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Radioisotope Distribution Program Progress Report for February 1975

J. H. Gillette

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ORNL-TM-4893

Contract No. W-7405-eng-26

ISOTOPES DEVELOPMENT CENTER

RADIOISOTOPE DISTRIBUTION PROGRAM PROGRESS REPORT FOR FEBRUARY 1975

J. H. Gillette

Work Sponsored by
ERDA Division of Biomedical and
Environmental Research

APRIL 1975

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RADIOISOTOPE DISTRIBUTION PROGRAM PROGRESS REPORT FOR FEBRUARY 1975

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RADIOISOTOPE PRODUCTION AND MATERIALS DEVELOPMENT

REACTOR-PRODUCED RADIOISOTOPES

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

Processed Units	
Radioisotope	Amount (mCi)
Copper-67	61
Calcium-47	18

ACCELERATOR-PRODUCED ISOTOPES

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

February 1975 ORNL 86-Inch Cyclotron runs for ORNL and non-ORNL programs are given in Table 1.

Table 1. Cyclotron Irradiations and Runs for February 1975

Date	Customer	Product	Target	Total Time (hr:min)	Total Charges
		ORNL Programs			
2-24-75	Isotopes Division	Thallium-201	Thallium	2:15	$ 221
2-26-75	ORAU	Carbon-11	Boron Oxide	7:15	696
				9:30	$ 917
		Non-ORNL Programs			
2-12-75	International Chemical and Nuclear Corp.	Cobalt-57	Nickel-58	49:15	$ 8,139
		Isotopes Sales Inventory			
2-21-75	Isotopes Sales Department	Cobalt-57	Nickel	46:00	$ 6,677

FISSION PRODUCTS

Krypton-85 Enrichment *(R. J. Lauer)*

Krypton-85 Columns

The middle sheath of calrod No. 27 in column A was found to leak helium at 12 psig from tube No. 27 to the cell atmosphere. To avoid further delay in getting the system into operation, it was decided to bypass tube calrod assembly No. 27 by joining the bottom of the adjacent calrod assembly No. 12 to the bottom of No. 4 radiation monitor. The wire to calrod No. 27 was removed and isolated electrically. Column A was leak tested successfully, and the bakeout and conditioning of the three columns in Cell 4 is now in progress. The columns in Cell 2 are in the second week of the bakeout and conditioning run.

The chilled water system and cooling tower have been in operation for the past two weeks and to date are performing to design expectations.

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

Inventory Material	Amount (Ci)
Cesium-137 chloride powder	0
Sources in fabrication	0
Completed sources and special form cans	11,625[a]
Total Inventory Material	11,625
Non-Inventory Material	
Material returned or stored for customer	
Puerto Rico sources	8,590
Lockheed	28,500
AECL powder	98,778
Radiation Resources	36,740
Minn. Mining & Mfg. Company	14,000
Gamma Industries	9,000
J. L. Shepherd	28,445
Total Non-Inventory Material	224,053
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	235,678

[a]Includes 6,330 Ci unclaimed sources and 5,295 Ci stock powder cans.

Fabrication Summary

	Feb. 1975		CY 1975		FY 1975	
	No.	Ci	No.	Ci	No.	Ci
Sources						
Fabricated	13	371	13	371	38	32,463
Shipped	13	371	13	371	38	32,463
Special Form Cans						
Fabricated	0	0	0	0	23	37,710
Shipped	2	49	4	2,049	10	4,169

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 DWMT Decommission Program. The ^{90}Sr powder was removed from the FPDL, encapsulated, and stored for future orders.

Product Inventory

Inventory Material	Amount (Ci)
^{90}Sr titanate powder (±5%)	487,360
Sources in fabrication	0
RCA source	60,650
^{90}Sr silicate powder	29,650
Stock powder cans	5,500
Total Inventory Material	583,160

Non-Inventory Material	Amount (Ci)
FPDL recovery material	19,200
Quehanna recovery material	46,680
Weather Bureau source	12,400
SNAP-7B	169,730
SNAP-7C	26,660
SNAP-7D	155,280
SNAP material purchase[a]	269,630
Total Non-Inventory Material	699,580
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	1,282,740

[a]Strontium-90 purchased under DRRD program.

Fabrication Summary

	Feb. 1975		CY 1975		FY 1975	
	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	0	0	0	0	3	540

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

Isotope	Number of Batches	Amount (Ci)
Xenon-133	2	700
Iodine-131	1	60
Yttrium-91	1	4

RADIOISOTOPE SALES

J. E. Ratledge

An order was received from New England Nuclear Corporation for 721 mCi of ^{33}P to be delivered at the rate of 120 mCi every six weeks. An order was received from Radium-Chemie Ltd., Switzerland, for 1,000 Ci of ^{147}Pm as oxide. We also received an order from General Electric Company for 435 Ci of ^{133}Xe with an optional requirement of 260 Ci more for shipment during the month of April 1975. An order was received from The Radiochemical Centre, England for 26,000 Ci of tritium gas.

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

Customer	Isotope	Amount
Large Quantities		
Technical Operations	Cesium-137	371 Ci
New England Nuclear Corporation	Tritium	2,000 Ci
Self-Powered Lighting Limited	Tritium	2,000 Ci
Saunders-Roe Development Limited	Tritium	5,000 Ci
Radium-Chemie A Zeller & Co	Tritium	10,000 Ci

Customer	Isotope	Amount
Withdrawn Items		
Cleveland Metropolitan General Hospital	Iodine-131	50 mCi
Mine Safety and Appliance Company	Iodine-131	100 mCi
University of Rochester	Iodine-131	150 mCi
University of California, Berkeley	Iodine-131	30 mCi
National Institutes of Health	Copper-67	12 mCi
Mayo Clinic	Copper-67	24 mCi
Items Used in Cooperative Programs		
Cinncinnati General Hospital	Potassium-43	6.2 mCi
Temple University	Potassium-43	84.0 mCi
Yale-New Haven Medical Center	Potassium-43	84.8 mCi
University of Maryland Hospital	Potassium-43	52.1 mCi
University of Texas Medical Branch	Potassium-43	82.5 mCi
Johns Hopkins Medical Institutions	Potassium-43	83.3 mCi
University of Mississippi Medical Center	Potassium-43	53.3 mCi
ORAU	Dysprosium-157	~7 mCi
University of California, San Francisco	Gadolinium-153	2 Ci
ORNL, Biology Division	Chromium-51	25 mCi
ORNL, Biology Division	Ruthenium-103	60 μCi

The radioisotopes sales proceeds and shipments for the first eight months of FY 1974 and FY 1975 are given in Table 2.

Table 2. Radioisotope Sales and Shipments

Item	7-1-73 thru 2-28-74	7-1-74 thru 2-28-75
Inventory items	$ 342,804	$ 263,597
Major products	52,850	32,340
Radioisotope services	196,496	84,193
Cyclotron irradiations	76,040	57,450
Miscellaneous processed materials	45,241	78,592
Packing and Shipping	55,142	48,500
Total	$ 768,573	$ 564,672
Number of shipments	1,373	1,018

PUBLICATIONS

REPORTS

J. H. Gillette, *Radioisotope Distribution Program Progress Report for January 1975*, ORNL-TM-4851, Oak Ridge National Laboratory (March 1975).

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