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# Radioisotope Distribution Program Progress Report for February 1978

E. Lamb

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OPERATIONS DIVISION

RADIOISOTOPE DISTRIBUTION PROGRAM  
PROGRESS REPORT FOR FEBRUARY 1978

Date Published - April, 1978

E. Lamb

Work Sponsored by  
DOE Division of Biomedical and  
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RADIOISOTOPE DISTRIBUTION PROGRAM  
PROGRESS REPORT FOR FEBRUARY 1978

*E. Lamb*

SUMMARY

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

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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	19

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

Eleven customer irradiation units and five ORNL HFIR units (RB) containing 100,000 Ci of iridium-192 at HFIR discharge date were processed during the month of February 1978. Eleven shipments containing 56,000 Ci of iridium-192 were made during this period.

Other GETR Products and Services (*E. Lamb*)

Quotations were transmitted to the General Electric Company for the irradiation of partially irradiated cobalt-60 targets, two iridium targets, and uranium-235 targets to furnish two each week. No order for these services has been placed.

The General Electric Company requested a quotation on the irradiation of one of the GETR-type sample holders in the HFIR. The sample holder would contain partially irradiated nickel-62 samples (~6 Ci/g), partially irradiated tin-118 metal to produce tin-119m, and an unirradiated sample of tin-113. The estimate was prepared and a quotation was transmitted to the General Electric Company.

The above quotations represent the combined efforts of a number of people for preparing reactor production quotations, developing and estimating the hot cell services for pre-irradiation testing of radioactive samples, estimating reactor handling and irradiation costs, and estimating irradiated target processing and handling costs.

Mediphysics requested information concerning the feasibility and cost of irradiating molybdenum metal slugs furnished by Mediphysics.

#### ACCELERATOR-PRODUCED ISOTOPES

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

February 1978 ORNL 86-Inch Cyclotron runs for ORNL and non-ORNL programs are given in Table 1.

Table 1. Cyclotron Irradiations and Runs for February 1978

Date	Customer	Product	Target	Total Time (hr:min)	Total Charges
<u>ORNL Programs</u>					
2-14-78	ORAU	Carbon-11	Boron Oxide	5:15	\$ 692
<u>Non-ORNL Programs</u>					
2- 2-78	Pacific Northwest Lab	Technetium-95m	Molybdenum-95	11:15	2,025
2-13-78	New England Nuclear	Gallium-67	Zinc-68	25:15	3,980
				36:30	\$ 6,005

Operations were interrupted five times this month due either to mechanical or electrical failures. On February 3rd, a leaking vacuum line on the target vacuum lock had to be repaired. From February 3rd to February 10th ground straps, which had been burned by RF, on the south trimmer in the machine, were replaced. On February 16th operations were interrupted twice because of shorted capacitors in the oscillator plate line. From February 17th to February 28th the cyclotron was again down to air to replace a leaking plate septum water line and replace two broken carbons on the liner wall.

#### FISSION PRODUCTS

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

The one krypton-85 enrichment column which was operative during the month of January was shut down due to the power shortage. All units and systems have been placed in a standby mode.

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

##### 1. Process Status

The <sup>137</sup>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	29,860
<u>Total Inventory Material</u>	<u>29,860</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	40,600
New England Nuclear Corporation	2,300
Puerto Rico Sources	7,900
Lockheed	19,600
AECL powder	71,500
Radiation Resources	19,800
Minn. Mining & Mfg. Company	2,800
Gamma Industries	8,400
<u>Total Non-Inventory Material</u>	<u>177,100</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	206,960

Fabrication Summary

	<u>Feb. 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	3	10,000	3	10,000	3	10,000
Shipped	3	10,000	3	10,000	3	10,000
Special Form Cans						
Fabricated	0	0	0	0	1	5
Shipped	2	200	3	300	7	500

## 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  $^{90}\text{Sr}$  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>
$^{90}\text{Sr}$ titanate powder ( $\pm 5\%$ )	0
Sources in fabrication	0
Stock powder cans	3,095
Stock solution	<u>200</u>
<u>Total Inventory Material</u>	<u>3,295</u>

<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
New England Nuclear Corporation	230
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 <sup>a</sup>	248,300
AGN-4 Powder	<u>38,400</u>
<u>Total Non-Inventory Material</u>	<u>634,930</u>

TOTAL INVENTORY AND NON-INVENTORY MATERIAL 638,225

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

Fabrication Summary

	<u>Feb. 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	0	0	0	0
Shipped	0	0	0	0	0	0

Short-Lived Fission Product Production (*R. W. Schaiach*)  
(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>
Xenon-133	4	2000

RADIOISOTOPE SALES

*J. E. Ratledge*

Visitors to Isotope Sales during February were M.A.L. Goppel, Delegation of the European Communities; J.F.W. Jaspert, Euratom Supply Agency; and D. Tonks, Brandhurst Ltd.

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	Tritium	8,000 Ci
Merz & Benteli Nuclear, Switzerland	Tritium	2,600 Ci
American Atomics Corporation	Tritium	115,000 Ci
Self-Powered Lighting	Tritium	3,000 Ci
Schwarz/Mann	Tritium	1,000 Ci
U.S. Radium Corporation	Tritium	10,000 Ci
ICN Pharmaceuticals	Tritium	1,000 Ci

Withdrawn Items

Gulf Nuclear, Inc.	Iridium-192	8,926 Ci
Gamma Industries	Iridium-192	16,157 Ci
Industrial Nuclear Company	Iridium-192	5,547 Ci
Technical Operations	Iridium-192	19,867 Ci

Items Used in Cooperative Programs

National Institutes of Health	Potassium-43	1 mCi
Veterans Administration Center	Potassium-43	2 mCi
University of Mississippi Medical Ctr.	Potassium-43	3 mCi
University of Arizona	Platinum-195m	6 mCi
Veterans Administration Center	Platinum-195m	15 mCi
University of Southern California	Platinum-195m	10 mCi

The radioisotope sales and shipments for the first five 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 2-28-77	10-1-77 thru 2-28-78
Inventory items	\$ 138,807	\$ 434,852
Major products	45,670	246,450
Radioisotope services	29,534	77,996
Cyclotron irradiations	168,536	140,872
Miscellaneous processed materials	76,755	75,443
Packing and shipping	<u>78,059</u>	<u>79,245</u>
Total	\$ 537,361	\$1,054,858
Number of shipments	988	963

## PUBLICATIONS

## REPORTS

E. Lamb, *Radioisotope Distribution Program Progress Report for January 1978*, ORNL/TM-6347, Oak Ridge National Laboratory (April 1978).

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