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Radioisotope Distribution Program Progress Report for July 1978

E. Lamb

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OPERATIONS DIVISION

RADIOISOTOPE DISTRIBUTION PROGRAM

PROGRESS REPORT FOR JULY 1978

E. Lamb

Work Sponsored by
DOE Division of Biomedical and
Environmental Research

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CONTENTS

	<u>Page</u>
SUMMARY	1
RADIOISOTOPE PRODUCTION AND MATERIALS	1
REACTOR-PRODUCED RADIOISOTOPES.	1
Reactor Products Production	1
Iridium-192 Production.	1
ACCELERATOR-PRODUCED ISOTOPES	1
Cyclotron Service Irradiations.	1
FISSION PRODUCTS.	2
Krypton-85 Enrichment Facility.	2
Cesium-137 Pilot Production	2
Strontium-90 Pilot Production	3
Short-Lived Fission Product Production.	4
RADIOISOTOPE SALES.	4
PUBLICATIONS.	5
REPORTS	5

RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR JULY 1978

E. Lamb

SUMMARY

Information is reported on new production,
inventory status, operational problems, and
radioisotope sales.

RADIOISOTOPE PRODUCTION AND MATERIALS

REACTOR-PRODUCED RADIOISOTOPES

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

<u>Processed Units</u>	
<u>Radioisotope</u>	<u>Amount (mCi)</u>
Calcium-47	22

Iridium-192 Production (*R. W. Schaich*)

Eight customer irradiation units and six ORNL HFIR units (RB) containing 99,000 curies of ^{192}Ir at HFIR discharge date were processed during the month of July 1978. Ten shipments containing 66,000 curies of ^{192}Ir were made during this period.

ACCELERATOR-PRODUCED ISOTOPES

Cyclotron Service Irradiations (*M. R. Skidmore*)
(Production and Inventory Accounts)

During July 1978 the ORNL 86-Inch Cyclotron operated 5:40 hours on ORNL Programs for total charges of \$678.00 and 242:30 hours on Non-ORNL Programs for total charges of \$40,547.00.

A cyclotron run was interrupted on July 3rd due to R.F. instabilities. A liner carbon was found loose and repairs were made. Pump down of the machine started on July 5th and R.F. bakeout was started on July 6th. R.F. bakeout was completed on July 11th and a run was started. This run was interrupted on July 12th due to the failure of the bias power supply. A wire to the main power of the bias power supply was found broken. After the bias power supply was repaired, the cyclotron ran well the rest of the month.

FISSION PRODUCTS

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

Five ^{85}Kr thermal diffusion columns were operated according to design during July 1978. Three columns in the south bank were shut down for approximately two days to remove the tailings and reload with normal material to increase the on-stream operation of the columns. This procedure should result in a decreased operational period to produce 40% enrichment. The two columns in the north bank are scheduled for tailing removal during August, 1978.

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

1. Process Status

The ^{137}Cs processing equipment has been placed in standby status.

2. Operational Summary

Product Inventory

(Decay calculated through August 31, 1977)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
Cesium-137 chloride powder	29,580
<u>Total Inventory Material</u>	<u>29,580</u>
<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
Special Form Cans	4,200
Material returned or stored for customer	
Nuclear Research Corporation	0
J. L. Shepherd	26,500
New England Nuclear Corporation	2,100
Puerto Rico Sources	7,900
Lockheed	19,600
AECL powder	38,100
Radiation Resources	19,800
Minn. Mining & Mfg. Company	0
Gamma Industries	8,400
<u>Total Non-Inventory Material</u>	<u>126,600</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	156,180

Fabrication Summary

	<u>July 1978</u>		<u>CY 1978</u>		<u>FY 1978</u>	
	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>
Sources						
Fabricated	0	0	40	76,105	40	76,105
Shipped	0	0	33	57,630	32	57,630
Special Form Cans						
Fabricated	6	600	6	600	7	605
Shipped	1	100	8	2,500	12	2,700

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 source fabrication equipment has been placed in standby status.

Product Inventory

(Decay calculated through August 31, 1977)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
⁹⁰ Sr titanate powder (±5%)	0
Sources in fabrication	0
Stock powder cans	3,070
Stock solution	200
<u>Total Inventory Material</u>	<u>3,270</u>
<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
New England Nuclear Corporation	220
Batch 26Sr-74RE	7,900
Calorimeter Standards	4,800
Weather Bureau Source	11,400
SNAP-7B	156,300
SNAP-7C	24,600
SNAP-7D	143,000
SNAP material purchase ^a	248,300
AGN-4 Powder	38,400
<u>Total Non-Inventory Material</u>	<u>634,920</u>
<u>TOTAL INVENTORY AND NON-INVENTORY MATERIAL</u>	<u>638,190</u>

^aStrontium-90 purchased under DRRD program.

Fabrication Summary

	<u>July 1978</u>		<u>CY 1978</u>		<u>FY 1978</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	6	40	6	40
Shipped	1	5	3	35	3	35

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

The production of short-lived fission products is listed in the table below.

<u>Isotope</u>	<u>Number of Batches</u>	<u>Amount (Ci)</u>
Iodine-131	1	75
Xenon-133	4	2300
Niobium-95	1	8

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>		
Merz & Benteli Nuclear AG, Switzerland	Tritium	30,000 Ci
Becton Dickinson Immunodiagnosics	Tritium	1,000 Ci
New England Nuclear Corporation	Tritium	10,000 Ci
Brandhurst Company, Ltd., England	Tritium	15,000 Ci
American Atomics Corporation	Tritium	50,000 Ci
Self-Powered Lighting, Ltd.	Tritium	3,000 Ci
Radiochemical Centre, England	Tritium	20,000 Ci
Saunders-Roe Developments, Ltd., England	Tritium	30,000 Ci
University of California	Tritium	1,778 Ci

Withdrawn Items

Automation Industries, Inc.	Iridium-192	18,951 Ci
Gulf Nuclear	Iridium-192	9,761 Ci
Source Production and Equipment Company	Iridium-192	11,220 Ci
Technical Operations	Iridium-192	22,866 Ci
Industrial Nuclear Company	Iridium-192	3,586 Ci

Items Used in Cooperative Programs

University of Mississippi Medical Center	Potassium-43	9.5 mCi
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The radioisotope sales and shipments for the first nine months of fiscal year 1977 and fiscal year 1978 are given in Table 2.

Table 2. Radioisotope Sales and Shipments

Item	10-1-76 thru 7-31-77	10-1-77 thru 7-31-78
Inventory Items	\$ 359,314	\$ 118,870
Tritium		1,404,948
Major Products	92,308	470,170
Iridium-192		740,886
Radioisotope Services	88,802	222,280
Cyclotron Irradiations	209,831	235,247
Miscellaneous Processed Materials	56,348	177,529
Packing and Shipping	160,069	179,505
Total	\$ 966,672	\$3,549,435
Number of Shipments	2,010	2,160

PUBLICATIONS

REPORTS

E. Lamb, *Radioisotope Distribution Program Progress Report for June 1978*, ORNL/TM-6517, Oak Ridge National Laboratory (August 1978).



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