

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 1 OF 23

SOURCE TYPE: Industrial Radiography Source Assembly

MODEL: G-80 Series: G-80 (equipped with SPEC Model #7 connector)  
G-80T (equipped with a Ball and Socket connector)

**G-80 684 Series: G-80 684 (equipped with SPEC Model #7 connector)  
G-80T 684 (equipped with a Ball and Socket  
connector)**

**G-80 741 Series: G-80 741 (equipped with SPEC Model #7 connector)  
G-80T 741 (equipped with a Ball and Socket  
connector)**

MANUFACTURER/DISTRIBUTOR: Source Production & Equipment Co., Inc.  
113 Teal Street  
St. Rose, Louisiana 70087  
(504) 464-9471

ISOTOPE:

<sup>60</sup> Cobalt

MAXIMUM ACTIVITY PER SOURCE:

110 Curies (4,070 GBq) for G-80 Series  
**11 Curies (407 GBq) for G-80 684 Series**  
**33 Curies (1,221 GBq) for G-80 741 Series**

LEAK TEST FREQUENCY:

During fabrication final inspection, then every six months

PRINCIPAL USE:

Code "A" Industrial Radiography for use under specific license

CUSTOM DEVICE:

Yes  No

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 2 OF 23

SOURCE TYPE: Industrial Radiography Source Assembly

DESCRIPTION:

The Models G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series are a Cobalt 60 industrial radiography assembly that will be used with the AEA Technology/QSA Global Inc. (formerly Amersham Corporation) Models 680-OP, **684-OP, and 741-OP** exposure devices. The QSA Global Model 680-OP, **684-OP, and 741-OP** are a mobile industrial radiography exposure devices.

The G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series are special form sealed source that are doubly encapsulated and consists of an inner and outer capsule constructed of 316 L CRES stainless steel. The outer source capsule is a circular cylinder with a cavity at one end, for the installation of a sealed inner capsule containing Co-60 pellets. The outer capsule has a welded cap closure that is welded 360 degrees. The welding method used is Gas Tungsten Arc welding (TIG). At the other end of the source capsule (opposite the welded cap closure) is a cavity used to attach a flexible metal cable.

The Co-60 pellets in the source capsule are solid metal cylindrical pellets with a diameter of 0.04 inches (1 mm), an activity of 1-3 curies, and a density of approximately 8.85 grams per cubic centimeter.

The Model G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series sealed outer source capsule has dimensions that vary according to the dimensions of the inner capsule. The outer capsule represents the primary containment boundary and vessel. The maximum and minimum sealed outer capsule dimensions are shown in Drawing 19B002, in Attachment #1.

The inner capsule dimensions depend on the source strength. The source strength will vary based on the demand of the user. The maximum source strength allowed in these capsules is 110 curies, and may go as low as 11 curies. The inner and outer capsules will always maintain a minimum wall thickness of 0.76 mm (0.030 inch). The inner capsule maximum and minimum dimensions are shown in the detailed drawings in attachment 1. The nominal "slip fit" between the inner and outer capsule is 0.008 inch, and the maximum slip fit between the inner and outer capsule is 0.012 inch. The maximum and minimum sealed inner capsule dimensions are shown in Drawing 19B002, in Attachment #1.

The G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series source assembly consists of a source capsule, cable, a locking ball that prompts (triggers) the automatic securing mechanism (Posilok) functions, a connector, and a stop (not a critical safety component). The source assembly is also known as a "source holder" or a "pig tail". The overall dimensions and general design of the source assembly are shown in Drawing 910315, in Attachment #1.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 3 OF 23

SOURCE TYPE: Industrial Radiography Source Assembly

DESCRIPTION (continued):

The Model G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series source assemblies are manufactured using the SPEC source assembly connector that is compatible with the control assembly drive cable connector that will be used with the device. For example the G-80 is equipped with the Model #7 source connector which is compatible with the Model #3 drive cable connector (commonly referred to as the fail safe), while the G-80T is equipped with a ball and socket connector. When used with the corresponding drive cable connector, the coupling is designed such that it cannot be unintentionally disconnected under normal and reasonably foreseeable abnormal conditions, and will not become disconnected if cranked outside of the guide tube in accordance with 10 CFR Part 34.20 (c) 1.

