U.S. Department of Energy Radioisotope Customers with Summary of Radioisotope Shipments, FY 1988

N. C. Van Houten

June 1989

**Prepared for the U.S. Department of Energy
under Contract DE-AC06-76RLO 1830**

**Pacific Northwest Laboratory
Operated for the U.S. Department of Energy
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Pacific Northwest Laboratory
Richland, Washington 99352

PREFACE

At the request of the Office of Health and Environment Research (ER-73), Office of Energy Research, U.S. Department of Energy (DOE), Pacific Northwest Laboratory (PNL) annually prepares the radioisotope customer list document. This report covers DOE radioisotope sales and distribution activities by its facilities to domestic, foreign and other DOE facilities for FY 1988. This is the 25th report in a series dating from 1964.

The following DOE sites are involved in radioisotope sales and distribution: Argonne National Laboratory (ANL), Brookhaven National Laboratory (BNL), Idaho National Engineering Laboratory (INEL), Los Alamos National Laboratory (LANL), Oak Ridge National Laboratory (ORNL), Pacific Northwest Laboratory (PNL), Savannah River Operations Office (SRO), and Westinghouse Hanford Company (WHC).

The information provided in this report is divided into five sections:

- Radioisotope Suppliers, Facility Contacts, and Radioisotopes or Services Supplied. Facilities supplying radioisotopes or services and a contact person for each DOE facility.
- List of Customers, Suppliers, and Radioisotopes Purchased. An alphabetical list of domestic and foreign radioisotope customers and their addresses. Each customer is assigned a customer number that is used to cross-reference data in the other sections of the report. Radioisotope purchases for each customer are listed below their address, along with the supplier code for the laboratory supplying the radioisotopes.
- List of Radioisotopes Purchased Cross-Referenced to Customer Numbers. An alphabetical list of the radioisotopes purchased, cross-referenced with the customer numbers of purchasers.
- Geographic Locations of Radioisotope Customers. An alphabetical list of states and foreign countries cross-referenced with customer numbers of purchasers.
- Radioisotope Sales and Transfers - FY 1988. A table summarizing the FY 1988 radioisotope shipment activities of the DOE laboratory facilities identified in the first section. Radioisotopes are alphabetically listed with the suppliers' abbreviated names. Data on shipments, quantities, units of measure, and dollar values of each radioisotope are listed under domestic, foreign and DOE categories.

The total value of DOE radioisotope sales for FY 1988 was \$11.1 million.

SUMMARY

Pacific Northwest Laboratory (PNL) prepared this edition of the radioisotope customer list at the request of the Office of Health and Environmental Research (ER-73), Office of Energy Research, U.S. Department of Energy (DOE). This is the 25th report in a series dating from 1964. This report covers DOE radioisotope sales and distribution activities by its facilities to domestic, foreign and other DOE facilities for FY 1988.

The report is divided into five sections: radioisotope suppliers, facility contacts, and radioisotopes or services supplied; a list of customers, suppliers, and radioisotopes purchased; a list of radioisotopes purchased cross-referenced to customer numbers; geographic locations of radioisotope customers; and radioisotope sales and transfers - FY 1988.

Radioisotopes not previously reported in this series of reports were argon-37, arsenic-72, arsenic-73, bismuth-207, gadolinium-151, rhenium-188, rhodium-101, selenium-72, xenon-123 and zirconium-88.

The total value of DOE radioisotope sales for FY 1988 was \$11.1 million, an increase of 3% from FY 1987.

ACKNOWLEDGMENTS

The author would like to thank the U.S. Department of Energy Laboratories and Area Offices for their annual data contributions that are used to produce this report:

Argonne National Laboratory
Brookhaven National Laboratory
Idaho National Engineering Laboratory/EG&G Idaho, Inc.
Los Alamos National Laboratory
Oak Ridge National Laboratory
Pacific Northwest Laboratory
Savannah River Operations Office
Westinghouse Hanford Company

LIST OF PREVIOUS REPORTS

Previous reports in this series are listed below by report number and fiscal year that radioisotopes were received. All of these reports were published in the year following the year listed (e.g., TID-2160 reports FY 1964 activities, but the report publication date was 1965).

TID-2160 (FY 1964)	BNWL-1774 (FY 1972)	PNL-3839 (FY 1980)
ORNL-IIC-6 (FY 1965)	BNWL-1824 (FY 1973)	PNL-4177 (FY 1981)
ORNL-IIC-9 (FY 1966)	BNWL-1902 (FY 1974)	PNL-4759 (FY 1982)
ORNL-IIC-13 (FY 1967)	BNWL-1993 (FY 1975)	PNL-5126 (FY 1983)
ORNL-IIC-17 (FY 1968)	BNWL-2147 (FY 1976)	PNL-5492 (FY 1984)
ORNL-IIC-27 (FY 1969)	PNL-2572 (FY 1977)	PNL-5948 (FY 1985)
ORNL-IIC-32 (FY 1970)	PNL-2930 (FY 1978)	PNL-6361 (FY 1986)
ORNL-IIC-38 (FY 1971)	PNL-3274 (FY 1979)	PNL-6657 (FY 1987)

Similar reports covering the U.S. Department of Energy's stable radioisotopes' distribution programs have also been prepared and are available from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161 (telephone 703/487-4650).

STABLE ISOTOPE SALES: MOUND FACILITY CUSTOMER AND SHIPMENT SUMMARIES

Report Number and Date

MLM-2718 (FY 1979)
MLM-2843 (FY 1980)
MLM-2994 (FY 1981)
MLM-3095 (FY 1982)
MLM-3234 (FY 1983)

Report Number and Date

MLM-3366 (FY 1984)
MLM-3468 (FY 1985)
MLM-3494 (FY 1986)
MLM-3550 (FY 1987)

STABLE ISOTOPE CUSTOMER LIST AND SUMMARY OF SHIPMENTS

Report Number and Date

ORNL/TM-7214 (FY 1979)
ORNL/TM-7764 (FY 1980)
ORNL/TM-8302 (FY 1981)
ORNL/TM-8704 (FY 1982)
ORNL/TM-8979 (FY 1983)

Report Number and Date

ORNL/TM-9430 (FY 1984)
ORNL/TM-9866/RI (FY 1985)
ORNL/TM-10324 (FY 1986)
ORNL/TM-10639 (FY 1987)
ORNL/TM-11077 (FY 1988)

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LIST OF ABBREVIATIONS

AG-105	Silver-105	CE-139	Cerium-139
AL-26	Aluminum-26	CE-144	Cerium-144
AM-241	Americium-241	CF-249	Californium-249
AM-243	Americium-243	CF-252	Californium-252
AO	Administration Only; no shipments made from site	Ci	Curie
AR-37	Argon-37	CM-243	Curium-243
AS-72	Arsenic-72	CM-244	Curium-244
AS-73	Arsenic-73	CM-248	Curium-248
AT-211	Astatine-211	CO-57	Cobalt-57
AU-195	Gold-195	CO-58	Cobalt-58
AU-196	Gold-196	CO-60	Cobalt-60
AU-198	Gold-198	CS-137	Cesium-137
B-11	Boron-11	CSI	Cyclotron Service Irradiations
BA-140	Barium-140	CSI-BNL	Cyclotron Service Irradiations by Brookhaven
BE-7	Beryllium-7	CSI-LANL	Cyclotron Service Irradiations by Los Alamos
BI-207	Bismuth-207		
BK-249	Berkelium-249	CU-64	Copper-64
BR-77	Bromine-77	CU-65	Copper-65
BR-82	Bromine-82	CU-67	Copper-67
C-11	Carbon-11	CU-68	Copper-68
C-14	Carbon-14	DU	Depleted Uranium
CA-47	Calcium-47	E	Enriched
CAP	Encapsulation	ES-253	Einsteinium-253
CD-109	Cadmium-109		

EU	Enriched Uranium	LU-172	Lutetium-172
EU-152	Europium-152	LU-173	Lutetium-173
F-18	Fluorine-18	MCP	Miscellaneous Compound Preparations
FE-52	Iron-52	μCi	Microcurie
FE-55	Iron-55	μg	Microgram
FE-59	Iron-59	mCi	millicurie
FP	Fission Products	mg	milligram
g	Gram	MG-28	Magnesium-28
GA-67	Gallium-67	MI	Miscellaneous Isotopes
GD-148	Gadolinium-148	MIS	Miscellaneous Quantities
GD-151	Gadolinium-151	MS	Miscellaneous Services
GD-153	Gadolinium-153	MN-54	Manganese-54
GE-68	Germanium-68	MN-57	Manganese-57
H-3	Hydrogen-3 (tritium)	NA-22	Sodium-22
HF-172	Hafnium-172	NA-24	Sodium-24
HO-163	Holmium-163	NB-95	Niobium-95
I-123	Iodine-123	NI-63	Nickel-63
I-125	Iodine-125	NP-237	Neptunium-237
I-129	Iodine-129	NP-237H	High Purity NP-237
I-131	Iodine-131	NP-237O	Oxide of NP-237
IN-111	Indium-111	NU	Natural Uranium
IR-192	Iridium-192	OS-191	Osmium-191
kCi	Kilocurie	P-32	Phosphorus-32
kg	Kilogram	P-33	Phosphorus-33
KR-85	Krypton-85	PA-231	Protactinium-231
KR-85E	Enriched Krypton-85	PD-109	Palladium-109

PM-147	Promethium-147	SM-151	Samarium-151
PO-208	Polonium-208	SN-117	Tin-117
PO-210	Polonium-210	SN-119m	Tin-119m
PU-236	Plutonium-236	SP	Special Processes
PU-237	Plutonium-237	SR-82	Strontium-82
PU-238	Plutonium-238	SR-85	Strontium-85
PU-239	Plutonium-239	SR-89	Strontium-89
PU-240	Plutonium-240	SR-90	Strontium-90
PU-241	Plutonium-241	SS	Special Services
PU-242	Plutonium-242	TB-158	Terbium-158
RB-81	Rubidium-81	TC-99	Technetium-99
RB-83	Rubidium-83	TE-128	Tellurium-128
RB-86	Rubidium-86	TH-229	Thorium-229
RE-188	Rhenium-188	TH-230	Thorium-230
RH-101	Rhodium-101	TH-232	Thorium-232
RSI	Reactor Service Irradiations	TH-234	Thorium-234
RU-97	Ruthenium-97	TI-44	Titanium-44
RU-103	Ruthenium-103	TM-167	Thulium-167
RU-106	Ruthenium-106	TM-170	Thulium-170
RW	Radioisotopes Withdrawn; prepared under special approval	TP	Target Preparations
SE-72	Selenium-72	TRU-SV	Trans Uranium Services
SE-75	Selenium-75	TS	Technical Service
SI-31	Silicon-31	U-233	Uranium-233
SI-32	Silicon-32	U-233SP	Uranium-233 Special Services
SM-145	Samarium-145	U-234	Uranium-234
		U-235	Uranium-235

U-236	Uranium-236
U-238	Uranium-238
V-48	Vanadium-48
V-54	Vanadium-54
XE-123	Xenon-123
XE-127	Xenon-127
Y-87	Yttrium-87
Y-88	Yttrium-88
Y-90	Yttrium-90
ZN-65	Zinc-65
ZR-88	Zirconium-88
ZR-95	Zirconium-95

1.0 RADIOISOTOPE SUPPLIERS, FACILITY CONTACTS, AND RADIOISOTOPES OR SERVICES SUPPLIED

This section lists DOE facilities supplying radioisotopes or services, the contact person for each facility, and the radioisotopes or services supplied. If readers need more specific information about radioisotope sales or shipments for a particular facility, they should contact the person listed for that facility.

