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**LABORATORY RECORDS**  
1954

**OPERATIONS DIVISION**

MONTHLY REPORT  
FOR

MONTH ENDING MAY 31, 1949

- BY  
 M. E. RAMSEY  
 E. J. WITKOWSKI  
 A. F. RUPP  
 J. A. COX  
 L. B. EMLET

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OPERATIONS DIVISION

MONTHLY REPORT

for

Month Ending May 31, 1949

by

M. E. Ramsey  
E. J. Witkowski  
A. F. Rupp  
J. A. Cox  
L. B. Emlet

DATE ISSUED

JUN 15 1949

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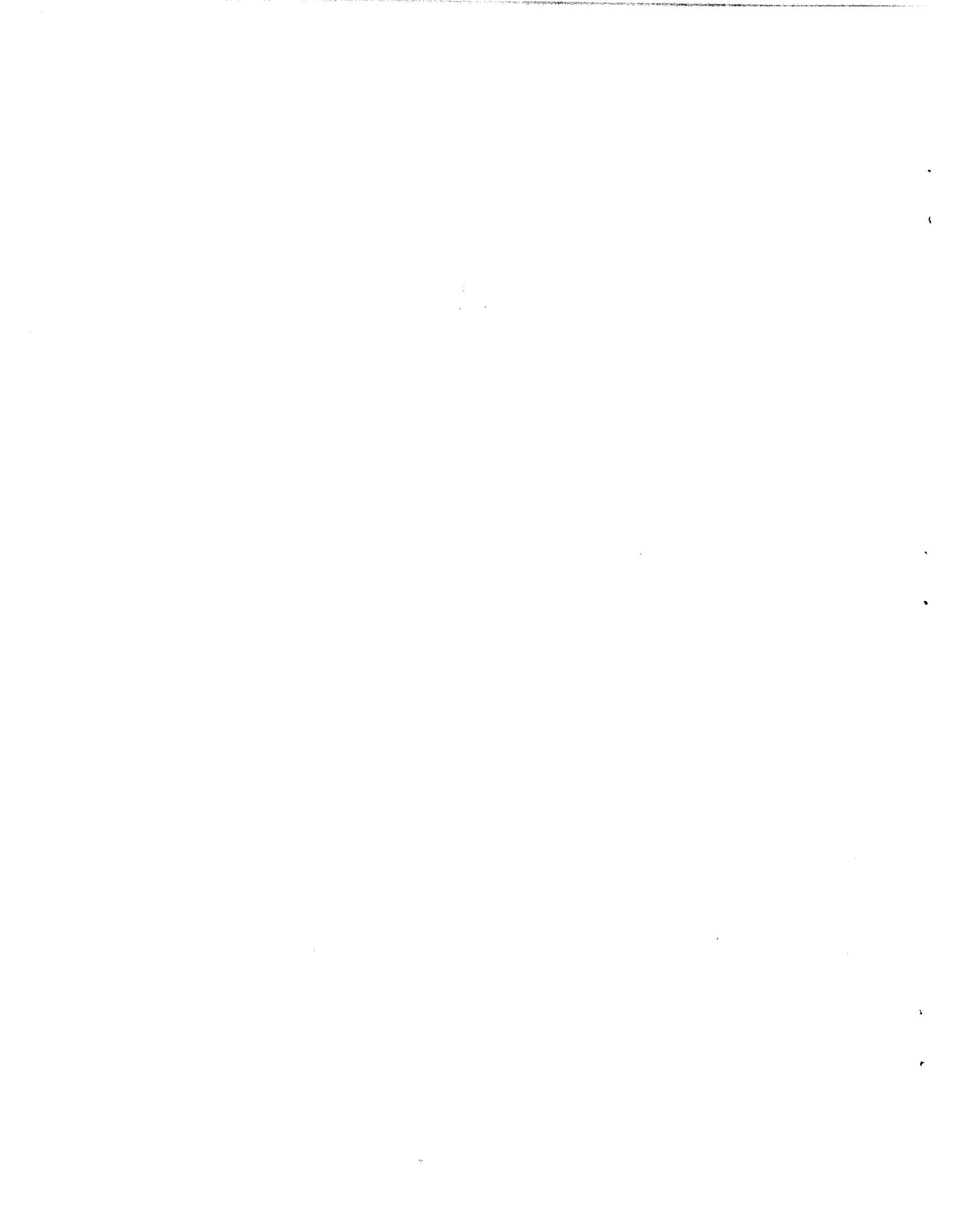
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SUMMARY

