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# RADIOISOTOPE DISTRIBUTION PROGRAM PROGRESS REPORT FOR JUNE 1974

J. H. Gillette

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ORNL-TM-4651

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ISOTOPES DEVELOPMENT CENTER

RADIOISOTOPE DISTRIBUTION PROGRAM  
PROGRESS REPORT FOR JUNE 1974

J. H. Gillette

Work Sponsored by  
AEC Division of Biomedical and  
Environmental Research

JULY 1974

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*J. H. Gillette*

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
Copper-67	35
Zinc-69m	707

ACCELERATOR-PRODUCED ISOTOPES

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

June 1974 ORNL 86-Inch Cyclotron runs for ORNL and non-ORNL programs are given in Table 1.

Table 1. Cyclotron Irradiations and Runs for June 1974

<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>					
5-23-74	Isotopes Division	<sup>237</sup> Pu	<sup>237</sup> Np	9:10	\$ 883
6-28-74	Isotopes Division	<sup>237</sup> Pu	<sup>237</sup> Np	17:15	1,651
6-28-74	ORAU Carbon-11 Grant	Target			
		Fabrication			750
				<u>26:25</u>	<u>\$ 3,284</u>
<u>Non-ORNL Programs</u>					
5-31-74	New England Nuclear	<sup>57</sup> Co	<sup>58</sup> Ni	51:15	\$ 8,480
6-6-74	New England Nuclear	<sup>109</sup> Cd	Ag	17:15	2,425
				<u>68:30</u>	<u>\$10,905</u>
<u>Sales Department Inventory</u>					
6-18-74	Isotopes Sales	<sup>67</sup> Ga	<sup>68</sup> Zn	3:15	\$ 465

## FISSION PRODUCTS

Krypton-85 Enrichment (*R. J. Lauer*)Krypton-85 Columns

The third bundle of columns has been installed in Cell 2 of Building 3026C. Cell 2 loading station has been overhauled and tested. Two counting chambers of a new design have been installed. Installation of the sampling system for this set of columns is all that remains. The sampling pumps have been received and will be leak tested before being installed. The set of three bundles for Cell 4 are at the site and are being installed in the cell.

Chilled Water System

The contractor has completed approximately 70% of the pipe work. A possible delay may occur in that the contractor is having difficulty getting shipment on valves needed to complete the water circuit.

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

## 1. Process Status

The <sup>137</sup>Cs process equipment is in standby condition.

## 2. Operational Summary

Product Inventory

<u>Inventory Material</u>	<u>Amount (Ci)</u>
Cesium-137 chloride powder	66,350
Sources in fabrication	0
Completed sources and special form cans	<u>12,430<sup>a</sup></u>
<u>Total Inventory Material</u>	<u>78,780</u>
<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
Material returned or stored for customer	
Puerto Rico sources	8,590
Lockheed	28,500
AECL powder	84,720
Radiation Resources	<u>36,740</u>
<u>Total Non-Inventory Material</u>	<u>158,550</u>
<u>TOTAL INVENTORY AND NON-INVENTORY MATERIAL</u>	<u>237,330</u>

<sup>a</sup>Includes 6,330 Ci unclaimed sources, 6,080 Ci stock powder cans, and one 20-Ci source for Industrial Nucleonics.

Fabrication Summary

	<u>June 1974</u>		<u>CY 1974</u>		<u>FY 1974</u>	
	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>
Sources						
Fabricated	13	104,000	63	441,790	88	463,945
Shipped	27	208,020	69	449,380	87	463,925
Special Form Cans						
Fabricated	0	0	2	24,350	4	25,150
Shipped	3	60	6	24,910	8	25,710

## 3. Current Orders

Current orders for  $^{137}\text{Cs}$  as sources or bulk powder are as follows:

<u>Customer</u>	<u>Amount (Ci)</u>	<u>Estimated Shipping Date</u>
Industrial Nucleonics	40	July 1974
J. L. Shepherd & Associates	25,001	*
Minnesota Mining & Mfg. Co.	15,000	*
Gamma Industries	10,001	*

\*Material to be canned and stored at ORNL for future shipment as sources or bulk powder.

The current inventory of  $^{137}\text{Cs}$  as CsCl powder is ~15 kilocuries.

