

JAN 31 1983

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SLBaggett

MEMORANDUM FOR: Joseph DelMedico
Material Licensing Branch
Division of Fuel Cycle and
Material Safety, NMSS

FROM: Steven L. Baggett
Material Certification and
Procedures Branch
Division of Fuel Cycle and
Material Safety, NMSS

SUBJECT: MINNESOTA MINING AND MANUFACTURING COMPANY
MAIL CONTROL NO. 03701

Per your request dated December 10, 1982, we have reviewed 3M's application with respect to the update of sealed source/device reviews. We have concluded that the sources are still acceptable for licensing purposes. We have formulated new registry sheets from the information supplied by 3M.

We continue to approve the exemption from six month leak test requirements for the series 6500-6520 Cs-137 sources.

We have also reviewed Mr. Wright's letter dated July 20, 1981, and the answers provided by 3M in their letter dated September 23, 1981. We conclude that the information contained in the renewal application and this letter have satisfactorily answered Mr. Wright's questions.

Original Signed By
Steven L. Baggett

Steven L. Baggett
Material Certification and
Procedures Branch
Division of Fuel Cycle and
Material Safety, NMSS

9805290248 960126
PDR RC * PDR
SSD

OFFICE	FCMC						
SURNAME	SLBaggett:rad						
DATE	1/28/83						

9805290248

SEALED SOURCE & DEVICE REVIEW
TRACKING SHEET

DATE RECEIVED: 12/13/82
CONTROL NUMBER: 82-86

SEND TO FEES? ☒ YES
☐ No

Date Sent _____
Date Returned _____

DESCRIPTION OF INCOMING

Date of Incoming 9/23/81 Model Number(s) 6701
To: E. G. Wright
From: Frank Copeland/Minnesota Mining and Manufacturing Company
SUBJECT: Renewal

REVIEWER: S. L. Baggett

TYPE OF REQUEST: ☒ Certificate ☐ Amendment ☐ Custom Review

REF LICENSE NO # 22-C0057-59MD

MILESTONES

	<u>Date</u>	<u>Person-Hours</u>
Request for Resubmission	_____	_____
Deficiency Letter	_____	_____
Deficiency Telephone Call	_____	_____
Response to Deficiency	_____	_____
30 Day Abandonment Letter	_____	_____
Request Denied	_____	_____
Request Withdrawn by Applicant.....	_____	_____
Certificate/Amendment/Custom Review Completed	<u>1-28-82</u>	_____
Void/Reason: _____	_____	_____

1-18-82 Glenda Jackson has done license file
Retuned - 1-28-82

TOTAL REVIEWER HOURS: 1.00

TYPING: _____



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Date December 10, 1982

TO: Material Certification & Procedures Branch, 426-SS

SUBJECT: MLB REQUEST FOR MCPB ASSISTANCE

RETURN: MLB, 396-SS

Control No.: 03701 (attached)

License No.: 22-00057-59MD (attached)

Letter No.: _____ (attached)

Assistance requested:

_____ Custom review
_____ New source review
_____ New device review
_____ ☒ Other (see remarks)

REMARKS:

_____ Catalog has been checked. No information is available on the source/device.

_____ We are not aware of any specific license which authorizes possession and use of this device.

_____ Manufacturer is located in Agreement State. MLB has verified that no device review is completed or pending, and that a custom review is required.

_____ Manufacturer is located in non-Agreement State.

_____ Source/device will be imported.

_____ If information provided by applicant is inadequate, assistance is required in the form of a letter/standard paragraphs and guides to request additional information from applicant.

☒ This case is being recorded in the computer as being assigned to 1-5. When it is returned to MLB, it will be reassigned to a MLB reviewer.

☒ Other -- See back of page

Joseph DeMedico
Requestor

Joseph DeMedico

Since the source distribution license is in for renewal, it would be appropriate at this time to ask the manufacturer for any additional information that might be necessary to update the sealed source/device review, especially on Models 6D6C and 6B6G.