RADIOISOTOPE SUPPLIERS, FACILITY CONTACTS, AND RADIOISOTOPES OR SERVICES SUPPLIED

<u>Radioisotope Supplier</u>	<u>Supplier Code</u>	<u>Facility Contact</u>	<u>Radioisotopes or Services</u>
Argonne National Laboratory	ANL	J. E. Gindler, Assistant Director, Chemistry Div. Argonne National Laboratory 9700 South Cass Avenue Argonne, IL 60439 FTS 972-3686 Commercial (312) 972-3686	No radioisotopes sold directly. Radio- isotopes produced counted in ORNL sales.
Brookhaven National Laboratory	BNL	K. S. Dahms Radioisotopes and Special Materials Group Brookhaven National Laboratory Upton, Long Island, NY 11973 FTS 666-4051 Commercial (516) 282-4051	AM-241, AR-37, AU-198, BE-7, CM-244, CS-137, CU-64, EU-152, I-123, I-125, I-131, M1, NA-22, P-32, PD-109, RE-188, RS1, RU-97, SM-145, U-235, U-238, XE-123
Idaho National Engineering Laboratory	INEL	J. E. Brasier Idaho National Engineering Laboratory EG&G Idaho, Inc. P.O. Box 1625 TRA-628, MS 7101 Idaho Falls, ID 83415 FTS 583-9057 Commercial (208) 526-9057	CO-60, GD-153, IR-192, PO-210, SN-119m

<u>Radioisotope Supplier</u>	<u>Supplier Code</u>	<u>Facility Contact</u>	<u>Radioisotopes or Services</u>
Los Alamos National Laboratory	LANL	Lisa Schneider Medical Radioisotope Research Program Los Alamos National Lab Group INC-11, Mail Stop J514 Los Alamos, NM 87545 FTS 843-4675 Commercial (505) 667-4675	AL-26, AS-72, AS-73, BE-7, BI-207, BR-77, BR-82, CD-109, CU-64, CU-67, GE-68, GD-151, NA-22, RB-83, RH-101, SE-72, SR-82, V-48, XE-127, Y-88, ZR-88
Oak Ridge National Laboratory	ORNL	T. A. Danner Isotope Distribution Office Oak Ridge National Laboratory P.O. Box 2008 Oak Ridge, TN 37831-6015 FTS 624-6506 Commercial (615) 574-6506	AM-241, AM-243, CAP, CE-144, CF-252, CM-244, CM-248, CO-60, CS-137, CSI-BNL, CSI-LANL, EU-152, GO-153, H-3, I-129, IR-192, KR-85, KR-85E, MCP, MG-28, MS, NP-237H, PU-237, PU-238, PU-239, PU-242, RSI, RU-106, SP, SR-90, SS, TC-99, TH-229, TH-230, TP, TRU-SV, TS, U-233, U-234, U-235, U-236, U-238, XE-127, Y-90
Pacific Northwest Laboratory	PNL	D. A. Dickman Safeguards Section Pacific Northwest Laboratory P.O. Box 999 Richland, WA 99352 FTS 444-1584 Commercial (509) 376-1584	No radioisotopes produced in FY 1988

<u>Radioisotope Supplier</u>	<u>Supplier Code</u>	<u>Facility Contact</u>	<u>Radioisotopes or Services</u>
Savannah River Operations Office	SRO	R. L. Chandler, Director Processing Division U.S. Department of Energy Savannah River Operations Office P.O. Box A Aiken, SC 29802 FTS 239-5530 Commercial (803) 725-5530	No radioisotopes sold directly. Radioisotopes produced counted in ORNL sales.
Westinghouse Hanford Company	WHC	R. W. Powell, Manager Engineering Development Westinghouse Hanford Company P.O. Box 1970 Richland, WA 99352 FTS 444-4529 Commercial (509) 376-4529	No radioisotopes sold directly. Radioisotopes produced counted in ORNL sales.

2.0 CUSTOMERS, SUPPLIERS, AND RADIOISOTOPES PURCHASED, WITH LISTING OF CUSTOMER NUMBERS

This section is an alphabetical listing of domestic and foreign radioisotope customers and their addresses. Each customer has a customer number that is used to cross-reference data in Sections 3.0 and 4.0 of this report. Radioisotope purchases for each customer are listed below each address, along with the supplier code for the laboratory supplying the radioisotopes.

ALPHABETICAL LISTING (BY COUNTRY) OF CUSTOMERS,
SUPPLIERS, AND ISOTOPES PURCHASED

UNITED STATES

1 AT&T Bell Laboratories
P.O. Box 800
Short Hills, NJ 07078

ORNL: TP, U-235 | 7 Agnes Scott College
E. College Avenue
Decatur, GA 30030

ORNL: TC-99 |
| 2 AT&T Technologies
P.O. Box 105229
Atlanta, GA 30348

ORNL: KR-85 | 8 Albert Einstein College of
Medicine
1300 Morris Park Avenue
Bronx, NY 10461

LANL: CU-67
ORNL: CSI |
| 3 Abbott Laboratories
P.O. Box 177
Abbott Park, IL 60064

ORNL: Y-90 | 9 Amersham Corporation
40 North Avenue
Burlington, MA 01803

ORNL: IR-192 |
| 4 Accu Ray Corporation
650 Ackerman Road
P.O. Box 00248
Columbus, OH 43202

ORNL: KR-85 | 10 Argonne National Laboratory
9700 South Cass Avenue
Argonne, IL 60439

BNL: RSI
LANL: ZR-88
ORNL: CF-252, CSI, MIS, SP,
TH-230, TP, U-233,
U-234 |
| 5 Advanced Micro Devices, Inc.
P.O. Box 3453, M/S 13
Sunnyvale, CA 94088-3453

ORNL: KR-85 | 11 Argonne National Laboratory
P.O. Box 2528
Idaho Falls, ID 83401

ORNL: KR-85, TRU-SV |
| 6 Aeonix Systems, Inc.
46 Manning Road
Billerica, MA 01821

ORNL: KR-85 | 12 Arizona State University
Tempe, AZ 85287

ORNL: SP, TH-229 |

<p>13 Atlantic Richfield Hanford Co.
P.O. Box 769
Richland, WA 99352</p> <p>ORNL: PU-236, RSI</p>	<p>20 Bionetics Research, Inc.
1330-A Piccard Drive
Rockville, MD 20850</p> <p>ORNL: Y-90</p>
<p>14 Atom Sciences, Inc.
114 Ridgeway Center
Oak Ridge, TN 37830   LANL: AL-26
ORNL: CSI</p>	<p>21 Biosources, Limited
4-4 Bud Way
Nashua, NH 03063</p> <p>ORNL: GD-153</p>
<p>15 Babcock & Wilcox Company
Naval Nuclear Fuel Division
Lynchburg, VA 24505</p> <p>BNL: U-235</p>	<p>22 Boston College
Chestnut Hill, MA 02167</p> <p>ORNL: TC-99</p>
<p>16 Bell Telephone Laboratories,
Inc.
600 Mountain Avenue
Murray Hill, NJ 07974</p> <p>BNL: U-238</p>	<p>23 Brigham & Womens Hospital
HMS-PBBH-SFCC
Radiology Foundation, Inc.
75 Francis Street
Boston, MA 02115</p> <p>ORNL: GD-153</p>
<p>17 Bendix Corporation, The
2000 East Bannister Road
Kansas City, MO 64131</p> <p>ORNL: SS</p>	<p>24 Brookhaven National Laboratory
Isotope & Special Materials
Group
Upton, Long Island, NY 11973   LANL: GE-68
ORNL: CSI</p>
<p>18 Beth Israel Hospital
330 Brookline Avenue
Boston, MA 02115</p> <p>ORNL: MCP</p>	<p>25 California Institute of
Technology
Pasadena, CA 91125</p> <p>ORNL: CSI</p>
<p>19 Bethlehem Steel Corporation
Bldg. G, Room 157
Bethlehem, PA 18016</p> <p>BNL: RSI</p>	<p>26 California State University
800 North State College Blvd.
Fullerton, CA 92634   LANL: CU-67
ORNL: CSI, GD-153</p>

<p>27 Calm VA-1-(525)
P.O. Box 2971
Austin, TX 78769

ORNL: XE-127</p> | <p>34 Computer Technology and
Imaging, Inc.
810 Innovation Drive
Knoxville, TN 37932

LANL: GE-68
ORNL: CSI</p> |
| <p>28 Canberra Industries, Inc.
One State Street
Meriden, CT 06450

ORNL: I-129</p> | <p>35 Consolidated Controls Corp.
P.O. Box 726
Springfield, VA 22150

ORNL: H-3, SS</p> |
| <p>29 Case Western Reserve
University
2220 Circle Drive
Cleveland, OH 44106

ORNL: MG-28</p> | <p>36 Cornell University
120 Maple Avenue
Ithaca, NY 14850

ORNL: CSI, MG-28</p> |
| <p>30 Center for Molecular Medicine
and Immunology
1 Bruce Street
Newark, NJ 07103

LANL: Y-88
ORNL: CSI, Y-90</p> | <p>37 Coulter Immunology
440 West 20th St.
Hialeah, FL 33010-2426

LANL: Y-88
ORNL: CSI, Y-90</p> |
| <p>31 Centocor
244 Great Valley Parkway
Malvern, PA 19355

ORNL: TC-99</p> | <p>38 Cryogenic Rare Gas
Laboratories, Inc.
913 Commerce Circle
Hanahan, SC 29410

ORNL: KR-85</p> |
| <p>32 Children's Hospital
300 Longwood Avenue
Boston, MA 02115

