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Radioisotope Distribution Program Progress Report for November 1978

E. Lamb

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OPERATIONS DIVISION

RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR NOVEMBER 1978

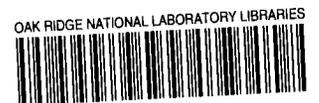
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RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR NOVEMBER 1978

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	13

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

Ten customer irradiation units and four ORNL HFIR units (RB) containing 98,000 curies of ^{192}Ir at HFIR discharge date were processed during the month of November 1978. Twelve shipments containing 70,857 curies of ^{192}Ir were made during this period.

ACCELERATOR-PRODUCED ISOTOPES

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

During November 1978, the ORNL 86-Inch Cyclotron did 85 hours of service irradiations for Non-ORNL customers, with total charges of \$13,689.

No irradiations were made after November 14, 1978 due to repairs of the Cyclotron and removal of diffusion pump oil from the vacuum system of the Cyclotron after a power outage. On November 3rd the startup of a run was delayed due to a short in a transformer of the power supply for the ion source. After considerable RF instabilities on November 15th, the Cyclotron vacuum tank was opened on November 16th to inspect the resonance system. A large crack was found in the dees which could cause the RF instabilities observed. After waiting 26 hours for a crane to remove the dees, they were removed and the crack welded, other minor repairs made, and the dees reinstalled on November 20th. On November 22nd at 9:00 p.m., during a fire drill, firemen going through the 13,800

volt switchgear room for the building brushed against a switch resulting in loss of electrical power to the transformer vault supplying the Cyclotron. The power outage resulted in diffusion pump oil diffusing back into the Cyclotron vacuum system. The rest of the month was spent in removing the dees and degreasing all of the components of the Cyclotron.

FISSION PRODUCTS

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

The Thermal Diffusion Columns operated normally during this month, except for one 72 hour outage due to refrigeration system problems. The compressor condensers were de-scaled and the problem was corrected. No production was lost as the column interstage valves were closed during the outage.

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

1. Process Status

The ^{137}Cs processing equipment remains in standby status.

2. Operational Summary

Product Inventory

(Decay calculated through August 31, 1978)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
Cesium-137 chloride powder	<u>8,200</u>
<u>Total Inventory Material</u>	<u>8,200</u>
<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
Reject Pellets and Sources	4,300
Special Form Cans	4,000
Material returned or stored for customer	
J. L. Shepherd	10,790
New England Nuclear Corporation	1,975
Puerto Rico Sources	7,700
Lockheed	19,100
AECL powder	36,949
Radiation Resources	16,800
Gamma Industries	<u>8,200</u>
<u>Total Non-Inventory Material</u>	<u>109,814</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	118,014

Fabrication Summary

	<u>Nov. 1978</u>		<u>CY 1978</u>		<u>FY 1979</u>	
	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>
Sources						
Fabricated	0	0	41	76,110	0	0
Shipped	15	15,140	49	72,775	15	15,140
Special Form Cans						
Fabricated	0	0	21	15,600	0	0
Shipped	0	0	11	3,625	0	0

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. Schaich*).
(Production and Inventory Accounts)

1. Process Status

Four ⁹⁰Sr titanate heat sources were fabricated for Teledyne Energy Systems. They contained an average of 250 W_T and were fabricated from Quehanna material. The ⁹⁰Sr processing equipment has been placed in standby status.

Product Inventory

(Decay calculated through August 31, 1978)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
⁹⁰ Sr titanate powder (±5%)	0
Sources in fabrication	0
Stock powder cans	3,170
Stock solution	<u>180</u>
<u>Total Inventory Material</u>	<u>3,350</u>
<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
⁹⁰ Sr Fluoride	60,000
New England Nuclear Corporation	175
Calorimeter Standards	4,700
Weather Bureau Source	11,100
SNAP-7B	152,500
SNAP-7C	24,000
SNAP-7D	139,500
SNAP material purchase	<u>126,700</u>
<u>Total Non-Inventory Material</u>	<u>518,675</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	522,025

Fabrication Summary

	<u>Nov. 1978</u>		<u>CY 1978</u>		<u>FY 1979</u>	
	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>
Sources						
Fabricated	4	153,000	4	153,000	4	153,000
Shipped	4	153,000	4	153,000	4	153,000
Special Form Cans						
Fabricated	0	0	6	40	0	0
Shipped	0	0	4	55	0	0

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	100
Xenon-133	3	1900
Niobium-95	1	1

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>		
Radium-Chemie, Ltd., Switzerland	Tritium	30,000 Ci
New England Nuclear Corporation	Tritium	8,000 Ci
American Atomics Corporation	Tritium	100,000 Ci
Self-Powered Lighting, Ltd.	Tritium	14,000 Ci
Brandhurst Company, Ltd., England	Tritium	60,000 Ci
ICN Pharmaceuticals, Inc.	Tritium	2,000 Ci
Merz & Benteli Nuclear, Switzerland	Tritium	30,000 Ci

Withdrawn Items

Gulf Nuclear, Inc.	Iridium-192	9,844 Ci
Technical Operations, Inc.	Iridium-192	25,936 Ci
Automation Industries	Iridium-192	9,209 Ci
Gamma Industries	Iridium-192	14,724 Ci
Source Production and Equipment Co.	Iridium-192	7,545 Ci
Industrial Nuclear	Iridium-192	3,599 Ci

The radioisotope sales and shipments for the first two months of fiscal year 1978 and fiscal year 1979 are given in Table 1.

Table 1. Radioisotope Sales and Shipments

Item	10-1-77 thru 11-30-77	10-1-78 thru 11-30-78
Inventory Items	\$ 190,142	\$ 49,394
Tritium		433,360
Major Products	29,603	41,887
Iridium-192		69,310
Radioisotope Services	45,956	26,987
Cyclotron Irradiations	60,902	70,551
Miscellaneous Processed Materials	20,214	10,038
Packing and Shipping	<u>33,025</u>	<u>33,265</u>
Total	\$ 379,842	\$ 734,792
Number of Shipments	393	406

PUBLICATIONS

REPORTS

E. Lamb, *Radioisotope Distribution Program Progress Report for October 1978*, ORNL/TM-6683, Oak Ridge National Laboratory (October 1978).



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