstore	Popcorn Stand
Fresh Fish & Sea Food Market	Printing Shop
Food Store	Optical Shop
Fountain Lunch	Outdoor Advertising
Funeral Home	Recreation Hall
Garage	Drive-in Restaurant
Garage with Auto Agency	Service Station
General Merchandise	Shoe Store

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Theater
Transfer & Storage

Variety Store
Women's & Children's Ready-To-Wear
Women's Specialty

Written permission was granted to fifteen (15) Richland residents to conduct the following part-time businesses in their homes:

Sell Stanley Products
Design & fabricate dresses
Sewing in the home
Install Skuttle "600" Humidifiers
Represent Franklin Life Insurance Company
Child care in the home
Sell Venetial Blinds for Rolscreen Company
Represent Prudential Life Insurance Company
Conduct Income Tax Accounting Service (4)
Sell Kirby Vacuum Cleaners
Sell Luzier's Cosmetics
Sell Fyr-Fyter Fire Extinguishing Equipment

Written permission was granted eleven (11) individuals living outside of Richland to contact residents, on an appointment basis only, on the following business matters:

Sell "Airway" Vacuum Cleaners, Wax & Polish (2)
Sell "Knapp" Shoes
Sell Name Plates
Sell & service sewing machines
Sell Stanley Products
Sell "On Guard" Automatic Fire Control Systems (2)
Sell & service Sew-Gen sewing machines
Sell & install venetian blinds for the Airlite Venetian Blind Company
Sell Surgical Instruments & Hospital Supplies for the Shaw Supply Company, Inc.

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COMMUNITY DIVISIONS

COMMUNITY HOUSING DIVISION

January, 1949

ORGANIZATION AND PERSONNEL

Number of employees on payroll:	<u>January</u>
Beginning of month	41
End of month	<u>43</u>
Net increase	2

RICHLAND HOUSING

Housing Utilization as of Month End

<u>Houses Occupied by Family Groups</u>	<u>Conven-</u>	<u>Block T</u>	<u>Pre-</u>	<u>Ranch</u>	<u>Pre-</u>	<u>Apt.</u>	<u>Tract</u>	<u>Total</u>	
	<u>tional</u>		<u>Cut</u>		<u>fab</u>				
Operations	2192	262	370	633	1094	61	38	4650	
Facilities	145	4	18	20	117	1	9	314	
Government	98	29	14	16	36	4	8	205	
Kellax Corporation	1	6	6		2	1		16	
Morrison-Knudsen	4		1	2		1		8	
Atkinson-Jones	25	23	24	24	21	1		118	
J. Gordon Turnbull	1	2	3	4	16			26	
Giffels & Vallet	3		1	7	11			22	
J. A. Terteling & Sons			10		2			14	
McNeil Construction Co.	2		2		4			8	
Newberry Neon Electric	1	2	2	1	1			7	
Urban, Smythe & Warren	2	2	1	1	3	1		10	
Robert's Filter	1							1	
Graysport Construction			1				8	9	
Newport-Kern Kibbe							1	1	
Vernita Orchards							5	5	
C. C. Moore Co.		1						1	
P. S. Lord Co.	1							1	
TOTAL HOUSES OCCUPIED	<u>2476</u>	<u>331</u>	<u>10</u>	<u>445</u>	<u>708</u>	<u>1307</u>	<u>70</u>	<u>*69</u>	<u>5416</u>
Houses utilized for special purp.								1	1
Houses assigned (leases written)	8	1		2	16	9	2		38
Houses assigned - awaiting tenants	16	1		3	79	16	2		117
Government houses - unassigned								**36	36
TOTAL HOUSES	<u>2500</u>	<u>333</u>	<u>10</u>	<u>450</u>	<u>803</u>	<u>1332</u>	<u>74</u>	<u>106</u>	<u>5572</u>

* Occupancy figure includes 4 houses occupied by Bonnerville Power in Priest Rapids and White Bluffs.

** This includes 31 Tract Houses boarded up for salvage.

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COMMUNITY HOUSING DIVISION

Housing Turnover During Month	Begin Month	Moved In	Moved Out	Month End	Difference
Conventional Type	2488	35	47	2476	Minus 12
Block Type	333		2	331	Minus 2
T Type	10			10	None
Precut Type	447	11	13	445	Minus 2
Ranch Type	520	207	19	708	Plus 188
Prefab Type	1308	51	52	1307	Minus 1
Apartment Type	73	1	4	70	Minus 3
Tract	69	1	1	69	None
Total	5248	306	138	5416	Plus 168

Dormitory Statistics

<u>Dormitories</u>		<u>Occupants</u>	<u>Vacancies</u>	<u>Total Beds</u>
Men - Occupied	14	541	* 15	556
Men - Unoccupied				
Women - Occupied	14	582	* 10	592

Women's Dormitories
Occupied by:

G. E. Office	1
Education	1
Apartment	1
	<u>31</u>

* This includes 6 beds in W-9 and 10 beds in M-12 not in use. Space in W-9 is being used for Supply Rooms and Dormitory Offices. Space in M-12 is being used by the F. B. I.

GENERAL

There were 228 Ranch type houses accepted during the month of January; 224 Y, three bedroom type and 4 Z, four bedroom type. This makes a total of 803 Ranch type houses, that are being constructed by the Nettleton Sound Co., accepted to date.

On January 8, 1949 a fire occurred in a Y type ranch house located at 618 Cottonwood. Damage was confined to the attic and roof at an estimated cost of \$1,900.00 The occupants were moved to 1322 Cedar.

It is expected the appraisal report being prepared by Messers. Barret and Wheeler will be submitted by the first of February.

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TENANT RELATIONS

The processing of Patrol Orders and Work Orders during the month is as follows:

	<u>Incomplete 12-31-48</u>	<u>Issued Dur. January</u>	<u>Incomplete 1-31-49</u>	<u>Issued Pre Month</u>
Patrol Orders - Days	873	3963	1219	3821
<u>Maintenance & Electrical</u>				
Patrol (Off Shift -Elect.)	0	562	0	664
Patrol (Off Shift -Maint.)	55	570	0	604
Regular Work Orders	422	167	309	212
Backcharge Tenant Relations Orders	15	41	10	59

3 Scrap Lumber Permits were issued during the month of January as compared to 7 during the previous month.

126 Conventional type houses were painted by Project Forces as compared to 78 during the previous month. (Interiors).

253 Home Fire Inspections were reported and processed. 528 homes were visited. 353 Home Fire Inspections in December and 683 homes were visited.

<u>Items of Interest</u>	<u>Jan. 1949</u>	<u>Outstanding Jan. 1949</u>	<u>Outstanding Prev. Month</u>	
1. Window Glass Replacements	91	71	88	(-17)
2. Sink Linoleum Replacements	85	44	96	(-52)
3. Bathroom Painting		60	70	(-10)
4. Miscellaneous	774	639	584	(+55)

Freeze-ups

	<u>Day Shift</u>	<u>Off Shift</u>	
Pre-fabs	284	83	
Pre-cuts	259	60	
Ranch-Type	42	28	
Conventional	25	18	
A & J	21	11	
Tract	13	5	
Terteling	3	-	
Total	<u>647</u>	<u>205</u>	
Grand Total			852

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TENANT RELATIONS

Alteration Permits issued during the month of January 1949, amounted to 51, as compared to 52 issued during the month of December. Permits were issued as follows

Basement Excavations	15
Humidifiers	10
Automatic Washers	10
Refinish Floors	7
Partitions in Basements	5
Install Back Door in Pre-fab	1
Change Locations of Basement Window	1
Install Tile in Bathroom	1
Construction of Tool Box	1
Install Thermostat	1
Air-conditioner	1
Remove Piece of Base and Baseboard	<u>1</u>

ALTERATIONS FOR MONTH OF JANUARY, 1949 - TOTAL 54

Inspection Information:

628 Inspections were made during the month of January. A breakdown of the inspections show the following distributions:

- a. 99 Window Shades Inspections
- b. 59 Wall Inspections
- c. 48 Linoleum Inspections
- d. 33 Bathtub caulking Inspections
- e. 26 Floorboard Inspections
- f. 13 Lot Line Inspections
- g. 7 Leaking Basement Inspections
- h. 2 Top Soil Inspections
- i. 2 Sidewalk Inspections
- j. 339 Miscellaneous Inspections

M. S. WAREHOUSE MONTHLY REPORT FOR JANUARY, 1949

Orders handled for January, 1949

		<u>Items</u>
Recall Orders	10	209
Delivery Orders	47	353
Range & Refrigerator Orders		
to Ranch Houses	<u>220</u>	<u>440</u>
Total Orders	277	1,002
Items received from Maintenance		487
Items sent to Maintenance		521
Items exchanged in Dormitories		216
Three-burner ranges exchanged in Village		19
Refrigerators exchanged in Village		14

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TENANT RELATIONS

TRIPS TO PASCO

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TENANT RELATIONS STORE:

Orders Disbursed	421
Items Disbursed	1858
Value	\$3,394.78
Items Received	2139
Value	\$5,385.55

GENERAL CHANGES IN POLICY AND IMPROVEMENT IN OPERATIONS:

- a. Installation of pig tails on 4-burner ranges in M. S. Warehouse by electricians so that ranges may be checked in new houses by our own personnel.
- b. Values are now computed on all items handled in M. S. Warehouse and shown in the Monthly Report.