Strontium-90 Pilot Production (*R. W. Schaich*)  
(Production and Inventory Accounts)

## 1. Process Status

Strontium-90 processing was completed and ~15 MCi of  $^{90}\text{Sr}$  feed solution was converted to distronium titanate. All inventory material will be canned and stored at FPDL.

Product Inventory

<u>Inventory Material</u>	<u>Amount (Ci)</u>
Feed solution ( $\pm 25\%$ )	0
Sources in fabrication	0
$^{90}\text{Sr}$ titanate powder ( $\pm 5\%$ )	487,360
RCA source	60,650
$^{90}\text{Sr}$ silicate powder	29,650
Stock powder cans	<u>6,040</u>
<u>Total Inventory Material</u>	<u>583,700</u>

<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
FPDL recovery material	19,200
Quehanna recovery material	46,680
Weather Bureau source	12,400
SNAP-7B	169,730
SNAP-7C	26,660
SNAP-7D	155,280
SNAP material purchase <sup>a</sup>	269,630
<u>Total Non-Inventory Material</u>	<u>699,580</u>
<u>TOTAL INVENTORY AND NON-INVENTORY</u>	<u>1,283,280</u>

<sup>a</sup>Strontium-90 purchased under DRRD program.

#### Fabrication Summary

	<u>June 1974</u>		<u>CY 1974</u>		<u>FY 1974</u>	
	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>
Sources						
Fabricated	0	0	3	153,170	4	198,870
Shipped	0	0	3	153,170	4	198,870
Special Form Cans						
Fabricated	0	0	0	0	0	0
Shipped	1	13	2	22	3	522

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	750
Iodine-131	1	6
Niobium-95	1	6

#### RADIOISOTOPE SALES

*J. E. Ratledge*

We presently have a backlog of normal <sup>85</sup>Kr orders totaling ~10,614 curies, and 180 curies of enriched <sup>85</sup>Kr. A shipment of <sup>85</sup>Kr was received from ARHCO and is being processed. Shipments of outstanding orders will begin in July 1974. Orders for <sup>137</sup>Cs were received from Minnesota Mining & Manufacturing Company for 15,000 curies; from Gamma Industries for 10,001 curies; from J. L. Shepherd & Associates for 25,001 curies; and from New England Nuclear Corporation for 285 curies.

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>		
New England Nuclear Corporation	Hydrogen-3	4,000 Ci
Cyclotron Corporation	Hydrogen-3	1,000 Ci
Saunders-Roe Development Ltd.	Hydrogen-3	5,000 Ci
U. S. Radium Corporation	Hydrogen-3	10,000 Ci
Sandia Corporation	Cesium-137	208,000 Ci
<u>Withdrawn Items</u>		
Mayo Clinic	Copper-67	~19.5 mCi
University of Arizona	Copper-67	~6.5 mCi
Cleveland Metropolitan General Hospital	Iodine-131	50 mCi
<u>Items Used in Cooperative Programs</u>		
ORAU	Dysprosium-157	150 mCi
University of Texas, Medical Branch	Potassium-43	5 mCi
University of Mississippi Medical Center	Potassium-43	10 mCi
University of Southern California	Platinum-195m	10 mCi

#### Unusual Items

Five  $^{147}\text{Pm}$  sources containing approximately one curie each were prepared for the Bendix Corporation. Four  $^{14}\text{C}$  targets were prepared for the University of Florida.

The radioisotopes sales proceeds and shipments for FY 1973 and FY 1974 are given in Table 2.

Table 2. Radioisotope Sales and Shipments

Item	7-1-72 thru 6-30-73	7-1-73 thru 6-30-74
Inventory items	\$ 548,166	\$ 467,424
Major products	58,796	65,945
Radioisotope services	256,604	297,898
ORNL 86-Inch Cyclotron	104,667	108,346
Miscellaneous processed materials	60,143	72,614
Packing and Shipping	67,852	74,522
Total	\$1,096,228	\$1,086,749
<u>Number of shipments</u>	2,120	1,805

#### PUBLICATIONS

##### REPORTS

J. H. Gillette, *Radioisotope Program Progress Report for May 1974*, ORNL-TM-4629, Oak Ridge National Laboratory.



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