1. Lost pile operating time averaged 11.9% for the month as compared to a year-to-date figure of 9.1%. The increase in pile shutdown time was largely due to the electrical power outages for the tie-in of the new 13,800-volt system. (Page 4.)
2. Two ruptured slugs were detected in the pile during the month and discharged without difficulty. (Page 4.)
3. Radioisotope production continued at a high level. Some processing difficulties in the preparation of P<sup>32</sup> resulted in several postponed shipments. (Pages 7 to 13.)
4. The chemical waste evaporator has been completed and tracer runs satisfactorily completed. (Page 15.)
5. RaLa Run #33 was completed and shipped on May 28, 1949. Los Alamos reported 3,700 curies present and stated that the quality was excellent. (Pages 16 and 17.)
6. During May, 511 shipments were made to bring the total since August, 1946, to 8,035. (Page 18.)
7. C<sup>14</sup> -labeled algae, prepared at Argonne National Laboratory, are now available for distribution. (Page 19.)
8. Work continues on the Radioisotope Production Area. The office building will be ready for occupancy by the middle of June. (Page 21.)

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information concerning interest in the Atomic Energy Act of 1946, as amended, and the Atomic Energy Control Act of 1947, as amended, and the Atomic Energy Act of 1954, as amended.



A. PILE DEPARTMENT

I. Operating Data:

	<u>MAY</u> <u>1949</u>	<u>APRIL</u> <u>1949</u>	<u>YEAR-TO-DATE</u> <u>1949</u>
Total Accumulated KWH-----	2,476,540	2,532,586	12,824,030
Average KW/operating hour-----	3779.06	3876.30	3894.37
Average KW/24-hour day-----	3328.68	3517.48	3538.64
Percent Lost Time-----	11.9%	9.3%	9.1%
Approx. Excess Pile Reactivity---	80-90 in hours	130-140 in hours	
Slugs Charged-----	101	73	1973
Slugs Discharged-----	149	63	1971
Product Made (grams)-----	90.39	92.43	441.03
Product Discharged (grams)-----	1.84	8.09	142.54

II. Pile Operation:

The pile-down time averaged 11.9% for the month, compared to 9.1% for the year-to-date. The slight increase in pile-down time was due principally to three power outages for main line electrical connections, installation of parts of the fuel assembly test equipment in Hole 11 for Argonne National Laboratory, and location and discharge of two ruptured slugs during the month.

One ruptured slug was detected by visual scanning in Channel 1869 on May 2, 1949. It was discharged without difficulty. The slug was of Class II metal and had been in the pile seventy days at a temperature of approximately 200° C.

The second ruptured slug was found in Channel 1467 by use of the scanner on May 31, 1949, and was discharged without difficulty. This was a thermocouple slug. The only prior indication of anything abnormal was an approximate 20° C. drop in the thermocouple reading about a week before the detection of the rupture. The slug had been in the pile for 119 days at about a temperature of 200° C. These two occurrences bring the total number of ruptures since 1943 to fifty-five.



Detection of ruptured slugs continued to be a major problem. Neither of the two ruptures occurring this month gave any appreciable indication of their presence on either the probe or the gummed-tape equipment. Until a more dependable monitor is developed, it is necessary that the weekly visual scanning of the metal channels be continued. Due to poor visibility, the scanner must be used on thermocouple rows even though it is at present considered to be less reliable than visual inspection.

The water tube in Hole 19 failed on May 27, 1949, and was replaced on May 31, 1949, without trouble.

The aluminum tube that failed in the Hole 12 water system was replaced on May 16, 1949. Filling the new installation with water required only about twenty-five inhours instead of the approximate forty-five required by the old assembly. The difference is no doubt due to smaller water space in the new tube.

The equipment necessary for the fuel assembly evaluation experiment to be done by Argonne National Laboratory in Hole 11 was installed during the month. A unit containing no fuel was installed for heat loss measurements prior to insertion of the unit containing fuel early in the coming month. This experiment is using fifteen inhours and will require about fifteen to twenty more inhours when water cooling is started.

