TAGGED COMPOUNDS

HEALTH PHYSICS SERVICE

ASSOCIATED EQUIPMENT

AFFILIATED COMPANIES PRODUCTS SOLD, SERVICED AND GUARANTEED BY ISOTOPES SPECIALTIES CO., INC. IN WESTERN UNITED STATES:

NUCLEAR CONSULTANTS, INC.
LONG ISLAND CITY, N. Y.
NUCLEAR CONSULTANTS, INC.
ST. LOUIS, MISSOURI
RESEARCH CHEMICALS
BURBANK, CALIFORNIA
NRD INSTRUMENTS
ST. LOUIS, MISSOURI
NUCOR RESEARCH
FERKDALE, MICHIGAN

ISOTOPES SPECIALTIES COMPANY, INC.
170 West Providencia
Burbank, California
VI. 9-2273
P.O. Box 688

SALES OFFICES:
NUCLEAR CONSULTANTS
CRESCENT STREET, L.I.C., N. Y.
NUCLEAR CORP. MIDCONTINENT SALES
MANCHESTER ROAD, ST. LOUIS, MISS.
ISOTOPES SPECIALTIES CO., INC
BURBANK, CALIF.

June 20 1958

Sealed Source Files

Atomic Energy Commission
By-Product Licensing Div.
Germantown, Maryland

ATTENTION: MR. LESTER ROGERS

Dear Mr. Rogers:

Pursuant to our discussion during your recent visit to this facility, ISC has recalled the one other LSS3 rollout camera besides that which had been sold to Air-Frame Inspection Company.

The source in the above mentioned camera was checked visually and mechanically to assure proper sealing. Visually the joint is completely bonded; mechanically a torque of 100#-in. failed to effect the screw joint. The camera was then returned to its owner.

To prevent the possibility of a recurrence of the Air-Frame Inspection incident a procedure has been instituted whereby all sources of this type are subject to mechanical and visual tests for integrity in addition to the usual leak tests.

Yours truly,

Allen M. Goldstein
General Manager

hb

(In Dupl)

B/58

SUPERSEDED
By Revised Sheet
JAN 24 1958

EMERGENCY PROCEDURES

1. If lights cease functioning, return source to center of camera, as indicated by a monitoring instrument, lock camera in "Off" position and repair the lighting circuit.

2. If the flexible drive shaft which drives the gear box ceases to function for any reason while the source is out of the center of the camera, approach the camera, disconnect the flexible drive shaft and connect the hand crank (which is attached by chain to the camera housing) to the special coupling on the gear box provided for it. Then return the source to the center of the camera with the hand crank as quickly as possible. At this point the camera should be locked and the flexible shafting returned to the manufacturer for replacement or repair.

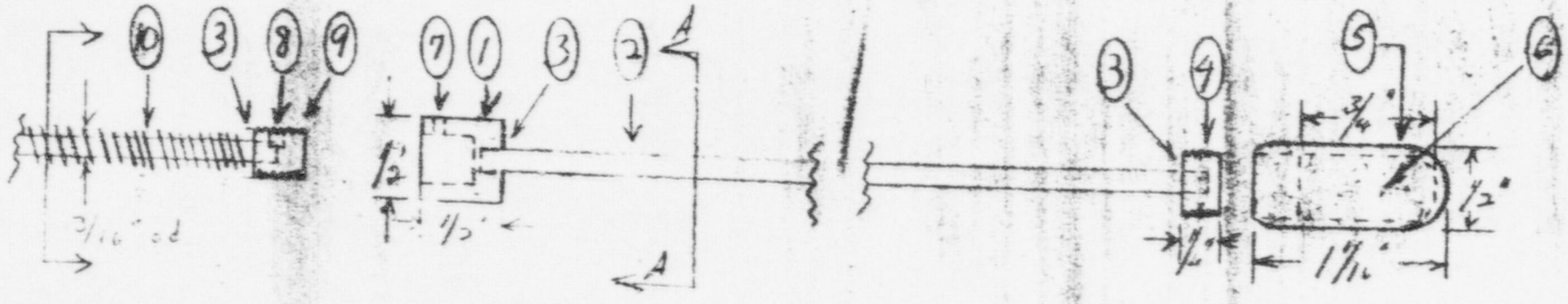
3. If the source and/or cable become fouled in the tube through which the source slides and requires a greater torque to dislodge it and return it to the center of the camera than is obtainable with the flexible drive shaft, disconnect the flexible drive shaft and proceed with the hand crank as described in Item 2.

4. In case of complete inability to dislodge source from fouled source tube, all pertinent precautions should be taken to reduce personnel hazard to the minimum required by the Atomic Energy Commission and a competent and authorized company, i.e. Isotopes Specialties Company, should be called in to handle the disposition of the source.

CAUTION

Never attempt to drive source out of the camera if the flexible tube through which the source travels or the flexible drive shaft are in any way looped or kinked.

SUPERSEDED



1. Stainless steel coupling for source holder and drive cable
2. Stainless steel cable part of source holder
3. Brazed joints
4. Stainless steel screw fit plug for sealing source holder sealed by brazing
5. Stainless steel source holder capsule with minimum walls 3/32 of an inch
6. Cavity for sources or radioactive materials
7. Hole for Allen head set screw for locking part no. 9 in part no. 1
8. Hole in part no. 9 for locking by Allen head set screw screwed through part no. 1 through hole as in no. 7
9. Stainless steel screw fit plug
10. Positive drive teleflex cable for driving source mechanism

