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Radioisotope Distribution Program Progress Report for July 1976

E. Lamb



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OPERATIONS DIVISION

RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR JULY 1976

E. Lamb

Work Sponsored by
ERDA Division of Biomedical and
Environmental Research

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RADIOISOTOPE DISTRIBUTION PROGRAM
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RADIOISOTOPE PRODUCTION AND MATERIALS DEVELOPMENT

REACTOR-PRODUCED RADIOISOTOPES

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

<u>Radioisotope</u>	<u>Processed Units</u> <u>Amount (mCi)</u>
Calcium-47	26

ACCELERATOR-PRODUCED ISOTOPES

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

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

Table 1. Cyclotron Irradiations and Runs for July 1976

Date	Customer	Product	Target	Total Time (hr:min)	Total Charges
<u>ORNL Programs</u>					
7- 2-76	Los Alamos Sci. Lab.	Cadmium-109	Silver	51:15	\$ 6,525
7- 6-76	ORAU	Carbon-11	Boron Oxide	6:15	750
7- 7-76	M. W. Poore, Y-12	Cobalt-56	Iron	6:15	976
7-13-76	ORAU	Carbon-11	Boron Oxide	5:45	692
7-17-76	Los Alamos Sci. Lab.	Cadmium-109	Silver	61:15	7,675
7-25-76	Los Alamos Sci. Lab.	Cadmium-109	Silver	61:15	7,675
7-27-76	ORAU	Carbon-11	Boron Oxide	<u>6:50</u>	<u>817</u>
				198:50	\$25,110
<u>Non-ORNL Programs</u>					
7- 8-76	New England Nuclear	Germanium-68	Gallium	13:15	\$ 2,279
7-14-76	New England Nuclear	Gallium-67	Zinc-68	25:15	3,980
7-21-76	New England Nuclear	Gallium-67	Zinc-68	33:35	5,680
7-28-76	New England Nuclear	Gallium-67	Zinc-68	26:15	4,130
7-29-76	New England Nuclear	Gallium-67	Zinc-68	11:15	1,880
7-30-76	New England Nuclear	Rubidium-84	Krypton-84	<u>5:15</u>	<u>1,305</u>
				114:50	\$19,254

Cyclotron Operations

During the month of July the cyclotron operated a total of 314 hours. On July 9, 1976, a bearing in the compressor which supplies cooling air for the oscillator failed. A 2-in. rubber hose was connected to the plant air, which was used two days for cooling the oscillator while the compressor was repaired. Normally plant air is not used due to the oil and water content. A ^{67}Ga run was interrupted by failure of a 1000 μf grid capacitor in the oscillator circuit on July 21, 1976. A ^{109}Cd run was interrupted on July 23, 1976, by the failure of contacts in a 460 VAC breaker in one of the high voltage power supplies for the oscillator. Preventive maintenance on all five power supplies for the oscillator was performed July 26, 1976. All the contacts in the 460 VAC breakers were replaced in the power supplies.

The electric repairs to the cyclotron are under the supervision of George M. Banic, Electrical Engineer, currently in the Chemical Technology Division and formerly with the Isotopes Division. Mr. Banic's extensive knowledge of the cyclotron components enabled us to limit the down time of any electrical failure this month to less than four hours and part of this four hours was for radiation cooling.

FISSION PRODUCTS

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

The ^{85}Kr enrichment columns operated satisfactorily during the month of July. Unloading operations will be initiated after the installation of a new unloading station. This station is being designed and should be in operation by September 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 April 30, 1975)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
In-Process	0
Cesium-137 chloride powder	37,820
Special form cans and Fabricated Sources	<u>4,580</u>
<u>Total Inventory Material</u>	<u>42,400</u>

<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
Material returned or stored for customer	
New England Nuclear Corporation	3,500
Puerto Rico sources	8,200
Lockheed	20,300
AECL powder	73,800
Radiation Resources	34,600
Minn. Mining & Mfg. Company	8,540
Gamma Industries	8,600
J. L. Shepherd	<u>13,400</u>
<u>Total Non-Inventory Material</u>	<u>170,940</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	213,340

Fabrication Summary

	<u>July 1976</u>		<u>CY 1976</u>		<u>FY 1976</u>	
	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>
Sources						
Fabricated	0	0	2	3,000	28	26,232
Shipped	0	0	2	3,000	18	24,032
Special Form Cans						
Fabricated	0	0	42	4,200	80	9,100
Shipped	4	1,260	8	1,660	41	8,782

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

Three ^{90}Sr heat sources containing $800 \text{ W}_t \pm 5\%$ are being fabricated for Teledyne-Isotopes. These units will be loaded into thermoelectric generators at the end of August 1976 and shipped to the customer.

Product Inventory

(Decay calculated through April 30, 1975)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
⁹⁰ Sr titanate powder (±5%)	136,000
Sources in fabrication	340,000
RCA source	57,800
⁹⁰ Sr silicate powder	28,200
Stock powder cans	<u>3,900</u>
<u>Total Inventory Material</u>	<u>565,900</u>
<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
FPDL recovery material	18,200
Quehanna recovery material	44,400
Weather Bureau source	11,800
SNAP-7B	161,500
SNAP-7C	25,400
SNAP-7D	147,800
SNAP material purchase ^a	<u>256,600</u>
<u>Total Non-Inventory Material</u>	<u>665,700</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	1,231,600

^aStrontium-90 purchased under DRRD program.Fabrication Summary

	<u>July 1976</u>		<u>CY 1976</u>		<u>FY 1976</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	1	100	6	334	10	704

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

<u>Isotope</u>	<u>Number of Batches</u>	<u>Amount (Ci)</u>
Iodine-131	1	50
Xenon-133	3	2080
Niobium-95	1	15

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>		
American Atomics	Tritium	8,000 Ci
New England Nuclear Corporation	Tritium	6,000 Ci
Self-Powered Lighting	Tritium	1,000 Ci
Schwarz/Mann	Tritium	1,500 Ci
<u>Withdrawn Items</u>		
Cleveland Metropolitan General Hospital	Iodine-131	50 mCi
Southwest Research Foundation for Research and Education	Carbon-14	1.64 mCi
<u>Items Used in Cooperative Programs</u>		
University of Southern California	Platinum-195m	14 mCi

The radioisotope sales and shipments for the month of July 1975 and July 1976 are given in Table 2.

Table 2. Radioisotope Sales and Shipments

Item	7-1-75 thru 7-31-75	7-1-76 thru 7-31-76
Inventory items	\$ 13,469	\$ 19,662
Major products	5,080	8,225
Radioisotope services	1,850	144
Cyclotron irradiations	11,939	23,968
Miscellaneous processed materials	6,326	5,506
Packing and shipping	6,638	14,320
Total	\$ 45,302	\$ 71,825
Number of shipments	144	178

PUBLICATIONS

REPORTS

E. Lamb, *Radioisotope Distribution Program Progress Report for June 1976*, ORNL/TM-5601, Oak Ridge National Laboratory (August 1976).



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