BNL: RSI
ORNL: TC-99</p> | <p>39 Cytogen Corporation
201 College Road East
Princeton, NJ 08540

LANL: Y-88
ORNL: CSI, SS, Y-90</p> |
| <p>33 Columbia University
168th and Fort Washington Ave.
New York, NY 10032

BNL: PD-109</p> | <p>40 Digital Equipment Corp.
100 Minuteman Road
Andover, MA 01810

ORNL: KR-85</p> |

- 41 Dow Chemical Company
P.O. Box 191
Midland, MI 48640

ORNL: Y-90
- 42 Dow Chemical USA
Texas Operations
Freeport, TX 77541

ORNL: Y-90
- 43 Downstate Medical Center
450 Clarkson Avenue
Brooklyn, NY 11203

BNL: I-125
- 44 Drexel University
32nd and Chestnut Streets
Philadelphia, PA 19104

ORNL: SS
- 45 Duke University
P.O. Box 40005
Durham, NC 27706

ORNL: CSI
- 46 Duke University Medical Center
Bell Building, Room 133
Durham, NC 27710

LANL: GE-68
- 47 E. I. DuPont de Nemours
and Company, Inc.
New England Nuclear Products
549 Albany Street
Boston, MA 02118

ORNL: CSI, GD-153, H-3, I-129,
KR-85, SR-90, TC-99,
Y-90
- 48 E. I. DuPont de Nemours
and Company, Inc.
Savannah River Plant
Aiken, SC 29801

ORNL: SS
- 49 E. I. DuPont de Nemours
and Company, Inc.
Experimental Station
Wilmington, DE 19898

ORNL: TC-99
- 50 E. I. DuPont de Nemours
and Company, Inc.
New England Nuclear Products
331 Treble Cove Road
North Billerica, MA 01862

INEL: SN-119m
LANL: GE-68, NA-22, Y-88
- 51 E. R. Squibb & Sons
P.O. Box CN 5303
Princeton, NJ 08540

ORNL: CSI, GD-153, XE-127
- 52 E. R. Squibb and Sons, Inc.
Route 1 South, Gate 125
New Brunswick, NJ 08902

LANL: SR-82, Y-88
- 53 EAL Corporation
2030 Wright Avenue
Richmond, CA 94804

ORNL: RSI

- 54 EG&G Idaho, Inc.
INEL Site
P.O. Box 1625
Idaho Falls, ID 83415

BNL: AU-198, RSI
ORNL: CF-252, MIS
- 55 Eagle-Picher Industries, Inc.
Chemsyn Science Laboratories
13605 West 96th Terrace
Lenexa, KS 66215

ORNL: H-3
- 56 Eastman Kodak Company
Kodak Park Division
66 Eastman Avenue
Rochester, NY 14650

LANL: RH-101
ORNL: CSI
- 57 Eberline/TMA
5635 Kircher Blvd., N.E.
Albuquerque, NM 87109

BNL: AM-241
- 58 Environmental Engineering
and Testing
P.O. Box 1012
Richland, WA 99352

ORNL: KR-85
- 59 Fairchild Camera & Instrument
Corporation
Linear Division
P.O. Drawer 7282
Mt. View, CA 94042

ORNL: KR-85
- 60 Fairchild Semiconductor Corp.
P.O. Box 5000, M/S 2C07
Puyallup, WA 98373-0900

ORNL: KR-85
- 61 Fermi National Accelerator
Laboratory
Batavia, IL 60510

BNL: U-238
- 62 Florida State University
Tallahassee, FL 32306

ORNL: MIS, SP, TC-99, TH-230
- 63 Ford Aerospace and
Communications Corp.
Aeronautic Division
Ford Road
Newport Beach, CA 92660

ORNL: KR-85
- 64 Frontier Technology Corp.
P.O. Box 486
1641 Burnett Drive
Xenia, OH 45385

ORNL: CF-252, MIS, TRU-SV
- 65 GA Technologies, Inc.
P.O. Box 85608
San Diego, CA 92138

ORNL: H-3, SR-90, SS
- 66 GTE Products Corporation
Hawes Street
Towanda, PA 18848-0504

LANL: AS-73
ORNL: CSI

67 Gamma Industries, Inc.
2255 Ted Dunham Avenue
Baton Rouge, LA 70802

ORNL: IR-192

68 Gearhart Industries
P.O. Box 1936
Fort Worth, TX 76101

ORNL: H-3

69 General Electric Company
Lynchburg, VA 24502

ORNL: KR-85

70 General Electric Company
P.O. Box 254
San Jose, CA 95103

ORNL: CF-252, MIS

71 General Electric Company
Research and Development
Building K-1
Schenectady, NY 12301

BNL: RSI

72 General Electric/SCO
230 E. Goddard Blvd.
King of Prussia, PA 19406

BNL: RSI

73 General Semiconductor, Inc.
2001 West 10th Place
Tempe, AZ 85281

ORNL: KR-85

74 Genicom Corporation
Genicom Drive
Waynesboro, VA 22980-1999

ORNL: KR-85

75 Georgia Institute
of Technology
225 North Avenue, N.W.
Atlanta, GA 30332

ORNL: KR-85

76 Gollob Analytical Service
47 Industrial Road
Berkeley Heights, NJ 07922

ORNL: H-3, KR-85

77 Grumman Aerospace Corporation
Research Department
South Oyster Bay Road
Bethpage, NY 11714

BNL: RSI

78 Harris Semiconductor
P.O. Box 883
Melbourne, FL 32901

ORNL: KR-85

79 Hughes Aircraft Company
Hughes Microelectronics Center
P.O. Box H, 500 Superior Ave.
Newport Beach, CA 92658-8903

ORNL: KR-85

80 Humanoid Systems
17022 Montanero Street
Carson, CA 90746

ORNL: PU-238, TP

<p>81 Hunter College
Department of Chemistry
126 E. 69th Street
New York, NY 10021</p> <p>LANL: CU-67</p>	<p>88 Indiana University Northwest
3400 Broadway
Gary, IN 46408</p> <p>ORNL: MG-28</p>
<p>82 Hybritech Incorporated
P.O. Box 269006
San Diego, CA 92121</p> <p>ORNL: Y-90</p>	<p>89 Industrial Nuclear Company
1428 Park Avenue
Hoboken, NJ 07030</p> <p>ORNL: IR-192</p>
<p>83 IBM Corporation
P.O. Box 9452
New Haven, CT 06534-0452</p> <p>ORNL: CSI, RSI</p>	<p>90 Industrial Nuclear Company
2506 Davis Street
San Leandro, CA 94577</p> <p>ORNL: IR-192</p>
<p>84 IBM Research Center
Route 134
Yorktown, NY 10598</p> <p>LANL: CU-67</p>	<p>91 Iotech, Inc.
11080 Irma Drive
Northglenn, CO 80233</p> <p>ORNL: CO-60</p>
<p>85 ICN Biomedicals, Inc.
P.O. Box 19536
Irvine, CA 92714</p> <p>ORNL: CS-137, H-3, MCP</p>	<p>92 Iowa State University
Ames Laboratory
Ames, IA 50011</p> <p>ORNL: TC-99</p>
<p>86 IT Corporation
312 Directors Drive
Knoxville, TN 37923</p> <p>ORNL: SP, U-235</p>	<p>93 Isotope Products Lab
1800 N. Keystone St.
Burbank, CA 91504   LANL: BE-7, CD-109, GD-151,
GE-68, XE-127, Y-88</p>
<p>87 Indiana University
P.O. Box 4040
Bloomington, IN 47402</p> <p>ORNL: MG-28</p>	<p>94 Isotope Products Laboratories
404 South Luke Street
Burbank, CA 91502   ORNL: AM-241, CAP, CE-144,
CSI, GD-153, I-129,
KR-85, PU-239, RU-106,
SP, SS, XE-127</p>

<p>95 Isovac Engineering, Inc.
932 Grand Central Ave.
Glendale, CA 91201</p> <p>ORNL: KR-85</p>	<p>102 Lawrence Berkeley Laboratory
One Cyclotron Road
Berkeley, CA 94720   LANL: BR-77; SR-82
ORNL: CSI, H-3, PU-242, SP,
TP</p>
<p>96 J. L. Shepherd and Associates
1010 Arroyo Street
San Fernando, CA 91340</p> <p>ORNL: CS-137, MCP, RSI</p>	<p>103 Lawrence Livermore National
Laboratory
Box 808
Livermore, CA 94550   LANL: RB-83
ORNL: AM-241, CAP, CF-252,
CSI, MIS, PU-242, SP,
TP</p>
<p>97 John Muir Cancer and Aging
Research Institute
2055 N. Broadway
Walnut Creek, CA 94596   LANL: Y-88
ORNL: CSI, Y-90</p>	<p>104 Lockheed Missiles & Space Co.
Product Assessment Plant
Bldg. 150 - Column D7
Sunnyvale, CA 94088</p> <p>BNL: NA-22</p>
<p>98 Johnson Matthey, Inc.
P.O. Box 733
Valley Forge, PA 19482-0733</p> <p>ORNL: TC-99</p>	<p>105 Los Alamos National Laboratory
P.O. Box 1663
Los Alamos, NM 87545   BNL: NA-22, RSI
LANL: BR-82, CD-109, CD-109,
CU-64, CU-67, SE-72
ORNL: CM-244, CSI, H-3,
I-129, MCP, PU-237, SP,
SS, TP, U-233, U-236</p>
<p>99 Joslyn Electronic Systems
P.O. Box 817
Goleta, CA 93116</p> <p>ORNL: H-3</p>	<p>106 Lovelace Biomedical & Environ-
mental Research Institute
Bldg. 9217, Area Y
Kirtland Air Force Base East
Albuquerque, NM 87115   BNL: BE-7
LANL: BE-7
ORNL: CSI, PU-242, SP</p>
<p>100 Kaman Instrumentation Corp.
P.O. Box 7463
Colorado Springs, CO 80933</p> <p>ORNL: RSI</p>	
<p>101 LSI Logic Corporation
1551 McCarthy Boulevard
Milpitas, CA 95035</p> <p>ORNL: KR-85</p>	

- 107 M. D. Anderson Hospital
151 Holcombe
Houston, TX 77030

LANL: GE-68
- 108 Mallinckrodt, Inc.
2703 Wagner Place
Maryland Heights, MO 63043

ORNL: CSI, XE-127
- 109 Manufacturing Sciences Corp.
804 Kerr Hollow Road
Oak Ridge, TN 37831

BNL: U-238
- 110 Marine Biological Laboratory
Wood Hole, MA 02543

ORNL: MG-28
- 111 Martin Marietta Corporation
East Sand Lake Road
Orlando, FL 32855