NOTE: TYPES OF SOURCES INSERTED IN CAVITY 6 DESCRIBED ON ATTACHED SHEET

SUPERSEDED
By Dwg. No. A 1023
JAN 23 1958

Sealed Source Files

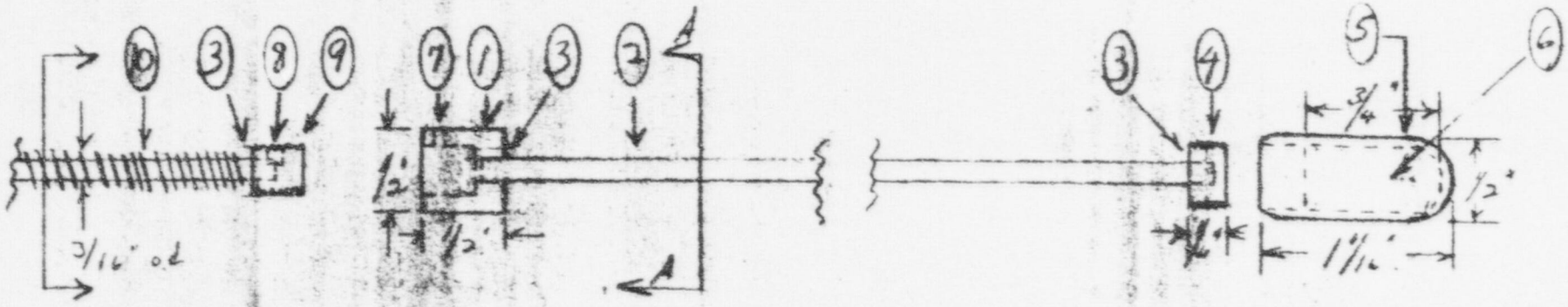
JAN 17 1958

ISOTOPES SPECIALTIES CO.
P. O. Box 589
Burbank, California

SCALE: 1/1	APPROVED BY:	DRAWN BY JAS
DATE: 1/20/47		REVISED

Source holder for all L-55-3 series cameras

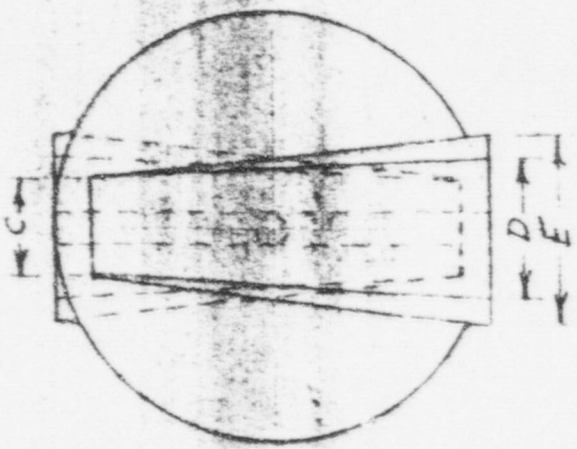
DRAWING NUMBER A-1017

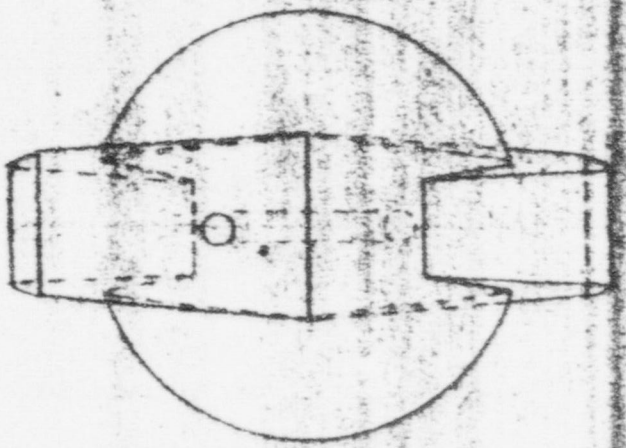


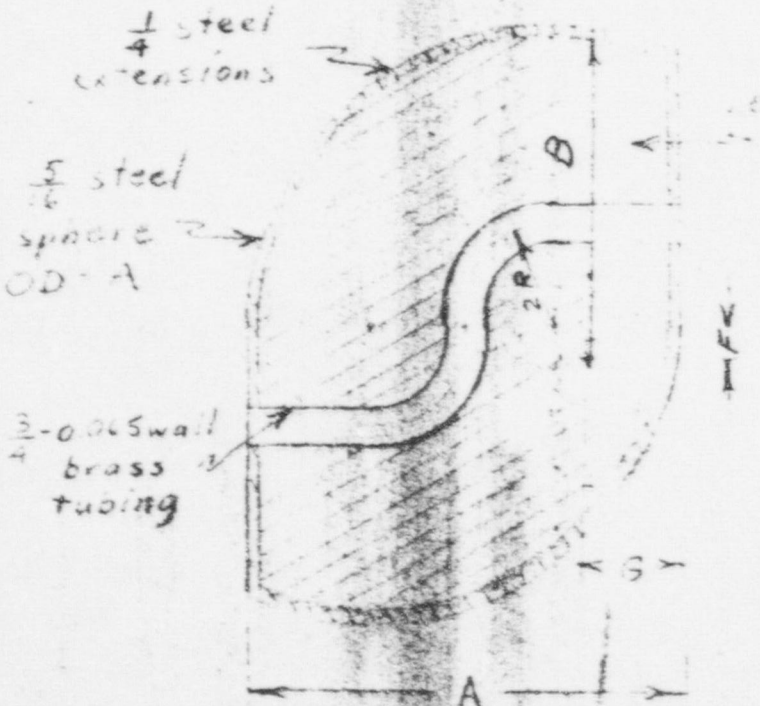
1. Stainless steel coupling for source holder and drive cable
2. Stainless steel cable part of source holder
3. Brazed joints
4. Stainless steel screw fit plug for sealing source holder sealed by brazing
5. Stainless steel source holder capsule with minimum walls 3/32 of an inch
6. Cavity for sources or radioactive materials
7. Hole for Allen head set screw for locking part no. 9 in part no. 1
8. Hole in part no. 9 for locking by Allen head set screw screwed through part no. 1 through hole as in no. 7
9. Stainless steel screw fit plug
10. Positive drive teleflex cable for driving source mechanism

NOTE: TYPES OF SOURCES INSERTED IN CAVITY 6 DESCRIBED ON ATTACHED SHEET

NOTICES SPECIFI... P. O. Box 88 Burbank, California		
SCALE: 1:1	APPROVED BY:	DRAWN BY
DATE: 4/2...7		REVISED
Source holder for all L-53-3		
Series cameras		DRAWING NUMBER A-1023







SUPERSEDED
By Dwg. No. A 1026
JAN 23 1958

DIMENSIONS

Model	LSS-3A	LSS-3B
A	8 1/8	12
B	7 1/2	10
C	2	3
D	3	4 1/2
E	4	6
F	1	2
G	1 1/4	2

All dimensions in inches

ISOTOPES SPECIALTIES COMPANY

JAN 17 1958

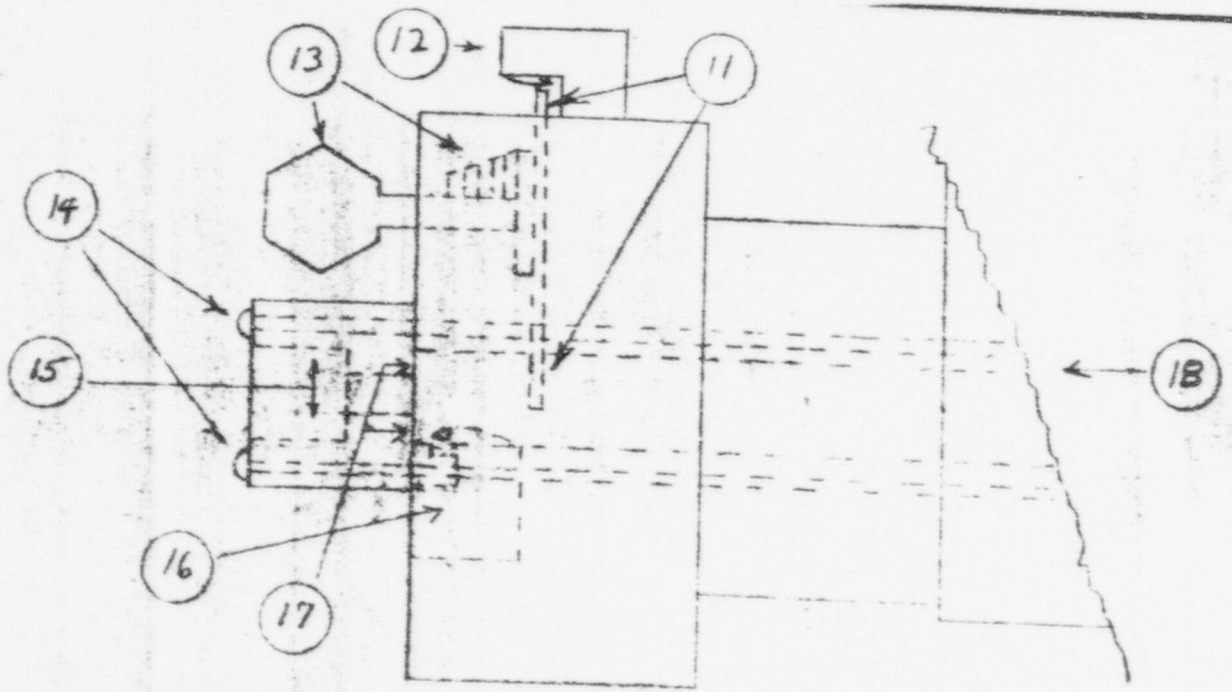
SCALE:	APPROVED BY:	DRAWN BY: EAS
DATE: 1-9-57		REVISED