- ° According to the renewal application, the manufacturer no longer uses the model designations 6D6C and 6B6G. Instead, these sources now receive one of the following designations: Series 6500 or 6520 appears to replace 6D6C; and Series 6510, 6530, 6540, 6550, or 6570 appears to replace 6B6G. The catalogue sheets should be amended to reflect these changes and to explain the differences among the new series designations.
- ° As part of the renewal application, the manufacturer submitted complete sealed source/device information. Please review this information to determine if any of it is new or different from the original submission. This is important, since the information in the renewal application will become a part of the tie-down condition when the license renewal is issued.
- ° Part of the renewal application is a request to continue the exemption from 6 month leak test requirements for the Series 6500 and 6520 Cs-137 sources. Please evaluate this request and make a determination as to its acceptability. The catalogue sheet should be amended to reflect your determination.
- ° To my knowledge, the issues raised in Earl Wright's letter of 7/20/80 (copy attached) have not been adequately resolved. In particular, the manufacturer's response to Item 2 of that letter makes reference to information contained in the license renewal application. I do not believe that Earl has had a chance to evaluate the referenced information in the renewal application to determine whether or not it adequately answers the question. What further action does the manufacturer need to take with regard to the problems detailed in Earl's letter before the distribution license can be renewed?

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: NR-460-S-⁹⁰⁶~~137~~-S

DATE:

PAGE 1 OF 9

SEALED SOURCE TYPE: Tube Source

MODEL: Series 6500, 6520 (formerly 6D6C)

MANUFACTURER/DISTRIBUTOR:

3M Health Physics Service
3M Center, Building 224-2E-06
St. Paul, MN 55144-1000

ISOTOPE:

Cesium-137

MAXIMUM ACTIVITY:

500.0 millicuries (18.50 GBq)
(see description for activity
per model)

LEAK TEST FREQUENCY: 36 Months

PRINCIPAL USE: (V) General Medical Use

CUSTOM SOURCE: _____ YES _____ X _____ NO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: NR-460-S-137-S

DATE:

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SEALED SOURCE TYPE: Tube Source

DESCRIPTION:

The 6500 Series and 6520 Series, together formerly known as the Model 6D6C source, are doubly-encapsulated gamma sources designed for use in brachytherapy applications. The 6500 Series, measuring approximately 0.787 in. (20.00 mm) long and 0.120 in. (3.050 mm) wide with a 0.551 in. (14.00 mm) active length, was formerly known as the size "CA" capsule of the 6D6C source. The 6520 Series, measuring approximately 0.630 in. (16.00 mm) long and 0.120 in. (3.050 mm) wide with a 0.394 in. (10.00 mm) active length, was formerly known as the size "CC" capsule of the 6D6C source.

Both the 6500 Series and the 6520 Series utilize cesium-137 (Cs-137) chloride contained in 3M Brand Radiating Microspheres. The microspheres are small ceramic particles into which the Cs-137 has been absorbed and then permanently fixed using a heat treatment. The microspheres are loaded into an inner capsule. That inner capsule either has a closed end and is sealed by one 0.043 in. (1.100 mm) stainless steel ball pressed into the open end and welded in place (sources made before 1985), or has two open ends and is sealed by two 0.043 in. (1.100 mm) stainless steel balls, one pressed into each end and welded in place (sources made after 1985). Sources made before 1985 were kept in stock until the stock was sold.

In either case, the inner capsule is inserted into an outer capsule. A welding plug is then inserted and welded in place. The outer capsule is either 0.787 in. (20.00 mm) long (for a 6500 Series source) or 0.630 in. (16.00 mm) long (for a 6520 Series source). For both Series, the outer capsule has an outer diameter of 0.120 in. (3.050 mm). After welding the outer plug, the entire source is nickel plated.

The outer capsule has an eyelet on one end. That end is also color coded with an epoxy resin to indicate the model number and activity of the source, according to the following chart:

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: NR-460-S-137-S

DATE:

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SEALED SOURCE TYPE: Tube Source

DESCRIPTION: (Continued)

6500 Series

<u>Model</u>	<u>Color Code</u>	<u>Activity</u>	<u>mg Ra equiv.</u>
6500	Blue	5 mCi (185 MBq)	12.56 mCi (464.7 MBq)
6501	Green	10 mCi (370 MBq)	25.13 mCi (929.8 MBq)
6502	Yellow	15 mCi (555 MBq)	37.69 mCi (1.395 GBq)
6503	Orange	20 mCi (740 MBq)	50.25 mCi (1.859 GBq)
6504	Red	25 mCi (925 MBq)	62.81 mCi (2.324 GBq)
6505	Violet	30 mCi (1.110 GBq)	75.38 mCi (2.789 GBq)
6506	White	35 mCi (1.295 GBq)	87.84 mCi (3.250 GBq)
6507	Black	40 mCi (1.480 GBq)	100.5 mCi (3.719 GBq)