GENERAL

DORMITORY PROGRESS REPORT FOR MONTH OF JANUARY

1. At the request of several tenants, two apartments were fumigated.
2. Installed side-landing lights in Dormitory M-9 through M-14 and ladders for maintenance and inspection of attics. Gratings being installed in upstairs service closets in M-9 through M-14 are not completed.
3. During the extreme cold weather a portion of the roofs on some of the buildings began to sweat. Additional ventilation has temporarily eliminated further damage.
Installed door closers at heads of central stairways in all Dormitories as a fire prevention measure.
Installed glass in the upper portion of doorways thus giving clearer visibility for tenants and eliminating a safety hazard.
A "direction sign" is being installed to assist in locating the emergency exit doors.
4. The heating system in Dormitories W-5, W-7, W-12 and W-15 were completely overhauled.
5. Fill-ins around the buildings have been taken care of on an emergency basis.
Work orders covering walk trimming, road repairs, bumper logs and general "fill-in" projects have been written and will be completed as weather conditions permit.
6. Several guard post, broken by motorist, were replaced.
7. 216 pieces of furniture were exchanged during the month.

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COMMUNITY SAFETY DIVISION

JANUARY, 1949

ORGANIZATION AND PERSONNEL

Number of employces on roll;	<u>Beq. of Month</u>	<u>End of Month</u>
	2	2

GENERAL

A "Two Second Thought for Safety" letter was prepared by the Community Safety Division and distributed by the Boy Scouts, as their part in Boy Scout Week, to all residents in the Village.

Mr. W. G. Allen, member of the Richland Board of Education Staff, has been assigned additional duties as safety supervisor of all schools. This is in keeping with the plans of the Community Safety Division and their program will be presented to the Board of Education through Mr. Allen, who indicates a sincere interest in the safety program.

A survey of all playground equipment at the schools has been recommended to the Community Activities Division, and that correction be made where improper equipment is installed. In one instance a piece of equipment is oversized for the children and a number of serious accidents have resulted.

The Community Safety Committee recommended to the Transportation Section that an installation of better identifying lights on locomotives be made. This has been complied with.

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COMMUNITY DIVISION REPORT COMMUNITY FIRE DIVISION

January 1949

Organization and Personnel

Number of employees on payroll	<u>January</u>	
Beginning of the month	151	
End of the month	<u>154</u>	
Terminations	1	
New Employees	4	

	<u>Richland</u>	<u>North Richland</u>
Response to alarms	27	19
Fire Loss (estimated)		
Hanford Works	2,437.64	535.00
Personal	118.00	1,045.98
Investigation of minor fires and incidents	18	17
Safety meetings	17	8
Outside drills	4	6
Inside drills	87	46
Fire alarm boxes tested	134	72

Richland Fire Prevention

Fire Inspections:	700 Area buildings	125
	1100 Area buildings	172
	Commercial facilities	94
	Schools, clubs, churches	49
	Homes	<u>273</u>
	Total	713

Fire Extinguishers:	Inspected	1332
	Installed	21
	Recharged	24
	Removed	7

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Miscellaneous Fire Prevention Activities:

Demonstrated the use of various types of fire extinguishers to 14 employees of the Kadlec Hospital.

On January 24 fire extinguishing equipment at the Government Airport was transferred to the Community Fire Department. An immediate inspection was conducted at which time most of the carbon dioxide fire extinguishers were found to be partly or completely empty; water type extinguishers frozen; and the two 40-gallon wheel-type extinguishers damaged by freezing. Home inspectors were withdrawn from their normal duties to assist in immediately servicing, recharging and repairing all extinguishers at the airport. Also encountered were several serious fire hazards that have been reported to the airport manager.

Weekly inspection of all sprinkler systems in Richland indicated all systems operating normally.

Serious fire hazards in attic of Columbia High School, created by Construction Division while installing new air ducts, were reported to Community Activities Division.

Manual tests on automatic shutters in projection booth at Columbia High School resulted in recommendations for correction of defects.

Holes cut in fire walls and draft stop walls in attics of Lewis and Clark School by construction craftsmen were reported to Community Activities Division.

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COMMUNITY DIVISIONS

COMMUNITY PATROL

JANUARY, 1949

ORGANIZATION AND PERSONNEL

Number of employees on payroll:	<u>January</u>
Beginning of Month	149
End of Month	<u>146</u>
Net Decrease for Month	3
Reason:	
3 Terminations	
1 Transfer Out	
1 Transfer In	

GENERAL

Traffic volume in Richland declined approximately twenty-five percent during January compared to December, 1948. Traffic accidents increased forty percent during the same period. Of the thirty-five accidents which occurred during the month of January, forty-eight percent were caused as a result of ice and hard-packed snow on the Village streets. One person received an injury requiring hospitalization, four were treated at First-Aid and released, and property damage as a result of traffic accidents was \$6,045.00.

Due to unusual weather conditions during the month, Patrol was constantly on the alert for unusual road conditions, reporting same to the Transportation Department. Reports received from the Transportation Labor Department reveal that over two thousand cubic yards of sand were used on Richland streets during the twelve day period when road conditions were at their worst. One thousand cubic yards were used on North Richland streets during the same period.

On January 20, 1949, a procedure was inaugurated whereby one patrolman from Richland Area would accompany one patrolman from the North Richland Area to pick up stray dogs in the Richland and North Richland Areas, spending one-half of each shift in each area.

On January 24, 1949, information was received from Sgt. Schlagel, Pasco Office, Washington State Patrol, to the effect that effective immediately all vehicles must display their 1949 license plates as required by law. Community Patrol officers were instructed to immediately enforce those laws governing Washington State Vehicle License Plates.

As the electrical shortage was still acute during the month, Community Patrol continued in their efforts to assist by making frequent rounds of the Village, using the P. A. System in urging the residents to reduce their usage of electrical power to a minimum.

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Community Patrol Division - Continued

With respect to the new uniforms which have been on order for several weeks, telegrams were received that trousers, shirts, and reefers were shipped January 21, 1949. Balance of the order was shipped January 27, 1949.

During the month, three patrolmen were provided the local School District for basketball games at the High School; one man on January 8, one on January 15, and one on January 28.

Fifty-eight gun registrations were taken by the Richland Patrol during the month.

Ninety-one prisoners were processed through the Richland Jail during the month.

TRAINING

Advance training for Community Patrol members at the Small Arms Range for the period December 17, 1948, to January 14, 1949, inclusive, was divided into Field Instruction as follows:

Pistol	1 1/2 hr.
Riot Gun	1 hr.
Machine Gun	1 hr.

Progress of scores and qualifications on the Army-L Gun Course:

	September		December		January	
	No.	Percent	No.	Percent	No.	Percent
Unqualified	0	0%	7	7%	4	9%
Marksman	15	27%	28	26%	5	11%
Sharpshooter	10	18%	26	24%	8	17%
Expert	31	55%	46	43%	30	63%

Progress of scores and qualifications on the Machine Gun Course:

	November		December		January	
	No.	Percent	No.	Percent	No.	Percent
Unqualified	1	1%	1	1%	0	0%
Marksman	8	4%	3	3%	1	3%
Sharpshooter	34	17%	7	7%	2	7%
Expert	155	78%	96	89%	28	90%

Note: Due to weather conditions and equipment working on the Range, 44 men did not fire over the Army-L Gun Course and 60 men did not fire over the Machine Gun Course. However, these men received their instructions and fired practice shots.

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Community Patrol Division - Continued

RICHLAND AREA (VILLAGE)

	<u>November</u>	<u>December</u>	<u>January</u>
Check on absentees	3	5	10
* Persons assisted	261	296	278
Doors & windows found open in commercial facilities	15	31	59
Lost children found	9	13	10
Ambulance runs	37	32	47
Lost dogs reported	3	5	4
Dog & cat complaints	35	29	31
Persons injured by dogs	4	5	1
Bank escorts & details	42	52	42
Fires investigated	31	29	30
Miscellaneous escorts	36	36	55
Complaints investigated	96	77	47
Missing persons reported	0	4	0
Totals	572	614	614

* Includes: Persons admitted to residence; delivery of messages to residents who have no telephone; relay of messages; handling requests of out of town police; miscellaneous aids to private parties; and opening trailer parking lot for individuals.

RICHLAND AREA (NORTH)

	<u>November</u>	<u>December</u>	<u>January</u>
Check on absentees	7	15	7
* Persons assisted	470	526	519
Doors & windows found open in commercial facilities	61	55	73
Lost children found	5	4	2
Ambulance runs	12	19	7
Lost dogs reported	0	0	1
Persons injured by dogs	2	1	0
Dog & cat complaints	8	4	10
Bank escorts and details	68	50	55
Fires investigated	15	21	16
Miscellaneous escorts	61	31	45
Complaints investigated	121	148	102
Missing persons reported	0	1	0
Totals	830	875	837

* Includes: Admitting persons to their rooms; contacting parties on long distance calls; issuing rooms and bedding; locating persons wanted for various reasons; relaying messages; assisting outside police agencies; assisting other departments; aiding private persons, etc.