Rotlok Source Model LSS-3A & LSS-3B

SPACER ASSEMBLY

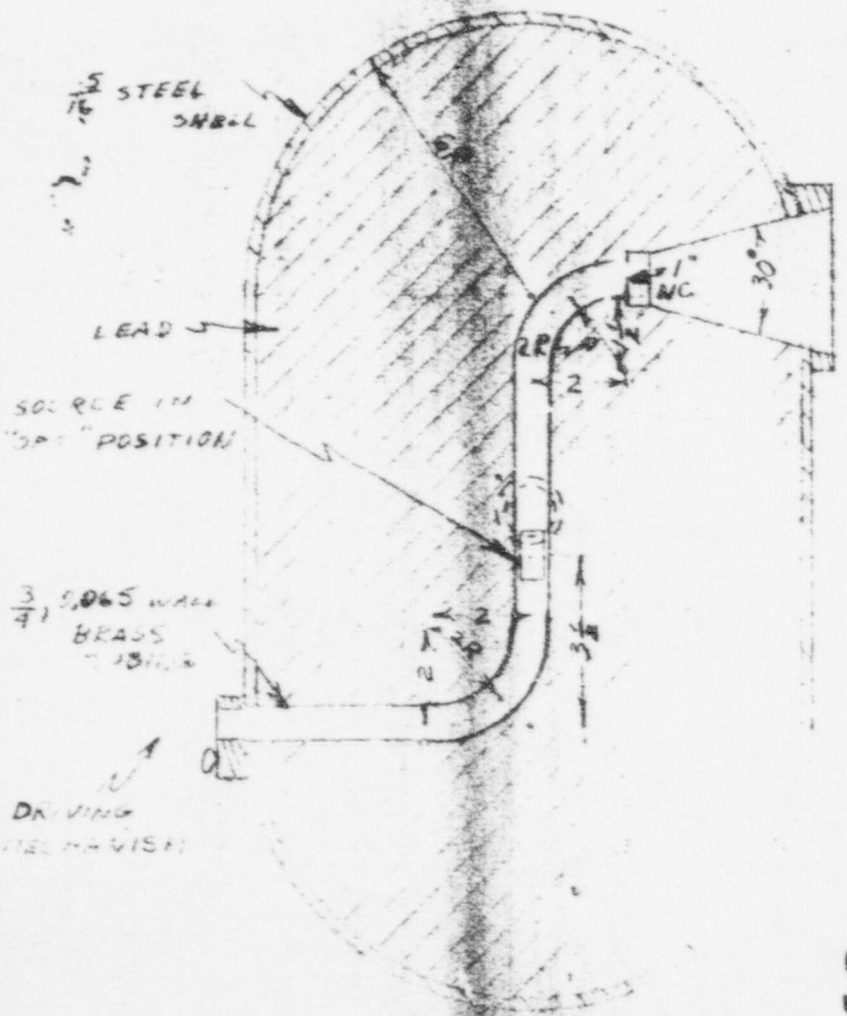
DRAWING NUMBER A-1012

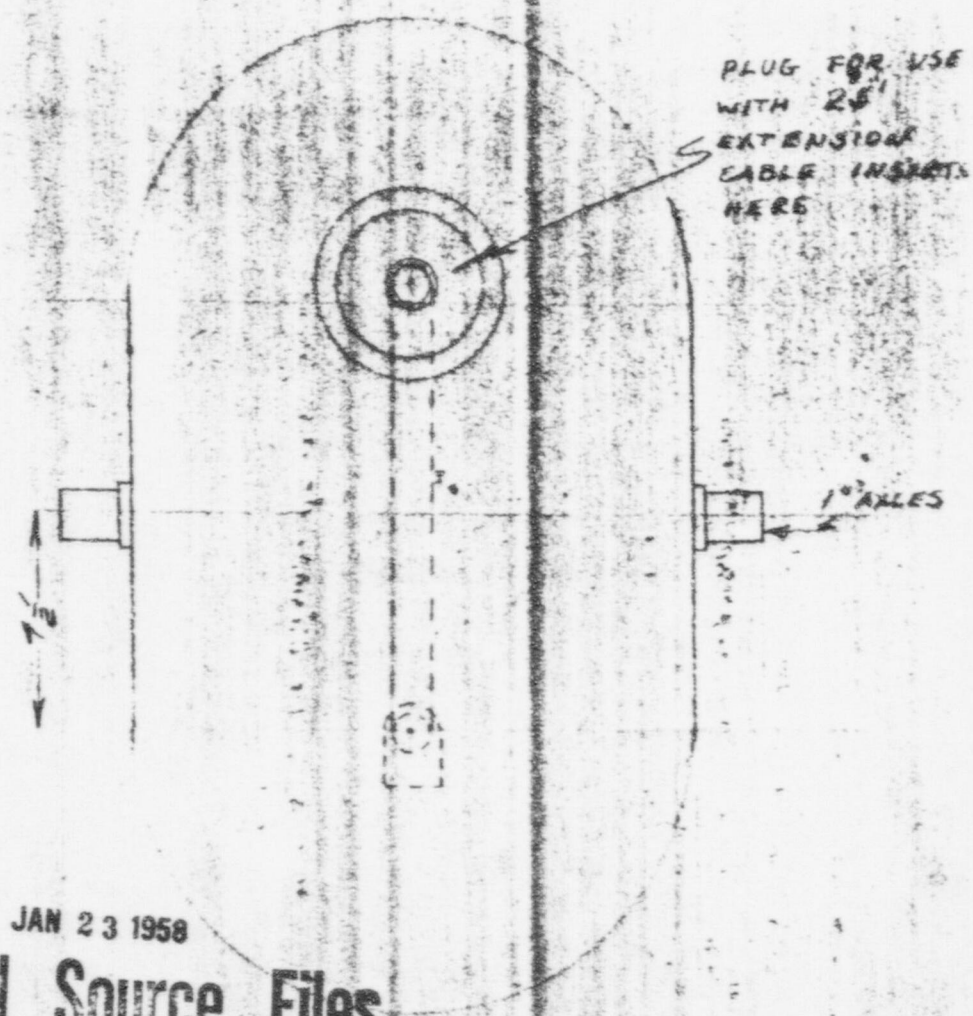
PRINTED ON NO. 1000H CLEARPRINT



11. Bar operated by lock (13) upper end operates microswitch (12) when lock is in "on" position. Lower end slides across coupling (1) as described in drawing A-1023 and over cable (2) to lock the source in the center of the shield when the lock is in the "off" position. Coupling (1) is held securely in place between the bar of lock (13) and the flange(17)
12. Microswitch operated by bar (11) to give indication when shield is in "on" position.
13. Lock and key for locking camera.
14. Bolts,6, screw through this assembly and into camera body for holding assembly tightly in place.
15. Opening where teleflex geared cable control box is screwed to unit.
16. Microswitch actuated by coupling (1) causes light to begin flashing as soon as coupling (1) has passed out of cavity and beyond end of bar (11) when key is in "on" position. This control enables the operator to know when source is in center of unit. The microswitch is mounted in a slot milled into the assembly.
17. Flanges against which coupling (1) rests when source is in center of camera. This flange blocks source from moving further back in the center of the camera.
18. Body of camera.

	[illegible] P. O. Box [illegible] [illegible] California	
SCALE: 1/1	APPROVED BY:	DRAWN BY:
DATE: 11/28/57		REVISED
Locking assembly showing two of three microswitches used in unit		DRAWING NUMBER A 1024





1. All dimensions in inches
2. Drive mechanism warning lights cable assembly etc. identical to camera LSS 3B except that aluminum plug will be provided innerchangeable with the 25 ft source tube to facilitate narrow beam exposures.

ISOTOPES SPECIALTIES CO. P. O. Box 563 Burbank, California	
SCALE: 1/4" = 1"	APPROVED BY: JLS
DATE: 1-23-58	DRAWN BY: GMS
	REVISED
Camera LSS-3B-M1	
	DRAWING NUMBER: #102T

No. A-1002

Sealed Source Files

SUPERSEDED
By Number
new designations
MAY 29 1958

AUG 7 1957

Isotopes Specialties Co.

SERIES 110 SOURCES
SPECIFICATION SHEET

1. Outside dimensions: 3/8" diameter, ¼" - ½" length.

2. Capsule Material: Aluminum

3. Window: 4 - 10 mil aluminum integral with body.

4. Method of sealing: Aluminum brazing.

5. Isotopes: Sr-90, Ru-106, Tl-204

6. Method of deposition of isotopes Less than 1 mc. by evaporation, more than 1 mc. by fusing as silicate for Sr-90 or plating as metal for Ru-106 or Tl-204.

7. List and description of types within this series:

   Type 110. 3/8" diameter by 1/4 inch long, 10 mil. window, sealing by aluminum brazing.

8. Coding system: Coding of these sources consists of five numbers or symbols. These are in order: (a) Type of radiation, (b) General description, (c) Isotope, (d) Range, (e) Minor alterations.

   (a) Type of radiation: B equals beta
   B G equals beta-gamma
   G equals gamma

   (b) Type number: As shown in No. 7 (above).

   (c) Isotope: The chemical symbol of the element used.

   (d) Range: U equals one micro-curie or less, U with a number immediately preceding it indicates the nominal number of micro-curies in the source. M with a number preceding it indicates the nominal number of millicuries in the source.