6520 Series

<u>Color Code</u>	<u>Activity</u>	<u>mg Ra equivalent</u>
Blue	5 mCi (185 MBq)	12.56 mCi (464.7 MBq)
Green	10 mCi (370 MBq)	25.13 mCi (929.8 MBq)
Yellow	15 mCi (555 MBq)	37.69 mCi (1.395 GBq)
Orange	20 mCi (740 MBq)	50.25 mCi (1.859 GBq)
Red	25 mCi (925 MBq)	62.81 mCi (2.324 GBq)

The Cs-137 tube source strengths listed above are "standard" activities. As the sources decay below the nominal activity, however, they fall into a "non-standard" activity category. The strengths of both the "standard" and "non-standard" activity sources are documented in the calibration certificate accompanying the sources at the time of distribution.

The 6500 Series and 6520 Series sources are stored in a lead pig container when not in use.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: NR-460-S-137-S

DATE:

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SEALED SOURCE TYPE: Tube Source

DIAGRAM:

See Attachments 1 and 2

LABELING:

3M stated that the exterior is engraved with a nominal activity and a serial number. In addition, the eyelet end of each 6500 Series and 6520 Series source is color-coded according to its nominal activity using a long-life epoxy resin. The DESCRIPTION section of this document has a table listing the colors and their corresponding nominal activities.

The lead pig container in which the 6500 Series and 6520 Series tube sources are stored has a label which includes the following:

**Cesium-137
Brachytherapy
Sources**

Made in U.S.A. for
Radiation Therapy Products
Medical Products Division/3M
St. Paul, MN 55501

radiation trefoil/
**Caution Radioactive
Material**

Description: Cesium-137 Sources consist of two stainless steel capsules, an outer casing and an inner core containing Cs-137 - labeled ceramic microspheres.

Product No. _____

Total Activity This Container _____ mCi Cs-137

Number of Sources: _____

Assay Date: _____

Store Source in shielded container provided, or in an equivalent container with a shielding value equal to one inch of lead.

WARNING: Licensed by the U.S. Nuclear Regulatory Commission for distribution to persons licensed pursuant to § 35.14 and § 35.100 Group VI of 10 CFR Part 35 or under equivalent licenses of Agreement States.

CAUTION: Federal law restricts this device to sale by or on the order of a physician. Maintain proper radiation safety precautions at all times.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: NR-460-S-137-S

DATE:

PAGE 5 OF 9

SEALED SOURCE TYPE: Tube Source

CONDITIONS OF NORMAL USE:

The 6500 Series and 6520 Series sources are intended for use in treating cancer in body cavities, such as gynecological cancers. These sources may be used in conjunction with other treatment modalities. The sources are loaded into an applicator for use in treating a patient. Treatment takes place in a hospital room, so environmental conditions are tightly controlled.

PROTOTYPE TESTING:

Prototypes of the 6500 Series sources containing approximately 12.50 mCi (462.5 MBq) of Cs-137 were subjected to the following prototype tests:

1. Temperature Test: Two 6500 Series sources were placed in a $1558.4^{\circ}\text{F} \pm 36^{\circ}\text{F}$ ($848^{\circ}\text{C} \pm 20^{\circ}\text{C}$) oven and left there for 77 minutes. Upon removal from the oven, the sources were dropped into water at a temperature of 57.2°F (14.0°C). Visual inspection of the sources after heating revealed no obvious structural defects. The wipe, leak, and soak tests were all negative for these two sources.
2. Impact Test: Two 6500 Series sources were dropped from a height of 29.53 feet (9.000 m) onto a flat, 0.500 in. (1.270 cm) thick steel plate. Visual inspection of the sources after the impact test revealed no obvious defects. The wipe, leak, and soak tests were all negative for these two sources.
3. Percussion Test: A 0.984 in. (2.500 cm) diameter steel bar weighing 3.198 lbs (1.451 kg) was dropped through a 1.378 in. (3.500 cm) inner diameter guiding sleeve onto each of the sources used in the Impact Test. The sources were lying horizontally on a 1.000 in. (2.540 cm) thick lead brick. One source was positioned so the center of the bar hit the source's center, and the other source was positioned so the edge of the bar hit the center of the source. Upon visual inspection after the percussion test, the former source

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: NR-460-S-137-S

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SEALED SOURCE TYPE: Tube Source

PROTOTYPE TESTING (Continued)

showed a bend of about 20° from the long axis of the source. No defects were observed in the latter source. The wipe, leak, and soak tests were all negative for these two sources.

