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RADIOISOTOPE DISTRIBUTION PROGRAM PROGRESS REPORT FOR FEBRUARY 1974

J. H. Gillette



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ISOTOPES DEVELOPMENT CENTER

RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR FEBRUARY 1974

J. H. Gillette

Work Sponsored by
AEC Division of Biomedical and
Environmental Research

MARCH 1974

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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 | 10 |
| Copper-67 | 21 |

ACCELERATOR-PRODUCED ISOTOPES

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

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

Table 1. Cyclotron Irradiations and Runs for February 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> | | | | | |
| 1-22-74 | UCC, Y-12 Plant | Cobalt-56 | Iron | 6:00 | \$ 703 |
| <u>Non-ORNL Programs</u> | | | | | |
| 1-22-74 | Pacific Northwest Laboratories | Technetium-95m | Molybdenum | 2:15 | \$ 373 |
| 2-11-74 | New England Nuclear Corporation | Cobalt-57 | Nickel-58 | 51:15 | <u>7314</u> |
| | | | | | \$7687 |
| <u>Sales Department Inventory</u> | | | | | |
| 2-1-74 | Isotopes Division | Cobalt-57 | Nickel | 59:15 | \$8532 |

FISSION PRODUCTS

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

The first 216 columns are fabricated and leak tested. One bundle of columns is being assembled. The second set of three bundles has been removed from the cell in Building 3026-C and has been transferred to the shop to be disassembled.

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

1. Process Status

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

2. Operational Summary

| <u>Product Inventory</u> | <u>Amount (Ci)</u> |
|---|---------------------------|
| <u>Inventory Material</u> | |
| Cesium-137 chloride products | 292,094 |
| Sources in fabrication | 234,000 |
| Completed sources and special form cans | <u>30,750^a</u> |
| <u>Total Inventory Material</u> | <u>556,844</u> |
| <u>Non-Inventory Material</u> | |
| Material returned or stored for customer | |
| Puerto Rico sources | 8,760 |
| Lockheed | 29,050 |
| AECL powder | 86,360 |
| Radiation Resources | <u>37,450</u> |
| <u>Total Non-Inventory Material</u> | <u>161,620</u> |
| <u>TOTAL INVENTORY AND NON-INVENTORY MATERIAL</u> | <u>718,464</u> |

^aIncludes 6400 Ci unclaimed sources.

Fabrication Summary

| | <u>February 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 | 4 | 100 | 4 | 100 | 29 | 22,255 |
| Shipped | 11 | 7714 | 11 | 7714 | 29 | 22,255 |
| Special Form Cans | | | | | | |
| Fabricated | 0 | 24,350 | 2 | 24,350 | 4 | 25,150 |
| Shipped | 0 | 0 | 0 | 0 | 2 | 800 |

3. Current Orders

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

| <u>Customer</u> | <u>Amount (Ci)</u> | <u>Estimated Shipping Date</u> |
|----------------------|------------------------|------------------------------------|
| 3M Company | 300 | a |
| Isomedix Corporation | 204,000 | March 1974 |

^aHolding for request for shipment.

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

1. Process Status

The maintenance work on the ^{90}Sr powder handling cell was completed on schedule. Approximately 0.1 MCi of ^{90}Sr feed solution was converted to $^{90}\text{SrCO}_3$ for conversion to distrontium titanate.

The source fabrication work for Teledyne Isotopes (155,000 Ci) was initiated this month and all pelletization should be completed by the first week in March 1974. Plasma arc welding, testing, and generator loading are scheduled for completion by March 15, 1974.

| <u>Inventory Material</u> | <u>Product Inventory</u> | <u>Amount (Ci)</u> |
|--|--------------------------|--------------------|
| Feed solution ($\pm 25\%$) | | 590,000 |
| Sources in fabrication | | 155,000 |
| ^{90}Sr products | | 33,000 |
| "AGN" liners | | 145,500 |
| SNAP-7F sources | | 115,200 |
| RCA source | | 62,400 |
| ^{90}Sr silicate powder | | 30,500 |
| Recovery material | | 25,400 |
| Stock powder cans | | <u>6,200</u> |
| Total | | 1,163,200 |
| Less SNAP material purchase ^a | | <u>277,400</u> |
| <u>Total Inventory Material</u> | | <u>885,800</u> |