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TRAFFIC SECTION

North Richland traffic accidents for January showed a total of fourteen compared to twelve during December. Ice and snow-packed streets were contributing causes to thirty-one percent of the January total. Traffic volume in North Richland declined noticeably compared to the previous month.

Twelve traffic safety lectures were given by members of the Community Patrol to plant groups and civic organizations during January. Traffic safety films were used to further illustrate the results of poor driving. A Schoolboy Patrol traffic film was shown at the North Star theater in North Richland, together with the regular feature, demonstrating the services rendered by the boys in protecting school children from possible injury while crossing streets.

Ninety-six motorists were arrested in Richland during January compared to seventy-two during December. Sixty-one were arrested in North Richland during January compared to fifty-one in December.

The majority of all traffic accidents during January, occurred during the hours when patrolmen were assigned to traffic control duty at intersections. Twenty-two of the thirty-five occurred in the residential area at locations where side streets intersect the arterials. It is possible to reduce this accident frequency through a more adequate coverage by motorized patrolmen. Providing traffic semaphores are installed at intersections requiring point control, patrolmen will be free to patrol streets and enforce the traffic laws.

In every accident recorded during January, it was found that at least one of the drivers had violated a traffic law that contributed to the cause of the accident.

TRAFFIC AND OFFENSE STATISTICS

These are presented in separate tables at the end of this departmental report. A comparison of Richland Offense Statistics with outside averages is also presented.

PATROL

A total of 156 Unusual Incident Reports was received, which consisted mainly of Accidents, Traffic Violations, and Intoxications. Regular Traffic Violation Reports, not accompanied by an Unusual Incident Report, are presented in separate tables in the Traffic Statistics attached to this report.

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PATROL DIVISION REPORT

COMMUNITY

JANUARY 1949

FORCE REPORT

	<u>Entire Patrol</u> <u>12/31/48</u>	<u>Entire Patrol</u> <u>1/31/49</u>
<u>Patrol</u>		
Patrol Supervisor	1	1
Division Supervisor	1	1
Captains	5	5
Lieutenants	12	12
Sergeants	17	17
Patrolmen	<u>109</u>	<u>106</u>
Total	145	142
<u>Clerical</u>		
Steno-Typists	<u>4</u>	<u>4</u>
Grand Total	149	146

Decrease

3 V. T. Personal
1 Transfer to Industrial Patrol

Increase

1 Transfer from Industrial Patrol

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PATROL DIVISION - TRAFFIC CONTROL STATISTICS

January - 1949

MOTOR VEHICLE ACCIDENTS

	Total Number		Fatalities		Major Injuries		Minor Injuries	
	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.
Richland	25	35	0	0	0	0	3	6
North Richland	12	14	0	0	0	1	2	4
Totals	37	49	0	0	0	1	5	10

ACCIDENT CAUSES

	Negligent Driving		Failure to Yield Right of Way		Reckless & Drunken Driving		Other Causes	
	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.
Richland	12	14	8	15	1	0	6	6
North Richland	6	3	4	7	0	0	3	4
Totals	18	17	12	22	1	0	9	10

PLANT WARNING TRAFFIC TICKETS ISSUED

	Speeding		Parking		Imp. License		Def. Equip.		Other Violations		Totals	
	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.
Richland	2	0	91	69	1	2	10	8	1	0	106	80
N. Rich.	0	2	134	234	0	8	7	15	0	0	142	259
Totals	2	2	225	303	1	10	17	23	1	0	248	339

COURT CITATION TRAFFIC TICKETS ISSUED

	Speeding		"Stop" Sign		Drunken Dr.		Reckless Dr.		Right of Way V.		Neg. Dr.		Parking V.		Other V.		Totals	
	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.
Richland	16	16	7	8	2	3	0	1	5	6	13	16	25	30	4	16	72	96
N. Rich.	11	9	7	5	0	2	2	1	2	4	10	18	4	0	15	22	51	61
Totals	27	25	14	13	2	5	2	2	7	10	23	34	29	30	19	38	123	157

TRAFFIC VOLUME: Count taken on January 31, 1949, on George Washington Way at Sewage Disposal Plant, all traffic, 24 hour period, 6,047 Cars.

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COMMUNITY PATROL DIVISION
 RICHLAND JUSTICE COURT CASES
 JANUARY, 1949

Violation	No. of No. of		Total	Total	Sentenced	Sentence	License	Average		Warrants
	Cases	Convictions						Fines	Susp.	
Drunken Driving.....	4	4	\$182.50	None	None	None	4	\$64.16	None	None
Reckless Driving.....	1	1	37.50	\$37.50	None	None	1	37.50	None	None
Driving While Lic. Revoked. 1										
Bound over to Superior Court.										
Negligent Driving.....	12	11	272.50	17.50	None	None	0	22.70	1	1
Speeding.....	17	17	202.50	None	0	0	0	11.91	0	0
Stop Signs.....	13	13	73.50	5.50	0	0	0	5.50	0	0
Failure to YROW.....	6	6	75.00	50.00	None	None	0	12.50	0	0
Improper Passing.....	7	7	42.50	None	None	None	0	6.07	0	0
Improper Parking.....	39	39	98.00	45.50	None	None	0	3.50	0	11
No Driver's License.....	9	8	38.00	13.00	None	None	0	6.33	1	0
Following Too Closely....	1	1	12.50	12.50	None	None	0	12.50	0	0
No Valid License Plates. 5		4	15.00	7.50	None	None	0	7.50	1	1
No Vehicle Registration. 1		0	None	None	None	None	0	None	1	0
Illegal U Turn.....	5	5	31.50	5.50	None	None	0	6.30	0	0
Permitting Unlicensed										
Driver to Drive.....	1	1	7.50	None	None	None	0	7.50	0	0
Failure to Obey Traffic										
Officer.....	2	2	13.00	None	None	None	0	6.50	0	0
Illegal Display of Red										
Light.....	1	0	None	None	None	None	0	None	1	None
Failure to Stop for School										
Bus.....	1	1	7.50	None	None	None	0	7.50	0	0
Public Intoxication.....	32	32	445.00	47.50	None	None	0	12.50	0	0
Public Nuisance.....	10	10	55.00	17.50	2	5	0	17.50	0	0
Vagrancy.....	27	27	87.50	35.00	11	12	0	17.50	0	0
Carrying Concd. Weapon.. 2		2	None	None	2	None	0	None	0	0
Third Degree Assault..... 2		2	27.50*	None	2	2	0	27.50	0	0
Bootlegging.....	4	4	307.50	None	1	0	0	102.50	0	0
Poss. of Stolen Prop..... 1		1	None	None	1	1	0	None	0	0
Drunks & Disorderly..... 7		7	85.00	None	2	1	0	21.25	0	0
TOTAL.....	211	206	\$2116.50	\$294.50	18	23	5	21.25	5	13

Total Fines.....\$2116.50
 Less Suspensions..... 294.50
 Total Received.....\$1822.00

* One Case Paid Fine & Sentence Was Suspended.

The above violations occurred on Hanford Works Project.

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PATROL DIVISION - NORTH RICHLAND OFFENSES- JANUARY 1949

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Classification	Offenses reported to Patrol during January		Actual Offenses		Offenses Cleared		By Other Perpetrators	
	Unfounded	Dec.	Jan.	Arrest	Action	Involved		
Assault.....	4	8	4	2	0	2		
Attempted Suicide.....	0	0	0	0	0	0		
Burglary-Breaking and/or Entering.....	4 (1)	4	4	0	1 (1)	1	(2)	c
Larceny-Theft (Except Auto & Bike).....	6	7	5	1	2	3		
(a) \$50.00 and over value.....	2	22	50	0	39	21	a	
(b) Under \$50.00 value.....	52	4	0	0	0	0		
Automobile Theft.....	1	4	0	0	0	0		
Bicycle and Motor Bike Theft.....	1	3	1	0	0	0		u
Carrying Concealed Weapon.....	2	0	2	2	0	2		
Destruction of Government Property.....	1	1	1	0	1	1		
Destruction of School Property.....	0	0	0	0	0	0		
Destruction of Personal Property.....	2	2	1	0	0	0		u
Disorderly Conduct.....	7	7	7	7	0	7		
Drunkness.....	28	43	28	28	0	28		
Embezzlement & Fraud.....	0	0	0	0	0	0		
Forgery.....	0	0	0	0	0	0		
Gambling.....	0	3	0	0	0	0		
Missing Person.....	0	1	0	0	0	0		
Narcotics.....	0	0	0	0	0	0		
Offense Against Family & Children.....	0	0	0	0	0	0		
Pickups for Outside Agencies.....	0	1	0	0	0	0		
Prowlers.....	1	0	1	0	0	0		u
Public Nuisance.....	9	26	9	9	0	9		
Rape.....	0	1	0	0	0	0		
Robbery.....	1	2	1	1	0	1		
Sex Offense.....	1	0	1	0	1	1		
Vagrancy.....	23	26	23	23	0	23		
Violation of State Game Laws.....	0	0	0	0	0	0		
Violation of State Liquor Laws.....	4	5	4	4	0	4		
Miscellaneous.....	2	0	1	1	0	1		
Totals.....	149	166	143	78	44	105	b	

a 36 of the offenses were perp. by 18 juveniles, ages (1)9, (1)10, (14)12, (12)13, and (8)14.
 b 60 of the Perp. are colored.
 c Shown in parenthesis is one old case cleared during January, 1949.
 u Represents Unknown. Value of property recovered during month - \$245.24.

