



U.S. Department
of Transportation

Pipeline and
Hazardous Materials
Safety Administration

East Building, PHH-23
1200 New Jersey Ave, SE
Washington, D.C. 20590

IAEA CERTIFICATE OF COMPETENT AUTHORITY
SPECIAL FORM RADIOACTIVE MATERIALS

CERTIFICATE USA/0166/S-96, REVISION 14

This certifies that the sources described have been demonstrated to meet the regulatory requirements for special form radioactive material as prescribed in the regulations of the International Atomic Energy Agency¹ and the United States of America² for the transport of radioactive material.

1. Source Identification - Gamma Industries Model Nos. VD, VD(HP), NB, NBG, NB(HP), single encapsulation universal source, double encapsulation universal source, and single encapsulation with side weld. Sources must have been manufactured before August 1, 1993.
2. Source Description - All sources described by this certificate are welded encapsulations constructed of Series 300 stainless steel or ARMCO Type 17-4 PH stainless steel. The sources are described, and have been manufactured in accordance with the referenced and attached Gamma Industries drawings:

Gamma Industries Model Number	Gamma Industries Drawing No.
VD and VD(HP)	602-7001-004
NB, NBG, and NB(HP)	602-7001-005
Universal source, single encapsulation	602-7001-006
Universal source, double encapsulation	602-7001-007
Single encapsulation with side weld	602-7001-008

3. Radioactive Contents -
 - a. Gamma Industries Model Nos. VD and VD(HP) - No more than 11.1 TBq (300 Ci) of any one of the following radionuclides: Barium-131, Cadmium-109, Calcium-45, Calcium-47, Cesium-137, Chlorine-36, Chromium-51, Iridium-192, Cobalt-60, Iron-59, Manganese-54, Phosphrous-32, Rubidium-86, Selenium-75, Strontium-85, Thallium-204, Thulium-170, Tin-113, Ytterbium-169, or Zinc-65.

¹ "Regulations for the Safe Transport of Radioactive Material, 2012 Edition, No. SSR-6" published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

² Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

CERTIFICATE USA/0166/S-96, REVISION 14

- b. Gamma Industries Model Nos. NB, NBG, NB(HP) - No more than either 0.93 TBq (25 Ci) of Americium-241, 1.1 GBq (30 mCi) of Radium-226, or 18.5 GBq (500 mCi) of an Americium-241 and Cesium-137 mixture.
- c. Gamma Industries universal source, single encapsulation - No more than either 18.5 TBq (500 Ci) of Iridium-192 or 0.74 TBq (20 Ci) of Cobalt-60.
- d. Gamma Industries universal source, double encapsulation - No more than either 185 TBq (5000 Ci) of Iridium-192 or 74 TBq (2000 Ci) of Cobalt-60.
- e. Gamma Industries single encapsulation with side weld - No more than either 18.5 TBq (500 Ci) of Iridium-192 or 0.74 TBq (20 Ci) of Cobalt-60.
4. Management System Activities - Records of Management System activities required by Paragraph 306 of the IAEA regulations shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the requirements of Subpart H of 10 CFR 71.
5. Expiration Date - This certificate expires on November 30, 2026. Previous editions which have not reached their expiration date may continue to be used.

This certificate is issued in accordance with paragraph(s) 804 of the IAEA Regulations and Section 173.476 of Title 49 of the Code of Federal Regulations, in response to the November 1, 2021 petition by QSA Global, Inc., Burlington, MA, and in consideration of other information on file in this Office.

Certified By:



WJS

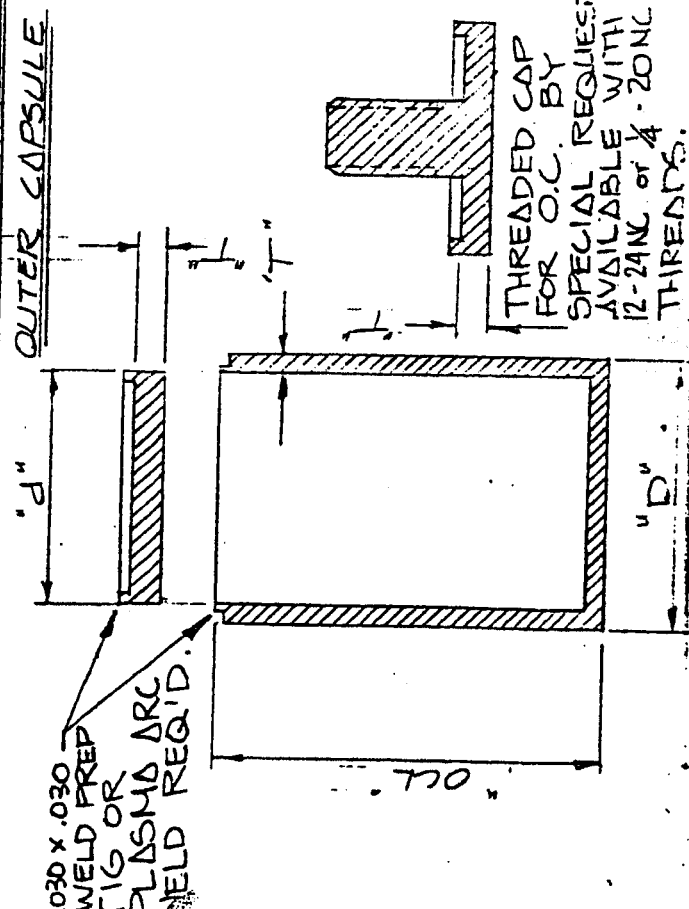
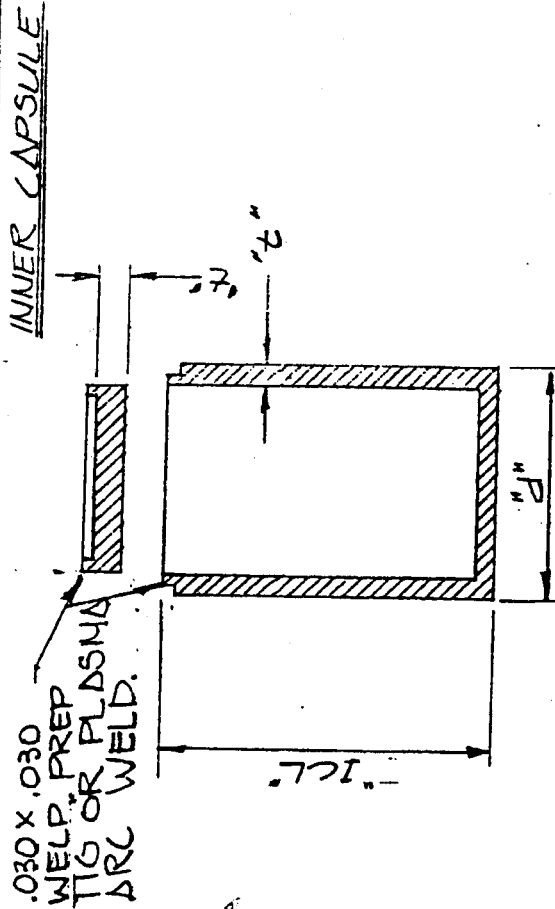
William Schoonover
Associate Administrator for Hazardous
Materials Safety

December 06, 2021
(DATE)

Revision 14 - Issued as a correction to Revision 13. Section 3.e. for the Gamma Industries single encapsulation with side weld source was erroneously removed from Revision 13. Section 3.e. is included in Revision 14. No other changes have been made.

THE OUTER CAPSULE IS TO BE INSCRIBED AS FOLLOWS:

GI _____ (MODEL NO)
 _____ (ISOTOPE)
 _____ (CURIES)
 _____ (SERIAL NO)



"t" IC "T" OC "d" "D"
 Wall Th. Wall Th. OD-IC OD-OC
 MODEL VD

.010 .010 0.125" Mn .145" Mn. .250" Mn .230" Mn See Note #1
 Min Min

2.000" Mx 2.060" Mx. 6.000" Mx 5.90" Mx

MODEL VD (HP) *1 *2
 .0125" Mn .250" Mn .230" Mn
 2.000" Mx 2.43" Mx 6.000" Mx 5.800" Mx

*1 "t" = 0.050 d" + .007
 *2 "T" = 0.1075 "D"

NOTES:

Note #1:

Model VD sources may employ .002" caps for beta sources.
 Am-241 sources shall use .010" minimum wall. Ir-192, Cs
 137 sources shall employ 0.030" minimum wall.

GAMMA INDUSTRIES; BR, LA.