^aStrontium-90 purchased under DRRD program and retained in solution form.

| | <u>Amount (Ci)</u> |
|--|--------------------|
| <u>Non-Inventory Material</u> | |
| Quehanna recovery material | 47,800 |
| Weather Bureau source | 12,700 |
| SNAP-7B | 173,800 |
| SNAP-7C | 27,300 |
| SNAP-7D | 159,000 |
| URIPS (billed at 221,000 Ci) | 216,000 |
| SNAP material purchase | <u>277,400</u> |
| <u>Total Non-Inventory Material</u> | <u>914,000</u> |
| TOTAL INVENTORY AND NON-INVENTORY MATERIAL | 1,799,800 |

| | <u>Fabrication Summary</u> | | | | | |
|-------------------|----------------------------|-----------|----------------|-----------|----------------|-----------|
| | <u>February 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 | 0 | 0 | 1 | 45,700 |
| Shipped | 0 | 0 | 0 | 0 | 1 | 45,700 |
| Special Form Cans | | | | | | |
| Fabricated | 0 | 0 | 0 | 0 | 0 | 0 |
| Shipped | 0 | 0 | 0 | 0 | 1 | 500 |

3. Current Orders

| <u>Customer</u> | <u>Amount (Ci)</u> | <u>Estimated Shipping Date</u> |
|---------------------------------|------------------------|------------------------------------|
| U. S. Navy | 221,000 | a |
| New England Nuclear Corporation | 9 | a |
| Teledyne Isotopes | 155,000 | March 1974 |

^aAll items are complete and awaiting receipt of further shipping instructions.

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 | 1 | 350 |
| Iodine-131 | 1 | 5 |
| Yttrium-91 | 1 | 86 |

RADIOISOTOPE SALES

J. E. Ratledge

An inquiry was received from Sandia Corporation on the availability and price of 200,000 Ci of ^{137}Cs as cylindrical sources, ~8000 Ci each. A quotation is being prepared so that a firm order can be placed. Orders were received from Airco Industrial Gases for 1000 Ci of ^{85}Kr and from Trio-Tech, Inc., for 200 Ci of ^{85}Kr . We presently have a back log of ^{85}Kr orders totaling 1509 Ci.

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 |
| Battelle Northwest | Tritium | 2,000 Ci |
| Sanders-Roe Developments, Ltd. | Tritium | 5,000 Ci |
| J. L. Shepherd Associates | Cesium-137 | 7,615 Ci |
| Gamma Industries | Cesium-137 | 400 Ci |
| <u>Withdrawn Items</u> | | |
| Cleveland Metropolitan General Hospital | Iodine-131 | 50 mCi |
| Mine Safety and Appliance Company | Iodine-131 | 100 mCi |
| University of Pittsburg | Iodine-131 | 50 mCi |
| University of Rochester | Iodine-131 | 100 mCi |
| University of Alabama | Copper-67 | 10 mCi |
| Mayo Foundation | Copper-67 | 10 mCi |
| California Institute of Technology | Service Irradiation | <3 mCi |
| <u>Items Used in Cooperative Programs</u> | | |
| National Institutes of Health | Potassium-43 | 5 mCi |

The radioisotope sales proceeds and shipments for the first seven months of FY 1973 and FY 1974 are given in Table 2.

Table 2. Radioisotope Sales and Shipments

| Item | 7-1-72 thru 1-31-73 | 7-1-73 thru 1-31-74 |
|----------------------------------|------------------------|------------------------|
| Inventory items | \$288,519 | \$225,796 |
| Major products | 33,281 | 48,015 |
| Radioisotope services | 100,538 | 112,031 |
| Cyclotron irradiations | 74,710 | 53,302 |
| Miscellaneous processed material | 30,746 | 31,997 |
| Packing and shipping | <u>39,407</u> | <u>41,762</u> |
| Total | \$567,201 | \$512,903 |
| Number of Shipments | 1,214 | 1,096 |

PUBLICATIONS

REPORTS

J. H. Gillette, *Radioisotope Program Progress Report for January 1974*, ORNL-TM-4502, Oak Ridge National Laboratory.

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