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J. H. Gillette

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ISOTOPES DEVELOPMENT CENTER

RADIOISOTOPE DISTRIBUTION PROGRAM PROGRESS REPORT FOR MARCH 1974

J. H. Gillette

Work Sponsored by
AEC Division of Biomedical and
Environmental Research

MAY 1974

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RADIOISOTOPE DISTRIBUTION PROGRAM PROGRESS REPORT FOR MARCH 1974

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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)
Calcium-47	53
Copper-67	21

ACCELERATOR-PRODUCED ISOTOPES

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

March 1974 ORNL 86-Inch Cyclotron runs for ORNL and non-ORNL programs are given in Table 1.

Table 1. Cyclotron Irradiations and Runs for March 1974

Date	Customer	Product	Target	Total Time (hr:min)	Total Charges
		ORNL Programs			
3-18-74	Isotopes Division	Vanadium-48	Titanium	1:40	$ 166
3-18-74	Isotopes Division	Chromium-51	Vanadium	1:15	126
3-18-74	Isotopes Division	Thulium-168, -170	Erbium	1:40	165
3-19-74	Isotopes Division	Tungsten-181	Tantalum	1:40	165
				6:15	$ 622
		Non-ORNL Programs			
2-19-74	New England Nuclear Corp.	Cobalt-57	Nickel-58	51:15	$7314
3-6-74	New England Nuclear Corp.	Titanium-44	Scandium	11:15	1782
				62:30	$9096
		Sales Department Inventory			
3-1-74	Isotopes Sales	Cobalt-57	Nickel	51:15	$7412

FISSION PRODUCTS

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

The six bundles of columns are fabricated. A hot water flush to remove solder flux is in progress. The fabrication of the four new counting chambers is approximately 95% complete.

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 products	292,094
Sources in fabrication	117,000
Completed sources and special form cans	147,250[a]
Total Inventory Material	556,344
Non-Inventory Material	
Material returned or stored for customer	
Puerto Rico sources	8,760
Lockheed	29,050
AECL powder	86,360
Radiation Resources	37,450
Total Non-Inventory Material	161,620
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	717,964

[a]Includes 6400 Ci unclaimed sources, 24,350 Ci special form containers, and 116,500 Ci for Isomedix.

Fabrication Summary

	March 1974		CY 1974		FY 1974	
	No.	Ci	No.	Ci	No.	Ci
Sources						
Fabricated	15	116,500	19	116,600	44	138,755
Shipped	0	0	11	7,714	29	22,255
Special Form Cans						
Fabricated	2	24,350	2	24,350	4	25,150
Shipped	0	0	0	0	2	800

3. Current Orders

Current orders for ^{137}Cs as sources or bulk powder are as follows:

Customer	Amount (Ci)	Estimated Shipping Date
3M Company	300	a
Isomedix Corporation	204,000	May 1974
Industrial Nucleonics Corporation	40	July 1974
Sandia Corporation	200,001	June 1974
Technical Operations, Inc.	25	July 1974

[a]Holding for request for shipment.

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

1. Process Status

The FPDL operations were placed on a straight-day-shift basis to conserve manpower and energy. Strontium-90 processing was continued and ∿0.15 MCi of ^{90}Sr feed solution was converted to distrontium titanate.

Three ^{90}Sr heat sources containing 153,170 Ci were fabricated for Teledyne Isotopes. The sources were plasma arc welded, helium leak tested, loaded into Teledyne generators, and shipped on schedule.

Product Inventory

Inventory Material	Amount (Ci)
Feed solution (±25%)	440,000
Sources in fabrication	0
^{90}Sr products	115,000
"AGN" liners	145,500
SNAP-7F sources	115,200
RCA source	62,400
^{90}Sr silicate powder	30,500
Recovery material	25,400
Stock powder cans	6,200
Total	940,200
Less SNAP material purchase[a]	277,400
Total Inventory Material	662,800

Non-Inventory Material

Quehanna recovery material	47,800
Weather Bureau source	12,700
SNAP-7B	173,800
SNAP-7C	27,300
SNAP-7D	159,000
URIPS (billed at 221,000 Ci)	216,000
SNAP material purchase	277,400
Total Non-Inventory Material	914,000
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	1,576,800

[a]Strontium-90 purchased under DRRD program and retained in solution form.

Fabrication Summary

	March 1974		CY 1974		FY 1974	
	No.	Ci	No.	Ci	No.	Ci
Sources						
Fabricated	3	153,170	3	153,170	4	198,870
Shipped	3	153,170	3	153,170	4	198,870
Special Form Cans						
Fabricated	0	0	0	0	0	0
Shipped	0	0	0	0	0	0

3. Current Orders

Customer	Amount (Ci)	Estimated Shipping Date
U. S. Navy	221,000	April 1974
New England Nuclear Corporation	9	April 1974

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

Isotope	Number of Batches	Amount (Ci)
Xenon-133	2	700
Iodine-131	1	24
Ruthenium-103	1	45
Zirconium-95	1	13
Cerium-141-144	1	29

RADIOISOTOPE SALES

J. E. Ratledge

An order was received from Sandia Corporation for 200,001 curies of ^{137}Cs as twenty-five encapsulated sources. A request for quotation was received from Rohstoff-Einfuhr GmbH, Germany, for 200 kilocuries of tritium as gas. We presently have on hand unfilled orders totaling 226 curies of normal ^{85}Kr and 180 curies of enriched ^{85}Kr.

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

Customer	Isotope	Amount
Large Quantities		
New England Nuclear Corporation	Hydrogen-3	8,000 Ci
U. S. Radium Corporation	Hydrogen-3	10,000 Ci
Teledyne Isotopes, Inc.	Strontium-90	153,170 Ci
Air Reduction Company	Krypton-85	67 Ci
New England Nuclear Corporation	Krypton-85	50 Ci
American Atomics Corporation	Krypton-85	55.8 Ci
Withdrawn Items		
University of Arizona	Copper-67	6.5 mCi
Mayo Clinic	Copper-67	19.5 mCi
University of Alabama	Copper-67	6.5 mCi
University of Rochester	Iodine-131	350 mCi
University of Pittsburgh	Iodine-131	50 mCi
Items Used in Cooperative Programs		
National Institutes of Health	Potassium-43	20 mCi

The radioisotopes sales proceeds and shipments for the first eight months of FY 1973 and FY 1974 are given in Table 2.

Table 2. Radioisotope Sales and Shipments

Item	7-1-72 thru 2-28-73	7-1-73 thru 2-28-74
Inventory items	$362,135	$342,804
Major products	42,411	52,850
Radioisotope services	150,105	196,496
ORNL 86-Inch Cyclotron	84,450	76,040
Miscellaneous processed materials	42,805	45,241
Packing and shipping	51,888	55,142
Total	$733,794	$768,573
Number of shipments	1,621	1,373

PUBLICATIONS

REPORTS

J. H. Gillette, *Radioisotope Program Progress Report for February 1974*, ORNL-TM-4537, Oak Ridge National Laboratory.

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