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ORNL/TM-5748

**Radioisotope Distribution Program
Progress Report for November 1976**

(E. Lamb)

OAK RIDGE NATIONAL LABORATORY

OPERATED BY UNION CARBIDE CORPORATION FOR THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

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OPERATIONS DIVISION

RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR NOVEMBER 1976

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E. Lamb

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OAK RIDGE NATIONAL LABORATORY
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RADIOISOTOPE PRODUCTION AND MATERIALS DEVELOPMENT

REACTOR-PRODUCED RADIOISOTOPES

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

<u>Processed Units</u>	
<u>Radioisotope</u>	<u>Amount (mCi)</u>
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

<u>Date</u>	<u>Customer</u>	<u>Product</u>	<u>Target</u>	<u>Total Time (hr:min)</u>	<u>Total Charges</u>
<u>ORNL Programs</u>					
11-17-76	ORAU	Carbon-11	Boron Oxide	3:15	\$ 400
<u>Non-ORNL Programs</u>					
	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)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
Cesium-137 chloride powder	36,560
<u>Total Inventory Material</u>	<u>36,560</u>
<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
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
<u>Total Non-Inventory Material</u>	<u>160,300</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	196,860

Fabrication Summary

	<u>Nov. 1976</u>		<u>CY 1976</u>		<u>FY 1977</u>	
	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>
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 ⁹⁰Sr 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)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
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
<u>Total Inventory Material</u>	<u>186,090</u>
<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
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
<u>Total Non-Inventory Material</u>	<u>666,800</u>
<u>TOTAL INVENTORY AND NON-INVENTORY MATERIAL</u>	<u>852,890</u>

^aStrontium-90 purchased under DRRD program.

Fabrication Summary

	<u>Nov. 1976</u>		<u>CY 1976</u>		<u>FY 1977</u>	
	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>
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. Schuich*)
(Production and Inventory Accounts)

<u>Isotope</u>	<u>Number of Batches</u>	<u>Amount (Ci)</u>
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:

<u>Customer</u>	<u>Isotope</u>	<u>Amount</u>
<u>Large Quantities</u>		
UN Pharmaceuticals	Tritium	1,000 Ci
New England Nuclear Corporation	Tritium	6,000 Ci

<u>Withdrawn Items</u>		
ORNL	Iodine-131	174 mCi
Cleveland Metropolitan General Hospital	Iodine-131	50 mCi
Microbiological Associates	Carbon-14	30 μ Ci

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).

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