The excess pile reactivity was eighty to ninety inhours at the end of the month. The approximate fifty-inhour loss from last month was due principally to the work at Hole 11 and the replacement of Hole 12 facilities.

III. Filter House:

The pressure losses encountered in the Filter House at date of initial use and until the end of the month are as follows:

Date	F. G. #50 GLASS WOOL FILTERS		C.W.S. #6 PAPER		ACROSS HOUSE	
	Inches w.g.	% Increase	Inches w.g.	% Increase	Inches w.g.	% Increase
11-15-48	1.1	-	1.0	-	3.3	-
11-30-48	1.5	36	1.1	10	3.8	15
12-15-48	2.4	60	1.2	9	4.7	24
12-31-48	3.4	41	1.3	8	5.8	23
1-15-49	4.2	19	1.3	6	6.8	17
1-31-49	4.8	12	1.3	0	7.2	6
2-15-49	5.2	8	1.3	0	7.4	3
2-28-49	5.4	4	1.4	7	7.7	4
3-15-49	5.4	0	1.4	0	7.8	1
3-31-49	5.4	0	1.4	0	7.8	0
4-15-49	4.7	-13	1.5	7	7.2	-8
4-30-49	3.2	-32	1.7	13	6.1	-13
5-15-49	3.4	6	1.7	0	6.2	2
5-31-49	3.5	3	1.7	0	6.4	3
OVERALL INCREASE	2.4	218	0.7	70	3.1	94

Filter House operation was normal throughout the month.

IV. Fan Operation:

The fans operated normally throughout the entire month.

V. Radioisotopes:

The following table is a comparison of the radioisotope and research samples charged into the pile during May, 1949, with those handled in April, 1949:

	MAY, 1949		APRIL, 1949	
	Research	Radioisotopes	Research	Radioisotopes
Stringers 13, 14, and 16	13	104	9	125
Hole 22 (Pneumatic Tube)	77	1	57	3
All Other Holes	5	22	4	13
TOTAL BY GROUPS	95	127	70	141
TOTAL FOR MONTH		222		211

At the end of May, 1949, there were 360 cans of target material in Stringers 13, 14, and 16, compared to 371 cans of target material in these stringers at the end of April, 1949

## B. CHEMICAL SEPARATIONS AND ISOTOPE DEVELOPMENT DEPARTMENTS

I. Radioisotopes:1. Iodine ( $I^{131}$  - 8d)

Twenty-one slugs were processed and 11,176 mc shipped. All products were within specifications. Three of the twenty-one slugs were exposed in the pile for only thirty days; these were processed for  $Sr^{89}$ ; the  $I^{131}$  was recovered as a by-product.

Due to a ruptured slug in Hole 1869 (92% flux), it was necessary to use slugs from Channel 1668 (88% flux) during the latter part of the month. The slugs in Hole 1668 had not been properly positioned for bombardment for iodine recovery and yields were lower for the first two weeks after this channel was put into use.

2. Phosphorus ( $P^{32}$  - 14.3d)

Sixteen, 2,000-gram cans of irradiated sulfur were processed and 7,408 mc shipped.

Higher than normal losses were encountered this month due to iron being found in some of the products and the repurification steps resulted in increased losses.

It has been found that the formation of rust on iron equipment over open vessels has been a source of these impurities. To alleviate this condition, a new hood has been built and should be in operation during the early part of next month. Two evaporators will be used; the first of which will be used for fuming with nitric acid to remove silica and organic material; the second evaporator will be gold-lined and will be used for final evaporation and purification. The construction of the hood is such that very little iron is exposed to acid.

## 2. Phosphorus Development Work

Purchase orders have been placed for the major equipment to be used in the P<sup>32</sup> extraction plant in the new area.

Experimental work continued on purification processes, using extract from the sulfur extractor in Cell 5. The diluted nitric acid extract was passed through a cation exchanger (Dowex 50) and the effluent then passed through an anion exchanger (Dowex A-2); the P<sup>32</sup> was taken up on the anion exchanger and then eluted in 0.1 N HCl. No sulfate and a very small quantity of iron (0.003 mg/ml) was found in the effluent. An overall yield of 75% was obtained, which is too low for practical use. However, if a better quality starting solution is used, low in Fe, Cr, and Ni, the yield should be greatly improved.