ORNL: KR-85
- 112 Martin Marietta Energy Systems
Oak Ridge Gaseous Diffusion
Plant
P.O. Box P
Oak Ridge, TN 37830

ORNL: KR-85, TP, U-235
- 113 Martin Marietta Energy Systems
Oak Ridge National Laboratory
Isotope Distribution Office
P.O. Box X
Oak Ridge, TN 37831-6615

INEL: GD-153, IR-192
- 114 Martin Marietta Energy
Systems, I
Y-12 Plant
P.O. Box Y
Oak Ridge, TN 37831

ORNL: GD-153, IR-192, RSI,
SR-90, SS
- 115 Massachusetts Institute
of Technology
96 Prescott Street
Cambridge, MA 02139

BNL: CU-64
- 116 Measurex Corporation
10475 Imperial Avenue
Cupertino, CA 95014

ORNL: CE-144, KR-85
- 117 Medical & Scientific
Enterprises Inc.
56 Union Avenue
Sudbury, MA 01776

ORNL: GD-153
- 118 Medical Research Foundation
181-A Upper Riverdale Road
Riverdale, GA 30274

ORNL: SS, Y-90
- 119 Micra Corporation
120 Ricefield Lane
Hauppauge, NY 11788

ORNL: KR-85
- 120 Micro-Rel, Inc.
2343 W. 10th Place
Tempe, AZ 85281

ORNL: KR-85

<p>121 Minnesota Mining and
Manufacturing Co.
P.O. Box 33121
St. Paul, MN 55133</p> <p>ORNL: GD-153, KR-85</p>	<p>128 National Semiconductor Corp.
P.O. Box 700
Santa Clara, CA 95051</p> <p>ORNL: KR-85</p>
<p>122 Moravsek Biochemicals, Inc.
577 Mercury Lane
Brea, CA 92621</p> <p>ORNL: H-3</p>	<p>129 Naval Research Laboratory
4555 Overlook Avenue, S.W.
Washington, DC 20375</p> <p>BNL: NA-22</p>
<p>123 Motorola, Inc.
5005 East McDowell Road
Phoenix, AZ 85008</p> <p>ORNL: KR-85</p>	<p>130 NeoRx Corporation
410 West Harrison Road
Seattle, WA 98119   LANL: BR-77
ORNL: CSI</p>
<p>124 NASA Space Center
Building 420
Houston, TX 77058</p> <p>BNL: RSI</p>	<p>131 Neutron Products, Inc.
P. O. Box 68
Mt. Ephraim Road
Dickerson, MD 20753   INEL: CO-60
ORNL: CO-60, PM-147, RSI</p>
<p>125 NL Erco/NL Industries, Inc.
15702 W. Hardy Road
Suite 240
Houston, TX 77060</p> <p>ORNL: SR-90</p>	<p>132 New York State Department
of Health
Division of Labs and Res.
Empire State Plaza
Albany, NY 12201</p> <p>BNL: RSI</p>
<p>126 National Semiconductor
333 Western Avenue
So. Portland, Maine 04106</p> <p>ORNL: KR-85</p>	<p>133 New York University
Medical Center
Long Meadow Road
Tuxedo, NY 10987</p> <p>BNL: CS-137</p>
<p>127 National Semiconductor Corp.
5901 S. Calle Santa Cruz
Tucson, AZ 85706</p> <p>ORNL: KR-85</p>	

- 134 New York University Medical Center
P.O. Box 1901
Murray Hill Station
New York, NY 10016

ORNL: MCP
- 135 North Carolina Memorial Hospital
101 E. Weaver Street
Carrboro, NC 27510

ORNL: XE-127
- 136 North Carolina State University
214 Clark Labs, Box 7108
Raleigh, NC 27695

LANL: V-48
ORNL: CSI
- 137 North Shore University Hospital
Dept. of Nuclear Medicine
300 Community Drive
Manhasset, NY 11030

BNL: I-125, RU-97, XE-123
LANL: GE-68
ORNL: CSI
- 138 Northwestern Memorial Hospital
259 East Erie Street
Chicago, IL 60611

ORNL: SR-90
- 139 Nuclear Radiation Developments
Division of Mark IV Industries
Incorporated
2937 Alt Boulevard North
Grand Island, NY 14072

ORNL: AM-241, CAP
- 140 Oak Ridge Associated Universities
P.O. Box 117
Oak Ridge, TN 37830

ORNL: MCP, Y-90
- 141 Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, TN 37831-6015

BNL: RSI
LANL: BI-207, CU-67
ORNL: CE-144, CF-252, CS-137,
CSI, EU-152, GD-153,
I-129, MCP, MIS,
PU-238, RSI, SP, SR-90,
TC-99, TP, U-236
- 142 Ohio State University Medical Center
Doan Hall, N163
410 West 10th Avenue
Columbus, OH 43210

BNL: I-125, SM-145
- 143 Pacific Northwest Laboratory
Battelle-Northwest
P.O. Box 999
Richland, WA 99352

ORNL: CF-252, MIS, SP, SS
- 144 Pett Electronics
858 Hanley Industrial Ct.
Brentwood, MO 63144

LANL: GE-68
ORNL: CSI
- 145 Piezo Technology, Inc.
P.O. Box 7859
Orlando, FL 32854

ORNL: KR-85

<p>146 Princeton Plasma Physics Lab
Princeton University
P.O. Box 451
Princeton, NJ 08544

ORNL: CF-252, MIS</p> <p>147 Princeton University
James Forrestal Campus
Princeton, NJ 08540

BNL: AR-37, RSI
ORNL: KR-85</p> <p>148 Production Data, Inc.
P.O. Box 3266
Bakersfield, CA 93385

ORNL: KR-85</p> <p>149 Purdue University
West Lafayette, IN 47907

LANL: CU-67
ORNL: CSI</p> <p>150 R/A Services, Inc.
P.O. Box 13327
Odessa, TX 79766

ORNL: KR-85</p> <p>151 RCA
Raritan, NJ 08869

ORNL: KR-85</p> <p>152 Radiation Sterilizers, Inc.
46721 Fremont Boulevard
Fremont, CA 94538

ORNL: CO-60, RSI</p> | <p>153 Raytheon Company
350 Ellis Street
Mountain View, CA 94042

ORNL: KR-85</p> <p>154 Reactor Experiments, Inc.
963 Terminal Way
San Carlos, CA 94070

ORNL: TP, U-235</p> <p>155 Reuter-Stokes, Inc
Edison Park
8499 Darrow Road
Twinsburg, OH 44087

ORNL: CAP, SP, TP, U-234,
U-235</p> <p>156 Rockwell International
Atomics International Division
Rocky Flats Plant
P.O. Box 464
Golden, CO 80401

ORNL: CSI, RSI, SP, U-236</p> <p>157 Rutgers State University
P.O. Box 1089
Piscataway, NJ 08854

ORNL: MG-28</p> <p>158 SGS Thomson Microelectronics
P.O. Box 115039, M.S. 2330
Carrollton, TX 75006-5039

ORNL: KR-85</p> <p>159 Safety Light Corporation
4150-A Old Berwick Road
Bloomsburg, PA 17815

ORNL: H-3</p> |
|---|---|

<p>160 Sandia Corporation
P.O. Box 5800
Albuquerque, NM 87115

ORNL: TP, U-235</p> | <p>167 Signetics Corporation
811 East Arques Avenue
P.O. Box 3409
Sunnyvale, CA 94088-3409

ORNL: KR-85</p> |
| <p>161 Sandia National Laboratory
Div. 2126, Bldg. 891
1515 Eubank SE
Albuquerque, NM 87123

BNL: NA-22</p> | <p>168 Siliconix, Inc.
2201 Laurelwood Road
Santa Clara, CA 95054

ORNL: KR-85</p> |
| <p>162 Saunders-Roe Developments, Inc.
87 Sand Pit Road
Danbury, CT 06810

ORNL: H-3</p> | <p>169 Solid State Testing
56 Middlesex Turnpike
Burlington, MA 01803

ORNL: KR-85</p> |
| <p>163 Science Applications
International Corp.
3 Choke Cherry Road
Rockville, MD 20850

LANL: Y-88
ORNL: CSI</p> | <p>170 Source Production and
Equipment Co., Inc.
113 Teal Street
St. Rose, LA 70087-9691

ORNL: IR-192</p> |
| <p>164 Self-Powered Lighting, Ltd.
8 Westchester Plaza
Elmsford, NY 10523

ORNL: H-3</p> | <p>171 Sprague Solid State
3900 Welsh Road
Willow Grove, PA 19090

ORNL: KR-85</p> |
| <p>165 Siemens Gammasonics
Health Physics Services
2000 Nuclear Drive
Des Plaines, IL 60018

LANL: GE-68
ORNL: CSI</p> | <p>172 St. Louis University
Medical School
Radiation Safety Office
3555 Viata
St. Louis, MO 63110

BNL: I-125</p> |
| <p>166 Signetics Corporation
1275 South, 800 East
Orem, UT 84057

ORNL: KR-85</p> | <p>173 Stanford University
P.O. Box 4409
Stanford, CA 94305

ORNL: CSI, TP, U-238</p> |

- 174 Stanford University Hospital
820 Quarry Road
Palo Alto, CA 94304

LANL: V-48
- 175 State University of New York
at Albany
Research Foundation
1400 Washington Avenue
Albany, NY 12222

ORNL: TC-99
- 176 State University of New York
at Stony Brook
Health Sciences Center
Stony Brook, NY 11794

BNL: I-131, RSI
- 177 State University of New York
Health Sciences Center
Department of Physiology
Room BSB6-28
Brooklyn, NY 11203

BNL: I-125
- 178 State of New Jersey
Dept. of Env. Protection
Div. of Env. Quality
Bureau of Env. Laboratories
Trenton, NJ 08625

ORNL: SS
- 179 Summa Medical Corporation
4272 Balloon Park Road, N.E.
Albuquerque, NM 87109

BNL: RE-188
- 180 TRW Inc.
P.O. Box 922
El Segundo, CA 90245

ORNL: KR-85, SS
- 181 Technical Wireline Service,
Inc.
P.O. Box 1973
Bakersfield, CA 93303

ORNL: KR-85
- 182 Teledyne Isotopes
123 Woodland Avenue
Westwood, NJ 07675

ORNL: KR-85
- 183 Teledyne Isotopes
Nuclear Systems Division
110 W. Timonium Road
Timonium, MD 21093

ORNL: MCP, SR-90
- 184 Test-er, Inc.
225 Mitchell Court A10
Chesapeake Square
Addison, IL 60101

