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Radioisotope Distribution Program Progress Report for October 1975

E. Lamb

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OPERATIONS DIVISION

RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR OCTOBER 1975

E. Lamb

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ERDA Division of Biomedical and
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DECEMBER 1975

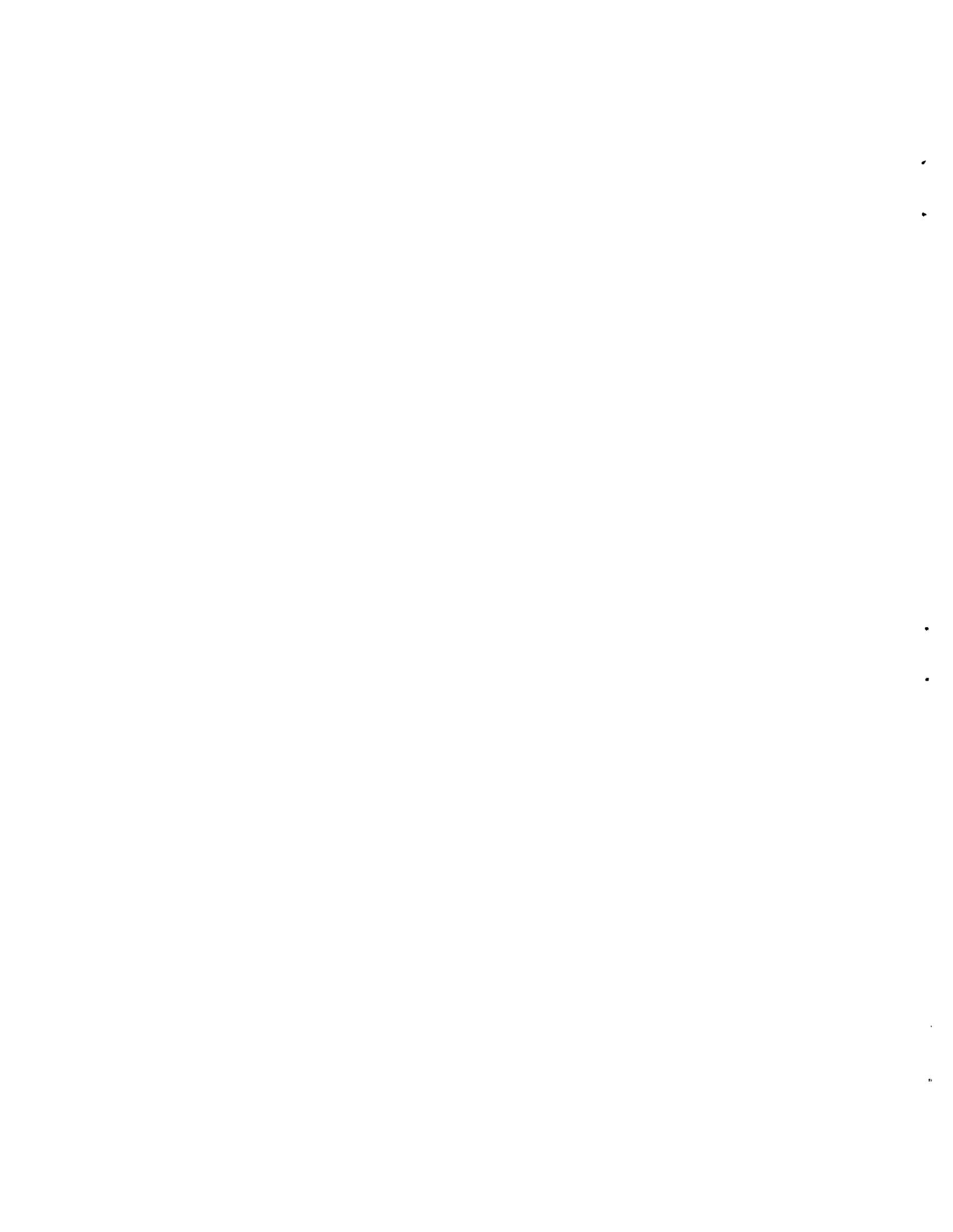
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RADIOISOTOPE DISTRIBUTION PROGRAM
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RADIOISOTOPE PRODUCTION AND MATERIALS DEVELOPMENT

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	19
Copper-67	1

ACCELERATOR-PRODUCED ISOTOPES

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

October 1975 ORNL 86-Inch Cyclotron runs for ORNL and non-ORNL programs are given in Table 1.