SCALE: NONE

DATE: 6-20-79

APPROVED BY:

M. K. Kettle

DRAWN BY HAL

REVISED

SOURCE MODELS: VD & VD (HP)

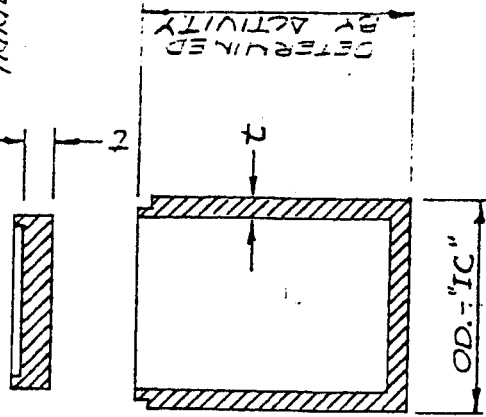
MULTIPURPOSE CAPSULE

241 Am (750 uCi); AMX B.V. (3000 Ci) DRAWING NUMBER 602-7001-004

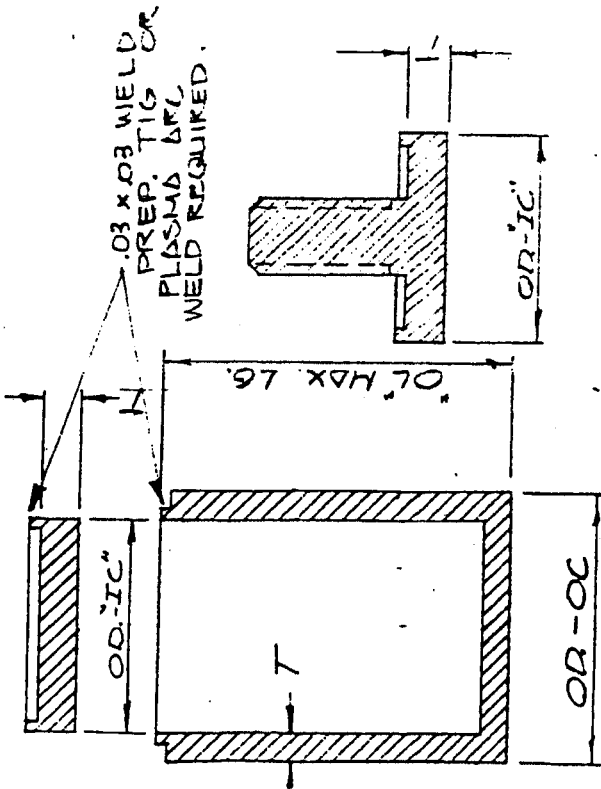
THE OUTER CAPSULE SHALL BE INSCRIBED AS FOLLOWS:

G.I. _____ (MODEL NO.)
 _____ (ISOTOPE)
 _____ (CURIES)
 _____ (SERIAL NO.)

INNER CAPSULE



OUTER CAPSULE



MODEL NB

Activity	OD - "OC"	Max. Lg.	"OL"	Outer Capsule Wall "T" Min.	Inner Capsule Wall "t" Min.
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0-3 Ci	.200-.500	.500		.040	.040
3-6 Ci	.500-1.00	1.50		.060	.040
6-10 Ci	1.00-1.50	2.50		.070	.040
10-25 Ci	1.50-2.00	3.0"		.080	.040

MODEL NBG

500 mCiAm	.200-1.00	1.50		.040	.040
100 mCiCs					

MODEL NB (HP)

1 Ci	up to .500	3 x OD		.050	.040
2 Ci	.501-.625	3 x OD		.070	.050
4 Ci	.626-.750	3 x OD		.095	.060
8 Ci	.751-.875	3 x OD		.110	.070
12 Ci	.875-1.00	3 x OD		.120	.080
20 Ci	1.000-1.50	4 inch		.120	.080
25 Ci	1.25-2.00	4 inch		.120	.080

NOTES:

- Note #1: Inner & outer capsules fabricated from 304 or 316 stainless steel.
- Note #2: Model NB (HP) is for high pressure 25,000 psi and high temperature +595 degrees C applications.
- Note #3: Capthickness will be at minimum the wall thickness.
- Note #4: Inner & outer capsules shall be Helium pressure bubble tested.
- Note #5: Outer cap may be extended & taped or threaded 12-24 NC or 1/4-20NC.

GAMMA INDUSTRIES ; BK, LA.