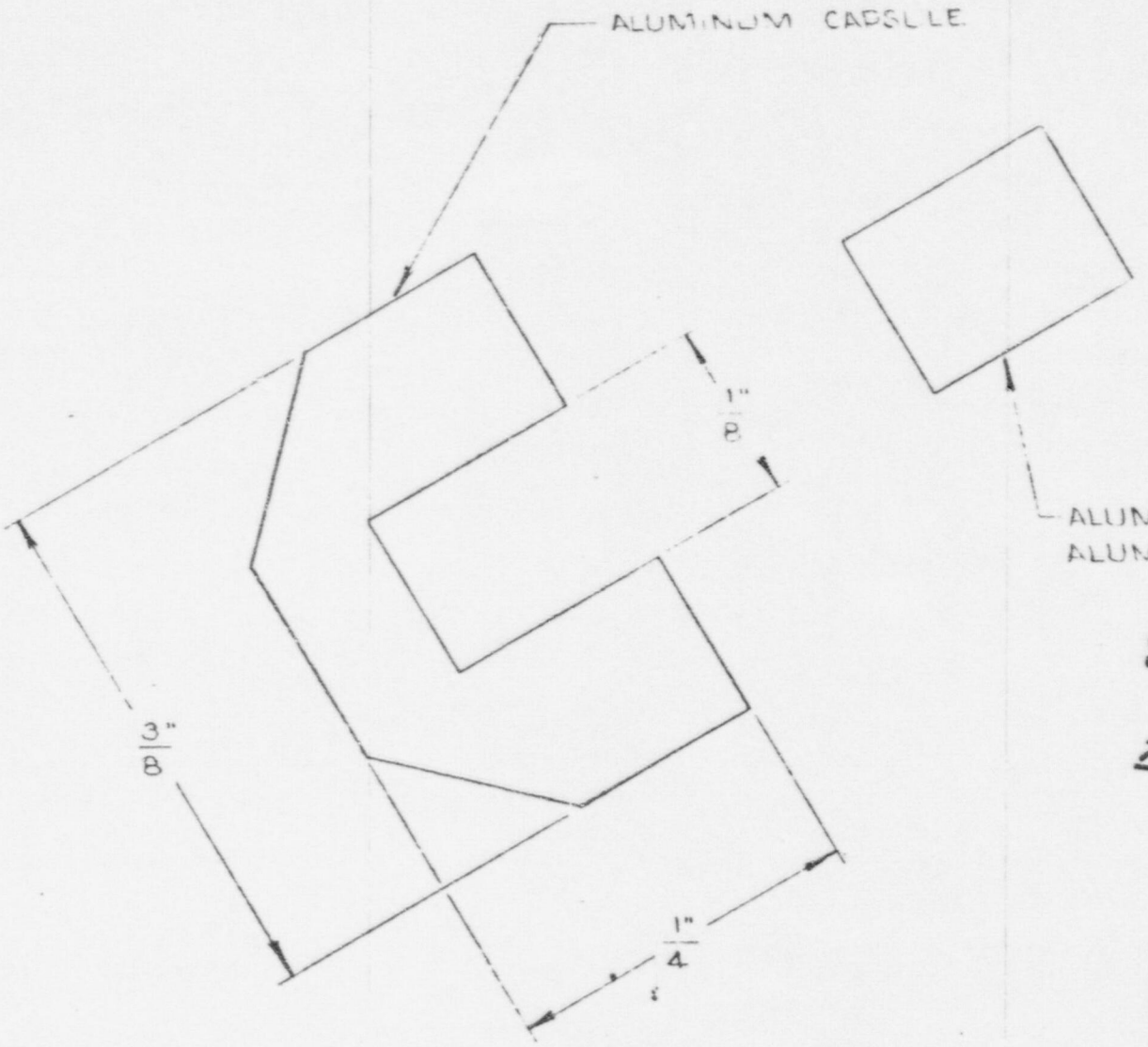
   (e) Minor alterations: These alterations will not affect the dimensions or sealing of the source; e.g. anodized.

   Example: 1 millicurie Sr-90 Source with 10 mil window.

   8-110-Sr-1M

   B/59

9. Marking: Sources of this series are not marked. They are designed to be incorporated into devices or into outer containers by customers.



SUPERSEDED
By [redacted]
new designations
MAY 29 1958

ISOTOPES SPECIALTIES CO.	
SERIES 110	
BETA SOURCE CAPSULE	UC OR MC LEVEL
8-1-57	1014 DICK

July 24, 1958
Revised Sept. 22, 1958

ISOTOPES SPECIALTIES COMPANY, INC.

TYPE 180 GAMMA SOURCE CAPSULE

SPECIFICATIONS

1. Outside dimensions: 1/16 inch diameter by 1/10 inch long. See attached drawing.

2. Capsule material: 304 series stainless steel.

3. Window: None.

3a. Minimum wall thickness: 0.010 inch.

4. Method of sealing: Cold weld and silver-bearing solder dip.

5. Isotope: Sb-124.

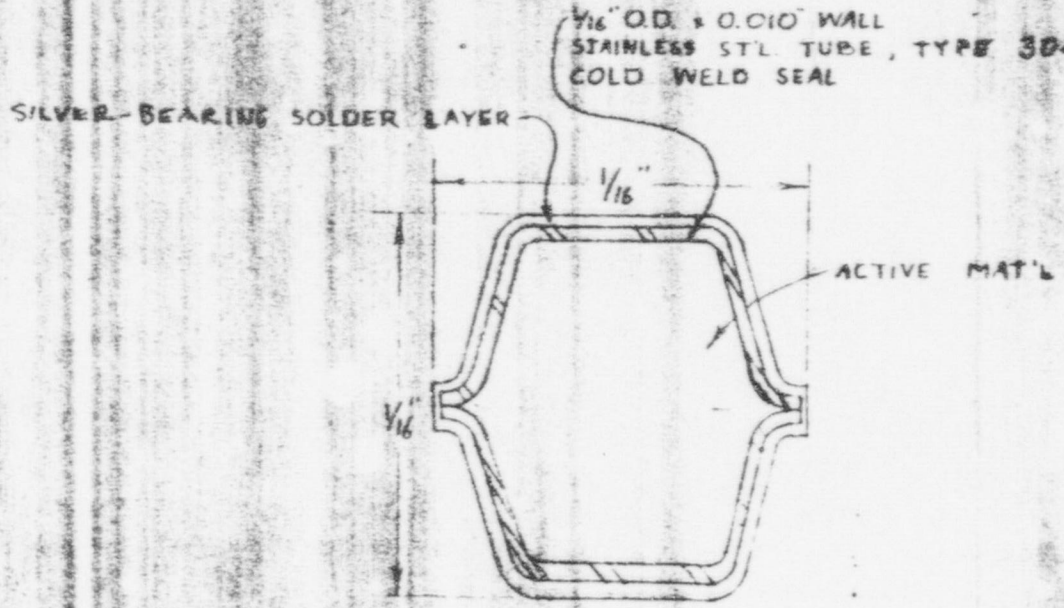
6. Method of deposition of isotope: Solid antimony placed in cavity.

7. Maximum activity: 500 millicuries.

8. Mounting: None. Sources are designed for insertion in rocket propellant [illegible] sources will be fired [illegible] reused.

9. Marking: None.

10. Leak testing: All capsules [illegible] tion test and are [illegible] is sufficiently sensitive to detect [illegible] contamination in excess of 0.05 [illegible] solid Sb-124 do not require [illegible] Atomic Energy Commission regulations.



SEP 2 3 1958

ISOTOPE SPECIALTIES COMPANY

SCALE: 32X	APPROVED BY:	DRAWN BY:
DATE: 7-24 58		REVISED

TYPE 180 AND 181 GAMMA SOURCE CAPSULE

ASSEMBLY

DRAWING NUMBER
1111

July 24, 1958
Revised Sept. 22, 1958

ISOTOPES SPECIALTIES COMPANY, INC.

TYPE 181 GAMMA SOURCE CAPSULE

SPECIFICATIONS

1. Outside dimensions: 1/16 inch diameter by 1/16 inch long. See attached drawing.

2. Capsule material: 304 series stainless steel.

3. Window: None.

3a. Minimum wall thickness: 0.010 inch.

4. Method of sealing: Cold weld and silver-bearing solder dip.

5. Isotope: Na-24 or La-140.

6. Method of deposition of isotope: Na_2CO_3 or La_2O_3 [illegible] in cavity.

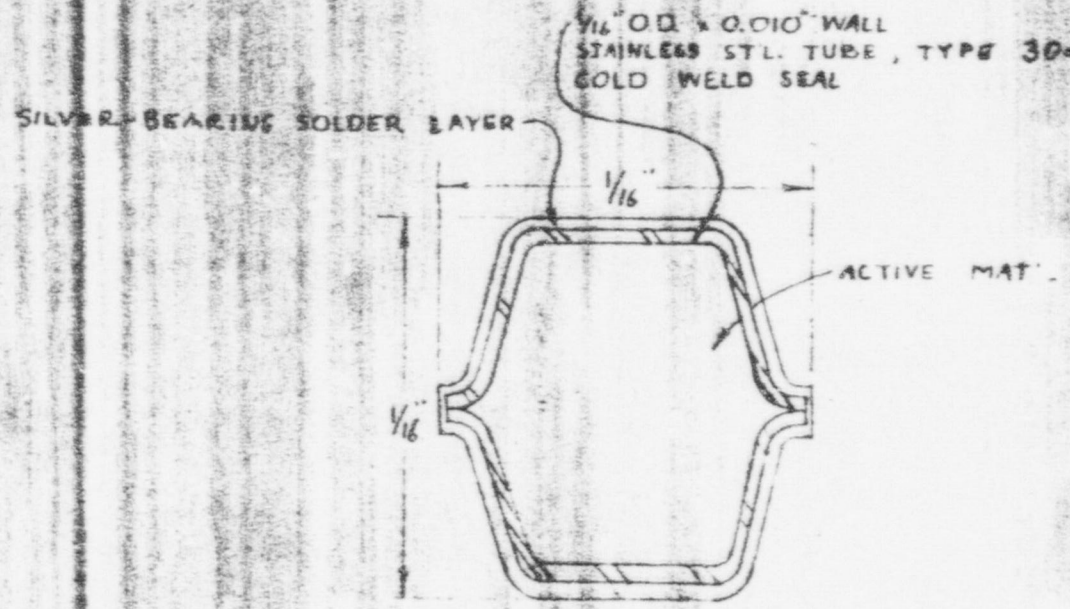
7. Maximum activity: 500 millicuries.

