ORNL/TM-5748

Radioisotope Distribution Program Progress Report for November 1976

E. Lamb

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

ORNL/TM-5748

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OPERATIONS DIVISION

RADIOISOTOPE DISTRIBUTION PROGRAM PROGRESS REPORT FOR NOVEMBER 1976

E. Lamb

Work Sponsored by
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Oak Ridge, Tennessee 37830
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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	18

ACCELERATOR-PRODUCED ISOTOPES

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

November 1976 ORNL 86-Inch Cyclotron runs for ORNL and non-ORNL programs are given in Table 1.

Table 1. Cyclotron Irradiations and Runs for November 1976

Date	Customer	Product	Target	Total Time (hr:min)	Total Charges
		ORNL Programs			
11-17-76	ORAU	Carbon-11	Boron Oxide	3:15	$ 400
		Non-ORNL Programs			
	New England Nuclear	Gallium-67	Zinc-68	5:15	$ 980
11- 3-76	New England Nuclear	Gallium-67	Zinc-68	25:15	3,980
11- 5-76	General Motors Research Labs.	Rhodium-99	Ruthenium-99	3:15	1,076
11- 9-76	New England Nuclear	Gallium-67	Zinc-68	43:15	6,680
11-11-76	New England Nuclear	Cobalt-57	Nickel-58	51:15	9,060
11-16-76	New England Nuclear	Gallium-67	Zinc-68	47:15	7,280
11-23-76	New England Nuclear	Gallium-67	Zinc-68	47:15	7,280
11-30-76	New England Nuclear	Gallium-67	Zinc-68	41:45	6,455
				264:30	$42,891

Cyclotron Operations

In addition to normal routine maintenance, the oscillator tube which had operated 2,855 hours was replaced. The tube was good but was replaced for precautionary reasons to prevent having to interrupt a run due to an oscillator tube failure.

Visitors

Fred Fulton and Bill Holman of the University of California, Lawrence Livermore Laboratory, Livermore, California, visited the cyclotron facilities and discussed the subject of accelerator-produced ^{235}Np.

FISSION PRODUCTS

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

The ^{85}Kr enrichment columns operated satisfactorily during the month of November. Unloading operations will be initiated in December 1976. Design changes and operational approvals have delayed the unloading schedule.

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

1. Process Status

Process equipment is in standby status.

2. Operational Summary

Product Inventory

(Decay calculated through August 31, 1976)

Inventory Material	Amount (Ci)
Cesium-137 chloride powder	36,560
Total Inventory Material	36,560

Non-Inventory Material	Amount (Ci)
Special Form cans	4,500
Material returned or stored for customer	
New England Nuclear Corporation	3,500
Puerto Rico sources	8,100
Lockheed	20,100
AECL powder	73,200
Radiation Resources	19,700
Minn. Mining & Mfg. Company	8,500
Gamma Industries	8,600
J. L. Shepherd	14,100
Total Non-Inventory Material	160,300
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	196,860

Fabrication Summary

	Nov. 1976		CY 1976		FY 1977	
	No.	Ci	No.	Ci	No.	Ci
Sources						
Fabricated	2	10	10	3,300	17	300
Shipped	44	14,650	61	17,940	59	14,940
Special Form Cans						
Fabricated	0	0	42	4,200	0	0
Shipped	0	0	11	1,720	0	0

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

A 20,000 curie ^{90}Sr heat source was fabricated in November for SNAM Progetti, Italy. Shipment has been delayed until December, 1976 due to boat booking.

Product Inventory

(Decay calculated through August 31, 1976)

Inventory Material	Amount (Ci)
^{90}Sr titanate powder (±5%)	77,000
Sources in fabrication	20,000
RCA source	57,300
^{90}Sr silicate powder (est.)	28,000
Stock powder cans	3,790
Total Inventory Material	186,090

Non-Inventory Material	Amount (Ci)
Calorimeter Standards	4,900
FPDL recovery material	19,700
Quehanna recovery material	44,000
Weather Bureau source	11,700
SNAP-7B	160,200
SNAP-7C	25,200
SNAP-7D	146,600
SNAP material purchase[a]	254,500
Total Non-Inventory Material	666,800
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	852,890

[a]Strontium-90 purchased under DRRD program.

Fabrication Summary

	Nov. 1976		CY 1976		FY 1977	
	No.	Ci	No.	Ci	No.	Ci
Sources						
Fabricated	0	0	3	343,800	0	0
Shipped	0	0	3	343,800	0	0
Special Form Cans						
Fabricated	0	0	0	0	0	0
Shipped	0	0	7	344	1	10

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

Isotope	Number of Batches	Amount (Ci)
Xenon-133	3	1765
Iodine-131	1	10

RADIOISOTOPE SALES

J. E. Ratledge

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

Customer	Isotope	Amount
Large Quantities		
ICN Pharmaceuticals	Tritium	1,000 Ci
New England Nuclear Corporation	Tritium	6,000 Ci
Withdrawn Items		
ORNL	Iodine-131	174 mCi
Cleveland Metropolitan General Hospital	Iodine-131	50 mCi
Microbiological Associates	Carbon-14	30 μCi

The radioisotope sales and shipments for the months of October and November 1975 and the first two months of fiscal year 1977 are given in Table 2.

Table 2. Radioisotope Sales and Shipments

Item	10-1-75 thru 11-30-75	10-1-76 thru 11-30-76
Inventory items	$ 49,341	$ 46,644
Major products	7,300	16,089
Radioisotope services	5,050	41,286
Cyclotron irradiations	48,214	75,532
Miscellaneous processed materials	10,379	14,789
Packing and Shipping	14,110	30,179
Total	$ 134,394	$ 224,519
Number of shipments	281	385

PUBLICATIONS

REPORTS

E. Lamb, *Radioisotope Distribution Program Progress Report for October 1976*, ORNL/TM-5727, Oak Ridge National Laboratory (December 1976).

ORNL/TM-5748

INTERNAL DISTRIBUTION

1. E. E. Beauchamp
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16. R. W. Schaich
17. M. R. Skidmore
18. M. J. Skinner
19-20. Central Research Library
21-22. Laboratory Records Department
23. Laboratory Records - RC
24. Document Reference Section

EXTERNAL DISTRIBUTION

25. B. J. Dropesky, LASL, Los Alamos, New Mexico
26-27. J. H. Jarrett, PNL, Richland, Washington
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30. H. A. O'Brien, LASL, Los Alamos, New Mexico
31. F. J. Skozen (Krizek), Argonne Cancer Research Hospital, Chicago, Ill.
32. L. G. Stang, Jr., BNL, New York
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37-38. Technical Information Center