A special batch of carrier-free P<sup>32</sup> was made with the following analysis:

Radiochemical purity	-	~ 100%
Concentration	-	1.24 mc/ml
Total Solids	-	0.0 mg/ml
Fe, Cr, Ni	-	None
Chloride	-	1.5 mg/ml.

Some difficulty had been encountered in the regular P<sup>32</sup> production runs and traces of organic matter and iron appeared in the final product. This condition was corrected by increased "curing" of new ion exchange resin put into the equipment and addition of an organic digestion step as the final product is evaporated.

## 3. Carbon (C<sup>14</sup> - 5100y)

No runs were made on the Ca(NO<sub>3</sub>)<sub>2</sub> process this month.

3. C<sup>14</sup> Development Work - (Be<sub>3</sub>N<sub>2</sub> Process)

Approximately 100 mc of C<sup>14</sup> was produced during Be<sub>3</sub>N<sub>2</sub> development work this month. Sodium hydroxide scrubbing is now being used and BaCO<sub>3</sub> precipitation from the alkaline solution has been improved to give practically complete recovery of C<sup>14</sup>. The isotopic abundance of the C<sup>14</sup> produced has ranged from 6-10%.

Work continued on waste volume reduction and beryllium recovery. Ammonia may be driven off of the BeSO<sub>4</sub> - (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> crystals formed in concentrated H<sub>2</sub>SO<sub>4</sub> by baking. The residual dry BeSO<sub>4</sub> has a low volume for storage, or can be converted to other chemical forms. The radioactivity of the recovered beryllium salt is extremely low.

Work has been completed (in collaboration with the Instrument Department) on the calibration of a four-liter chamber for monitoring C<sup>14</sup> in the atmosphere. The monitor is quite sensitive; a concentration of 0.4 microcuries C<sup>14</sup> per liter of air gave 30% of full-scale reading. As a corollary of this work, an apparatus for accurately assaying C<sup>14</sup> as gas is being developed. This assay method should be more convenient than the present analytical method, in which solid BaCO<sub>3</sub> is packed into a small hole in a metal plate, and secondary gamma radiation from an absorber counted with an end-window counter.

Hydrogen peroxide and other oxidizing agents are being tried as a replacement for chromic acid in the Be<sub>3</sub>N<sub>2</sub> process. Initial results on two full-scale runs were good; the yields were 149% and 169% of theoretical. The excess C<sup>14</sup> obtained is believed to be carbon which has been held up in the CuO oxidizing furnace from previous runs. The H<sub>2</sub>O<sub>2</sub> is not added until all possible

3. C<sup>14</sup> Development Work - (Be<sub>3</sub>N<sub>2</sub> Process) - Continued

hydrogen or methane has been removed from the train. Elimination of chromic acid from the process would be a great improvement from the standpoint of operation and waste recovery.

Twenty millicuries of 13% C<sup>14</sup> was provided for a special order for high specific activity material.

4. Sulfur (S<sup>35</sup> - 87d)

No S<sup>35</sup> was produced this month, there being a supply on hand.

5. Fission Products

Run SS-12 was finished and the data evaluated. In this particular system, Dowex 50 resin was found not to be as suitable as Amberlite IR-1, which has been used in all runs prior to SS-12. Since the first fission product separation step, performed inside the cell, is primarily for the purpose of producing only major fission product groups, a highly selective cation exchanger is not required. It is possible to fractionate mixed F.P. solution more rapidly, with lower effluent volumes, using IR-1 than when Dowex 50 is used.

Runs SS-13 and SS-14 were completed during the month. SS-13 was routine, IR-1 resin having been returned to the separations column. SS-14 was normal except that 37-day slugs were used for the starting solution instead of the usual 60-day slugs. This run was made primarily for the purpose of obtaining Sr<sup>89</sup> containing less than 1% Sr<sup>90</sup>; Nd<sup>147</sup>, Pr<sup>143</sup>, and Ba<sup>140</sup> were also separated. Analyses have not been completed on this run, but preliminary indications are that approximately 200 mc Sr<sup>89</sup>, relatively free of Sr<sup>90</sup>, was produced. Approximately 800 mc of pure Ba<sup>140</sup> was also produced on the primary separation.

