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Radioisotope Distribution Program Progress Report for August 1975

E. Lamb



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OPERATIONS DIVISION

RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR AUGUST 1975

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. Schaich*)
(Production and Inventory Accounts)

Processed Units	
Radioisotope	Amount (mCi)
Calcium-47	7

ACCELERATOR-PRODUCED ISOTOPES

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

August 1975 ORNL 86-Inch Cyclotron runs for ORNL and non-ORNL programs are given in Table 1.

Table 1. Cyclotron Irradiations and Runs for August 1975

Date	Customer	Product	Target	Total Time (hr:min)	Total Charges
<u>ORNL Programs</u>					
8-5-75	Operations Div., Ken Poggenburg	Thulium	Erbium Oxide	5:15	\$ 511
<u>Non-ORNL-Programs</u>					
8-1-75	New England Nuclear Corporation	Germanium-68	Gallium	9:15	\$ 1,533

Cyclotron Operations

On August 7, 1975, an irradiation was started to produce rubidium-84 using the extracted beam. A 1-in. cooling water hose to the channel coil inside the cyclotron vacuum tank ruptured, resulting in shutdown of the machine for repairs from August 7th through August 31st. The channel coil was removed from the cyclotron, and all water hose, O rings and some electrical insulation was replaced. The Dee's and liner were inspected, and a large crack in the Dee stem

and several smaller cracks in other areas were found. The Dee's were removed from the vacuum tank and transported to the "dry dock" where major repairs and alterations were made.

FISSION PRODUCTS

Krypton-85 Enrichment Facility (*F. N. Case*)

Loss of cooling water circulation required column shutdown for four days, which included a weekend. The cooling loss occurred when a flow valve failed to operate properly due to corrosion in the mechanical linkage of the valve. The problem was corrected on a temporary basis and replacement is scheduled at the end of the first cycle shutdown, approximately October 1, 1975. In addition to changes in cooling water control, maintenance will also be made on radiation monitoring equipment installed inside the krypton-85 diffusion column shield.

The system was sampled in the CD column to determine whether or not the shutdown caused mixing in the columns. The results of this sampling indicated that except for loss of enrichment time no adverse effects occurred.

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

1. Process Status

The ^{137}Cs process equipment is in standby condition.

2. Operational Summary

Product Inventory

(Decay calculated through April 30, 1975)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
Cesium-137 chloride powder	0
Special form cans	<u>5,000</u>
<u>Total Inventory Material</u>	<u>5,000</u>
<u>Non-Inventory Material</u>	
Material returned or stored for customer	
Puerto Rico sources	8,400
Lockheed	27,600
AECL powder	92,000
Radiation Resources	35,900
Minn. Mining & Mfg. Company	11,700
Gamma Industries	8,800
J. L. Shepherd	<u>19,800</u>
<u>Total Non-Inventory Material</u>	<u>204,200</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	209,200

Fabrication Summary

	<u>Aug. 1975</u>		<u>CY 1975</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	29	8,374	0	0
Shipped	0	0	29	8,374	0	0
Special Form Cans						
Fabricated	0	0	0	0	0	0
Shipped	5	2,070	10	4,151	5	2,070

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. Schleich*)
(Production and Inventory Accounts)

1. Process Status

The ⁹⁰Sr process and manipulator cells are being decontaminated under the DWMT Decommission Program. The ⁹⁰Sr powder was removed from the FPD, encapsulated, and stored for future orders.

Product Inventory

(Decay calculated through April 30, 1975)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
⁹⁰ Sr titanate powder (±5%)	491,800
Sources in fabrication	0
RCA source	59,200
⁹⁰ Sr silicate powder	28,900
Stock powder cans	4,680
<u>Total Inventory Material</u>	<u>584,580</u>
<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
FPDL recovery material	18,700
Quehanna recovery material	45,500
Weather Bureau source	12,100
SNAP-7B	165,600
SNAP-7C	26,000
SNAP-7D	151,500
SNAP material purchase ^a	263,000
<u>Total Non-Inventory Material</u>	<u>682,400</u>
<u>TOTAL INVENTORY AND NON-INVENTORY MATERIAL</u>	<u>1,266,980</u>

^aStrontium-90 purchased under DRRD program.

Fabrication Summary

	<u>Aug. 1975</u>		<u>CY 1975</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	0	0	2	20	0	0

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

<u>Isotope</u>	<u>Number of Batches</u>	<u>Amount (Ci)</u>
Xenon-133	2	700
Iodine-131	2	80
Yttrium-91	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>		
Self-Powered Lighting Limited	Tritium	2,000 Ci
New England Nuclear Corporation	Tritium	4,000 Ci
Saunders-Roe Development Limited	Tritium	5,000 Ci
Radium-Chemie A Zeller & Co., Switzerland	Tritium	10,000 Ci
Radium-Chemie A Zeller & Co., Switzerland	Promethium-147	1,021 Ci
Radiochemical Centre, England	Promethium-147	1,344 Ci
Minnesota Mining & Manufacturing Co.	Cesium-137	2,000 Ci
Philips-Duphar, Netherlands	Cobalt-57	600 mCi
<u>Withdrawn Items</u>		
National Animal Disease Center	Iodine-131	75 mCi
Cleveland Metropolitan General Hospital	Iodine-131	95 mCi
University of Rochester	Iodine-131	100 mCi
<u>Items Used in Cooperative Programs</u>		
ORAU	Erbium-171	235 mCi
ORAU	Thulium-167	12 mCi
University of Maryland Hospital	Thulium-167	2 mCi
University of Southern California	Platinum-195m	22 mCi

