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Radioisotope Distribution Program Progress Report for April 1975

J. H. Gillette



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ISOTOPES DEVELOPMENT CENTER

RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR APRIL 1975

J. H. Gillette

Work Sponsored by
ERDA Division of Biomedical and
Environmental Research

JULY 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	24
Calcium-47	19

ACCELERATOR-PRODUCED ISOTOPES

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

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

Table 1. Cyclotron Irradiations and Runs for April 1975

Date	Customer	Product	Target	Total Time (hr:min)	Total Charges
<u>ORNL Programs</u>					
3-20-75	ORAU	Carbon-11	Boron Oxide	4:50	\$ 459
4- 3-75	ORAU	Carbon-11	Boron Oxide	4:30	428
4- 4-75	ORAU	Carbon-11	Boron Oxide	4:15	411
4-14-75	Cyclotron	Beam Location		1:30	
4-14-75	Cyclotron	Beam Location		1:30	
				16:35	\$ 1,298
<u>Non-ORNL Programs</u>					
4-11-75	New England Nuclear Corporation	Cobalt-57	Nickel-58	51:15	\$ 7,314
<u>Isotopes Sales Inventory</u>					
4-17-75	Isotopes Sales Dept.	Cobalt-57	Nickel	51:15	\$ 7,412

Cyclotron Operations

The water used to cool the cyclotron is demineralized water in a closed system which is, in turn, cooled by heat exchangers. In the past, the 5000-gallon storage tank in the system has been vented into the utility area. To avoid the possibility of release of short-lived radionuclides in the utility area, the vent has been connected to the pit exhaust system which exhausts through absolute filters and a stack on the roof of the building.

FISSION PRODUCTS

Krypton-85 Enrichment (*S. E. Gheesling*)

Krypton-85 Columns

Additional testing of the entire system was performed in an effort to determine if the heat cycle was responsible for leaks which developed during the final simulated run. No additional leaks were found after a series of tests.

A volume check is being performed to determine the volume of all components before initial loading scheduled for May 8, 1975.

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

<u>Inventory Material</u>	<u>Amount (Ci)</u>
Cesium-137 chloride powder	0
Sources in fabrication	0
Completed sources and special form cans	<u>11,625^a</u>
<u>Total Inventory Material</u>	<u>11,625</u>

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	<u>28,445</u>
<u>Total Non-Inventory Material</u>	<u>224,053</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	235,678

^aIncludes 6330 Ci unclaimed sources and 5295 Ci stock powder cans.

Fabrication Summary

	<u>Apr. 1975</u>		<u>CY 1975</u>		<u>FY 1975</u>	
	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>
Sources						
Fabricated	0	0	13	371	38	32,463
Shipped	0	0	13	371	38	32,463
Special Form Cans						
Fabricated	0	0	0	0	23	37,710
Shipped	0	0	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. Schleich*)
(Production and Inventory Accounts)

1. Process Status

The ⁹⁰Sr process and manipulator cells are being decontaminated under the DWMT Decommission Program. The ⁹⁰Sr powder was removed from the FPD, encapsulated, and stored for future orders.

Product Inventory

<u>Inventory Material</u>	<u>Amount (Ci)</u>
⁹⁰ Sr titanate powder (±5%)	487,360
Sources in fabrication	0
RCA source	60,650
⁹⁰ Sr silicate powder	29,650
Stock powder cans	<u>5,500</u>
<u>Total Inventory Material</u>	<u>583,160</u>
<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
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	<u>269,630</u>
<u>Total Non-Inventory Material</u>	<u>699,580</u>
<u>TOTAL INVENTORY AND NON-INVENTORY MATERIAL</u>	<u>1,282,740</u>

^aStrontium-90 purchased under DRRD program.

Fabrication Summary

	<u>Apr. 1975</u>		<u>CY 1975</u>		<u>FY 1975</u>	
	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>
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)

<u>Isotope</u>	<u>Number of Batches</u>	<u>Amount (Ci)</u>
Xenon-133	4	1400
Iodine-131	1	48

RADIOISOTOPE SALES

J. E. Ratledge

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

<u>Customer</u>	<u>Isotope</u>	<u>Amount</u>
<u>Large Quantities</u>		
General Electric Company	Xenon-133	~1,100 Ci
New England Nuclear Corporation	Tritium	1,000 Ci
Radiochemical Centre, England	Tritium	6,000 Ci
Saunders Roe Development Limited	Tritium	5,000 Ci
Self-Powered Lighting Limited	Tritium	2,000 Ci
<u>Withdrawn Items</u>		
General Electric Company	Molybdenum-99	~20,000 Ci
University of Rochester	Iodine-131	150 mCi
Cleveland Metropolitan General Hospital	Iodine-131	365 mCi
University of California, Berkeley	Iodine-131	30 mCi
Mayo Clinic	Copper-67	34.8 mCi
National Institutes of Health	Copper-67	1.5 mCi
Brookhaven National Laboratory	Carbon-14 Targets	1.4 mCi
<u>Items Used in Cooperative Programs</u>		
Johns Hopkins Medical Institutions	Potassium-43	119 mCi
University of Maryland Hospital	Potassium-43	115.6 mCi
University of Texas Medical Branch	Potassium-43	119.6 mCi
Yale-New Haven Medical Center	Potassium-43	117.7 mCi
Temple University	Potassium-43	121.5 mCi
University of Mississippi Medical Center	Potassium-43	116.3 mCi
College of Medicine & Dentistry of New Jersey	Potassium-43	25 mCi
ORAU	Dysprosium-157	107 mCi
University of California, Los Angeles	Gadolinium-153	4.7 Ci
University of Southern California	Platinum-195m	14 mCi

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

Table 2. Radioisotope Sales and Shipments

Item	7-1-73 thru 4-30-74	7-1-74 thru 4-30-75
Inventory items	\$ 385,231	\$ 317,453
Major products	57,310	84,375
Radioisotope services	216,170	92,453
Cyclotron irradiations	84,747	84,257
Miscellaneous processed materials	54,161	107,250
Packing and Shipping	<u>60,917</u>	<u>62,520</u>
Total	\$ 858,536	\$ 748,308
Number of shipments	1,507	1,319

PUBLICATIONS

REPORTS

J. H. Gillette, *Radioisotope Distribution Program Progress Report for March 1975*, ORNL-TM-4937, Oak Ridge National Laboratory (April 1975).

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