8. Mounting: None. Sources are designed for [illegible] rocket propellant materials for testing [illegible] sources will be fired with the propellant and [illegible] reused.

9. Marking: None.

10. Leak testing: All capsules [illegible] contamination test and [illegible] The test is sufficiently sensitive to detect [illegible] of removable contamination in excess of [illegible] quent leak tests [illegible] Atomic Energy Commission [illegible] since at the end of the normal [illegible] to insignificance.

SEP 23 [illegible]



SEP 2 3 1958

ISOTOPE SPECIALTIES COMPANY

SCALE: 32X	APPROVED BY:	DRAWN BY: [illegible]
DATE: 7-24 58		REVISED

TYPE 180 AND 181 GAMMA SOURCE CAPSULE

ASSEMBLY

DRAWING NUMBER
1111

Sealed Source Files

August 7, 1958

ISOTOPES SPECIALTIES COMPANY, INC.

TYPE 190 GAMMA SOURCE CAPSULE

SPECIFICATION SHEET

1. Outside dimensions: One inch diameter by six inches long. See attached drawing.

2. Capsule material: Stainless steel.

3. Window: None.

3a. Minimum wall thickness: 0.050 inches.

4. Method of sealing: Screw plug and silver solder, or all welded.

5. Isotope: Co-60.

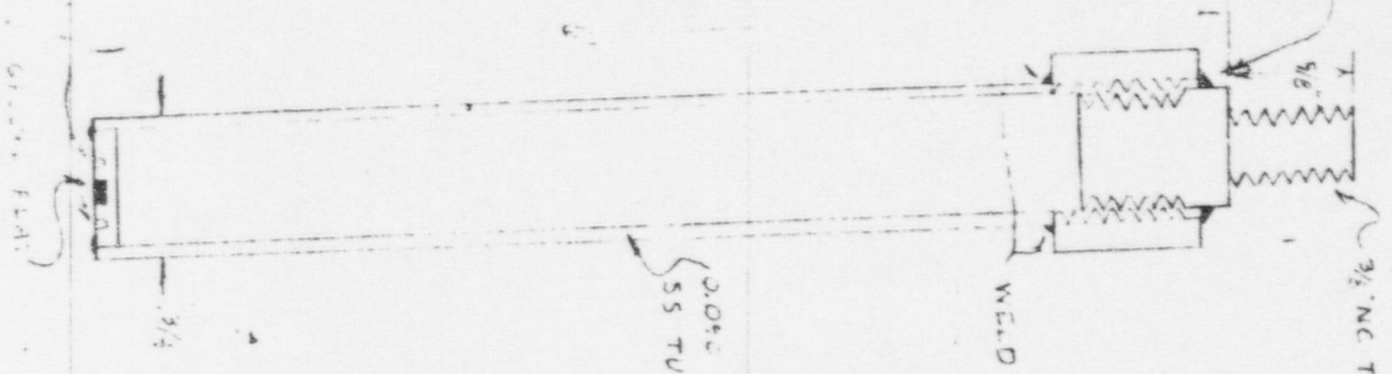
6. Method of deposition of isotope: Solid cobalt, gold plated, placed in cavity.

7. Maximum activity: 1500 curies.

8. Mounting: The capsule is provided with a fitting to match the plug of the shield in which it is stored. This then constitutes a device.

9. Marking: Sources are marked with company initials (ISC), name of isotope, and manufacturer's number. If the source is not intended for use in a device, a metal tag bearing the radiation symbol is wired to the source. The shield containing the source is marked with a radiation symbol decal and a metal name plate, stating activity, number and date.

10. Leak testing: All capsules undergo the manufacturer's contamination test and are decontaminated if necessary. The test is sufficiently sensitive to detect the presence of removable contamination in excess of 0.05 uc. Sources of plated cobalt do not require subsequent leak tests by Atomic Energy Commission regulations.



SUPERSEDED
By 190 Number
SEP 23 1958

Sealed Source Files
AUG 8 1958

ISOTOPES SPECIALTIES COMPANY		
SCALE: FULL DATE: 1-18-58	APPROVED BY: J.L.S.	DRAWN BY QAF REVISED
SOURCE CAPSULE FOR KILOCURIE LEVEL SOURCE		
TYPE 190 CO-60		DRAWING NUMBER

August 7, 1958
Revised Sept. 22, 1958

ISOTOPES SPECIALTIES COMPANY, INC.

TYPE 190 GAMMA SOURCE CAPSULE

SPECIFICATION SHEET

1. Outside dimensions: One inch diameter by [illegible] inches long. See attached drawing.

2. Capsule material: 321 stainless steel.

3. Window: None.

3a. Minimum wall thickness: 0.050 inches.

4. Method of sealing: Screw plug and silver brazing, or heliarc welding.

5. Isotope: Co-60.

6. Method of deposition of isotope: Solid cobalt, gold plated, placed in cavity.

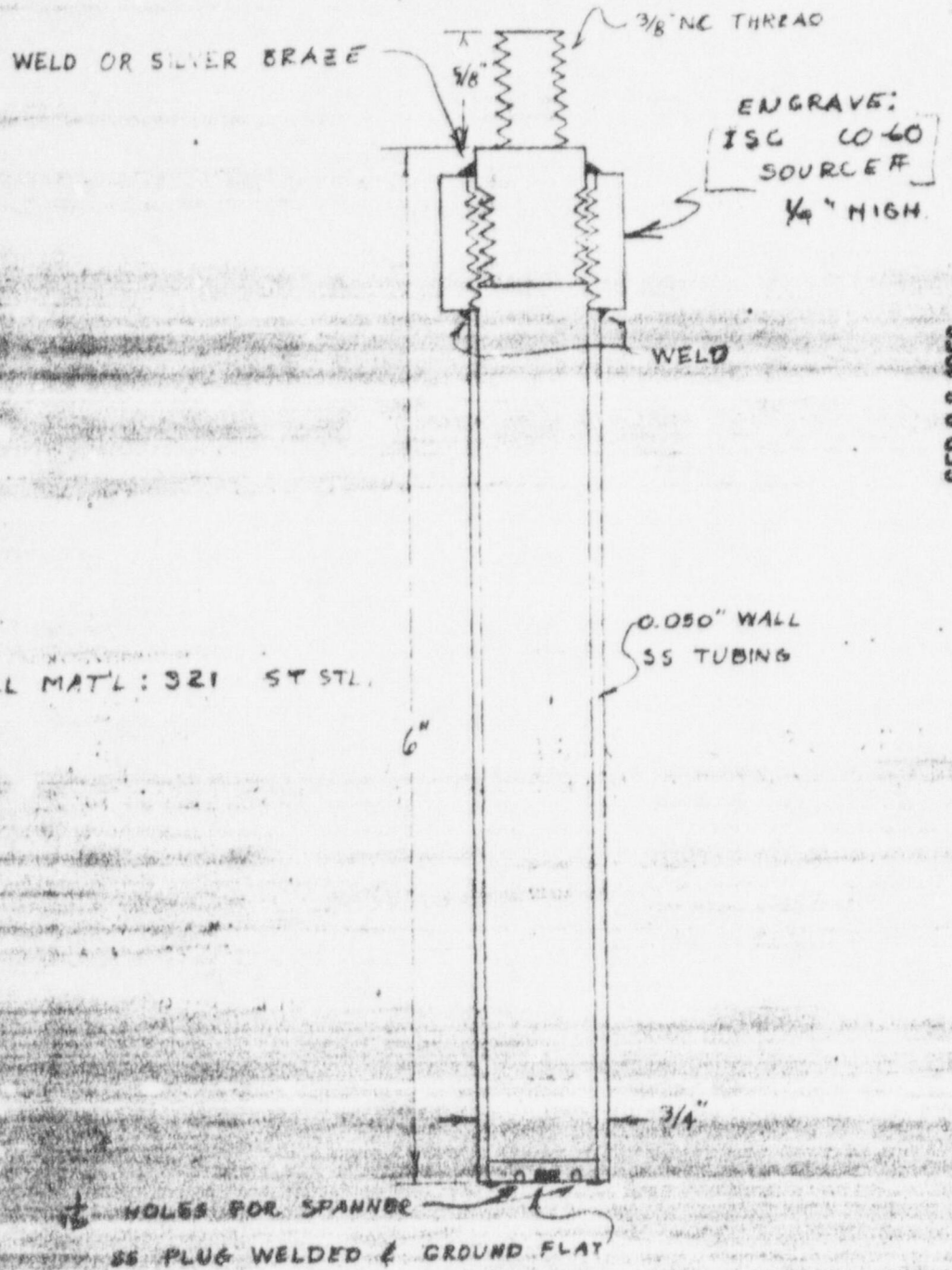
7. Maximum activity: 1500 curies.