The Model G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series and the SPEC manufactured AEA Posilock Control Adaptor are designed to meet the requirements of ANSI N432-1980, Section 6.1.4, which states, "The control shall not allow exposure of the source if the control is not properly connected to the source assembly and exposure device."

The source assembly cable is 7X19 strand X 1/8 inch diameter stainless steel. The locking ball and the connector are 300 series CRES stainless steel. Detailed drawings are available in Attachment 1.

The G-80 series sources have been approved for transportation by the US Department of Transportation under the issued certificate number USA/0566/s.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 4 OF 23

SOURCE TYPE: Industrial Radiography Source Assembly

DESCRIPTION (continued):

Source Model	Maximum Activity	Device	Connector		Overall Length
			Source	Drive Cable	
G-80	110 Curies	QSA Model 680	Model 7	QSA Model #3 (SPEC Fail Safe)	10 3/4"
G-80T			Ball & Socket	QSA Tech-Op (SPEC Ball & Socket)	
G-80 684	11 Curies	QSA Model 684	Model 7	QSA Model #3 (SPEC Fail Safe)	9 3/8"
G-80T 684			Ball & Socket	QSA Tech-Op (SPEC Ball & Socket)	
G-80 741	33 Curies	QSA Model 741	Model 7	QSA Model #3 (SPEC Fail Safe)	10 7/16"
G-80T 741			Ball & Socket	QSA Tech-Op (SPEC Ball & Socket)	

LABELING:

The model G-80, G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741 series source assembly outer capsule is durably marked with the words "Danger-Radioactive" in compliance with 10 CFR 34.20(c)(4).

A Source Tag is provided with each source to identify the isotope, source model, serial number, activity, and date of manufacture. The source tag is attached directly to the QSA Global Model 680-OP, 684-OP, and 741-OP exposure device using two threaded fasteners (screws).

The source assembly connectors are permanently marked (etched or engraved) with a six digit alphanumeric code (serial number, two letters and four numbers). The drive cable connectors are permanently marked with a unique serial number.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 5 OF 23

SOURCE TYPE: Industrial Radiography Source Assembly

DIAGRAM:

See Attachment 1:

- Drawing # **B913015**, Source Assembly-Model G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741**Series
- Drawing # 19B002, Capsule Assembly, G & T Series
- Drawing # B910034, Locking Ball, T Series
- Drawing # B151203, Source Connector-Model #7
- Drawing # B910031, Source Connector-Ball & Socket
- Drawing # 19B004, Inner and Outer Capsules (2 pages)
- Drawing # B141101, Control Adaptor- AEA Posilock System, SPEC Version
- Drawing # B190512, Stop-Model G Series

CONDITIONS OF NORMAL USE:

The Model G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series source is designed for use as an unprotected radiography source as defined in American National Standards Institute (ANSI) N43.6-2007. The **G-80, G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series source assemblies are intended to be used at locations where industrial radiography is performed.

The G-80 and G-80T source assemblies are designed for use with the QSA GLOBAL Model 680-OP exposure device; **the G-80 684 and G-80T 684 source assemblies are designed for use with the QSA GLOBAL Model 684-OP exposure device; and the G-80 741 and G-80T 741 source assemblies are designed for use with the QSA GLOBAL Model 741-OP exposure device** to perform industrial radiography at field sites and permanent facilities with a broad range of environmental conditions. It will operate properly within a temperature range of -40 degrees Fahrenheit to +600 degrees Fahrenheit, and all levels of relative humidity and pressure. The sturdy design and durable materials of construction are not affected by severe conditions of pressure and temperature that are typical to industrial radiography operations.

