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Radioisotope Distribution Program Progress Report for January 1976

E. Lamb

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ORNL/TM-5347

Contract No. W-7405-eng-26

OPERATIONS DIVISION

RADIOISOTOPE DISTRIBUTION PROGRAM PROGRESS REPORT FOR JANUARY 1976

E. Lamb

Work Sponsored by
ERDA Division of Biomedical and
Environmental Research

MARCH 1976

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RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR JANUARY 1976

E. Lamb

RADIOISOTOPE PRODUCTION AND MATERIALS DEVELOPMENT

REACTOR-PRODUCED RADIOISOTOPES

Reactor Products Pilot Production (*R. W. Schaich*)
(Production and Inventory Accounts)

Processed Units	
Radioisotope	Amount (mCi)
Calcium-47	20
Copper-67	10

ACCELERATOR-PRODUCED ISOTOPES

Cyclotron Products Pilot Production (*M. R. Skidmore*)
(Production and Inventory Accounts)

No cyclotron runs were made during the month of January; maintenance and repair work were continued.

FISSION PRODUCTS

Krypton-85 Enrichment Facility *(F. N. Case)*

Transfer of Material From Storage Cylinders

Krypton-85 materials enriched to 11.5%, 8.7%, and 8.8% during the first enrichment cycle were removed from storage cylinders 1, 3 and 4 respectively, and transferred to column CD. This transfer was accomplished by admitting helium to the storage cylinders (20- and 40-liter volume) to one atmosphere absolute pressure and pumping the gas mixture (He-Kr) through a carbon trap which was cooled to liquid nitrogen temperature, thus trapping the krypton and allowing the helium carrier gas to pass through the trap. The discharge line was continuously monitored to detect any release of krypton. We estimate that approximately one curie of krypton was released during this transfer operation (this included the releases in the subsequent transfer of the krypton from the carbon trap to the column).

The material was subsequently transferred from the carbon trap to column CD. This transfer was completed on January 9, 1976.

Removal of Light Gases From Column

Light gases were removed from the top ends of all columns (including column CD) on January 13, 1976. These light gases, essentially air, enter the columns during the loading process and are routinely removed after approximately one month of operation. In the case of column CD, some helium was admitted to the column with the previously enriched feed in order to achieve a quantitative transfer of feed. Column pressures were then adjusted to normal operating pressures of between 0 and -1.2 inches of mercury vacuum using normal krypton product.

Status of Column Operation

All krypton enrichment columns appear to be operating normally through January 27, 1976. Columns C and CD appear to have a collection of non-radioactive gases in the light ends of the columns. This was expected in column CD because of helium admitted during the reloading operation. Column C apparently was not equalized completely during the January 13, 1976 adjustments.

The inlet and outlet cooling water temperatures were approximately 10°F higher than the normal operating temperatures. The temperature differential, however, was unchanged. No reason for this has been found. The condition corrected itself approximately four hours after being observed.

A complete checkout of the temperature controls of the chilled water system and the cooling tower was made in an attempt to explain the temperature increase which occurred. The system is operating perfectly and no reason was found to explain the increase in temperature.

A temperature recording system is being installed in the inlet and outlet water lines to both cells. This recording system will allow us to closely monitor these temperatures in the event another temperature excursion, as occurred this month, happens again.

Cesium-137 Pilot Production (*R. W. Schaich*)
(Production and Inventory Accounts)

1. Process Status

The ^{137}Cs process equipment is in standby condition.

2. Operational Summary

Product Inventory

(Decay calculated through April 30, 1975)

Inventory Material	Amount (Ci)
Cesium-137 chloride powder	0
Special form cans and Fabricated Sources	6,000
Total Inventory Material	6,000

Non-Inventory Material	Amount (Ci)
Material returned or stored for customer	
Puerto Rico sources	8,400
Lockheed	21,000
AECL powder	72,000
Radiation Resources	35,900
Minn. Mining & Mfg. Company	11,700
Gamma Industries	8,800
J. L. Shepherd	17,800
Total Non-Inventory Material	175,600
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	181,600

Fabrication Summary

	Jan. 1976		CY 1976		FY 1976	
	No.	Ci	No.	Ci	No.	Ci
Sources						
Fabricated	0	0	0	0	26	23,232
Shipped	0	0	0	0	16	22,032
Special Form Cans						
Fabricated	0	0	0	0	38	4,900
Shipped	1	100	1	100	33	7,122

3. Current Orders

All orders on hand have been completed and the material placed into storage awaiting receipt of release for the material.

Strontium-90 Pilot Production *(R. W. Schaich)*
(Production and Inventory Accounts)

1. Process Status

The ^{90}Sr process and manipulator cells are being decontaminated under the ERDA Decommissioning Program. The ^{90}Sr powder was removed from the FPDL, encapsulated, and stored for future orders.

Product Inventory

(Decay calculated through April 30, 1975)

Inventory Material	Amount (Ci)
^{90}Sr titanate powder (±5%)	491,800
Sources in fabrication	0
RCA source	59,200
^{90}Sr silicate powder	28,900
Stock powder cans	4,215
Total Inventory Material	584,115

Non-Inventory Material	Amount (Ci)
FPDL recovery material	18,700
Quehanna recovery material	45,500
Weather Bureau source	12,100
SNAP-7B	165,600
SNAP-7C	26,000
SNAP-7D	151,500
SNAP material purchase[a]	263,000
Total Non-Inventory Material	682,400
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	1,266,515

[a]Strontium-90 purchased under DRRD program.

Fabrication Summary

	Jan. 1976		CY 1976		FY 1976	
	No.	Ci	No.	Ci	No.	Ci
Sources						
Fabricated	0	0	0	0	0	0
Shipped	0	0	0	0	0	0
Special Form Cans						
Fabricated	0	0	0	0	0	0
Shipped	1	95	1	95	5	465

Short-Lived Fission Production (*R. W. Schaich*)
(Production and Inventory Accounts)

Isotope	Number of Batches	Amount (Ci)
Xenon-133	2	700
Zirconium/Niobium-95	1	2

RADIOISOTOPE SALES

J. E. Ratledge

A request was received from J. L. Shepherd and Associates for two 1500-Ci cesium-137 sources.

Shipments made during the month that may be of interest are listed below:

Customer	Isotope	Amount
Large Quantities		
New England Nuclear Corporation	Tritium	4,000 Ci
Schwarz/Mann	Tritium	2,000 Ci
Withdrawn Items		
Mine Safety and Appliance Company	Iodine-131	150 mCi
Cleveland General Hospital	Iodine-131	50 mCi
Items Used in Cooperative Programs		
ORAU	Dysprosium-157	210 mCi
George Washington University	Platinum-195m	25 mCi

The radioisotope sales and shipments for the first seven months of FY 1975 and FY 1976 are given in Table 2.

Table 2. Radioisotope Sales and Shipments

Item	7-1-74 thru 1-18-75	7-1-75 thru 1-31-76
Inventory items	$ 236,863	$ 169,224
Major products	25,925	27,255
Radioisotope services	69,393	63,616
Cyclotron irradiations	55,280	79,729
Miscellaneous processed materials	69,023	33,272
Packing and Shipping	41,515	54,518
Total	$ 497,999	$ 427,614
Number of Shipments	863	954

PUBLICATIONS

REPORTS

E. Lamb, *Radioisotope Distribution Program Progress Report for December 1975*, ORNL/TM-5342, Oak Ridge National Laboratory (March 1976).

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