[REDACTED]

5. Fission Products - Continueda. Zr-Cb ( Zr<sup>95</sup>-65d, Cb<sup>95</sup>-35d)

Amberol resins, which are unsulfonated and presumably do not contain ion exchange centers, were tried for adsorption of Zr-Cb from uranyl nitrate solutions. It has been reported in the literature that Zr-Cb is taken up on cation exchange resin largely as a result of adsorption, and not by true ion exchange. The unsulfonated resin probably does not have the same type of surface for adsorption as the sulfonated resin, but it was decided to try these materials to see if there was any appreciable adsorption. In two trials, using different resins, practically no adsorption of Zr-Cb was obtained.

Pure Zr<sup>95</sup> has been extracted into TTA-benzene and Cb<sup>95</sup> (daughter) will be extracted with 6 N HCl as it grows in.

b. Yttrium (Y<sup>91</sup> - 57d)

Routine purifications were made and product put in stock.

c. Rare Earths (Nd<sup>147</sup>-11d, 61<sup>147</sup>-3.7y, Pr<sup>143</sup>-14d)

Several curies of rare earths were obtained from SS-14 and are in process of purification.

d. Cerium (Ce<sup>141-144</sup> - 28d, 280d)

Approximately 500 mc Ce<sup>141-144</sup> was produced and stored.

6. Ruthenium (Ru<sup>106</sup> - 1y)

No concentrations were made. There is a sufficient stock on hand to meet current demands.

7. Calcium (Ca<sup>45</sup> - 180d)

Twenty-one microcuries of carrier-free Ca<sup>45</sup> was produced which had the following analysis:

Purity	-	> 99%
Concentration	-	0.54 microcuries/ml
Total Solids	-	0.3 mg/ml
Non-volatile Matter	-	0.0 mg/ml.

8. Strontium (Sr<sup>89-90</sup> - 55d, 30y)

Strontium 89 from SS-13 was purified on a Dowex 50 resin column. After the Sr<sup>89</sup> was placed on the column, 0.2 molar citrate solution at 3.0 pH was passed through for twenty-four hours; no activity was removed, indicating that the preparation was free of Y<sup>91</sup>. The pH of the eluting solution was changed to 4.5. Two small activity peaks (probably rare earths) were removed before the Sr<sup>89</sup> peak. The strontium removed was of > 99% purity.

Fifteen curies of old strontium (Sr<sup>90</sup>) are in process of purification. This batch has been delayed since last month while some improvements in the equipment were being made.

9. Iron (Fe<sup>55-59</sup> - 4y, 44d)

A sample of normal iron irradiated at Hanford was received and processed to be used as high specific activity Fe<sup>59</sup>. The analysis has not been completed.

10. Miscellaneous

Twelve - 2 cm - and forty - 1 cm - cobalt needles which had been irradiated to produce 1 mc per cm in one group of needles, and 2 mc per cm in another group, were encapsulated and silver soldered in sheaths furnished by a customer. Representative samples were calibrated by gamma-ray measurement against Co<sup>60</sup> standards and found to be within  $\pm$  10% of the desired values.

10. Miscellaneous - Continued

Special samples of uranium oxide, thiophene, thenoyl pyramine, and various pure rare earths were prepared for irradiation here and at Hanford.

A separation is being made on an old sample of RaLa to determine the stable and long-lived radioactive contaminants. The new automatic absorption equipment is being used in conjunction with a Dowex 50 column for this study. The equipment is proving to be quite useful for this work. The major radioactive contaminants are Sr<sup>90</sup> and Ce<sup>144</sup>, although the values have not been calculated back to starting time (~one year ago). Inactive elements present are Fe, Cr, Ni, Cu, Mg, Ba, Si, Ca; distinct bands of Fe and Cr were separated out on the column. This work will continue to determine the actual quantity of contamination in the original sample.

A lithium cyclotron target which had been bombarded to produce Be<sup>7</sup> is being processed in collaboration with the Biology Division.

II. Tank Farm and Burial Ground:

1. Wastes Discharged to the White Oak Creek

a. About 137.11 curies of beta activity were discharged from the Settling Basin this month. This was an average of 4.42 curies per day.