Table 1. Cyclotron Irradiations and Runs for October 1975

Date	Customer	Product	Target	Total Time (hr:min)	Total Charges
<u>ORNL Programs</u>					
10-6-75	ORAU	Carbon-11	Boron Oxide	4:30	\$ 434
10-13-75	ORAU	Carbon-11	Boron Oxide	3:05	300
10-23-75	ORAU	Carbon-11	Boron Oxide	5:15	506
10-27-75	ORAU	Carbon-11	Boron Oxide	3:40	355
				16:30	\$ 1,595
<u>Non-ORNL Programs</u>					
10-6-75	Virginia Associated Research Campus	Thallium-202	Mercuric Oxide	3:15	385
10-10-75	ICN Pharmaceuticals	Cobalt-57	Nickel-58	49:15	8,292
10-20-75	New England Nuclear Corporation	Cobalt-57	Nickel-58	51:15	8,495
10-25-75	New England Nuclear Corporation	Titanium-44	Scandium	11:15	1,782
10-29-75	New England Nuclear Corporation	Krypton-84	Rubidium-84	6:15	1,095
				121:15	\$20,049
<u>Isotopes Sales Inventory</u>					
10-3-75	Isotopes Sales Dept.	Cobalt-57	Nickel	44:15	\$ 6,432

Cyclotron Operations

During the month a new filament was installed in the ion source. After the new filament was installed, the ion source output was low so two days were spent to improve the output. We operated thirty-eight shifts this month with a staff of two technical personnel, one research mechanic, and the loan of an electrical engineer for two days.

FISSION PRODUCTS

Krypton-85 Enrichment Facility (*F. N. Case*)

The ^{85}Kr Thermal Diffusion Plant was unloaded for product recovery and segregation of low end depleted ^{85}Kr .

Maintenance of the loadout station of both banks of columns was started and is expected to continue into November. The cooling water system was also modified to provide better reliability of the automatic switches that had deteriorated due to exposure to weather. Maintenance was also made on the radiation monitors used to show the positioning of the ^{85}Kr in the columns and permit adjustment of the light and heavy ends of the krypton in the columns for optimum production.

Approximately 300 Ci of 14% ^{85}Kr was placed in sales inventory and the balance of the enriched material product was loaded into one column for second pass enrichment to greater than 20% ^{85}Kr . Startup of the entire system is expected late in November.

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

1. Process Status

The ^{137}Cs process equipment is in standby condition.

2. Operational Summary

Product Inventory

(Decay calculated through April 30, 1975)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
Cesium-137 chloride powder	0
Special form cans	<u>5,000</u>
<u>Total Inventory Material</u>	<u>5,000</u>

<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
Material returned or stored for customer	
Puerto Rico sources	8,400
Lockheed	27,600
AECL powder	72,000
Radiation Resources	35,900
Minn. Mining & Mfg. Company	11,700
Gamma Industries	8,800
J. L. Shepherd	<u>19,800</u>
<u>Total Non-Inventory Material</u>	<u>184,200</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	189,200

Fabrication Summary

	<u>Oct. 1975</u>		<u>CY 1975</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	40	28,383	11	20,009
Shipped	0	0	40	28,383	11	20,009
Special Form Cans						
Fabricated	0	0	0	0	0	0
Shipped	0	0	10	4,151	5	2,070

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 process and manipulator cells are being decontaminated under the DWMT Decommission Program. The ⁹⁰Sr powder was removed from the FPDL, encapsulated, and stored for future orders.

Product Inventory

(Decay calculated through April 30, 1975)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
⁹⁰ Sr titanate powder (±5%)	491,800
Sources in fabrication	0
RCA source	59,200
⁹⁰ Sr silicate powder	28,900
Stock powder cans	<u>4,680</u>
<u>Total Inventory Material</u>	<u>584,580</u>

<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
FPDL recovery material	18,700
Quehanna recovery material	45,500
Weather Bureau source	12,100
SNAP-7B	165,600
SNAP-7C	26,000
SNAP-7D	151,500
SNAP material purchase ^a	263,000
<u>Total Non-Inventory Material</u>	<u>682,400</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	1,266,980

^aStrontium-90 purchased under DRRD program.

Fabrication Summary

	<u>Oct. 1975</u>		<u>CY 1975</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	2	20	0	0

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

<u>Isotope</u>	<u>Number of Batches</u>	<u>Amount (Ci)</u>
Xenon-133	1	350
Iodine-131	1	44
Ruthenium-103	1	21
Zirconium/Niobium-95	1	17

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>	
University of California, LLL	Tritium Targets	3,548 Ci
Atomic Energy of Canada, Ltd.	Tritium Targets	900 Ci
American Atomics	Tritium	10,000 Ci
New England Nuclear Corporation	Tritium	4,000 Ci
Saunders-Roe Development, Ltd., England	Tritium	5,000 Ci
Schwarz/Mann	Tritium	2,500 Ci
Self-Powered Lighting, Ltd.	Tritium	1,000 Ci
ICN Pharmaceuticals	Tritium	1,000 Ci

Withdrawn Items

Microbiological Associates	Carbon-14	0.89 mCi
Cleveland General Hospital	Iodine-131	75 mCi
National Animal Disease Center	Iodine-131	50 mCi
University of Rochester	Iodine-131	100 mCi

Items Used in Cooperative Programs

ORAU	Dysprosium-157	485 mCi
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The radioisotope sales and shipments for the first four months of FY 1975 and FY 1976 are given in Table 2.