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PATROL DIVISION - NORTH RICHLAND - COMPARISON

JANUARY 1949

Number of offenses known to Police per 10,000 inhabitants in Cities between 10,000 and 25,000 inhabitants:

Classification	<u>Wash., Oregon & Calif.</u>		<u>North Richland</u>		
	<u>Six Months</u>	<u>One Month</u>	<u>Six Months</u>	<u>Dec.</u>	<u>Jan.</u>
	<u>(Jan-June 1948)</u>	<u>Average</u>	<u>(Jan-June 1948)</u>	<u>1948</u>	<u>1949</u>
Murder	.181	.030	0	0	0
Robbery	3.47	.57	1.00	1.33	.66
Aggravated Assault	1.75	.29	5.16	5.33	2.66
Burglary	35.69	5.94	.08	2.66	2.66
Larceny	127.06	21.17	25.16	19.33	36.66
Auto Theft	15.56	2.59	1.66	2.66	0

Number of offenses known to Police per 10,000 inhabitants regardless of whether offenses occurred in Cities or rural districts:

Classification	<u>State of Washington</u>		<u>North Richland</u>		
	<u>Six Months</u>	<u>One Month</u>	<u>Six Months</u>	<u>Dec.</u>	<u>Jan.</u>
	<u>(Jan-June 1948)</u>	<u>Average</u>	<u>(Jan-June 1948)</u>	<u>1948</u>	<u>1949</u>
Murder	.140	.23	0	0	0
Robbery	4.90	.81	1.00	1.33	.66
Aggravated Assault	.78	.13	5.16	5.33	2.66
Burglary	36.91	6.15	.08	2.66	2.66
Larceny	92.22	15.37	25.16	19.33	36.66
Auto Theft	18.15	3.02	1.66	2.66	0

The portion of offenses committed by persons under the age of 25 years is shown by the following figures:

Classification	<u>National Average</u>	<u>North Richland</u>		
	<u>Six Months</u>	<u>Six Months</u>	<u>Dec.</u>	<u>Jan.</u>
	<u>(Jan-June 1948)</u>	<u>(Jan-June 1948)</u>	<u>1948</u>	<u>1949</u>
Robbery	55.5	0	0	0
Burglary	59.9	0	25.55	0
Larceny	45.2	5.3	0	72.00
Auto Theft	71.6	0	0	0

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 arrest records is doubtless incomplete in the lower age groups because of the practice of some jurisdictions not to fingerprint youthful offenders."

In North Richland every delinquent juvenile is entered in the records.

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PATROL DIVISION-RICHLANE OFFENSES
JANUARY, 1949

Classification of Offenses	Offenses Known or Reported to Patrol		Actual Offenses		Offenses Cleared		Perpetrators Involved
	Patrol	Unfounded	Dec.	Jan.	By Arrest	By Other Action	
Arson.....	0	0	0	0	0	0	0
Attempted Assault.....	1	0	1	1	0	0	1
Attempted Suicide.....	0	0	0	0	0	0	0
Burglary, Breaking & Entering..	1	0	0	1	0	0	0
Attempted Breaking & Entering..	2	0	3	2	0	0	0
Robbery.....	0	0	0	0	0	0	0
Larceny-Theft (Except Auto & Bike)	3	0	3	3	2	0	4
(a) Over \$50.00.....	10	0	10	10	5	2	4*
(b) Under \$50.00.....	0	0	0	0	0	0	0
Auto Theft.....	0	0	0	0	0	0	0
Attempted Auto Theft.....	0	0	0	0	0	0	0
Bicycle Theft.....	11	2	4	9	0	3	0
Weapons: Carrying, Poss. Using..	0	0	0	0	0	0	0
Destruction of Government Prop..	0	0	1	0	0	0	0
Destruction of Personal Prop....	0	0	1	0	0	0	0
Destruction of School Property..	0	0	0	0	0	0	0
Disorderly Conduct.....	0	0	2	0	0	0	0
Drunkenness.....	4	0	1	4	4	1	4
Embezzlement & Fraud.....	1	0	0	1	0	1	1
Forgery.....	1	0	12	1	0	1	1
Gambling & Or Possessing.....	0	0	0	0	0	0	0
Missing Persons.....	1	0	1	1	0	1	1
Offense Against Family & Children.	1	0	0	1	0	1	1
Pickup for Outside Agency.....	0	0	0	0	0	0	0
Prowlers.....	2	1	0	1	0	0	0
Public Nuisance.....	1	0	3	1	1	0	1
Rape.....	0	0	0	0	0	0	0
Sex Offense.....	0	0	1	0	0	0	0
Cohabitation.....	0	0	0	0	0	0	0
Vagrancy.....	4	0	0	4	4	0	4
Violation State Game Laws.....	0	0	0	0	0	0	0
Violation State Liquor Laws.....	0	0	0	0	0	0	0
Miscellaneous.....	5	1	1	4	0	2	2
Juveniles (Other than above)....	0	0	0	0	0	0	0

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Page Two--Richland Offenses--January, 1949--Crime Prevention Section

Classification of Offenses	Offenses Reported		Actual Offenses		Offenses Cleared		Perpetrators Involved
	Jan.	Dec.	Jan.	Dec.	By Arrest	Other Action	
Juveniles (Disorderly Conduct)	1	0	1	0	1	0	1**
Total Offenses.....	49	4	45	44	17	12	25

* One Case was perpetrated by two Juveniles, ages 11 & 12.
 One Case was perpetrated by one Juvenile, age 11.
 ** One Case was perpetrated by one Juvenile, age 7.

Recovery for the month was \$484.00 (3 bikes).

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Number of offenses known to police per 10,000 inhabitants, in cities between 10,000 and 25,000 inhabitants:

Classification	Wash. Oregon & Calif.		Richland		
	Six Months (Jan-June 1948)	One Month Average	Six Months (Jan-June 1948)	Dec. 1948	Jan. 1949
Murder.....	.181	.031	0	0	0
Robbery.....	3.47	.58	0	0	0
Aggravated Assault.....	1.75	.29	1.5	.66	.66
Burglary.....	35.69	5.95	4.55	0	2.00
Larceny.....	127.06	21.18	22.0	19.5	16.00
Auto Theft.....	15.56	2.59	1.44	0	0

Number of offenses known to police per 10,000 inhabitants regardless of whether offenses occurred in cities or rural districts:

Classification	State of Washington		Richland		
	Six Months (Jan-June 1948)	One Month Average	Six Months (Jan-June 1948)	Dec. 1948	Jan. 1949
Murder.....	.140	.023	0	0	0
Robbery.....	4.90	.82	0	0	0
Aggravated Assault....	.78	.13	1.5	.66	.66
Burglary.....	36.91	6.15	4.55	0	2.00
Larceny.....	92.22	15.37	22.0	19.5	16.00
Auto Theft.....	18.15	3.03	1.44	0	0

The portion of offenses committed by persons under the age of 25 years, is shown by the following figures:

Classification	National Average (Jan-June 1948)	Richland		
		Six Months (Jan-June 1948)	Dec. 1948	Jan. 1949
Robbery.....	55.5	0	0	0
Burglary.....	59.9	8%	0	0
Larceny.....	45.2	8	15%	13%
Auto Theft.....	71.6	38	0	0

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 arrest records is doubtless incomplete in the lower age groups because of the practice of some jurisdictions not to fingerprint youthful offenders."

In Richland every delinquent juvenile is entered in the records.