SCALE: NONE

DATE: 6-21-79

APPROVED BY:

M. Kiddle

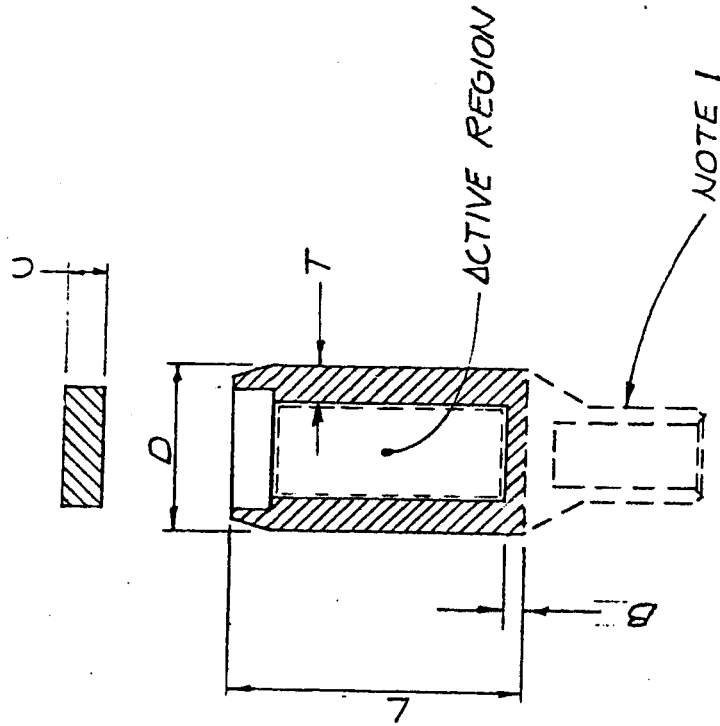
DRAWN BY: HAL

REVISED:

SOURCE CAPSULE MODELS: NB, NBG, NBS (HP)

NEUTRON & NEUTRON GAMMA SOURCES FOR WELL LOGGING LOGSHEPHE DETSIT & CO.

AP-14 (7502), K-14 (30000) & K-14 (15000) DRAWING NUMBER G02-7001-005



"B"	"D"	"C"	"T"	"L"	L/D
.100	.187	.130	.030	1.00	5.4
Min	Min	Min	Min	Max	Max

Note 1: Attachments to this capsule may be made by swedging or threading the outlined appendage. Such attachments shall not impair or reduce the structural soundness of the encapsulation. Examples of applications are; Radiography source assemblies, Survey instrument calibrators, et. al.

GAMMA INDUSTRIES ; DR , LA.

SCALE: NONE

DATE: 6-22-79

APPROVED BY:

M. Kaddi

DRAWN BY HAL

REVISED

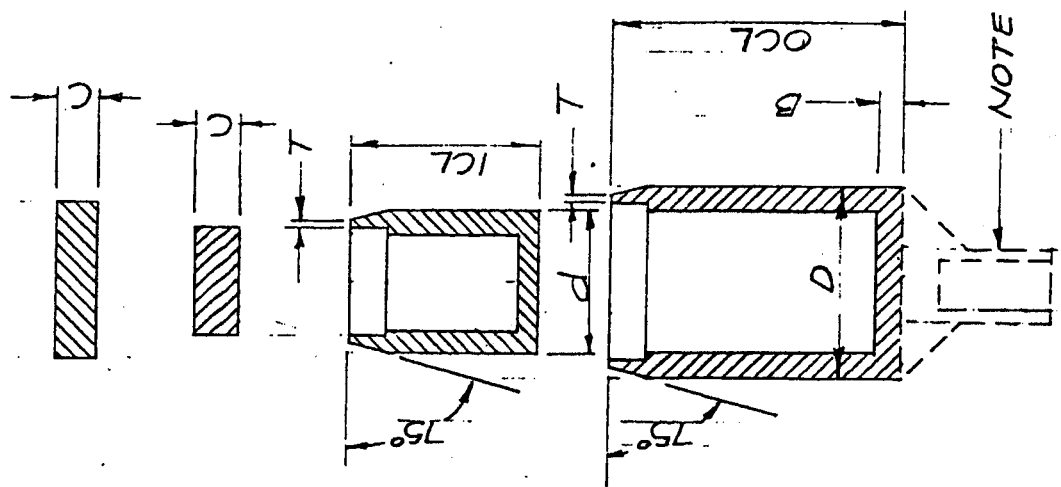
SINGLE ENCAPSULATION (UNIVERSAL SOURCE)