After each test, the tested sources were subjected to wipe/smear, leak, and soak tests. The allowable limit of removable contamination for the wipe and soak tests was 0.0005 μCi (18.50 Bq). The soak test involved completely immersing the sources in distilled water heated to a temperature of at least 104°F (40°C) for a minimum of 16 hours. The leak test involved immersing the sources in glycerin heated to about 302°F (150°C) for at least one minute. Failure of this test occurred when any bubbles were observed coming from the source.

EXTERNAL RADIATION LEVELS:

The following dose rates were calculated from the dose rates at 39.37 in. (100 cm), which were measured by NIST (formerly NBS). NIST stated that the measured values were accurate to within 0.9 percent. The estimated activity for each source was calculated from the measured data using the exposure rate constant of 0.328 $\text{m}^2 \cdot \text{mr/hr} \cdot \text{mCi}$ as described on page 8 of Specification of Gamma-Ray Brachytherapy Sources, NCRP Report No. 41, Washington, DC 20014.

Est. Output Activity mCi (MBq)	DOSE RATE AT		
	5 cm (1.97 in.) mR/hr (mSv/hr)	30 cm (11.8 in.) mR/hr (mSv/hr)	100 cm (39.4 in.) mR/hr (mSv/hr)
11.6 (429.2)	1,524 (15.24)	42.30 (0.423)	3.810 (0.038)
25.1 (928.7)	3,288 (32.88)	92.30 (0.923)	8.220 (0.082)
37.2 (1376)	4,880 (48.80)	135.5 (1.355)	12.20 (0.122)
57.1 (2113)	7,492 (74.92)	208.0 (2.080)	18.70 (0.187)
72.6 (2686)	9,520 (95.20)	264.0 (2.640)	23.80 (0.238)
93.0 (3441)	12,200 (122.0)	338.9 (3.389)	30.50 (0.305)

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: NR-460-S-137-S

DATE:

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SEALED SOURCE TYPE: Tube Source

QUALITY ASSURANCE AND CONTROL:

The following quality control procedures were followed during production of these sources:

1. Each inner capsule was leak tested after it was sealed. A negative leak test meant that no air leaks or holes were detected while the capsule was immersed in glycerine at a temperature of 248°F - 302°F (120°C - 150°C) for at least 10 seconds.
2. Each inner capsule was wipe tested after it was sealed. The allowable limit was 0.0002 μCi (7.400 Bq) of removable Cs-137.
3. Each inner capsule was soak tested after it was sealed in 6-7 ml of distilled water at 68°F (20°C) for 16 hours. The allowable limit was 0.0002 μCi (7.400 Bq) of detectable Cs-137.
4. Each source was wipe tested, after the outer capsule was sealed, as in test 2 above, except that the allowable limit for this test was 0.0001 μCi (3.700 Bq).
5. Each source was leak tested after the outer capsule was sealed, as in test 1 above.
6. Each completed source was leak tested as in test 1 above.
7. Each completed source was soak tested. The maximum allowable limit was 0.0005 μCi (18.50 Bq).
8. Each completed source was visually inspected to ensure it was nickel plated smoothly and completely with no discoloration, to check for uniform, smooth welds, to check for the proper color code, and to check that the activity (in mg Radium equivalent) and serial number were properly engraved on the source.
9. Each completed source was assayed to ensure its activity was 0-10 percent above the nominal activity.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: NR-460-S-137-S

DATE:

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SEALED SOURCE TYPE: Tube Source

QUALITY ASSURANCE AND CONTROL: (Continued)

10. Prior to shipment, each source was visually inspected for proper labeling, assayed for radioactivity as in (9) above, and wipe tested, with an allowable limit of 0.0001 μCi (3.700 Bq) of removable contamination. Any sources not meeting these final checks were rejected.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- These sources may be distributed only to persons specifically licensed by the NRC or an Agreement State.
- At time of distribution of both "standard" and "non-standard" activity Cs-137 sources, a calibration certificate will accompany the shipment which shows for each source the actual measured output activity in millicuries of Cs-137 and the calculated milligram radium equivalent Cs-137 activity.
- Handling, storage, use, transfer, and disposal: to be determined by the licensing authority.
- As of July 1992, 3M Health Physics Services' entire inventory of 6500 Series and 6520 Series sources were bought by Medi+Physics of Arlington Heights, IL. They are intended for distribution under Medi+Physics' distribution license.
- The sealed sources shall be leak tested at intervals not to exceed 36 months (3 years) using techniques capable of detecting 0.005 microcurie (185.0 Bq) of removable contamination.
- This registration sheet and the information contained within the references shall not be changed without the written consent of the NRC.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: NR-460-S-137-S