ORNL: I-129
- 185 Texas A and M Research
Foundation
P.O. Box H
College Station, TX 77843

ORNL: CSI
- 186 Texas A&M University
Radiological Safety Office
College Station, TX 77843-3261

LANL: CU-67

<p>187 Texas Instruments Incorporated
Semiconductor Group
P.O. Box 225012 M/S 6
Dallas, TX 75265</p> <p>ORNL: KR-85</p>	<p>194 U.S. Air Force - Brooks
Brooks Air Force Base
San Antonio, TX 78235</p> <p>ORNL: MIS</p>
<p>188 Texas Nuclear Corporation
P.O. Box 9267
Austin, TX 78756</p> <p>ORNL: PU-238, TP</p>	<p>195 U.S. Air Force - Kirtland
Kirtland Air Force Base
Albuquerque, NM 87117</p> <p>ORNL: TP, U-238</p>
<p>189 The Applied Radiant
Energy Corporation
2432 Lakeside Drive
Lynchburg, VA 24501</p> <p>ORNL: CO-60</p>	<p>196 U.S. Air Force - McClellan
McClellan Air Force Base
McClellan AFB, CA 95652</p> <p>ORNL: AM-241, CF-252, MIS</p>
<p>190 Theragenics Corporation
900 Atlantic Drive
Atlanta, GA 30332</p> <p>ORNL: SS</p>	<p>197 U.S. Army
Armed Forces Radiobiology
Research Institute
Defense Nuclear Agency
Bethesda, MD 20014</p> <p>ORNL: MIS</p>
<p>191 Tracero Corporation
5763 Underwood Road
Pasadena, TX 77507</p> <p>ORNL: KR-85</p>	<p>198 U.S. Bureau of Mines
729 Arapleen Drive
Salt Lake City, UT 84108</p> <p>LANL: AS-73</p>
<p>192 Trio-Tech International
355 Parkside Drive
San Fernando, CA 91340</p> <p>ORNL: KR-85</p>	<p>199 U.S. Department of Agriculture
Research Service
P.O. Box 53326
New Orleans, LA 70150</p> <p>ORNL: MG-28, XE-127</p>
<p>193 Tru-Tec Incorporated
P.O. Box 1908
La Porte, TX 77571</p> <p>ORNL: KR-85</p>	<p>200 U.S. Department of Energy
New Brunswick Laboratory
9800 South Cass Avenue
Argonne, IL 60439</p> <p>ORNL: AM-243, SP, TP</p>

<p>201 U.S. Department of Interior
U.S. Bureau of Mines
4800 Forbes Avenue
Pittsburgh, PA 15213</p> <p>ORNL: CSI</p>	<p>208 Unisys Corporation
310.1 Goddard Space Flight
Center
Greenbelt, MD 20771</p> <p>ORNL: KR-85</p>
<p>202 U.S. Geological Survey
1020 O'Brien Drive
Menlo Park, CA 94025</p> <p>ORNL: CSI</p>	<p>209 Unisys Corporation
Computer Systems
P.O. Box 64525
St. Paul, MN 55161</p> <p>ORNL: KR-85</p>
<p>203 U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 22092</p> <p>ORNL: CSI, H-3, RSI, SP, U-235</p>	<p>210 University Hospitals
of Cleveland
2074 Abington Road
Cleveland, OH 44106</p> <p>ORNL: CSI</p>
<p>204 U.S. Geological Survey
345 Middlefield Road
Menlo Park, CA 94025</p> <p>LANL: AS-73</p>	<p>211 University of Alabama
Medical Center
1919 Seventh Avenue, South
Birmingham, AL 35486</p> <p>ORNL: CSI</p>
<p>205 U.S. National Bureau of
Standards
Gaithersburg, MD 20899   ORNL: CE-144, CF-252, GD-153,
MIS</p>	<p>212 University of Alabama
221 Fourteenth Street S.
Birmingham, AL 35294</p> <p>LANL: BR-77</p>
<p>206 U.S. National Institutes
of Health
900 Rockville Pike
Bethesda, MD 20892   LANL: CU-67, Y-88
ORNL: CSI, XE-127, Y-90</p>	<p>213 University of Arkansas
4301 West Markham Street
Little Rock, AR 72205   LANL: CU-67
ORNL: CSI</p>
<p>207 U.S. Navy
Naval Ocean Systems Center
271 Catalina Boulevard
San Diego, CA 92152-5122</p> <p>ORNL: MIS, TRU-SV</p>	<p>214 University of California
405 Hilgard Avenue
Los Angeles, CA 90024</p> <p>ORNL: MG-28, XE-127</p>

<p>215 University of California
8655 Production Avenue
San Diego, CA 92121</p> <p>LANL: CU-67</p>	<p>222 University of Chicago
1525 E. Hyde Park Blvd.
Chicago, IL 60615</p> <p>ORNL: TP</p>
<p>216 University of California
Chemistry Department
Davis, CA 95616   LANL: Y-88
ORNL: CSI, MG-28</p>	<p>223 University of Cincinnati
Cincinnati, OH 45221</p> <p>ORNL: TC-99</p>
<p>217 University of California
Davis Medical Center
2921 Stockton Blvd.
Sacramento, CA 94817</p> <p>LANL: Y-88</p>	<p>224 University of Colorado
Campus Box 54
Boulder, CO 80309</p> <p>ORNL: TC-99</p>
<p>218 University of California San
Diego
La Jolla, CA 92093</p> <p>ORNL: CSI</p>	<p>225 University of Florida
Radiation Control Office
212 Nuclear Science Center
Gainesville, FL 32611</p> <p>BNL: I-125</p>
<p>219 University of California, Davis
4310 X Street
Sacramento, CA 95817</p> <p>LANL: CU-67</p>	<p>226 University of Lowell
Research Foundation
450 Aiken Street
Lowell, MA 01854</p> <p>ORNL: TP</p>
<p>220 University of California, Davis
Internal Medicine
2315 Stockton Blvd., Room 4320
Sacramento, CA 95616</p> <p>ORNL: CSI</p>	<p>227 University of Michigan
1101 N. University Bldg.
Ann Arbor, MI 48109   LANL: GE-68
ORNL: CSI</p>
<p>221 University of Central Florida
4000 Central Florida Blvd.
Orlando, FL 32816   LANL: AS-73
ORNL: CSI</p>	<p>228 University of North Carolina
Chapel Hill, NC 27514</p> <p>ORNL: SS</p>

229 University of Pennsylvania
3400 Spruce Street
Philadelphia, PA 19104-6281

LANL: GE-68
ORNL: CSI

230 University of Rochester
400 Elmwood Avenue
Rochester, NY 14642

BNL: RSI

231 University of Texas
6431 Fannin
Houston, TX 77030

LANL: AS-72

232 University of Texas System
Cancer Center
M. D. Anderson Cancer Center
P.O. Box 25128
Houston, TX 77030

ORNL: CSI

233 University of Texas at Dallas
5323 Harry Hines Blvd.
Dallas, TX 75235

LANL: CD-109, CU-67

234 University of Texas at Dallas
P.O. Box 30365
Dallas, TX 75230

ORNL: CSI, SS

235 University of Virginia
Radiation Safety Officer
RWMF, 124 11th Street, S.W.
Charlottesville, VA 22903

BNL: P-32

236 University of Washington
400 Administration Building
Seattle, WA 98195

ORNL: CSI, SP

237 University of Washington
Isotope Receiving Office
Room J25A, Health Science
Building
Seattle, WA 98195

LANL: GE-68

238 University of Wisconsin
317 N. Randall Avenue
Room 9
Madison, WI 53715

LANL: GE-68

239 University of Wisconsin
750 University Avenue
Madison, WI 53706

ORNL: CSI

240 Washington Department of
Social and Health
Office of Public Health Labs
1610 N. E. 150th Street
Seattle, WA 98155-7224

ORNL: SP, U-236

241 Washington University
724 S. Euclid, Rm. 242
St. Louis, MO 63110

LANL: BR-77, CU-67, GE-68

242 Washington University
Lindell and Skinker
St. Louis, MO 63130

ORNL: CSI

243 West Valley Nuclear Services
Rocky Springs Road
West Valley, NY 14171-0191

BNL: CS-137

244 Western Kentucky University
Bowling Green, KY 42101

ORNL: MIS

245 Westinghouse Advanced Energy
Systems
I-70, Exit 258, Gate A
Madison, PA 15663

INEL: PO-210

246 Westinghouse Electric Corp.
P.O. Box 284
Elmira, NY 14902

ORNL: CAP, PU-237, TP, U-234,
U-235

247 Westinghouse Electric Corp.
Research and Development Center
Beulah Road, Churchill Borough
Pittsburgh, PA 15235

ORNL: MIS, NP-237, TRU-SV

248 Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

ORNL: MIS

249 Westinghouse Idaho
Nuclear Co., Inc.
P.O. Box 4000
Idaho Falls, ID 83403

ORNL: CM-248, TRU-SV

250 Wright State University
7751 Colonel Glenn Highway
Dayton, OH 45431

ORNL: MG-28

251 Yale University
20 Ashmun Street
New Haven, CT 06520

ORNL: MCP

252 Yankee Atomic Electric Company
1671 Worcester Road
Framingham, MA 01701

ORNL: CSI

253 Zilog, Incorporated
10460 Bubb Road
Cupertino, CA 95014

ORNL: KR-85

AUSTRALIA

254 Australian National University
Research School of Physical
Sciences
Supply Office, G.P.O. Box 4
Canberra, A.C.T. 2601
AUSTRALIA

ORNL: SP, U-236

255 Australian Nuclear Science
and Technology Org.
Australian Radioisotopes,
Bldg. 238
New Illawarra Road
Lucas Heights, Sydney NSW 2234

AUSTRALIA

LANL: BE-7
ORNL: CSI

256 Embassy of Australia
1601 Massachusetts Avenue, N.W.
Washington, DC 20036
AUSTRALIA

ORNL: PU-239, SP

257 Monash University
The Accountant
Wellington Road
Clayton, Victoria 3168
AUSTRALIA

ORNL: I-129

258 Phillips Communication Systems
2 Greenhills Avenue
Moorebank N.S.W. 2170
AUSTRALIA

ORNL: KR-85

BELGIUM

259 Institut National Des
Radioelements
Service des Achats
Zoning Industriel du Wainage
B-6200, Fleurus
BELGIUM

LANL: GE-68

ORNL: SR-90

260 Joint Research Centre
Central Bureau for Nuclear
Measurements
Steenweg op Retie
2400 Geel
BELGIUM

ORNL: TP

261 Katolieke Universiteit Leuven
Instituut Voor Kern-En
Stralingsfysika
Celestijnenlaan 200 D
3030 Leuven
BELGIUM

ORNL: I-129, SS

262 Liege University
Cyclotron Center
B4000 Liege
BELGIUM

LANL: GE-68

263 Universit de Liege
Centre de Recherche du
Cyclotron
B-4000 Liege
BELGIUM

ORNL: CSI

BRAZIL

264 Brazilian Center for Physical
Research
Rio de Janeiro
BRAZIL

ORNL: CO-60, Y-90

CANADA

265 Anka Nuclear Industries
(Canada) Inc.
#3, 2816-21 Street N.E.
Calgary, Alberta
CANADA

ORNL: TC-99

- 266 Atomic Energy of Canada, Ltd.
Chalk River Nuclear Lab.
Chalk River, Ontario
CANADA