¹⁹²Ir (500 Ci) , Co (20 Ci)

DRAWING NUMBER

602-9001-006

"OCL"	"ICL"	"D"	"d"	"C"	"T"	"B"	OCL/D	ICL/d
1.5" Max	.990" Max	.160" Min	.100" Min	.130" Min	.030" Min	.100" Min	9.4 Max	9.9 Max



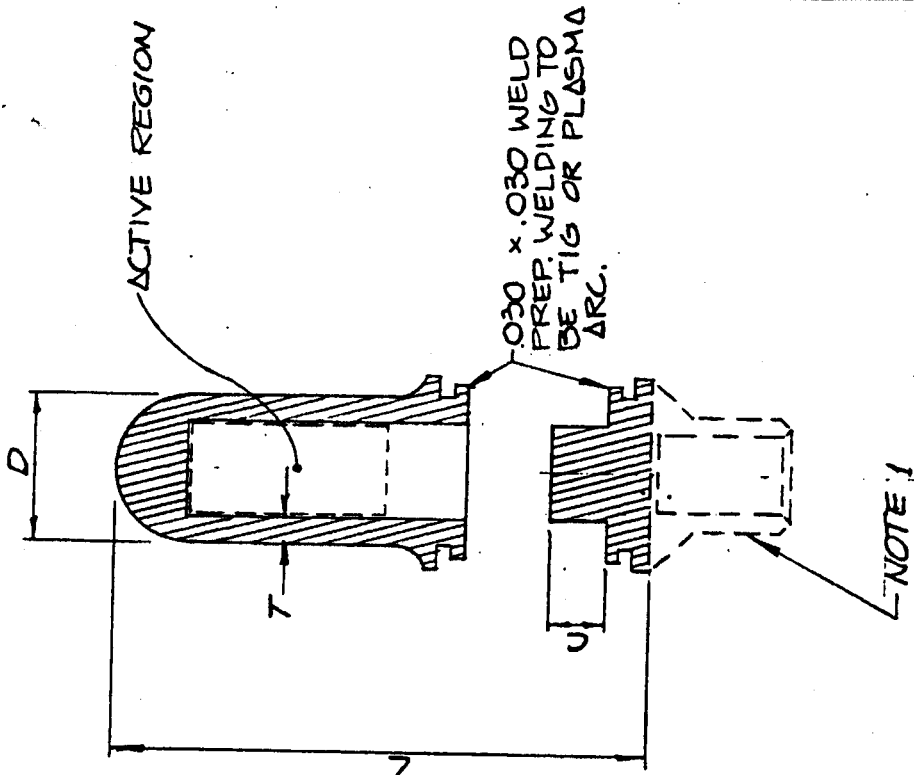
Note 1: Attachments to this capsule may be made by swedging or threading the outlined appendage. Such attachments shall not impair or reduce the structural soundness of the encapsulation. Examples of applications are; Radiography source assemblies, Survey instrument calibrators, et. al.

GAMMA INDUSTRIES; BR 74.

SCALE: NONE
 DATE: 6-23-70
 APPROVED BY: *M. Richards*
 DRAWN BY: HAL
 REVISED

DOUBLE ENCAPSULATED UNIVERSAL SOURCE

192 Ir (5000Ci), 60 Co (2000Ci)
 DRAWING NUMBER 602-7001-007



"L"	"D"	"C"	"T"
1.000 Max	.187 Min	.100 Min	.030 Min

Note 1: Attachments to this capsule may be made by swedging or threading the outlined appendage. Such attachments shall not impair or reduce the structural soundness of the encapsulation. Examples of applications are; Radiography source assemblies, Survey instrument calibrators, et. al.

GAMMA INDUSTRIES; BR, LD.

SCALE: NONE

DATE: 7-9-79

APPROVED BY:

DRAWN BY HAL

REVISED

SINGLE ENCAPSULATION ; SIDE WELD

¹⁹²Pf (500 Ci)

, ⁶⁰Co (20 Ci)

DRAWING NUMBER
602-7001-008



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1200 New Jersey Ave, SE
Washington, D.C. 20590

CERTIFICATE NUMBER: USA/0166/S-96

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