DATE:

PAGE 9 OF 9

SEALED SOURCE TYPE: Tube Source

SAFETY ANALYSIS SUMMARY:

The 6500 Series and 6520 Series sources are not current products manufactured or distributed by 3M Health Physics Services. However, 3M Health Physics Services will continue to receive these sources for disposal.

Based on our review of the information and test data cited below, and the past history of the source design, we continue to conclude that the 6500 Series and 6520 Series tube sources are acceptable for specific licensing purposes.

Furthermore, we continue to conclude that these sources would be expected to maintain their containment integrity for normal conditions of use and accidental conditions which might occur during uses specified in this certificate.

REFERENCES:

The following supporting documents for the 6500 Series and 6520 Series (formerly 6D6C) sources are hereby incorporated by reference and are made a part of this registry document:

- 3M Health Physics Services' letters dated August 6, 1991, February 15, 1991, November 6, 1990, July 24, 1989, January 17, 1985, and May 1, 1980, with enclosures thereto

ISSUING AGENCY:

U.S. Nuclear Regulatory Commission

Date: _____

Reviewer: _____
Thomas W. Rich

Date: _____

Concurrence: _____
Steven L. Baggett

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: NR-460-S-137-S

DATE:

ATTACHMENT 1

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: NR-460-S-137-S

DATE:

ATTACHMENT 2

3M Health Physics Services

3M Center Bldg. 224-2E-06
St. Paul, MN 55144-1000
612/736 0498



August 6, 1991

U.S. Nuclear Regulatory Commission
Washington D.C. 20555

Attn: Mr. Steven L. Baggett
Nuclear Material Safety and Safeguards
Medical and Commercial Use Safety Branch
Mail Stop 6H3

Subject: Inactive Source Registrations

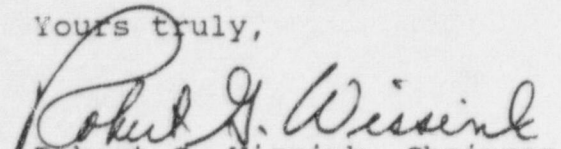
Gentlemen:

In accordance with a July 25, 1991 telephone conversation between Mr. Melvin R. Peters, 3M, and Mr. John W. Lubinski, NRC, enclosed is a listing of registered 3M sources which should be terminated. The manufacturing of these sources either has been, or will have been, permanently discontinued by September 30, 1991.

It is our understanding that upon termination:

1. The registrations will become part of NRC's inactive file, but present users of the sources may continue to use them.
2. 3M can accept the sources for disposal and leak testing, but cannot refurbish or repair them.
3. 3M, on a best effort basis, will provide the NRC with a listing of the total number of sources sold and the date of the last sale.
4. The annual maintenance fee for the registrations will be waived.

Yours truly,


Robert G. Wissink, Chairman
Isotope Committee

Enclosure: 3M Inactive Source List (July 27, 1991)