INEL: RSI
ORNL: H-3
- 267 Atomic Energy of Canada, Ltd.
Radiochemical Co.
P.O. Box 13500
Kanata, Ontario K2K 1X8
CANADA

ORNL: CS-137, MCP, SS, XE-127
- 268 Canadian Tracerlab, Inc.
P.O. Box 1958, Station "M"
Calgary, Alberta
CANADA

ORNL: KR-85
- 269 Dr. Gati & Associates
Laboratories Ltd.
P.O. Box 563
Winterburn, Alberta T0E 2N0
CANADA

ORNL: H-3
- 270 Fisheries and Oceans
Freshwater Institute
501 University Crescent
Winnipeg, Manitoba R3T 2N6
CANADA

LANL: CD-109
- 271 Government of Canada
Fisheries and Oceans
Freshwater Institute
501 University Crescent
Winnipeg, Manitoba
CANADA

ORNL: CSI
- 272 McMaster University
Hamilton, Ontario
CANADA

LANL: GE-68
ORNL: CSI, SP, U-236
- 273 TRIUMF
4004 Westbrook Mall
Vancouver, BC
CANADA

BNL: U-238
- 274 Toronto General Hospital
101 College Street
Toronto 2, Ontario
CANADA

ORNL: Y-90
- 275 Universite Du Quebec A
Montreal
P.O. Box 8888, Branch "A"
Montreal (Quebec) H3C 3P8
CANADA

ORNL: TC-99
- 276 University of British Columbia
Accounts Payable
2075 Westbrook Mall
Vancouver
British Columbia V6T 1Z1
CANADA

ORNL: CSI, MG-28
- 277 University of Saskatchewan
Accelerator Laboratory
Saskatoon
CANADA

BNL: CM-244

DENMARK

278 Isotope Pharmacy, The
378 Frederikssundsvej
DK-2700 Bronshøj
DENMARK

ORNL: CS-137

279 Molsgaard Medical A/S
Rungstedvej 13
DK-2970 Horsholm
DENMARK

ORNL: CS-137, MCP

280 Riso National Laboratory
Isotope Division
DK-4000 Roskilde
DENMARK

LANL: V-48
ORNL: CSI

FINLAND

281 Turku University Central
Hospital
Department of Nuclear Medicine
SF-20520 Turku
FINLAND

LANL: GE-68
ORNL: CSI

FRANCE

282 CERMEP
59 Bd Pinel
69003 Lyon
FRANCE

ORNL: CSI

283 Centre De Medicine Nucleaire
28 Ave. Du Doyen Jean Lepine
69394 Lyon Cedex 3,
M690017 S11
FRANCE

LANL: GE-68

284 Commissariat A L'Energie
Atomique
C/O Embassy of France/Nuclear
Office
4101 Reservoir Road N.W.
Washington, DC 20007-2180
FRANCE

ORNL: CF-252, MIS

285 Compagnie Oris Industrie
Societe Gondrand
Roissy-CDC Airport
FRANCE

LANL: GE-68
ORNL: CSI

GERMANY (FEDERAL REPUBLIC OF)

286 Federal Health Office
Ingolstaedter Landstr. 1
D-8042 Neuherberg
GERMANY (FEDERAL REPUBLIC OF)

ORNL: AM-243, CM-248, SP,
TH-230, TP, TRU-SV,
U-236

287 Institut fur Strahlenphysik
der Universitat Stuttgart
Allmandring 3
D-7000 Stuttgart 80
GERMANY (FEDERAL REPUBLIC OF)

ORNL: SS

288 Kernforschungszentrum
Karlsruhe
Postfach 3640
7500 Karlsruhe
GERMANY (FEDERAL REPUBLIC OF)

ORNL: TC-99

289 Kernkraftwerk Obrigheim GmbH
6951 Obrigheim am Neckar
Frankfurt
GERMANY (FEDERAL REPUBLIC OF)

ORNL: SP, U-234

290 Osram GmbH LOG/TRE
Postfach 90 06 20
8000 Munchen 90
GERMANY (FEDERAL REPUBLIC OF)

ORNL: KR-85

291 Ruhr Universitat Bochum
Zentrales Isotopen Laboratory
Universitat Strasse 150
4630 Bochum 1
GERMANY (FEDERAL REPUBLIC OF)

LANL: NA-22

292 Universitat Giessen
6300 Giessen
GERMANY (FEDERAL REPUBLIC OF)

ORNL: SP, U-236

293 Universitat Muchen
Sektion Physik
Technologisches Labor
8046 Garching
Am Coulombwall 1
GERMANY (FEDERAL REPUBLIC OF)

LANL: AL-26

ORNL: CSI

ISRAEL

294 Rambam Society
Rambam Medical Center
Haifa 35254
ISRAEL

ORNL: MCP

ITALY

295 Fondazione Centro S. Romanello
Del Monte Tabor
Via Olgettine, 60-Milano
Codice Fiscale 03064280153
ITALY

ORNL: CSI

296 San Raffaele Institute
Nuclear Medicine
Via Olgettina 60
20132 Milano
ITALY

LANL: GE-68

JAPAN

297 Daiel Bussan Co., Ltd.
Yoshizumi Building
No. 16, 2-Chome
Nihonbashi Kayabacho Chuo-Ku
Tokyo
JAPAN

ORNL: H-3, SS

298 Japan Atomic Energy
Research Institute
2-2, Uchisaiwai-Cho 2-Chome
Chiyoda, Tokyo 100
JAPAN

ORNL: CAP, CM-244, H-3, SS

299 Japan Radioisotope Association
Hon-Komagome 2 Chome 28
Bunkyo-Ku
Tokyo
JAPAN

ORNL: TP

KOREA

300 Hyundai Electronics America
4401 Great America Parkway
Santa Clara, CA 95054
KOREA

ORNL: KR-85

301 Modu Corporation
33-10 Queens Boulevard
Long Island City, NY 11101
KOREA

ORNL: TC-99

MEXICO

302 Honeywell, S. A. de C. V.
Apartado 1223
col Panamericana C. P. 3
Chihuahua, Chih
MEXICO

ORNL: KR-85

NETHERLANDS

303 Byk Mallinckrodt Cil B. V.
Attention: Mr. L. B. Dapper
Westeiduinweg 3
1754 Z. G. Petten
NETHERLANDS

ORNL: TC-99

304 Vrije Universiteit
Amsterdam
NETHERLANDS

ORNL: CSI

PHILIPPINES

305 Team Pacific Corporation
Electronics Avenue
FTI Taguig
Metro Manila
PHILIPPINES

ORNL: KR-85

SOUTH AFRICA

306 J. A. Ewing and McDonald, Inc.
11 Penn Plaza Suite 2221
New York, NY 10001
SOUTH AFRICA

ORNL: TC-99

SWEDEN

307 Studsvik Ab
Purchasing Office
611 82 Nykoping
SWEDEN

ORNL: I-129

SWITZERLAND

308 Eidg. Institut fur
Reaktorforschung
Wurenlingen
SWITZERLAND

ORNL: AM-243

309 MB-Microtec, Inc.
Freiburgstrasse 624
CH-3172 Niederwangen/Berne
SWITZERLAND

ORNL: H-3

310 Paul Scherrer Institute (PSI)
Formerly SIN
CH-5234 Villigen
SWITZERLAND

LANL: GE-68

ORNL: CSI, H-3

311 Radium-Chemie Limited
CH-9053 Teufen
SWITZERLAND

ORNL: H-3

UNITED KINGDOM

312 Amersham International
Great South West Road
East Bedfont, Feltham
Middlesex England TW14 8NJ
UNITED KINGDOM

LANL: BE-7, Y-88

313 Amersham International, Ltd.
White Lion Road Amersham
Buckinghamshire England HP7 9LL
UNITED KINGDOM

ORNL: CAP, CE-144, CM-244,
CO-60, CSI, GD-153, H-3,
KR-85, RSI, TC-99, Y-90

314 Medical Research Council
Hammersmith Hospital
Ducane Road
London, W12
UNITED KINGDOM

LANL: GE-68

315 Medical Research Council
Radiobiology Unit, Harwell
Didcot, Oxon, OX11 ORD
UNITED KINGDOM

LANL: CU-67

ORNL: CSI

316 Saunders-Roe Developments,
Ltd.
Attn: Chief Accountant
Millington Road
Hayes, Middlesex,
England UB3 4NB
UNITED KINGDOM

ORNL: H-3

317 Semiconductor Devices, Ltd.
65 Wong Chuk Hang Road
Gee Chang Hong Centre
16./F1., Flat D, Aberdeen
Hong Kong
UNITED KINGDOM

ORNL: KR-85

318 Sinotra Company Limited
Sui Ying Bldg., 1/F Flat 'F'
1 Yuk Yat Street, Lik Shan
Road
Kowloon, Hong Kong
UNITED KINGDOM

ORNL: SR-90

319 Surelite Limited
Priors Court
Priors Haw Road
Weldon, Northants NN171J6
England
UNITED KINGDOM

ORNL: H-3

- 320 The Open University
Finance Division
Sherwood House
Bletchley, Milton Keynes
Buckinghamshire, England
UNITED KINGDOM

ORNL: SP, TH-229
- 321 Unipath, Ltd.
Norse Road
Bedford MK41 0QG
UNITED KINGDOM

ORNL: Y-90
- 322 University of London
Royal Post Graduate Medical
School
Hammersmith Hospital
London, England W12 0HS
UNITED KINGDOM

ORNL: CSI

3.0 LIST OF RADIOISOTOPES PURCHASED CROSS-REFERENCED TO CUSTOMER NUMBERS

This section contains an alphabetical list of radioisotopes cross-referenced to customer numbers. This list provides a quick reference of the number of customers purchasing a particular radioisotope.