8. Mounting: The capsule is provided with a fitting to embed the plug of the shield in which it is stored. This then constitutes a device.

9. Marking: Sources are engraved with company [illegible] name of isotope, and manufacturer's number. If the source is not intended for use in a device, a metal tag bearing the radiation symbol is wired to the source. The shield containing the source is marked with a radiation [illegible] decal and a metal name plate, stating activity and date.

10. Leak testing: All capsules undergo the manufacturer's contamination test and are decontaminated, if necessary. The test is sufficiently sensitive to detect the presence of removable contamination in excess of [illegible] of plated cobalt do not require subsequent leak [illegible] Atomic Energy Commission regulations.

SEP 23 1958



SEP 23 1958

ISOTOPES SPECIALTIES COMPANY

SCALE: FULL
APPROVED BY: J.L.S.
DRAWN BY: A.
DATE: 7-18-58
REVISED

SOURCE CAPSULE FOR KILOCURIE LEVEL SOURCE

TYPE 190 CO-60

DRAWING NUMBER 1146

Register with AEC

Sealed Source Files

August 14, 1958

AUG 2 5 1958

ISOTOPES SPECIALTIES COMPANY, INC.

TYPE 210 BETA SOURCE CAPSULE

SUPERSEDED By 210 Number SEP 2 3 1959

SPECIFICATIONS

1. Outside dimensions: 8" x 2½" x 3/8" thick. See attached drawing.

2. Capsule material: 300 series stainless steel.

3. Window: 0.001 inch 302 stainless steel.

4. Method of sealing: Resistance weld and silver solder.

5. Isotope: Sr-90 or Ce-144.

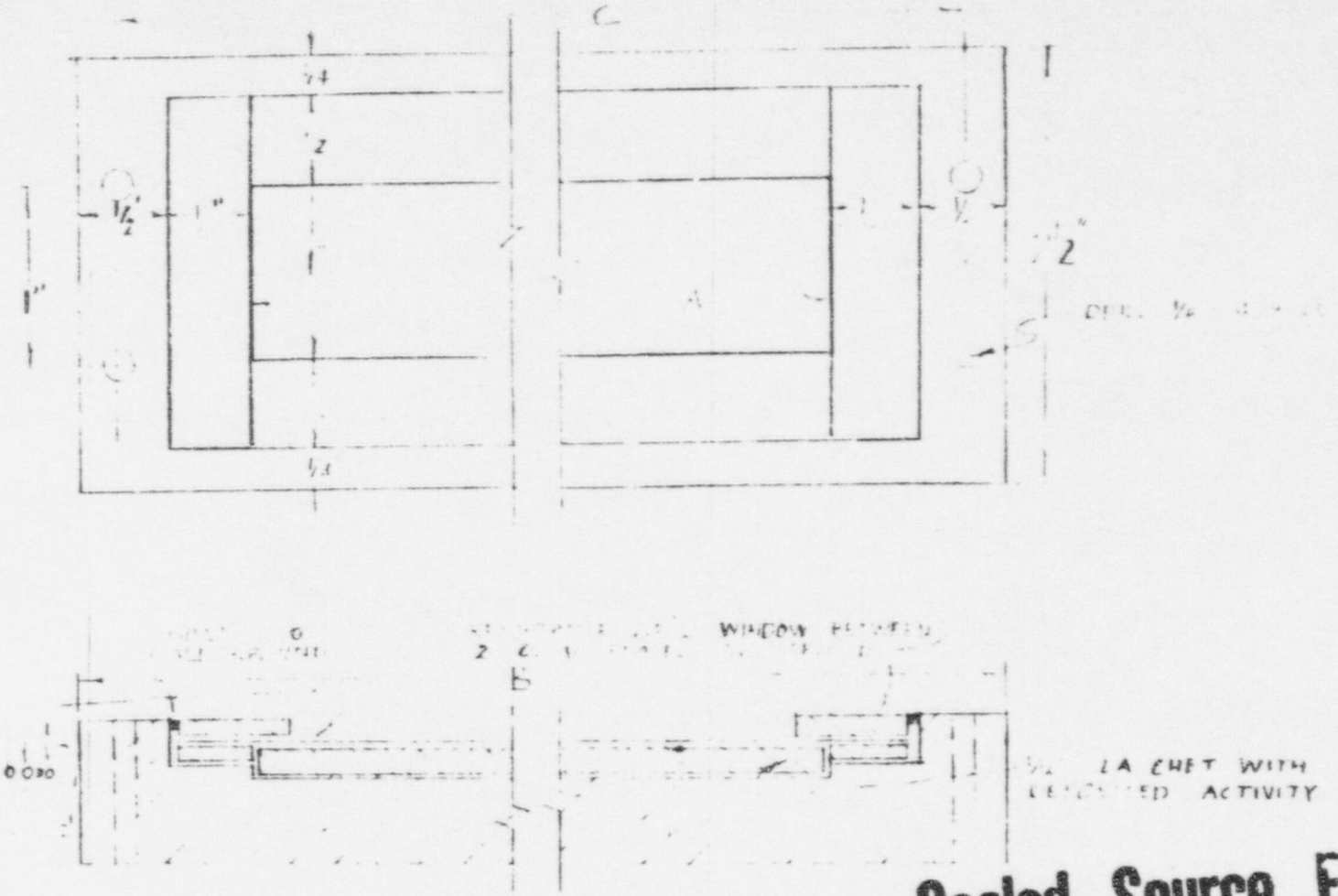
6. Method of deposition of isotope: Fused in glass.

7. Maximum activity: Sr-90 - 100 mc.; Ce-144 - 100 mc.

8. Mounting: Four 1/8 inch holes are provided for mounting in a device. Holes may be changed in diameter or location to meet customer specifications, or other mounting methods may be supplied, but such changes can in no way affect the wall thickness, method of sealing or integrity of the capsule.

9. Marking: Capsules are marked with company initials (ISC), name of isotope, and the manufacturer's number.

10. Leak testing: All capsules undergo the manufacturer's leak test. This involves testing and decontaminating if necessary, storage for thirty days, and retesting. No sources which show an increase in contamination during this period are distributed to customers. Tests are sufficiently sensitive to detect the presence of removable contamination in excess of 0.005 uc. Subsequent to the manufacturer's tests, the Atomic Energy Commission requires leak testing at six-month intervals for sources of this type.



½ LA CHET WITH
ACTIVITY

Sealed Source Files

AUG 2 5 1958

STEEL

7½

SUPERSEDED
By 210 Number
SEP 2 3 1958

ISOTOPES SPECIALTIES CO., INC.

SCALE	APPROVED BY:	DRAWN BY
DATE		REVISED

TYPE 210 & 211 BETA SOURCE CAPSULE

ASSEMBLY

DRAWING NUMBER

August 14, 1958
Revised Sept. 22, 1958

ISOTOPES SPECIALTIES COMPANY, INC.