1) At the request of the Health Physics Division, the discharge of highly active wastes from the chemical waste system to the Settling Basin was discontinued on May 20, 1949, because of low water flow through the Clinch River. By May 26, 1949, the flow of active waste to the Creek was started again.

[REDACTED]

- b. To make space for waste from W-6 tank, about 40,000 to 50,000 gallons of supernate from the East Pond were pumped into the Settling Basin this month.
- c. The following table shows the total discharge of activity to the White Oak Creek:

<u>Discharged From</u>	<u>Gallons</u>	<u>Curies</u>
Settling Basin	16,409,000	137.11
Retention Pond	347,549	.48

2. Waste Tank Inventory

CHEMICAL WASTE

<u>Tanks</u>	<u>Gallons Capacity</u>	<u>Gallons In</u>	<u>Gallons Out</u>	<u>Discharged To</u>	<u>Free Space</u>
W-5,6	340,000	147,600	88,800	East Pond and White Oak Creek	31,200

METAL WASTE

W-4,7,8, 9,10	713,000	7,792	0	-----	94,400
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3. Special Wastes

- a. Four shipments of alpha-contaminated material from Dayton.
- b. Two shipments of contaminated trash from K-25 and two from Y-12 were buried.
- c. Eleven pots of chemical waste, two pots and three drums of metal waste were received from Chicago.
- d. K-25 transferred 660 gallons of water containing uranium to metal waste system.
- e. A total of 294 kg of uranium was received into the metal waste system this month. Of this, the Hot Pilot Plant transferred 41.6 kg; RaLa, 132.44 kg; Chicago, 112.09 kg; Technical Division, Section IV, .85 kg; and the Chemistry Division, 7.02 kg.

4. Maintenance and Construction

- a. The chemical waste evaporator in the Tank Farm has been completed and accepted from the J. A. Jones Construction Company. Several water runs, a run using 8% nitric acid, and a simulated run have been made. The simulated run made used a solution made up of the various inactive salts in W-5 tank, plus about thirty-five gallons of activity from W-5 as a tracer. The resulting decontamination factor was about  $3 \times 10^4$ . Final flange testing is underway preparatory to evaporation of regular chemical waste.
- b. The Technical Division has installed a 250-gallon tank at W-10 metal storage tank for the purpose of putting the sodium diuranate precipitate from W-10 into a nitric acid solution. This will make the uranium suitable for recovery studies. The float gauge from W-10 was removed, an air-driven pump dropped into W-10, and 250 gallons of precipitate pumped into the new tank.
- c. A new draw-off line from the 706-C metal waste tank to W-9 was installed this month. This draw-off ties into the 706-D to W-9 line. It will not be necessary to go to W-9 through the chemical waste line any more.

III. RaLa (Ba<sup>140</sup> - 12.5d):

RaLa Run #33 was started on May 23, 1949, as scheduled with the charging of seventy-six, four-inch, Hanford slugs to the dissolver. These slugs were dissolved and extracted in two batches.

No difficulties were encountered in the run operation which was essentially the same procedure as used for RaLa Run #32. Last separation time was reached at 2200 on May 27, 1949, and the product with a content of 3,360 curies as determined by an eleven-hour skyshine was shipped in the nitrate form at 1100 on May 28, 1949. (Los Alamos reported 3,700 curies and stated that the quality was excellent.)

The analytical summary of the run follows:

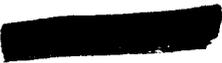
Slugs Loaded: 76, four-inch, Hanford slugs  
Slugs Dissolved: 78.4 " " " (by analysis)

	<u>CURIES</u>	<u>PERCENT</u>
Total Curies Dissolved*	5,358	100.0
Cell A Losses	1,378	25.7
Cell B Losses	619	11.6
Losses Accounted For	1,997	37.3
Material Balance through B-6		97.1
Product Shipped (Skyshine)	3,360	62.7
Material Balance through Skyshine		100.0
Losses Unaccounted for through Skyshine		0.0

\* All curies corrected to L.S.T.

Although the A-16 barricade has been enclosed and is under slight vacuum with the exhausted air being drawn through the cell ventilation filter house, several instances of high air contamination resulted during this run. Enclosing the A-16 barricade has aided considerably in reducing the air contamination but the problem of eliminating all sources of air contamination still remains.