ISOTOPES PURCHASED AND CROSS-REFERENCED TO CUSTOMER NUMBERS

Aluminum-26	14 293
Americium-241	57 94 103 139 196
Americium-243	200 286 308
Argon-37	147
Arsenic-72	231
Arsenic-73	66 198 204 221
Beryllium-7	93 106 255 312
Bismuth-207	141
Bromine-77	102 130 212 241
Bromine-82	105
Cadmium-109	93 105 233 270
Californium-252	10 54 64 70 103 141 143 146 196 205 284
Cerium-144	94 116 141 205 313
Cesium-137	85 96 133 141 243 267 278 279
Cobalt-60	91 131 152 189 264 313
Copper-64	105 115
Copper-67	8 26 81 84 105 141 149 186 206 213 215 219 233 241 315
Curium-244	105 277 298 313
Curium-248	249 286
Cyclotron Service Irradiations	8 10 14 24 25 26 30 34 36 37 39 45 47 51 56 66 83 94 97 102 103 105 106 108 130 136 137 141 144 149 156 163 165 173 185 201 202 203 206 210 211 213 216 218 220 221 227 229 232 234 236 239 242 252 255 263 271 272 276 280 281 282 285 293 295 304 310 313 315 322
Encapsulation	94 103 139 155 246 298 313
Europium-152	141

Gadolinium-151	93
Gadolinium-153	21 23 26 47 51 94 113 114 117 121 141 205 313
Germanium-68	24 34 46 50 93 107 137 144 165 227 229 237 238 241 259 262 272 281 283 285 296 310 314
Gold-198	54
Iodine-125	43 137 142 172 177 225
Iodine-129	28 47 94 105 141 184 257 261 307
Iodine-131	176
Iridium-192	9 67 89 90 113 114 170
Krypton-85	2 4 5 6 11 38 40 47 58 59 60 63 69 73 74 75 76 78 79 94 95 101 111 112 116 119 120 121 123 126 127 128 145 147 148 150 151 153 158 166 167 168 169 171 180 181 182 187 191 192 193 208 209 253 258 268 290 300 302 305 313 317
Magnesium-28	29 36 87 88 110 157 199 214 216 250 276
Misc. Compounds	18 85 96 105 134 140 141 183 251 267 279 294
Misc. Quantities	10 54 62 64 70 103 141 143 146 194 196 197 205 207 244 247 248 284
Neptunium-237	247
Palladium-109	33
Phosphorus-32	235
Plutonium-236	13
Plutonium-237	105 246
Plutonium-238	80 141 188
Plutonium-239	94 256
Plutonium-242	102 103 106
Polonium-210	245
Promethium-147	131
Reactor Service Irradiation	10 13 19 32 53 54 71 72 77 83 96 100 105 114 124 131 132 141 147 152 156 176 203 230 266 313

Rhenium-188	179
Rhodium-101	56
Rubidium-83	103
Ruthenium-106	94
Ruthenium-97	137
Samarium-145	142
Selenium-72	105
Sodium-22	50 104 105 129 161 291
Special Processes	10 12 62 86 94 102 103 105 106 141 143 155 156 200 203 236 240 254 256 272 286 289 292 320
Special Services	17 35 39 44 48 65 94 105 114 118 143 178 180 190 228 234 261 267 287 297 298
Strontium-82	52 102
Strontium-90	47 65 114 125 138 141 183 259 318
TRU Services	11 64 207 247 249 286
Target Preparation	1 10 80 102 103 105 112 141 154 155 160 173 188 195 200 222 226 246 260 286 299
Technetium-99	7 22 31 32 47 49 62 92 98 141 175 223 224 265 275 288 301 303 306 313
Thorium-229	12 320
Thorium-230	10 62 286
Tin-119m	50
Tritium	35 47 55 65 68 76 85 99 102 105 122 159 162 164 203 266 269 297 298 309 310 311 313 316 319
Uranium-233	10 105
Uranium-234	10 155 246 289
Uranium-235	1 15 86 112 154 155 160 203 246
Uranium-236	105 141 156 240 254 272 286 292

Uranium-238	16	61	109	173	195	273																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													</
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4.0 GEOGRAPHIC LOCATIONS OF RADIOISOTOPE CUSTOMERS

This section alphabetically lists states and foreign countries, cross-referencing the customer numbers, which indicate the geographic concentration of radioisotope users.

GEOGRAPHIC LOCATIONS OF CUSTOMERS BY CUSTOMER NUMBER

DOMESTIC

Alabama	211	212												
Arizona	12	73	120	123	127									
Arkansas	213													
California	5	25	26	53	59	63	65	70	79	80	82	85	90	
	93	94	95	96	97	99	101	102	103	104	116	122	128	
	148	152	153	154	167	168	173	174	180	181	192	196	202	
	204	207	214	215	216	217	218	219	220	253				
Colorado	91	100	156	224										
Connecticut	28	83	162	251										
Delaware	49													
District of Columbia	129													
Florida	37	62	78	111	145	221	225							
Georgia	2	7	75	118	190									
Idaho	11	54	249											
Illinois	3	10	61	138	165	184	200	222						
Indiana	87	88	149											
Iowa	92													
Kansas	55													
Kentucky	244													
Louisiana	67	170	199											
Maryland	20	131	163	183	197	205	206	208						
Massachusetts	6	9	18	22	23	32	40	47	50	110	115	117	169	
	226	252												
Michigan	41	227												
Minnesota	121	209												
Missouri	17	108	144	172	241	242								

New Hampshire	21
New Jersey	1 16 30 39 51 52 76 89 146 147 151 157 178 182
New Mexico	57 105 106 160 161 179 195
New York	8 24 33 36 43 56 71 77 81 84 119 132 133 134 137 139 164 175 176 177 230 243 246
North Carolina	45 46 135 136 228
Ohio	4 29 64 142 155 210 223 250
Pennsylvania	19 31 44 66 72 98 159 171 201 229 245 247
South Carolina	38 48
Tennessee	14 34 86 109 112 113 114 140 141
Texas	27 42 68 107 124 125 150 158 185 186 187 188 191 193 194 231 232 233 234
Utah	166 198
Virginia	15 35 69 74 189 203 235
Washington	13 58 60 130 236 237 240 248
Wisconsin	238 239
 <u>FOREIGN</u>	
AUSTRALIA	254 255 256 257 258
BELGIUM	259 260 261 262 263
BRAZIL	264
CANADA	265 266 267 268 269 270 271 272 273 274 275 276 277
DENMARK	278 279 280
FINLAND	281
FRANCE	282 283 284 285
GERMANY (FEDERAL REPUBLIC OF)	286 287 288 289 290 291 292 293
ISRAEL	294

ITALY	295 296
JAPAN	297 298 299
KOREA	300 301
MEXICO	302
NETHERLANDS	303 304
PHILIPPINES	305
SOUTH AFRICA	306
SWEDEN	307
SWITZERLAND	308 309 310 311
UNITED KINGDOM	312 313 314 315 316 317 318 319 320 321 322

5.0 RADIOISOTOPE SALES AND TRANSFERS - FY 1988

This section summarizes FY 1988 radioisotope shipment activities of the DOE laboratory facilities mentioned in the first section of the report. Radioisotopes are listed alphabetically with the suppliers' abbreviated names. Data on shipments, quantities, units of measure, and dollar values of each radioisotope are listed under domestic, foreign, and DOE categories. The value of the radioisotopes sold in FY 1988 was \$11.1 million.

RADIOISOTOPE SALES AND TRANSFERS - FY 1988

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Radioisotope	Supplier	Domestic				Foreign				DOE				Total			
		No. of Ship.	Quantity	Unit	\$ Value	No. of Ship.	Quantity	Unit	\$ Value	No. of Ship.	Quantity	Unit	\$ Value	No. of Ship.	Quantity	Unit	\$ Value
Aluminum-26	LANL	1	66.66	nCi	953	1	1.00	nCi	114	-	---	-	-	2	61.00	nCi	1067
Americium-241	BNL	1	0.01	mCi	0	-	---	-	-	-	---	-	-	1	0.01	mCi	0
Americium-241	ORNL	4	15.90	g	25388	-	---	-	-	1	55470.00	g	68382	5	55485.90	g	91770
Americium-243	ORNL	-	---	-	-	2	11.00	mg	325	0	---	mg	100	2	11.00	mg	425
Argon-37	BNL	1	10.00	mCi	0	-	---	-	-	-	---	-	-	1	10.00	mCi	0
Arsenic-72	LANL	1	6.30	mCi	0	-	---	-	-	-	---	-	-	1	6.30	mCi	0
Arsenic-73	LANL	6	13.00	mCi	1269	-	---	-	-	-	---	-	-	6	13.00	mCi	1269
Beryllium-7	BNL	1	47.00	mCi	3143	-	---	-	-	-	---	-	-	1	47.00	mCi	3143
Beryllium-7	LANL	3	105.00	mCi	2516	7	121.00	mCi	3375	-	---	-	-	10	226.00	mCi	5891
Bismuth-207	LANL	-	---	-	-	-	---	-	-	1	3.00	mCi	7450	1	3.00	mCi	7450
Bromine-77	LANL	3	77.00	mCi	1256	-	---	-	-	1	50.00	mCi	721	4	127.00	mCi	1977
Bromine-82	LANL	-	---	-	-	-	---	-	-	3	115.00	mCi	0	3	115.00	mCi	0
CSI-BNL	ORNL	8	1156.00	-	41433	2	51.00	-	2550	3	410.00	-	10815	13	1617.00	-	54798
CSI-LANL	ORNL	87	9220.70	-	291409	25	826.00	-	44780	24	803.40	-	22362	136	10850.10	-	350551
Cadmium-109	LANL	10	184.00	mCi	29098	1	200.00	mCi	3312	3	24.50	mCi	0	14	408.50	mCi	32410
Californium-252	ORNL	6	11397.00	μCi	174495	1	3535.00	μCi	95545	6	57689.10	μCi	300	12	72601.10	μCi	270340
Cerium-144	ORNL	1	50.00	mCi	700	0	---	mCi	440	2	32.00	mCi	584	3	82.00	mCi	1724
Cesium-137	BNL	2	0.07	mCi	0	-	---	-	-	-	---	-	-	2	0.07	mCi	0
Cesium-137	ORNL	4	109757.00	Ci	11575	3	88870.00	Ci	95920	0	---	Ci	100	7	190627.00	Ci	107595
Cobalt-60	INEL	1	185000.00	Ci	99000	-	---	-	-	-	---	-	-	1	185000.00	Ci	99000
Cobalt-60	ORNL	6	518024.00	Ci	129500	3	451095.00	Ci	112773	-	---	-	-	9	969119.00	Ci	242279
Copper-64	BNL	2	0.17	mCi	0	-	---	-	-	-	---	-	-	2	0.17	mCi	0
Copper-64	LANL	-	---	-	-	-	---	-	-	2	29.00	mCi	0	2	29.00	mCi	0