TYPE 210 BETA SOURCE CAPSULE

SPECIFICATIONS

1. Outside dimensions: .8 inch by 2.5 inch by 3/8 inch thick. See attached drawing.

2. Capsule material: 304 series stainless steel.

3. Windo.. 0.001 inch 302 stainless steel.

4. Method of sealing: Resistance weld and silver-bearing solder.

5. Isotope: Sr-90 or Ce-144.

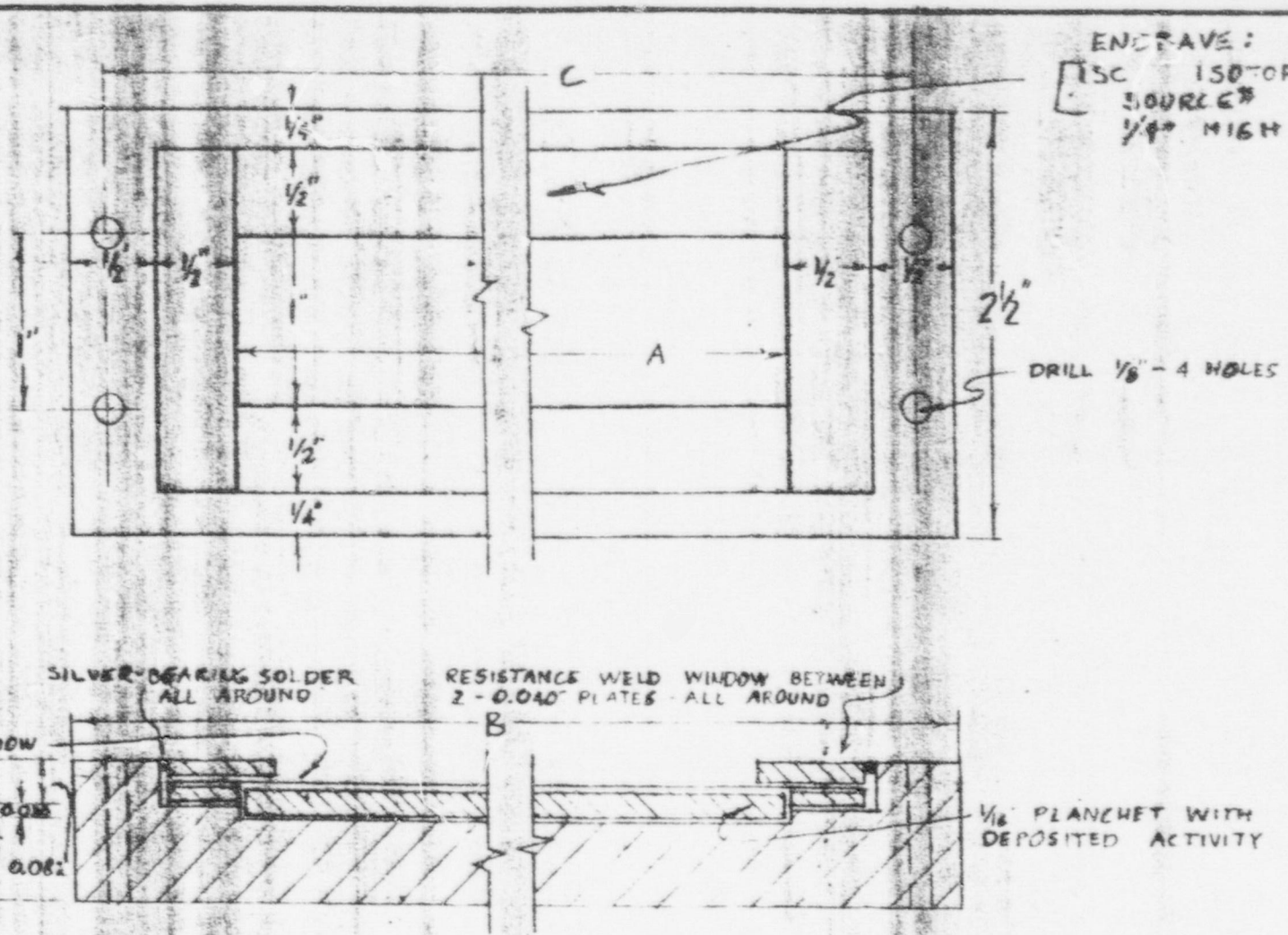
6. Method of deposition of isotope: Fused in glass.

7. Maximum activity: Sr-90 - 100 mc.; Ce-144 - 100 mc.

8. Mounting: Four 1/8 inch holes are provided for mounting in a device. Holes may be changed in diameter or location to meet customer specifications, or other mounting methods may be supplied, but such changes can in no way affect the wall thickness, method of sealing or integrity of the capsule.

9. Marking: Capsules are engraved with company initials (ISC), name of isotope, and the manufacturer's number.

10. Leak testing: All capsules undergo the manufacturer's leak test. This involves testing and decontaminating, if necessary, storage for thirty days, and retesting. No sources which show an increase in contamination during this period are distributed to customers. Tests are sufficiently sensitive to detect the presence of removable contamination in excess of 0.050 uc. Subsequent to the manufacturer's tests, the Atomic Energy Commission requires leak testing at six-month intervals for sources of this type.



MATL: 304 ST. STL., WINDOW - 302 ST. STL.

TYPE	210	211
A	6"	12"
B	8"	14"
C	7½"	13½"

SEP 2 3 1959

ISOTOPES SPECIALTIES CO., INC.

SCALE: NONE	APPROVED BY:	DRAWN BY: A
DATE: 8 - 13 - 58		REVISED

TYPE 210 & 211 BETA SOURCE CAPSULE

ACTIVITY

DRAWING NUMBER

August 14, 1958

ISOTOPES SPECIALTIES COMPANY, INC.

TYPE 211 BETA SOURCE CAPSULE

SPECIFICATIONS

1. Outside dimensions: 1¼" x 2½" x 3/8" thick. See attached drawing.

2. Capsule material: 300 series stainless steel.

3. Window: 0.001 inch 302 stainless steel

4. Method of sealing: Resistance weld and silver solder.

5. Isotope: Sr-90 or Ce-144.

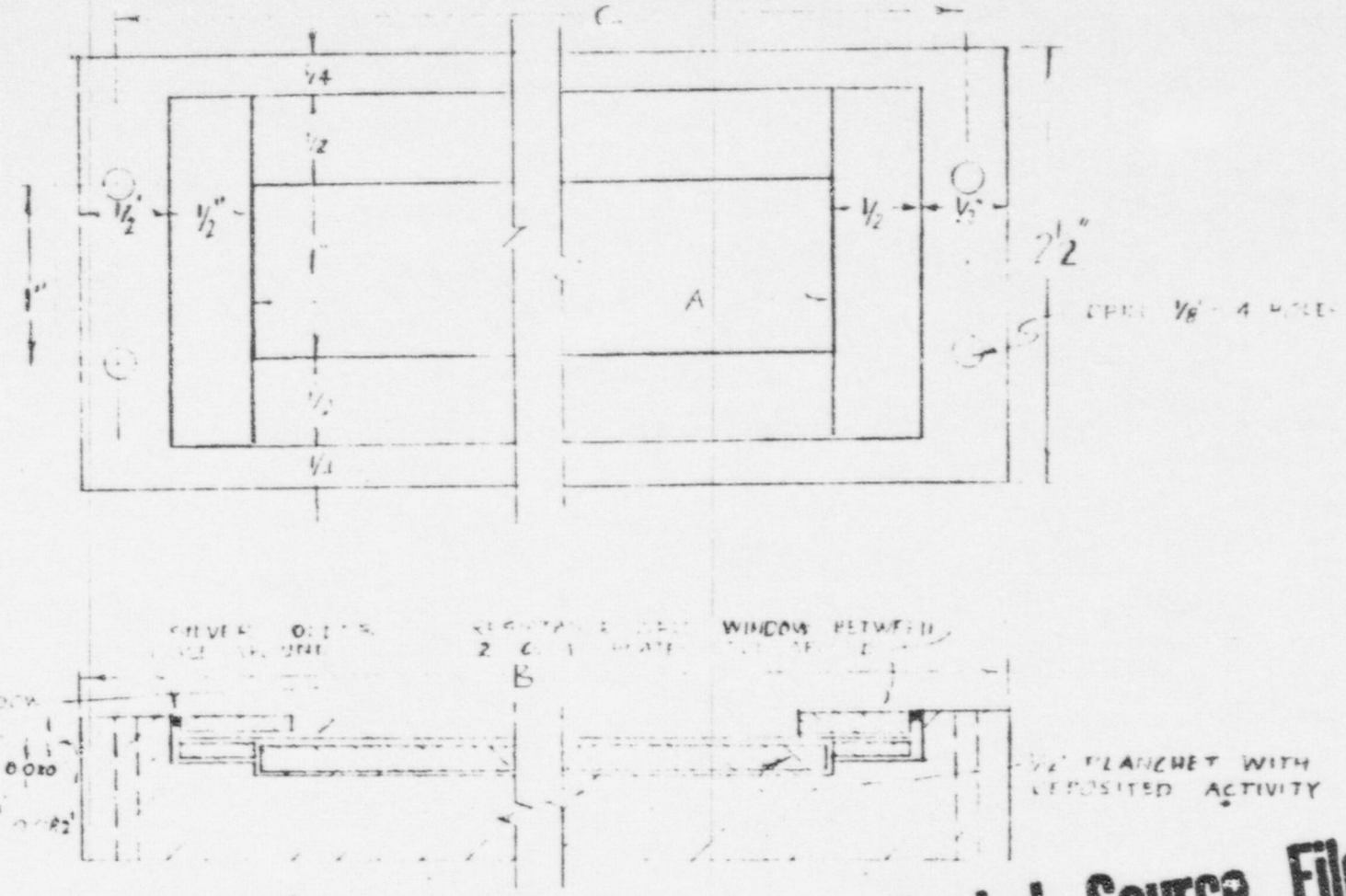
6. Method of deposition of isotope: Fused in glass.