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

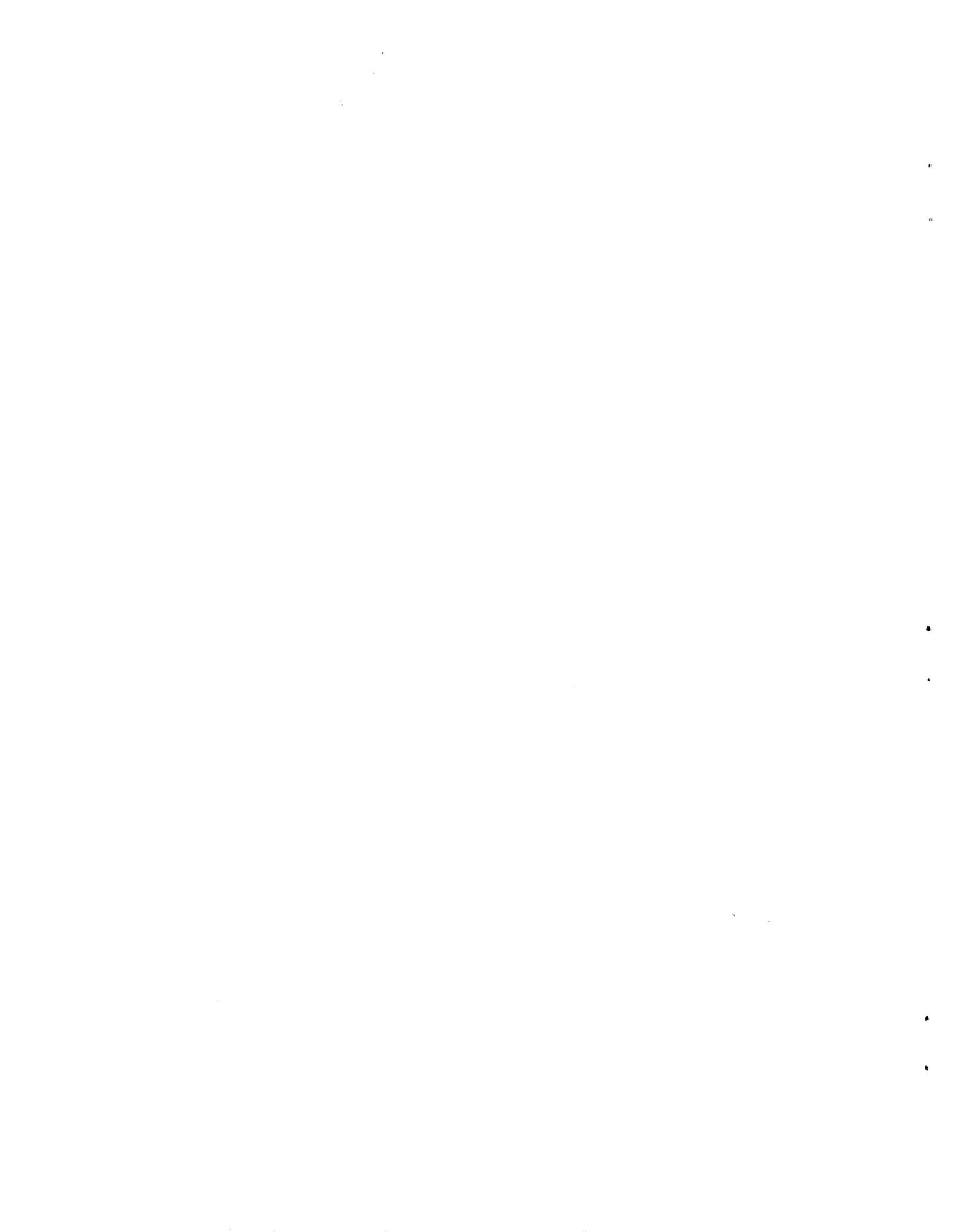
Table 2. Radioisotope Sales and Shipments

Item	8-1-74 thru 8-31-74	8-1-75 thru 8-31-75
Inventory items	\$ 87,631	\$ 13,469
Major products	7,600	7,688
Radioisotope services	11,750	26,994
Cyclotron irradiations	15,666	21,800
Miscellaneous processed materials	15,461	9,995
Packing and Shipping	12,690	12,498
Total	\$ 150,798	\$ 115,213
Number of shipments	258	125

PUBLICATIONS

REPORTS

E. Lamb, *Radioisotope Distribution Program Progress Report for July 1975*, ORNL-TM-5084, Oak Ridge National Laboratory (August 1975).



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