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**Radioisotope Distribution Program
Progress Report for August 1976**
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(E. Lamb) A

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OAK RIDGE NATIONAL LABORATORY

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OPERATIONS DIVISION

RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR AUGUST 1976

Date Published: October 1976

E. Lamb

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RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR AUGUST 1976

E. Lamb

RADIOISOTOPE PRODUCTION AND MATERIALS DEVELOPMENT

REACTOR-PRODUCED RADIOISOTOPES

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

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

ACCELERATOR-PRODUCED ISOTOPES

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

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

Table 1. Cyclotron Irradiations and Runs for August 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>					
8- 2-76	ORAU	Carbon-11	Boron Oxide	6:15	\$ 745
8- 9-76	ORAU	Carbon-11	Boron Oxide	5:30	659
8-18-76	ORAU	Carbon-11	Boron Oxide	5:50	697
8-25-76	ORAU	Carbon-11	Boron Oxide	<u>8:15</u>	<u>975</u>
				25:50	\$ 3,076
<u>Non-ORNL Programs</u>					
8- 5-76	ICN Pharmaceuticals	Cobalt-57	Nickel-58	49:15	\$ 9,681
8-17-76	New England Nuclear	Gallium-67	Zinc-68	33:15	5,180
8-18-76	Pacific Northwest Laboratories	Technetium-95m	Molybdenum	3:15	650
8-24-76	New England Nuclear	Gallium-67	Zinc-68	27:15	4,280
8-27-76	New England Nuclear	Germanium-68	Gallium	13:15	2,279
8-31-76	New England Nuclear	Gallium-67	Zinc-68	<u>33:15</u>	<u>5,180</u>
				159:30	\$27,250
<u>Isotopes Sales Inventory</u>					
8-11-76	Isotopes Sales Dept.	Cobalt-57	Nickel	40:15	\$ 6,717

Cyclotron Operations

During the month of August the cyclotron operated a total of 226 hours. On August 11, 1976, we had an electrical outage due to the bolts holding the coil on the 460 VAC breaker vibrating loose in cubicle 96. No runs were scheduled for August 17th due to an electrical outage for the Thermonuclear Division to make some electrical connections. A water leak occurring on August 20th was the result of a radiation damaged O-ring on the deflector. High pressure and short ion source filament life during the period August 22 through August 24 were the result of a valve leaking on the hydrogen line supplying the ion source. A 1000- μ f capacitor in the grid section of the oscillator was replaced on August 29th.

FISSION PRODUCTS

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

The ^{85}Kr enrichment columns operated satisfactorily during the month of August. 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>Aug. 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	3	60	11	1,720	44	8,842

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

Three ⁹⁰Sr heat sources containing 800 W_e ±5% are being fabricated for Teledyne-Isotopes. These units will be loaded into thermoelectric generators and shipped to the customer during September. The thermoelectric generators were not received on schedule.

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>3,800</u>
<u>Total Inventory Material</u>	<u>565,800</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>
<u>TOTAL INVENTORY AND NON-INVENTORY MATERIAL</u>	<u>1,231,500</u>

^aStrontium-90 purchased under DRRD program.

Fabrication Summary

	<u>Aug. 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	0	0	6	334	10	704

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

<u>Isotope</u>	<u>Number of Batches</u>	<u>Amount (Ci)</u>
Iodine-131	1	50
Xenon-133	2	1500

RADIOISOTOPE SALES

J. E. Ratledge

An order was received from J. L. Shepherd and Associates for one full WESF can of ^{137}Cs to be processed to cesium chloride and stored at ORNL for fabrication into ^{137}Cs sources at a future date. Confirmation was received from the Radiochemical Centre of their order for one WESF can of ^{137}Cs and authorization was given for shipment from Richland, Washington, in customer supplied container. An order was received from New England Nuclear Corporation for 76,000 Ci of tritium to be shipped over a one-year period upon request.

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 Atomic	Tritium	4,000 Ci
New England Nuclear Corporation	Tritium	6,000 Ci
Saunders-Roe, England	Tritium	5,000 Ci
<u>Withdrawn Items</u>		
Mine Safety Appliance Company	Iodine-131	150 mCi
Cleveland Metropolitan General Hospital	Iodine-131	50 mCi
Los Alamos Scientific Laboratory	Iodine-131	25 mCi
Duke University	Carbon-14	<50 μCi
Microbiological Associates	Carbon-14	0.008 mCi
<u>Items Used in Cooperative Programs</u>		
University of Southern California	Platinum-195m	\sim 12 mCi

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

Table 2. Radioisotope Sales and Shipments

Item	7-1-75 thru 8-31-75	7-1-76 thru 8-31-76
Inventory items	\$ 36,238	\$ 57,036
Major products	7,688	15,221
Radioisotope services	5,194	10,708
Cyclotron irradiations	21,800	64,897
Miscellaneous processed materials	9,995	39,373
Packing and Shipping	12,498	28,055
Total	\$ 93,413	\$ 215,290
Number of shipments	269	341

PUBLICATIONS

REPORTS

E. Lamb, *Radioisotope Distribution Program Progress Report for July 1976*, ORNL/TM-5650, Oak Ridge National Laboratory (September 1976).

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