Radioisotope	Supplier	Domestic				Foreign				DOE				Total			
		No. of Ship.	Quantity	Unit	\$ Value	No. of Ship.	Quantity	Unit	\$ Value	No. of Ship.	Quantity	Unit	\$ Value	No. of Ship.	Quantity	Unit	\$ Value
Copper-67	LANL	45	2500.51	mCi	6090	2	25.00	mCi	285	14	1004.00	mCi	605	61	3649.51	mCi	6980
Curium-244	BNL	-	---	-	-	1	100.00	mCi	0	-	---	-	-	1	100.00	mCi	0
Curium-244	ORNL	-	---	-	-	4	2000.00	mg	295300	1	1.00	mg	100	5	2001.00	mg	295400
Curium-248	ORNL	-	---	-	-	1	5.00	mg	725	1	5000.00	mg	100	2	5005.00	mg	825
Encapsulation	ORNL	-	---	-	656149	-	---	-	300999	-	---	-	42995	-	---	-	1059143
Europium-152	BNL	-	---	-	-	1	0.92	mCi	0	-	---	-	-	1	0.92	mCi	0
Europium-152	ORNL	-	---	-	-	-	---	-	-	1	2.00	mCi	105	1	2.00	mCi	105
Gadolinium-151	LANL	1	392.00	nCi	0	-	---	-	-	-	---	-	-	1	392.00	nCi	0
Gadolinium-153	INEL	2	218.00	Ci	140000	-	---	-	-	-	---	-	-	2	218.00	Ci	140000
Gadolinium-153	ORNL	45	141.70	Ci	531979	1	25.00	Ci	94350	4	2.00	Ci	8139	50	168.70	Ci	634468
Germanium-68	LANL	18	1030.00	mCi	62809	11	305.00	mCi	19110	1	10.00	mCi	594	30	1411.00	mCi	72319
Gold-198	BNL	1	1.00	mCi	0	-	---	-	-	-	---	-	-	1	1.00	mCi	0
Iodine-123	BNL	1	4.00	mCi	0	-	---	-	-	-	---	-	-	1	4.00	mCi	0
Iodine-125	BNL	11	30.05	mCi	0	-	---	-	-	-	---	-	-	11	30.05	mCi	0
Iodine-129	ORNL	7	4014.00	mg	29437	3	304.00	mg	2700	3	55.00	mg	896	13	5053.00	mg	32833
Iodine-131	BNL	1	0.13	mCi	0	-	---	-	-	-	---	-	-	1	0.13	mCi	0
Iridium-192	INEL	11	300022.00	Ci	334000	-	---	-	-	-	---	-	-	11	300022.00	Ci	334000
Iridium-192	ORNL	31	339595.00	Ci	401100	-	---	-	-	0	003.00	Ci	1403	37	340198.00	Ci	402592
Krypton-85	ORNL	200	4000.50	Ci	350771	17	627.00	Ci	47421	2	0.40	Ci	533	219	5233.90	Ci	400725
Krypton-85E	ORNL	21	1132.00	Ci	703939	0	347.00	Ci	199052	-	---	-	-	27	1479.00	Ci	903791
Magnesium-28	ORNL	31	303.00	mCi	21500	0	7.00	mCi	2070	4	9.00	mCi	1700	41	399.00	mCi	25430
Misc. Compounds	ORNL	-	---	-	4523	-	---	-	1430	-	---	-	-	-	---	-	5901
Misc. Isotopes	BNL	45	---	-	2305	3	---	-	135	-	---	-	-	48	---	-	2500
Misc. Services	ORNL	-	---	-	07719	-	---	-	19005	-	---	-	132634	-	---	-	239950

Radioisotope	Supplier	Domestic				Foreign				DOE				Total			
		No. of Ship.	Quantity	Unit	\$ Value	No. of Ship.	Quantity	Unit	\$ Value	No. of Ship.	Quantity	Unit	\$ Value	No. of Ship.	Quantity	Unit	\$ Value
Neptunium-237H	ORNL	8	---	g	287	-	---	-	-	-	---	-	-	8	---	g	287
Palladium-109	BNL	4	1838.88	mCi	8	-	---	-	-	-	---	-	-	4	1838.88	mCi	8
Phosphorus-32	BNL	1	8.81	mCi	8	-	---	-	-	-	---	-	-	1	8.81	mCi	8
Plutonium-237	ORNL	8	---	mg	38888	-	---	-	-	1	84.88	mg	2883	1	84.88	mg	48883
Plutonium-238	ORNL	2	3881.88	mg	8885	-	---	-	-	1	188.88	mg	188	3	3181.88	mg	8885
Plutonium-239	ORNL	1	38.88	mg	188	1	5.88	mg	118	-	---	-	-	2	35.88	mg	312
Plutonium-242	ORNL	1	18.88	mg	188	-	---	-	-	2	4188.88	mg	288	3	4118.88	mg	388
Polonium-218	INEL	1	24.88	mCi	988	-	---	-	-	-	---	-	-	1	24.88	mCi	988
Reactor Serv. Ir.	BNL	83	---	-	18489	-	---	-	-	-	---	-	-	83	---	-	18489
Reactor Serv. Ir.	ORNL	13	381414.88	-	258895	8	248319.88	-	122587	-	---	-	9885	19	827733.88	-	392187
Rhenium-188	BNL	3	1.58	mCi	8	-	---	-	-	-	---	-	-	3	1.58	mCi	8
Rhodium-181	LANL	1	1.88	mCi	2282	-	---	-	-	-	---	-	-	1	1.88	mCi	2282
Rubidium-83	LANL	-	---	-	-	1	1.38	mCi	163	-	---	-	-	1	1.38	mCi	163
Ruthenium-188	ORNL	2	15.88	mCi	2875	-	---	-	-	-	---	-	-	2	15.88	mCi	2875
Ruthenium-97	BNL	1	23.88	mCi	8	-	---	-	-	-	---	-	-	1	23.88	mCi	8
Samarium-146	BNL	2	8.58	mCi	8	-	---	-	-	-	---	-	-	2	8.58	mCi	8
Selenium-72	LANL	-	---	-	-	-	---	-	-	1	8.18	mCi	8	1	8.18	mCi	8
Sodium-22	BNL	8	8.88	mCi	8	-	---	-	-	-	---	-	-	8	8.88	mCi	8
Sodium-22	LANL	3	2288.88	mCi	38583	1	58.88	mCi	987	-	---	-	-	4	2258.88	mCi	48558
Special Processes	ORNL	-	---	-	3149	-	---	-	18821	1	---	-	8823	1	---	-	28393
Special Services	ORNL	3	15.88	-	183548	-	---	-	228918	1	18.88	-	34381	4	25.88	-	384839
Strontium-82	LANL	8	3345.88	mCi	58535	-	---	-	-	2	488.88	mCi	7118	18	3745.88	mCi	85851
Strontium-90	ORNL	8	486218.28	Ci	58123	2	28.48	Ci	484	1	---	Ci	288	9	486238.88	Ci	58727

Radioisotope	Supplier	Domestic				Foreign				DOE				Total			
		No. of Ship.	Quantity	Unit	\$ Value	No. of Ship.	Quantity	Unit	\$ Value	No. of Ship.	Quantity	Unit	\$ Value	No. of Ship.	Quantity	Unit	\$ Value
TRU Services	ORNL	-	---	-	39410	-	---	-	365	-	---	-	16762	-	---	-	66537
Target Prep.	ORNL	-	---	-	73305	-	---	-	15805	1	100.00	-	36106	1	100.00	-	125216
Technetium-99	ORNL	17	117.20	g	8650	9	330.00	g	20250	2	7.00	g	434	20	455.00	g	29342
Technical Service	ORNL	-	---	-	30025	-	---	-	4000	-	---	-	1281	-	---	-	43300
Thorium-229	ORNL	1	10.00	mg	300	1	20.00	mg	620	-	---	-	-	2	30.00	mg	980
Thorium-230	ORNL	1	5.00	mg	210	1	1.00	mg	190	1	2.00	mg	100	3	8.00	mg	514
Tin-119m	INEL	1	14.00	mCi	1900	-	---	-	-	-	---	-	-	1	14.00	mCi	1900
Tritium	ORNL	83	890251.00	Ci	1101065	53	1409077.00	Ci	1790795	2	10000.00	Ci	7261	130	2376728.00	Ci	2907121
Uranium-233	ORNL	-	---	-	-	-	---	-	-	3	124.00	mg	300	3	124.00	mg	300
Uranium-234	ORNL	4	11000.00	mg	405300	1	5000.00	mg	215000	1	2.00	mg	170	6	16002.00	mg	620470
Uranium-235	BNL	2	52.00	mCi	0	-	---	-	-	-	---	-	-	2	52.00	mCi	0
Uranium-235	ORNL	6	3150.00	mg	11145	-	---	-	-	2	10599.00	mg	301	7	13755.00	mg	11446
Uranium-236	ORNL	1	1.00	mg	100	4	3190.00	mg	2214	2	100.00	mg	400	7	3297.00	mg	2714
Uranium-238	BNL	8	26333.01	mCi	0	1	0.00	mCi	0	-	---	-	-	9	26333.07	mCi	0
Uranium-238	ORNL	1	2000.00	mg	400	1	15000.00	mg	2250	1	12000.00	mg	400	3	29000.00	mg	3110
Vanadium-48	LANL	2	22.00	mCi	1327	1	20.00	mCi	1117	-	---	-	-	3	42.00	mCi	2444
Xenon-123	BNL	1	5.00	mCi	0	-	---	-	-	-	---	-	-	1	5.00	mCi	0
Xenon-127	LANL	3	9298.30	mCi	59534	-	---	-	-	-	---	-	-	3	9298.30	mCi	59534
Xenon-127	ORNL	14	16729.00	mCi	143549	2	500.00	mCi	4162	23	5400.00	mCi	41763	39	22035.00	mCi	189474
Yttrium-88	LANL	15	55.75	mCi	5359	2	60.00	mCi	1979	-	---	-	-	17	115.75	mCi	7338
Yttrium-90	ORNL	100	16025.00	mCi	87800	4	7721.00	mCi	10910	23	2300.00	mCi	9200	187	25046.00	mCi	87970
Zirconium-88	LANL	-	---	-	-	-	---	-	-	1	0.50	mCi	144	1	0.50	mCi	144
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