[REDACTED]



Investigation is still underway to determine the origin of the activity.

A semi-permanent concrete block wall has been erected in front of Cell B entrance to help shield the working area from the radiation which has been swept into the corridor by the new cell ventilation duct.



C. ISOTOPE CONTROL DEPARTMENT

I. General:

There were 511 shipments during the month of May compared with 461 in April and 514 in March.

Several shortages of P<sup>32</sup> were experienced during the month and caused postponement of shipments. There was also a slight shortage of I<sup>131</sup> and Sr<sup>90</sup>.

The breakdown of shipments according to separated and un-separated material is as follows:

	<u>APRIL</u> 1949	<u>MAY</u> 1949	<u>TOTAL</u> August, 1946, to May, 1949, Inc.
Separated Material			
706-D Area	357	382	6,207
Unseparated Material			
100 Area	<u>104</u>	<u>129</u>	<u>1,828</u>
	461	511	8,035

The breakdown of shipments according to non-project, project, and foreign shipments for April and May is as follows:

	<u>APRIL</u>	<u>MAY</u>
Non-Project	354	418
Project	64	64
Foreign	<u>43</u>	<u>29</u>
	461	514

II. Carbon 14:

A total of 588.5 millicuries of carbon 14 was transferred to the Chemistry Division during the month for use in preparing stock-piles of carbon 14-labeled intermediates. It appears that the amount of carbon 14 available for this program will have to be limited because the present rate of production in the pile is only approximately 200 millicuries per month.

[REDACTED]

III. Carbon 14 Labeled Compounds:

An additional shipment of carbon 14-labeled algae was received during May from the Argonne National Laboratory. This will be distributed in the same manner as the other labeled compounds received from Berkeley and Los Alamos.

The formic acid produced by the Chemistry Division will be ready for distribution as soon as standardization is completed.

IV. Radioactive Cobalt:

The first large sample of radioactive cobalt arrived from Hanford during the month and the specific activity was approximately 0.5 curies/gram.

A twenty-curie Co source was assembled for Brookhaven for use in irradiating growing plants. Information received from Brookhaven indicates that the source is very satisfactory.

V. Special Services:

Preparation of a cerium 144 source for Princeton University did not turn out satisfactorily and the customer has requested that another source be made.

Approximately 350 grams of gold, irradiated at X-10, has now cooled sufficiently to send to the Bureau of Standards where the Hg<sup>198</sup> formed will be separated and used as a wave length standard.

Several irradiations of very low-boiling compounds have been accomplished by using special exposure cans equipped with a spring-loaded, release valve. It was feared that the material might all leak out of the can during the irradiation but this was not the case. This new technique will permit the irradiation of other volatile compounds.

V. Special Services: - Continued

Arrangements have been made to send the very short-lived isotopes via special truck to the airport so that shipments will catch the earliest possible flight and arrive in eastern cities on Monday afternoon. This enables customers to perform experiments Monday evening instead of waiting until Tuesday morning when large quantities of the short-lived materials have decayed.

VI. Cyclotron-Produced Isotopes:

A program for cyclotron-produced isotopes has been established and the first samples of cyclotron targets are expected shortly from the University of Pittsburgh. In addition, a lithium target containing radioactive beryllium is being separated as a special service for the University of North Carolina in connection with an Atomic Energy Commission research program. Radioisotopes which will be produced under the cyclotron program will be those of which only short-lived activities can be produced in the pile; as an example, sodium 22, which has a half life of three years compared with the pile-produced isotope of this element, - sodium 24, which has a half life of approximately fifteen hours. Beryllium 7 is another example of the radioisotopes which can be produced by cyclotron bombardment, while no corresponding beryllium radioisotope can be produced in the pile.

Other isotopes will be produced in carrier-free form by cyclotron bombardment where they cannot be produced in sufficiently high activity in the pile. An example of this is iron 59 produced from cobalt in the cyclotron in carrier-free form, but can only be produced satisfactorily from natural iron in the pile giving a low specific activity.