COMMUNITY PATROL DIVISION
U. I. MONTHLY REPORT
JANUARY 1949

TRAFFIC ACCIDENTS	46
3RD DEGREE ASSAULT	2
PUBLIC INTOXICATION	29
TRAFFIC VIOLATIONS	18
PICKUP FOR OUTSIDE AGENCY	1
DRUNK AND DISORDERLY CONDUCT	7
DISTURBANCE	5
DEATH	1
VAGRANCY	21
PUBLIC NUISANCE	9
BOOTLEGGING	4
CARRYING CONCEALED WEAPONS	2
DESTRUCTION OF GOVERNMENT PROPERTY	1
MISSING PERSONS	2
ARMED ROBBERY	1
CRUELTY TO ANIMALS	1
GRAND LARCENY	1
UNAUTHORIZED CONTRABAND	1
MOLESTING	1
ABANDONED CAR	1
REPOSSESSED CAR	1
AMBULANCE RUN	1
TOTAL	156

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COMMUNITY PATROL DIVISION
OPEN DOORS & WINDOWS
MONTHLY REPORT
JANUARY, 1949

<u>LOCATION</u>	<u>OPEN DOORS</u>	<u>OPEN WINDOWS</u>
SUB-CONTRACTORS (N. RICHLAND)	28	0
FACILITIES (N. RICHLAND)	11	8
SCHOOLS (N. RICHLAND)	25	1
FACILITIES (RICHLAND)	11	14
SCHOOLS (RICHLAND)	<u>23</u>	<u>11</u>
TOTALS	98	34

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COMMUNITY DIVISIONS

COMMUNITY ACTIVITIES DIVISION

January, 1949

ORGANIZATION AND PERSONNEL

Number of employees on roll

Beginning of month		12
Additions	1	
Terminations	<u>0</u>	
End of month		13

SCHOOLS

On January 3, representatives of the McNeil and Turnbull companies and staff members of the Activities Division inspected Carmichael Junior High School for possible fire damage. A negative report was submitted.

On January 3, classes at John Ball Grade School were dismissed due to lack of heat.

On January 4, representatives of the McNeil and Turnbull companies, School District #400, and the Community-Public Works and Activities Divisions made a final inspection of the Lewis and Clark and Marcus Whitman Grade School additions and the new Spalding Grade School. All three projects were accepted with exceptions.

On January 5, representatives of the Activities Division and School District #400 reviewed specifications for the proposed new Junior High School. A second conference was held on January 6 which included the proposed new grade school.

Dr. Walter Isle, president of the Eastern Washington College of Education, lectured before the Richland Educational Association at the Lewis and Clark Grade School on January 5. His topic was "Teaching for These Times".

Columbia High School conducted an "Open House" schedule during the entire evening of January 6. Residents of the community were invited to witness the staff and classes of the High School in action. The major objectives of the open house were to acquaint the adult residents with the work being done at the school and the administrative and technical problems involved.

"Lights Out When You're Out" posters and information relating to the power conservation program were posted in all schools and activities buildings.

Due to the prolonged cold wave, several classes were dismissed from Sacajawea, Lewis and Clark, Jefferson, and John Ball Schools on January 10. Immediate steps were taken to procure additional heating units for rooms and hutments. Work Orders were written for the temporary connection of Univent Heaters which were available but with motors missing.

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Community - Activities Division

Arrangements were made to have two trucks available each morning to assist in starting school buses to prevent exposing students to long waits at bus stops.

At the request of Maintenance, arrangements were made to keep minimum heating in all school buildings at all times to prevent freezing of water lines, etc.

On January 12, a large transformer was installed at Sacajawea Grade School to provide more power for heat in hutments. All school hutments were banked with sand at their bases as a heat conservation measure.

It was announced on January 13 that the Columbia High School's evening adult education program is being expanded to include three new homemaking courses, more physical education classes for women, a fly-tying course, and classes in art metal work.

Alteration permits were issued to transfer stacks and shelving from library to study hall at Columbia High School on January 13.

On January 13, three representatives of the Activities Division inspected the Columbia High School cafeteria and observed two shifts of students being served during lunch hour to obtain first hand knowledge of the problems involved.

Two Washington State College extension courses were made available to adults at Columbia High School during the month. The first, History-137-C, dealing with recent history and government of the State of Washington, started on January 17. A second course in audio-visual aids in education began January 25.

On January 19, inspections were made of the Carmichael Junior High School with representatives of the McNeil and Turnbull Companies. The boilers at Marcus Whitman were also checked to correct difficulties.

Arrangements were made with the School District #400 and McNeil Construction Company to start moving school furniture into Carmichael School on January 24.

Kindergarten rolls were reopened on January 31 for the registering of children who had had their fifth birthday during the three preceding months.

On January 31, a new class in distributive education was begun at Columbia High School. This course in "Distinctive Education" covers on-the-job training combined with class room instruction.

CHURCHES

The month of January saw increased activity on the part of the Richland church groups in relation to proposed construction of new church facilities. The First Baptist and Central United Protestant both filed new applications to build. The Episcopal Church and Reorganized Church of Jesus Christ, Latter Day Saints, both purchased Nettleton Sound Barracks buildings, materials from which will be used in new construction. The Christian Science Church officially accepted its new site and the Episcopal group was assigned a list of consideration. The Assembly of God was informed of the removal of its proposed site from the list of eligible locations on the master plan and given assistance in selecting an alternate location. The Richland Baptist Church made huge strides toward the completion of its new building and the South Side United Protestant Church group finished its basement construction and began the construction of the main building.

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Community - Activities Division

The Church of the Nazarene accepted a site and prepared to move a War Surplus Army Chapel unto the site for remodeling and modernization. The Church of Christ submitted a set of preliminary drawings in preparation for its proposed building program. The Church of Jesus Christ of Latter Day Saints completed its plans and announced that ground would be broken for their new building on February 5. The Activities Division assisted in the processing of all the foregoing building proposals and surveys.

The Church of Christ reported in its news letter on January 6 that it had raised \$8265 to bring its combined total in the building fund to an even \$10,000.

The Whitworth College A Capella Choir was presented in concert at the Central United Protestant Church on January 9.

The Pastor of the Richland Lutheran Church attended a special conference of the Pacific Lutheran Church at Tacoma on January 16.

The executive secretary of the Washington and Northern Idaho Council of Churches met with the United Protestant of Richland on January 20. The main purpose of the meeting was the adoption of the Constitutions for the local United Protestant Churches and the United Protestant Council.

The following is a tabulation of full time paid personnel, as of January 31, 1949:

	<u>Ministers</u>	<u>Staff</u>	<u>Total</u>
Assembly of God	1	0	1
Catholic	2	2	4
Central United Protestant	2	1	3
Church of Christ	1	0	1
Church of God	1	0	1
Episcopal Church	1	0	1
Free Methodist	1	0	1
Mission Baptist	1	0	1
Mo. Synod Lutheran (Redeemer)	1	1	2
National Lutheran	1	2	3
Nazarene	1	0	1
Regular Baptist	1	0	1
United Protestant - North Richland	2	1	3
United Protestant - West Side	1	0	1
United Protestant - South Side	1	0	1
	<u>18</u>	<u>7</u>	<u>25</u>

COMMUNITY

The regular monthly meeting of the Recreation Advisory Committee was held on January 31, 1949. The minutes of the October 27 and November 29, 1948, meetings were approved by the Atomic Energy Commission on December 3, 1948. These include: Richland Light Opera Company, Richland Golf Association, Richland Stamp Society, Inter-Mountain Alpine Club, "P" Division Recreation Association,

Community - Activities Division

and the Society for the Preservation and Encouragement of Barber Shop Quartet Singing in America, Inc.

As of January 31, 1949, organizational personnel included:

Villagers, Inc.	8
American Legion	2
Co-ordinate Club	1
Youth Council	1
Boy Scouts	1
Camp Fire Girls	2
Hi-Spot Club	1
Jr. Chamber of Commerce	2
Red Cross	3
Castle Club	1
Post Office	80
Veterans Administration	2
Girl Scouts	2
	<u>106</u>

The Corner Nursery School at 71 Willis opened its activities the week of January 10.

The Richland Dormitory Club sponsored a public showing of two Winter-sport color films at the Columbia High School Auditorium on January 13. The pictures were titled "Sun Valley Holiday" and "Ski Trails" and admission was free.

The Three Rivers Mineralogy Society met for the first time in its new building on January 13. The new headquarters is located at the northeast corner of the junction of Thayer Drive and George Washington Way.

An open meeting of the Richland Light Opera Company was held at Columbia High School on January 14 for organizational purposes, the adoption of a charter, and the election of officers.

The annual "March of Dimes" campaign to raise funds in combating infantile paralysis was launched January 14 with the Junior Chamber of Commerce spear-heading the drive. The announced quota is \$1 per capita.

The highest honor capable of being bestowed by the American Legion was awarded to Richland Post 71 on January 15. The award is known as "A Certificate of Distinguished Service" and was awarded to the Richland Post for having obtained the highest rating in the Washington Department as the result of maintaining a well balanced efficient Americanism and post activities program.

Richland contributed \$3704.83 of the \$6355.75 total raised in the recent Christmas Seal drive. These totals were announced by the Benton County Chapter to the Washington Tuberculosis Association on January 20.

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Community - Activities Division

The Richland Meistersingers opened their 1949 season with concerts in the Columbia Auditorium on January 21 and 22. A third concert was presented by this group in Kennewick for the benefit of the Kennewick P.T.A.

Seattle representatives of the Y.W.C.A. held a public meeting at Columbia High School January 24 for the purpose of considering the feasibility of establishing a branch Y.W.C. A. in Richland.

The American Legion Women's Auxiliary made the first group donation to the March of Dimes campaign with a contribution of \$100 on January 24. Funds from a previous St. Patrick's Day dance were spent to order a new iron lung for Kadlec Hospital.