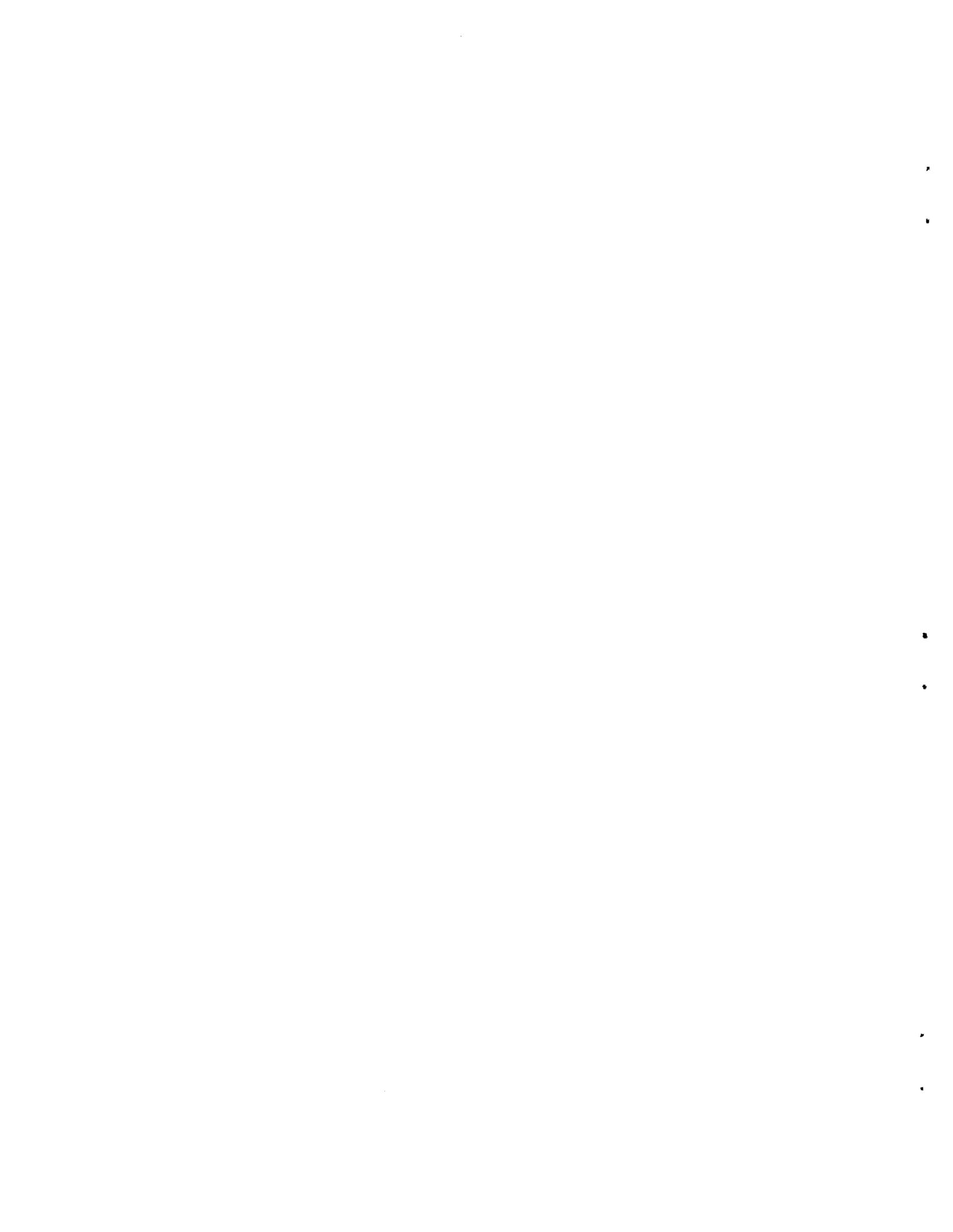
Table 2. Radioisotope Sales and Shipments

Item	7-1-74 thru 10-31-74	7-1-75 thru 10-31-75
Inventory items	\$ 177,251	\$ 97,715
Major products	16,270	15,383
Radioisotope services	32,399	35,557
Cyclotron irradiations	28,905	40,183
Miscellaneous processed materials	42,211	16,786
Packing and Shipping	<u>26,955</u>	<u>27,598</u>
Total	\$ 323,991	\$ 233,222
Number of shipments	550	161

PUBLICATIONS

REPORTS

E. Lamb, *Radioisotope Distribution Program Progress Report for September 1975*, ORNL-TM-5218, Oak Ridge National Laboratory (December 1975).



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