7. Maximum activity: Sr-90 - 100 mc.; Ce-144 - 100 mc.

8. Mounting: Four 1/8 inch holes are provided for mounting in a device. Holes may be changed in diameter or location to meet customer specifications, or other mounting methods may be supplied, but such changes can in no way affect the wall thickness, method of sealing or integrity of the capsule.

9. Marking: Capsules are marked with company initials (ISC), name of isotope, and the manufacturer's number.

10. Leak Testing: All capsules undergo the manufacturer's leak test. This involves testing and decontaminating if necessary, storage for thirty days, and retesting. No sources which show an increase in contamination during this period are distributed to customers. Tests are sufficiently sensitive to detect the presence of removable contamination in excess of 0.005 uc. Subsequent to the manufacturer's tests, the Atomic Energy Commission requires leak testing at six-month intervals for sources of this type.



Sealed Source Files

AUG 2 5 1958

STEEL

SUPERSEDED
By 211 Number
SEP 2 3 1958

ISOTOPES SPECIALTIES CO., INC.		
SCALE:	APPROVED BY:	DRAWN BY
DATE:		REVISED
TYPE 210 & 211 BETA SOURCE CAPSULE		
ASSEMBLY		DRAWING NUMBER

August 14, 1958
Revised Sept. 23, 1958

ISOTOPES SPECIALTIES COMPANY, INC.

TYPE 211 BETA SOURCE CAPSULE

SPECIFICATIONS

1. Outside dimensions: 14 inch by 2.5 inch by 3/8 inch thick. See attached drawing.

2. Capsule material: 304 series stainless steel.

3. Window: 0.001 inch 302 stainless steel.

4. Method of sealing: Resistance weld and silver-bearing solder.

5. Isotope: Sr-90 or Ce-144.

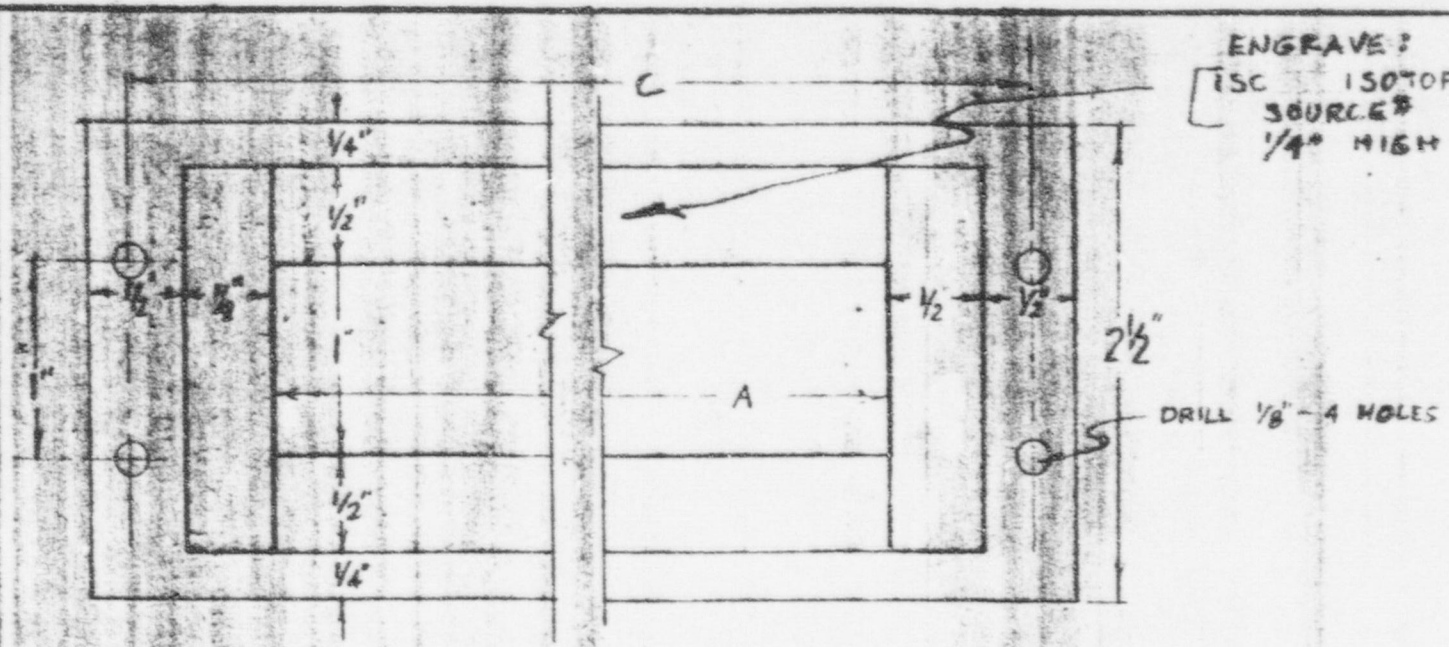
6. Method of deposition of isotope: Fused in glass.

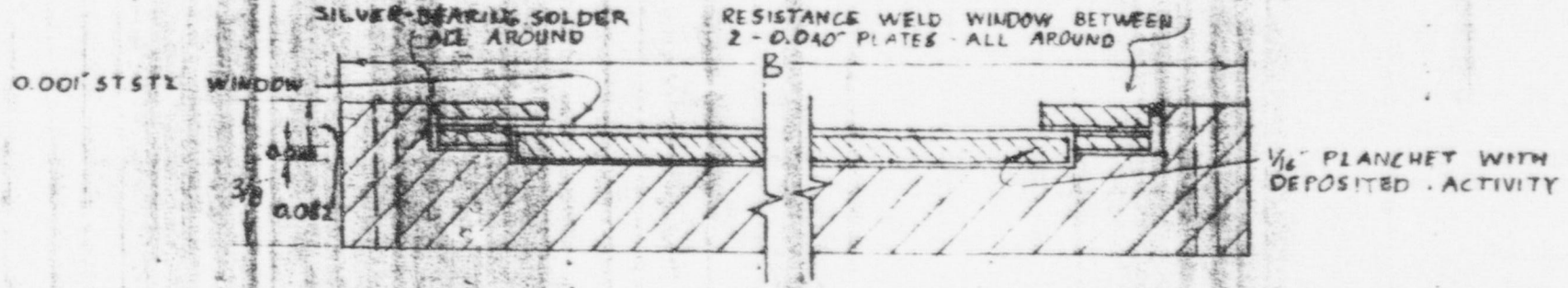
7. Maximum activity: Sr-90 - 100 mc.; Ce-144 - 100 mc.

8. Mounting: Four 1/8 inch holes are provided for mounting in a device. Holes may be changes in diameter or location to meet customer specifications, or other mounting methods may be supplied, but such changes can in no way affect the wall thickness, method of sealing or integrity of the capsule.

9. Marking: Capsules are engraved with company initials (ISC), name of isotope, and the manufacturer's number.

10. Leak testing: All capsules undergo the manufacturer's leak test. This involves testing and decontaminating, if necessary, storage for thirty days, and retesting. No sources which show an increase in contamination during this period are distributed to customers. Tests are sufficiently sensitive to detect the presence of removable contamination in excess of 0.050 uc. Subsequent to the manufacturer's tests, the Atomic Energy Commission requires leak testing at six-month intervals for sources of this type.





MATL: 304 ST. STL. WINDOW - 302 ST. STL.

TYPE	210	211
A	6"	12"
B	8"	14"
C	7 1/2"	13 1/2"

SEP 2 3 1958

ISOTOPES SPECIALTIES CO., INC.

SCALE: NONE	APPROVED BY:	DRAWN BY: GAF
DATE: 8-13-58		REVISED

TYPE 210 & 211 BETA SOURCE CAPSULE

ASSEMBLY

DRAWING NUMBER
1-4-7