A report published January 25 indicated that the Richland Boy Scouts have increased memberships in all phases of their 1948 program. There are now 391 Cubs in 8 Packs, 218 Scouts in 8 Troops, 34 Senior Scouts in 3 Units, and 177 adults actively engaged in this youth program in Richland.

The Washington state director of the Fraternal Order of Eagles met with the Atomic Arie on January 26 to present the local organization with its charter and to discuss plans for a future building. The Activities Division assisted in the discussions with representatives of the Eagles group concerning possible sites and regulations regarding the building program.

The Richland Rose Society on January 27 announced their plans for a Municipal Rose Garden on George Washington Way opposite the new Richland Electric Furniture Store. The Society's announced slogan is "Help to Make Richland More Beautiful". The Activities Division processed the Rose Society's application for a garden site and furnished plot plans and legal descriptions to the Society.

The radio division of the Richland Players, Inc. presented its first radio show of the 1949 season over K.P.K.W. on January 30, 1949.

As a result of the prolonged cold weather, the Columbia River inlet known as "Nelson's Pond" provided excellent facilities for ice skating during January. The Community-Activities Division arranged for a Night Hawk generating unit to provide lighting for the skating area at night. Park benches were spotted throughout the area and a daily supply of firewood was provided.

To relieve congestion at Nelson's Pond, a second ice skating area was provided by flooding the low terrain at the northwest junction of Goethals Drive and Williams Blvd. The Activities Division made arrangements to supply this area also with a Night Hawk generating unit, benches, and firewood.

Representatives of the Activities Division, the Boy and Girl Scouts, and the Camp Fire Girls conducted a field trip survey of the area around Nelsons Pond for the purpose of establishing the feasibility of providing camping facilities in this area.

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Community - Activities Division

An engineering request was submitted for improvements to Columbia High School recreation area to provide added facilities to accommodate an expanded day and evening summer recreational program.

An engineering request was submitted for the utilization of the North Richland Moss Hall No. 3 as a Youth Activities Building in Richland. The same engineering request covered the proposed renovation of the present Hi-Spot Club currently housed in the south end of the Richland Recreation Hall.

Requests were submitted through the plant library for the latest publications on recreational activities as a basis for the 1949 community wide recreation program.

A log-railing type fence, 2 $\frac{1}{2}$ feet high, was constructed along the bank of the Columbia River just north of the Community Swimming Pool and extending from the pool to the Boat Club stairway.

Additional ball field backstops were constructed at Jefferson and Lewis and Clark Grade School playgrounds.

The number and types of organizations presently served by the Community - Activities Division include 15 business and professional clubs, 23 churches and church organizations, 5 civic organizations, 15 fraternal organizations, 8 music and art associations, 9 private instructors, 32 recreation and hobby groups, 7 schools and 7 parent teachers associations, 10 social clubs and organizations, 10 veteran and military organizations, 5 welfare organizations, 19 Boy Scout troops, 13 Camp Fire Girls troops, 36 Girl Scout troops, 3 other youth groups, and 14 miscellaneous organizations.

MAJOR ACTIVITIES DURING MONTH

January 9	Whitworth College Choir	Central U. P. Church
" 21 - 22	Richland Meistersingers	Columbia High School

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Community - Activities Division

RICHLAND PUBLIC SCHOOLS PERSONNEL AND ENROLLMENT REPORT

The following is a tabulation of full-time school district paid personnel, as of January 31, 1949:

Administration	3
Clerical	15
Principals and Supervisors	17
Teachers	230
Building Custodians	38
Cooks	19
Nursery Sch. Ex. Day Care	17
Bus Drivers	2
Total	<u>341</u>

On January 28, 1949, there were 65 children enrolled in the Richland Nursery School with an average attendance of 49. There was no change in enrollment during the month. On this day there were 19 children enrolled in the Extended Day Care program of the Nursery with an average attendance for the month of 14. There was an increase in enrollment during the month of 4.

COLUMBIA HIGH SCHOOL

		<u>Boys</u>	<u>Girls</u>	<u>Total</u>
Freshmen	(9th grade)	171	176	347
Sophomore	(10th grade)	155	166	321
Junior	(11th grade)	115	92	207
Senior	(12th grade)	102	101	203
		<u>543</u>	<u>535</u>	<u>1078</u>

GRADE SCHOOLS

	<u>Spalding</u>	<u>Sacajawea</u>	<u>Lewis & Clark</u>	<u>Marous</u>	<u>Jefferson</u>	<u>Ball</u>
Kind.	91 (4)	71 (2)	94 (4)	68 (2)	58 (2)	93 (4)
1st grade	95 (3)	122 (4)	154 (5)	116 (4)	104 (3)	150 (5)
2nd grade	86 (3)	107 (4)	120 (4)	89 (3)	88 (3)	116 (4)
3rd grade	77 (3)	109 (3)	117 (4)	83 (3)	78 (2)	113 (4)
4th grade	65 (2)	108 (4)	108 (3)	104 (3)	88 (3)	100 (3)
5th grade	92 (3)	102 (3)	97 (3)	79 (2)	65 (2)	91 (3)
6th grade	46 (2)	92 (3)	86 (3)	73 (2)	67 (2)	90 (3)
7th grade		86 (3)	93 (3)	112 (3)	69 (2)	87 (3)
8th grade			62 (2)	254 (8)		67 (2)
	<u>552</u>	<u>797</u>	<u>931</u>	<u>978</u>	<u>617</u>	<u>907</u>

Totals by grades

Kindergarten	475
1st grade	741
2nd grade	606
3rd grade	577
4th grade	573
5th grade	526
6th grade	454
7th grade	447
8th grade	383
Total	<u>4782</u>

*Half days
() Number of classes

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GENERAL ELECTRIC COMPANY
HANFORD WORKS
COMMUNITY ACCOUNTING DIVISION

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MONTHLY REPORT FOR JANUARY, 1949

ORGANIZATION:

Employees - Beginning of the month	29	Exempt	5	Male	10
Terminations or transfers	1	Non-exempt	23	Female	18
Employees - End of the month	<u>28</u>	Total	<u>28</u>	Total	<u>28</u>

One employee was transferred to the Construction Accounting Division to fill an existing vacancy, and her work was able to be reassigned to others in the Division so that a replacement was not necessary.

ACCOUNTS RECEIVABLE

RENTS

House leases processed:	JANUARY	DECEMBER
New	344	351
Modifications	26	271
Cancellations	131	141
Active total house leases	5445	5250

Of the 344 new leases processed, 243 covered new ranch type houses.

There were 88 new dormitory assignments and 90 removals.

Rental revenue was as follows:

	JANUARY	DECEMBER
Equipment	\$ 146.45	\$ 220.03
Houses	223,619.90	212,087.53
Dormitories	15,510.95	15,437.51
Facilities	<u>73,515.92</u>	<u>49,692.99</u>
Total	\$312,793.23	\$277,438.06

The increase in house revenue during January is due to the additional houses occupied during January. The facility revenue increase arises because of the Seattle First National Bank's new lease which was retroactive to May 1, 1948, although approval and payment of back rental of \$5800 was not received until January. The remaining difference is an adjustment of the December facility revenue accrual which was understated in December.

TELEPHONE

The telephone facilities for residents remain fairly constant and the volume of work continues at a satisfactory rate.

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The new charges for supplemental phone listings and facility rental realized an increase of \$160.00 in monthly revenue. As additional listings are added, the revenue will increase proportionately.

We have received no further word regarding the proposal to the Interstate Telephone Company to eliminate Pasco-Kennewick toll charges.

MISCELLANEOUS RECEIVABLES

There were 97 miscellaneous invoices issued during the month. The individual amounts were small and only accounted for \$887.68 in revenue.

Sixteen collection letters on past due accounts were written and resulted in the payment of 11 accounts in the total amount of \$548.26.

One building permit involving a fee of \$242.45 was issued to the Latter Day Saints Church, and an alteration permit involving a fee of \$6.28 was issued to the Richland Laundry Company. To date there has been \$876.71 collected for Building and Alteration Permits since the policy was placed into effect last November.

During January a policy was agreed upon whereby Community Engineering will submit estimated costs concerning "backcharges" to residents and facility operators when certain work is performed by project employees, and in only specific cases where a fixed rate has been established by experience and study, will other than the actual cost of doing the work on a backcharge basis be charged. Prior to this time the estimated cost was considered the fixed invoice price regardless of the actual cost, which was generally higher, and the difference was borne by the Project.

The backcharge authorization forms will be revised to provide for authorization on an estimated cost basis and a procedure has been agreed upon whereby Community Cost will issue billing requests to General Accounts when such work orders involving backcharges have been completed.