96082701

INVOICE #	LICENSE #	SOURCE MODEL #
AMO 6645 91	STB 1129	THORIUM
AMO 6541 91	22 00057 34G	703
AMO 6628 91	NR 0459S 101 S	4F6Y
AMO 6629 91	NR 0459S 102 S	3F1G
AMO 6551 91	NR 0460S 101 U	4F6D
AMO 6552 91	NR 0460S 102 S	4F6H
AMO 6553 91	NR 0460S 103 U	4F6G
AMO 6554 91	NR 0460S 105 U	6B6F
AMO 6555 91	NR 0460S 106 U	4F6P
AMO 6556 91	NR 0460S 107 S	1C2A, 1C2B
AMO 6557 91	NR 0460S 108 U	4F3B
AMO 6558 91	NR 0460S 109 U	4F3C
AMO 6543 91	NR 0460D 110 U	3M1C
AMO 6544 91	NR 0460D 111 U	3M1B
AMO 6559 91	NR 0460S 112 U	3E4G
AMO 6560 91	NR 0460S 113 U	4D3A
AMO 6561 91	NR 0460S 114 U	4D3B
AMO 6562 91	NR 0460S 115 U	4D6D
AMO 6563 91	NR 0460S 116 U	4D6F
AMO 6564 91	NR 0460S 117 U	5F1D
AMO 6565 91	NR 0460S 118 U	5F1E
AMO 6566 91	NR 0460S 119 U	5F1F
AMO 6567 91	NR 0460S 120 U	5F1G
AMO 6568 91	NR 0460S 121 U	3L2B
AMO 6569 91	NR 0460S 122 U	3L2A
AMO 6545 91	NR 0460D 123 U	3M1F
AMO 6570 91	NR 0460S 124 U	3L2C
AMO 6571 91	NR 0460S 125 U	1E2J
AMO 6572 91	NR 0460S 126 U	3F1G
AMO 6573 91	NR 0460S 127 U	4F1E
AMO 6574 91	NR 0460S 128 U	5F1H
AMO 6575 91	NR 0460S 129 U	3E4O
AMO 6576 91	NR 0460S 130 U	5F1N
AMO 6577 91	NR 0460S 131 U	5F1N (MODIFIED)
AMO 6578 91	NR 0460S 132 U	7B8L
AMO 6579 91	NR 0460S 133 U	6H6A
AMO 6580 91	NR 0460S 134 U	6H6B
AMO 6581 91	NR 0460S 135 U	4D6M
AMO 6582 91	NR 0460S 136 U	3L2E
AMO 6583 91	NR 0460S 137 S	6500 & 6520 (FORMERLY 6D6C)
AMO 6584 91	NR 0460S 138 U	3L2D
AMO 6585 91	NR 0460S 139 U	3Q1D
AMO 6586 91	NR 0460S 140 U	3E4L, 3E4S
AMO 6587 91	NR 0460S 141 U	3F1R
AMO 6546 91	NR 0460D 142 G	902, 902F, 903
AMO 6588 91	NR 0460S 143 S	4P6E
AMO 6589 91	NR 0460S 144 S	4P6M
AMO 6547 91	NR 0460D 145 U	3M1L
AMO 6590 91	NR 0460S 146 U	3G9A
AMO 6592 91	NR 0460S 147 U	3B4G
AMO 6591 91	NR 0460S 147 S	3B4G
AMO 6593 91	NR 0460S 148 U	4F3F
AMO 6594 91	NR 0460S 149 U	4F3G

NL460867, NL460874

2

3 SAME

07/29/91

MINNESOTA MINING & MFG (TO INACTIVE STATUS)

PAGE 2

INVOICE #	LICENSE #	SOURCE MODEL #
AMO 6595 91	NR 0460S 151 S	6530, 6540 (FORMERLY 6B6G) ✓
AMO 6548 91	NR 0460D 152 U	6H6D ✓
AMO 6596 91	NR 0460S 153 S	ALB/MIN MICROSPHERES (HUMAN) TC-99M <i>available</i>
AMO 6549 91	NR 0460D 154 U	6H6E SOURCE APPLICATOR, 8C9T SAFE ✓
AMO 6597 91	NR 0460S 155 S	4D6L ✓
AMO 6598 91	NR 0460S 156 S	4D6P ✓
AMO 6599 91	NR 0460S 158 U	3F1I, 3F1J, 3F1L ✓
AMO 6600 91	NR 0460S 159 U	3F1V ✓
AMO 6601 91	NR 0460S 160 U	4P6T ✓ <i>NR 4603 673</i>
AMO 6602 91	NR 0460S 161 U	4F3D ✓
AMO 6603 91	NR 0460S 162 U	4F3H ✓
AMO 6604 91	NR 0460S 163 S	4F6S ✓
AMO 6605 91	NR 0460S 164 S	3E4O ✓
AMO 6606 91	NR 0460S 165 S	6701 ✓
AMO 6550 91	NR 0460D 168 G	702, 703, 704 <i>D</i>
AMO 6609 91	NR 0460S 169 S <i>sm</i>	6510, 6550, 6570 (FORMERLY 6B6G) ✓
AMO 6610 91	NR 0460S 170 S	4P6V ✓
AMO 6611 91	NR 0460S 171 S	4F6ST ✓