VII. Radioisotope Production Area:

In the Isotope Processing Area construction work continued on all buildings. The work in the office building included completion of the plastering and tile work, installation of the lighting fixtures, the inside doors, the lockers, and most of the bathroom fixtures; also, the asphalt tile floors were started. In the analytical building the block and brick walls were completed, and work continued on the air ducts, service piping, electrical conduits, and ceiling framing. Also, the furniture pads in the laboratory were poured, the tile work started, and the forms for the concrete storage barricade completed; the lead work was started on the isotope loading barricade. In the process buildings work continued on the service piping, the electrical wiring, and the interior aluminum walls; installation of the exhaust ducts was started.

Outside piping work included completion of the outside distilled water lines and tying in of most of the water lines to the plant water lines. At the brick exhaust stack, the stainless steel pan was completed and tested. Also, the area around the stack was graded for the equipment pad; the pad for one exhaust blower was poured and installation of the blower was started.



L. B. Enlet, Director  
Operations Division

VIII. Source and Fissionable Material Accountability:

Following is a summary of shipments and receipts of S. F. Materials  
for the month of May, 1949:

SHIPMENTS

<u>Shipped To</u>	<u>Material</u>	<u>Content</u>
Argonne National Lab.	Plutonium as Nitrate Solution	12.22 gm Plutonium
" " "	Plutonium Solution 1.3M Al(NO <sub>3</sub> ) <sub>3</sub>	12.80 gm Plutonium
" " "	Plutonium Solution 1.3M Al(NO <sub>3</sub> ) <sub>3</sub>	11.30 gm Plutonium
" " "	1 Normal Uranium X Slug	1.17 kg
" " "	10 ML of 1 AF	4.50 gm Normal
" " "		1.00 mg Plutonium
" " "	Plutonium Solution as Nitrate	9.90 gm Plutonium
C&CCC, K-25 Area	Normal Uranium (UNH Solution)	118.00 kg
C&CCC, Y-12 Area	U <sub>3</sub> O <sub>8</sub>	4.00 gm
" " "	25 ml UO <sub>3</sub> in 0.3M NaHCO <sub>3</sub> (83.5% Enriched)	150.00 mg Uranium
		125.25 mg U-235
General Electric Company	1 Md dissolver Solution 0.2M Acid 10 ML sample	5.00 gm Uranium
" " "		1.00 mg Plutonium
" " "	1 Liter Plutonium Solution as Nitrate	247.00 mg Plutonium
Gen. Elec. Research Lab.	2 ml of 1 Md Dissolver Solution	1.50 mg Uranium
		0.20 mg Plutonium
Iowa State College	Uranium Carbide	223.20 gm Normal
Tracerlab	U <sub>3</sub> O <sub>8</sub>	600.00 mg Normal
USAEC, New York	Normal Uranium Filings	0.535 gm Normal

RECEIPTS

<u>Received From</u>	<u>Material</u>	<u>Content</u>
Argonne National Lab.	Normal U/ZR Alloy	1.00 gm Normal
" " "	Waste Solution	200.63 kg UNH
" " "		95.09 kg U
" " "	Dissolver Solution	17.06 kg Normal
		150.00 mg

[REDACTED]

VIII. Source and Fissionable Material Accountability:

RECEIPTS - Continued

<u>Received From</u>			
C&CCC, K-25 Area		Hanford Waste (Radioactive Glass and Paper)	7.00 gm Depleted
" "		Hanford Waste Scrap (Radioactive Glass and Paper)	7.00 gm Depleted
" "		Hanford Waste (Radioactive Glass and Paper)	99.00 gm Depleted
" "		Hanford Waste Scrap (Radioactive Glass and Paper)	11.00 gm Depleted
" "		Uranium Metal Waste Solution	90.00 mg Plutonium
			16,200.00 gm Uranium
C&CCC, Y-12 Area		Uranium Metal	18.103 gm
" "		Uranium Electroplated on the end of a Carbon Electrode	0.3 mg Normal
" "		U <sub>3</sub> O <sub>8</sub>	2.04 gm Normal
" "		UCl <sub>4</sub>	63.40 gm Normal
General Electric Company		Hot Uranium Slugs	51.56 kg Uranium
			15.25 gm Plutonium
			354.24 gm U-235
" " "		Hot Uranium Slugs	176.67 kg Uranium
			38.13 gm Plutonium
" " "		Slugs (Dummies)	1,213.72 gm U-235
			59.615 gm Normal

[REDACTED]