Government equipment located in respective facilities was sold to the following at an agreed-upon approved selling price during January:

1-17-49	Richland Supply Company	\$ 2,911.75
1-17-49	Seattle First National Bank (Richland)	30,991.05
1-19-49	Robley L. Johnson Studio	229.02
1-20-49	Hurts' Apparel	188.94
	Total	\$34,320.76

ACCOUNTS PAYABLE

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STATISTICS

	JANUARY	DECEMBER
Accounts Payable Vouchers Processed	281	304
Freight Bills Processed	199	198
Purchase Orders Received	79	83
Amount of Purchase orders	\$50,682.33	\$62,215.92
Receiving Reports Received	315	227
Total Net Amount Disbursed	\$136,186.51	\$214,558.33

GENERAL

The Accounts Payable balance as of 1-31-49 was \$90.93 covering 10 vouchers, 3 of which are credit items past due for which payment has been requested.

The Freight Account continues to reflect a zero balance at month end.

The status of the contracts for which the Community Division is responsible is as follows:

<u>Subcontractor</u>	<u>Subcontract No.</u>	<u>Amount Awarded</u>	<u>Amount Paid</u>	<u>Amount Retained</u>
Vance Properties, Inc.	None Applied	CFFF	\$68,775.54	-0-
Graysport Construction	G-187	\$20,500.00	18,450.00	\$2,050.00
Touche, Niven, Bailey & Smart	G-213	*14,022.04	14,022.04	-0-
Puyallup Gardens	G-216	*87,933.67est	47,376.30	5,166.81
Touche, Niven, Bailey & Smart	G-218	*18,691.01	18,691.01	-0-
West Coast Painters Co.	G-219	46,449.19	18,640.97	2,071.22
McAtte & Heathe	G-223	*41,414.45est	40,323.33	4,480.37
Fore Dine Roofing Co.	G-227	7,500.00	6,000.00	0

The A.E.C. Finance Office made a detailed study of the Operating Report and the flow of work and procedures involved. Except for minor discrepancies which had previously been recognized, the report on their findings was favorable.

GENERAL

It was agreed that all projects which could not be capitalized would be written off to cost each month.

The duplication of reports was simplified upon the receipt of master ditto forms which were ordered and made especially for the Operating Report.

Another room of 190 square feet of floor space was made available to Community Cost by combining offices of the General Accounts group. The new arrangement appears to be satisfactory to both groups.

Minor revisions are still being made in the form for reporting monthly operating costs, but it appears as though all of the items of major importance have been agreed upon.

GENERAL LEDGER

The trial balance for December was forwarded to the General Division for consolidation on January 25, 1949. The computation of the undistributed cost, the Community portion of which is shown on the current operating report under the "Miscellaneous" caption, delays the issuance of the final trial balance by about one week. An attempt will be made to improve this loss of time so that the trial balance will be issued before the twentieth day of each current month.

STATISTICS

	<u>NO.</u>	<u>AMOUNT</u>
Second Class Invoices Received	84	\$702,379.43
Second Class Invoices Issued	48	241,172.24
Public Vouchers Forwarded for Govt. Billing	20	36,503.46

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DESIGN DIVISION

JANUARY 1949

GENERAL

This report is limited to those projects or phases of projects which require a narrative type of reporting to adequately portray important design considerations and developments. It is not the intent to enumerate all active projects or to cover the full activities of the Design Division. Projects having a more or less routine nature have been purposely omitted but are included in the regular statistical reports prepared by this Division.

DEVELOPMENT OF PILE AREA "G"

HISTORY AND ORIGINAL OBJECTIVES

Directive HW-104 was issued November 12, 1948, and stated as its general objective the production of a complete, detailed design of a new production plant within the 100 Area, incorporating such technical advances and/or simplifications as may be practical, and including a program of engineering studies and mechanical development of components.

The specific objectives stated in the project proposal were the following:

- a. The attainment of a higher specific operating power level (approaching 500 mw).
- b. The attainment of an improved conversion ratio between fuel and production.
- c. The attainment of a higher level of excess re-activity.
- d. Reduction of initial cost.
- e. The attainment of a design which will permit more efficient operation and lower maintenance costs, while continuing to meet safety requirements.

PROBLEMS ENCOUNTERED TO DATE AND THEIR RELATION TO THE OBJECTIVES

I. THE ATTAINMENT OF HIGHER POWER LEVEL

A. REASONS FOR SEEKING HIGHER POWER LEVEL.

The attainment of a higher power level in a single unit tends to decrease production cost, even though the cost of the plant itself should increase in proportion to the power level. Actually, it is hoped that a substantial increase in power level can be obtained with a less than proportionate increase in cost, resulting in a net gain in relation between first cost and production capacity.

Report on development of Pile Area "G" (Continued)

To achieve the increase in power level while gaining an advantage in first cost, it is necessary to make a very close appraisal of the specific heat rejection to the cooling water, since this has a direct influence on the size of the water plant, which accounts for a major portion of plant cost.

B. DISCUSSION OF PROBLEMS ENCOUNTERED

1. Heat Transfer, Film Formation, and Corrosion.

A careful review is being made of the available information on heat transfer and we are endeavoring to make use of the latest available information on forced convection with surface ebullition. This problem has to be considered in conjunction with the film formation, which, in turn, is influenced by temperatures, water treatment, and flow conditions. At the present time, we have borrowed the services of a heat transfer expert who is on loan to the Company from the University of California. Existing data gives substantial promise that the specific heat rejection rate can be increased without hazard; however, it will be necessary to confirm this analysis by experimental tests before we can be certain of our position. This testing will take an extended period of time.

2. Influence of Pile Size.

Work is currently being done by Physicists in the Technical Division to determine the optimum size of pile and this may have a substantial effect on the specific heat rejection rate. The answer to this problem is expected to be available during March, 1949.

3. Effect on Thimble Design.

It is expected that a higher specific power level will, in time, give rise to higher carbon temperatures than those now experienced and that this, in turn, will make it impractical to continue the use of aluminum thimbles inserted into the pile. Consequently, an intensive program has been started to develop workable designs for the safety rods and shim rods in which the thimble can be wholly on the outside of the pile. In addition to avoiding the temperature hazard, this construction will have the advantage of affording some increase in re-activity. A number of preliminary layouts have been made in which consideration has been given on the one hand to a hermetically sealed system, and on the other to the use of a packing gland system.

4. Safety Rod Requirements.

Another problem arising because of higher power level is that it probably will not be practical to maintain safety requirements with the present type of safety rod, since it is becoming

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increasingly difficult to incorporate the required number of such rods. Consequently, consideration is being given to the use of sheet-type rods and various arrangements and types of rods have been laid out. Layouts are also being made of winches, guides, and release mechanisms.

5. Third Safety Device

The removal of thimbles to the outside of the pile has introduced a difficult problem in the design of suitable third safety device, since there is no longer a sealed container into which a boron solution can be introduced. Consideration is being given to the use of boron-steel balls and some tests have been conducted to determine the eroding effect on the graphite when such balls fall into the pile by gravity.

C. PRESENT OBJECTIVES

Because of the extended period that will be required to fully prove the safety and reliability of operation at a higher power level, it is highly important that suitable short-range objectives be evaluated and decided upon.

Our immediate objective for the next two or three months is to determine what we believe will be a reasonable answer to the problem of selecting a suitable power level. This answer will be based on the best knowledge of heat transfer, film formation, corrosion, water treatment, material selection, etc. We hope to arrive at this answer within approximately two months. It will be recognized, however, that the answer obtained at that time will not necessarily be final, but will represent our best judgment on the basis of facts at hand. We then propose to design on the basis of that objective, recognizing that if later test results prove that a 500 mw power level is too hazardous, that we may then have to reduce the objective to some lower value. It is expected that such a reduction in the objective will not have a serious effect on the first cost of the plant, provided the tentative objective is approximately correct. To this end, the study of heat transfer work is being continued and we expect to have enough data available to provide the basis of a joint decision by all parties concerned within about two months. After this decision is reached, it is intended to continue the experimental work to obtain the necessary confirming evidence.

II. EXCESS RE-ACTIVITY AND CONVERSION RATIO

A. INFLUENCE OF LATTICE SPACING.

The most important influence on excess re-activity and on conversion ratio is that of the lattice spacing. This is primarily a physics problem and we have been advised by the Technical Division that it will not be feasible to arrive at a final answer to this problem in less than approximately ten months, because of the rather complex analyses and tests required. Consequently, the specific goal of improving re-activity and conversion ratio by modification of the lattice spacing has been dropped from the immediate objectives of the Design Division and we are proceeding on the basis of the present lattice spacing.

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Report on Development of Pile Area "G" (Continued)

Since we anticipate this program to be a continuing one, the work by the Technical Division will not be stopped on that account, but will continue, and will be translated into an actual design at the appropriate time.

B. INFLUENCE OF OTHER FACTORS.

Re-activity and conversion ratio are, of course, influenced by other factors such as the removal of thimbles, the purity of the moderator, the size and shape of the pile, and by selection of other materials.

For example, the use of beryllium "H" members for tying the packing together is being considered. Likewise, some consideration has been given to the feasibility of using beryllium process tubes. Other metals under consideration are aluminum, zirconium and magnesium.

C. PRESENT OBJECTIVES.

The present objectives in connection with re-activity and conversion ratio consists simply of taking advantage of every factor of design that will help to obtain such improvement. The delay in arriving at a final answer for the optimum lattice spacing is disappointing, but will not seriously affect the design and development work; however, it must be recognized that it may not be possible to provide the optimum lattice spacing in the first design of Pile Area "G".

