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Radioisotope Distribution Program Progress Report for July 1977

E. Lamb

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OAK RIDGE NATIONAL LABORATORY
OPERATED BY UNION CARBIDE CORPORATION FOR THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

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RADIOISOTOPE DISTRIBUTION PROGRAM PROGRESS REPORT FOR JULY 1977

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E. Lamb

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OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee 37830
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CONTENTS

	Page
SUMMARY	1
RADIOISOTOPE PRODUCTION AND MATERIALS DEVELOPMENT	1
REACTOR-PRODUCED RADIOISOTOPES	1
Reactor Products Pilot Production	1
ACCELERATOR-PRODUCED ISOTOPES	1
Cyclotron Products Pilot Production	1
FISSION PRODUCTS	2
Krypton-85 Enrichment Facility	2
Cesium-137 Pilot Production	2
Strontium-90 Pilot Production	3
Short-Lived Fission Production	4
RADIOISOTOPE SALES	4
PUBLICATIONS	5
REPORTS	5

RADIOISOTOPE DISTRIBUTION PROGRAM PROGRESS REPORT FOR JULY 1977

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SUMMARY

Information is reported on new production, inventory status, operational problems, and radioisotope sales.

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	19

ACCELERATOR-PRODUCED ISOTOPES

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

July 1977 ORNL 86-Inch Cyclotron runs for ORNL and non-ORNL programs are given in Table 1.

Table 1. Cyclotron Irradiations and Runs for July 1977

Date	Customer	Product	Target	Total Time (hr:min)	Total Charges
		ORNL Programs			
7- 5-77	ORAU	Carbon-11	Boron Oxide	3:40	$ 448
7- 6-77	ORAU	Carbon-11	Boron Oxide	5:10	616
7-26-77	ORAU	Carbon-11	Boron Oxide	4:40	563
7-26-77	Ken Poggenburg, ORNL	Tellurium-123	Antimony	3:15	
7-28-77	ORAU	Carbon-11	Boron Oxide	3:15	400
				20:00	$ 2,027
		Non-ORNL Programs			
7- 3-77	New England Nuclear	Cobalt-57	Nickel-58	51:15	$ 9,090
7- 7-77	E. I. duPont	Technetium-95m	Molybdenum	2:15	480
7-12-77	New England Nuclear	Gallium-67	Zinc-68	49:15	7,580
7-19-77	New England Nuclear	Gallium-67	Zinc-68	25:15	3,980
7-22-77	New England Nuclear	Cobalt-57	Nickel-58	51:15	9,275
7-28-77	New England Nuclear	Gold-195	Platinum	11:15	2,640
				190:30	$32,995
		Isotopes Sales Inventory			
7-15-77	Isotopes Sales	Cobalt-57	Nickel	51:15	$ 8,977

Cyclotron Operations

A malfunctioning of one of three current limiters in the oscillator system was the cause of having to operate the cyclotron at a reduced beam current. The rectifiers in cubicle 94 in the oscillator system had to be replaced.

FISSION PRODUCTS

Krypton-85 Enrichment Facility *(R. W. Schaich)*

The ^{85}Kr enrichment columns were operative during the month of July, and all systems were functioning according to design. The south bank of three columns are scheduled to be unloaded during September, 1977. Expected yield on one of these columns should be >20% enrichment in ^{85}Kr.

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

1. Process Status

A Hanford WESF capsule containing approximately 70,000 curies of $^{137}CsCl$ was processed this month for J. L. Shepherd & Associates. A total of 66,450 curies was recovered by the purification procedure and the product was considered excellent material for ^{137}Cs source fabrication.

2. Operational Summary

Product Inventory

(Decay calculated through August 31, 1977)

Inventory Material	Amount (Ci)
Cesium-137 chloride powder	34,600
Total Inventory Material	34,600

Non-Inventory Material	Amount (Ci)
Special Form cans	4,400
Material returned or stored for customer	
J. L. Shepherd	50,600
New England Nuclear Corporation	2,600
Puerto Rico sources	7,900
Lockheed	19,600
AECL powder	71,500
Radiation Resources	19,200
Minn. Mining & Mfg. Company	3,600
Gamma Industries	8,400
Total Non-Inventory Material	187,800
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	222,400

Fabrication Summary

	July 1977		CY 1977		FY 1977	
	No.	Ci	No.	Ci	No.	Ci
Sources						
Fabricated	0	0	5	15,846	22	16,146
Shipped	0	0	8	34,475	67	49,413
Special Form Cans						
Fabricated	0	0	0	0	0	0
Shipped	3	300	12	5,450	12	5,450

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 fabrication of three Sentinel-8 generators for Teledyne Energy Systems is in progress. Generator loading is scheduled for mid-August.

Product Inventory

(Decay calculated through August 31, 1977)

Inventory Material	Amount (Ci)
^{90}Sr titanate powder (±5%)	0
Sources in fabrication	160,000
Stock powder cans	3,700
Total Inventory Material	163,700

Non-Inventory Material	Amount (Ci)
Batch 26Sr-74RE	7,900
Calorimeter Standards	4,800
Weather Bureau source	11,400
SNAP-7B	156,300
SNAP-7C	24,600
SNAP-7D	143,000
SNAP material purchase[a]	248,300
AGN-4	40,500
Total Non-Inventory Material	636,800
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	800,500

[a]Strontium-90 purchased under DRRD program.

Fabrication Summary

	July 1977		CY 1977		FY 1977	
	No.	Ci	No.	Ci	No.	Ci
Sources						
Fabricated	0	0	0	0	0	0
Shipped	0	0	1	20,000	1	20,000
Special Form Cans						
Fabricated	0	0	0	0	0	0
Shipped	0	0	2	20	2	20

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

Isotope	Number of Batches	Amount (Ci)
Xenon-133	2	1500
Strontium-89	1	14
Ruthenium-103	1	16
Zirconium/Niobium-95	1	10
Barium/Lanthanum-140	1	27

RADIOISOTOPE SALES

J. E. Ratledge

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

Customer	Isotope	Amount
Large Quantities		
New England Nuclear Corporation	Tritium	10,000 Ci
ICN Pharmaceuticals	Tritium	2,000 Ci
Self-Powered Lighting	Tritium	3,000 Ci
American Atomics Corporation	Tritium	29,000 Ci
Schwarz/Mann	Tritium	2,000 Ci
U.S. Radium Corporation	Tritium	10,000 Ci
Withdrawn Items		
Cleveland Metropolitan General Hospital	Iodine-131	50 mCi
Items Used in Cooperative Programs		
University of Kentucky	Platinum-195m	∿5 mCi

The radioisotope sales and shipments for October 1975 through July 1976 and the first ten months of fiscal year 1977 are given in Table 2.

Table 2. Radioisotope Sales and Shipments

Item	10-1-75 thru 7-31-76	10-1-76 thru 7-31-77
Inventory items	$ 266,099	$ 359,314
Major products	54,010	92,308
Radioisotope services	111,786	88,802
Cyclotron irradiations	176,945	209,831
Miscellaneous processed materials	48,947	56,348
Packing and shipping	109,712	160,069
Total	$ 767,499	$ 966,672
Number of shipments	1,492	2,010

PUBLICATIONS

REPORTS

E. Lamb, *Radioisotope Distribution Program Progress Report for June 1977*, ORNL/TM-6004, Oak Ridge National Laboratory (July 1977).

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1. E. E. Beauchamp
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