III. PROBLEMS PERTAINING TO FIRST COST

A. DETAILED COST REDUCTIONS

Studies are being made of present shielding methods with a view to determining the detailed simplifications that may be applied to secure cost reduction. A necessary part of this study is the compilation of cost data on existing structures. The compilation of such data is difficult because present methods in the administration of construction projects do not yield a sufficiently detailed breakdown of costs; however, if necessary, direct cost comparisons can be made between existing designs and proposed designs. Meanwhile, layout work is continuing.

B. GENERAL STUDY OF SHIELDING

1. Thermal Shield.

Consideration is being given to the use of boron steel for the thermal shield and some computations have been made indicating that two inches of $1\frac{1}{2}\%$ boron steel will be required.

2. Concrete Shields.

Testing of concrete made with hydrated alumina is in progress. The data so far indicates about the same water content as masonite at 70°F.

Investigations are being made of a local source of magnetic, high density sand as a possible aggregate.

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Report on Development of Pile Area "G" (Continued)

In general, concrete shield designs are being based on the use of low-strength concrete, with the major strength appearing in the structural steel framework.

3. Tank Type Shields.

Shields in which the structure is essentially a tank filled with a mixture of high-melting asphalt and sand, or an equivalent matrix, which can be poured in place, is being considered and some structural analysis has been done. The work is continuing.

4. An important concept in connection with shielding is that it may be necessary, because of the external thimbles, to continue the shielding structure upward vertically to include the volume above the pile containing the vertical safety rods and shim rods. A design is being considered in which the corner posts will carry the roof load as well as the dynamic load of vertical rods.

C. METAL HANDLING.

A time study and flow chart for metal handling has been completed by Project Engineering and a final report should be available to the Design Division within the next few days.

Two methods for continuous charging and discharging have been proposed and both are being worked upon at the present time. A detailed report has been written on one method and is being reviewed. The most difficult problem occurs at the rear face where remote manipulation is necessary and where the mechanism must be extremely simple and very reliable.

D. SIZE OF WATER PLANT.

This subject was discussed in connection with the attainment of a higher power level. As mentioned previously, the specific heat rejection to the water has a major effect on water plant size and is being studied very carefully.

In addition to this factor, studies are also being made of the general arrangements of water plant components. These studies are Part I of a major study being undertaken by Giffels and Vallet, Inc. Minimum requirements for continuity of flow during emergency and minimum requirements for a normal operating sequence during a power interruption or other failure have been determined and transmitted to the Architect-Engineer.

The approach to this problem has been one of attempting to meet minimum safety and operating requirements while giving full consideration to all possible alternate designs. For example, the studies have included the use of standby electrical power, standby steam driven pumps, standby diesel driven pumps, and hydro-pneumatic accumulators. The studies have also taken a completely new look at reservoir requirements and these requirements have been reduced to the simple statement that "eight hours' supply of water at full operating conditions must be available between the filter bed and the pile".

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Report on Development of Pile Area "G" (Continued)

These studies are scheduled to be finished May 1. Conferences have been held with the Architect-Engineer and with Operating, Design and Technical personnel and two further conferences are planned prior to the final report.

A second major part of this study is concerned with the use of a re-circulating water system. This is expected to be a longer range study which will not be completed by May 1. However, it is of sufficient importance to warrant a continued aggressive effort, even though a specific design may not be forthcoming to be included in the first design of Pile Area "G". The use of re-circulating water completely changes the objective of demineralization since the objective in this case must be to minimize the radioactivity in the water leading to the pile so that it will not interfere with normal operations. Studies of chemistry and radioactivity necessary for this are well under way, but it will be necessary to conduct long-range tests on the corrosion effects in the process tubes before a final decision can be reached. If this design should prove feasible, it is anticipated that the selection of a site will be much more flexible and the hazard of polluting river water will be substantially non-existent.

Both of the above studies are influenced in some degree by another water plant study being conducted by Giffels and Vallet, Inc. which is concerned with the simultaneous operation of "D" and "DR".

PRESENT DESIGN OBJECTIVE

This project is still in the formative stage where problems are being defined and various ultimate solutions studied. The immediate objective, therefore, is to arrive at suitable design criteria within the next few months so that a specific design can be started. Before stating the design criteria, it will be necessary to review the entire situation and determine whether the gains that might be achieved will warrant the major expense of a complete design at that time. This review should probably take place in about three months.

ORGANIZATION AND MANPOWER

A separate group in the Design Division is charged with the sole responsibility for the design and mechanical development connected with this project. To date it has not been possible to man this operation adequately chiefly because recruiting efforts have been too slow in producing the types of people required. As a consequence, we are currently considering obtaining interim assistance by contract. Negotiations for such assistance are being conducted and should be completed in February. Plans call for a total of thirty engineers on design and development and exclusive of those in the experimental section.

Consideration has been given to securing the necessary test facilities and to securing the people necessary for conducting the tests. This organization is being assembled and currently consists of six people, of whom four are engineers. Development shop work is being undertaken wherever convenient and test facilities are also being established in the most convenient locations. Test facilities at the moment include the 9-tube mock up, the tower test for control rods, and the heat transfer test which is just being started.

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Report on Development of Pile Area "G" (Continued)

The development program will also require a substantial amount of laboratory assistance, some of which may have to be obtained off the plant site and this is currently being investigated. The laboratory work will include such items as chemical analyses, material property tests, etc.

FUNDS

Accounting reports have not yet been received on this project, but it is estimated that approximately \$40,000.00 has been spent out of the \$250,000.00 appropriated. As soon as arrangements for engineering assistance are completed, it will be necessary to request an additional appropriation to cover the amount of the commitment under the engineering assistance contract. It is anticipated that this can be done without exceeding the total estimate for the project.

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PROJECT & RELATED PERSONNEL

<u>GOVERNMENT EMPLOYEES</u>	<u>12-31-48</u>	<u>1-31-49</u>
Civilian Personnel - Atomic Energy Commission	343	341
Civilian Personnel - G. A. O.	<u>4</u>	<u>6</u>
Total		347
	347	347
 <u>RICHLAND VILLAGE PERSONNEL</u>		
Commercial Facilities (Includes No. Richland)	1,888	1,717
Organizations, Clubs & Etc.,	105	106
Schools	336	341
Churches	<u>24</u>	<u>25</u>
Total		2,189
	2,353	2,189
 <u>MORRISON-KNUDSEN PERSONNEL (Columbia Camp)</u>		
	200	186
 <u>CONSTRUCTION SUB-CONTRACTORS</u>		
Atkinson-Jones	8,397	8,306
Newport, Kern & Kibbe	14	15
Newberry Neon	776	943
Urban, Smyth, Warren Co.,	1,870	1,959
J. P. Head Co.,	19	15
Kellex Corp.,	585	585
J. Gordon Turnbull	139	139
Giffels & Vallat, Inc.,	187	187
Morrison-Knudsen Co.,	173	247
C. A. Moore	158	99
V. J. Jenkins Insulating Co.,	40	22
Curtis Sand & Gravel	12	30
National Carbon/Carbide Co.,	320	320
Trowbridge & Flynn Electric Co.,	8	8
J. A. Terteling & Son	548	495
Graysport Construction Co.,	28	15
Nettleton-Sound	124	32
Thorgaard Plumbing	17	9
Chris Berg Co.,	158	120
Holert Electrical Co.,	28	23
McNeill Const. Co.,	448	308
Rust Engineering Co.,	17	15
Arnold & Jeffers Co.,	28	25
Central Service Co.,	11	-
Charles Swanson (& Lyle)	102	6

(Continued on page #2)

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<u>CONSTRUCTION SUB-CONTRACTORS</u>	<u>12-31-48</u>	<u>1-31-49</u>
Fox Metal Products	9	9✓
Scott-Buttner	19	21✓
Martin's Furniture	23	4✓
Parsons Tile	3	4✓
William's Paint & Glass	5	-
Seldon's Inc.,	-	6✓
West Coast Painters	11	16✓
Holaday & Edworthy	3	7✓
Chicago Bridge & Iron	8	15✓
P. S. Lord	46	-
Haughton Elevator Co.,	9	5✓
E. J. Bartells Co.,	47	34✓
H. P. Fischer & Sons	6	6✓
Howard P. Foley Co.,	41	30✓
E. F. Sherrill	2	-
E. F. Hauserman	1	-
Combustion Engine Co.,	1	1✓
Indust. Eng. & Contractors	17	35✓
Hanley & Co.,	6	26✓
Johnson Service	2	1✓
X-Ray Products	5	11✓
Anning -Johnson	-	16✓
National Blower & Sheetmetal	-	6✓
United Refractory & Construction	-	12✓
Link-Belt	-	2✓
Isaacson Iron Works	-	7✓
Strasser Drilling	-	2✓
Total	14,471	14,199✓
<u>GENERAL ELECTRIC PERSONNEL</u>	8,618	8,678✓
GRAND TOTAL	25,989	25,599✓

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