The source assemblies are resistant to corrosion from typical industrial environments. Vibrations, encountered as a result of normal use and transportation, will have no impact on the sealed source or the source assembly.

Because there is negligible gas contained in the minute void of the source capsule, internal pressurization due to increased temperatures or reduced pressure at elevated altitudes will not affect the integrity of the source capsule. The source capsule is not vulnerable to (nor generally subjected to) damage by elevated pressure due to underwater use.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 6 OF 23

SOURCE TYPE: Industrial Radiography Source Assembly

CONDITIONS OF NORMAL USE (continued):

The materials of construction of the source capsule have established melting points well above temperatures that are typical to transport and industrial fires. It is likely that fire would alter the physical properties of the cable. Source assemblies should not be used after exposure to a fire.

PROTOTYPE TESTING:

Prototypes of the G-80, G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741 series source capsule design have been tested to verify compliance with the requirements for Special Form Radioactive Material as prescribed in Title 49 CFR 173.469, TS-R-1, "Regulations For the Safe Transport of Radioactive Material", 1996 Edition, and with the American Standard Institute ANSI N43.6-2007, "Sealed Radioactive Sources Classification".

Prototype testing for verification that the Model G-80 series sealed source capsules meets the requirements for ANSI Classification 07C43515 was done in accordance with ANSI N43.6-2007.

Prototype testing on the source assembly was done in accordance with 10 CFR 34.20(c)(1) and the ISO3999:2004 Standard, "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography".

EXTERNAL RADIATION LEVELS:

**Radiation levels are established by calculation based on the maximum activity of the source, the emissivity value for Cobalt<sup>60</sup> and the inverse square law formula. The emissivity value for Cobalt<sup>60</sup> is 1.30 R/h-Ci @ 1 meter (14 R/h @ 1 foot) as specified in ISO3999:2004, "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography", Section 8.1.**

**G-80 and G-80T**

**Maximum Activity = 110 curies**

**Radiation Level at: 0 cm (0") = 61,600,000 R/h**

5 cm (2") = 55,440 R/h

30 cm (11.8") = 1,596 R/h

100 cm (39.4") = 144 R/h

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 7 OF 23

SOURCE TYPE: Industrial Radiography Source Assembly

EXTERNAL RADIATION LEVELS (continued):

**G-80 684 and G-80T 684**

**Maximum Activity = 11 curies**

**Radiation Level at: 0 cm (0") = 6,160,000 R/h**

**5 cm (2") = 5,544 R/h**

**30 cm (11.8") = 159.6 R/h**

**100 cm (39.4") = 14.4 R/h**

**G-80 741 and G-80T 741**

**Maximum Activity = 33 curies**

**Radiation Level at: 0 cm (0") = 18,480,000 R/h**

**5 cm (2") = 16,632 R/h**

**30 cm (11.8") = 478.8 R/h**

**100 cm (39.4") = 43.2 R/h**

QUALITY ASSURANCE AND CONTROL:

The G-80, G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741 series source assemblies and components are manufactured and inspected using specific procedures and are controlled by SPEC's Quality Assurance Program. SPEC has been issued a Quality Assurance Program approval for Radioactive Material packages, by the U.S. NRC, under number 0102. The program is in compliance with 10 CFR 71.75, 10 CFR 32.210, and 10 CFR Part 71, Subpart H.

The quality assurance program encompasses the design, fabrication, assembly, testing, use, repair, and maintenance of radioactive material packages. SPEC has expanded the scope of the program to include sources, source assemblies, and associated equipment. The SPEC Quality Assurance program also meets the requirements in ANSI N43.6-2007. Reports of defects must be reported in accordance with 10 CFR Part 21.

Sealed sources are fabricated and leak tested in accordance with the terms and conditions of Louisiana License LA-2966-L01.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

1. The Model G-80, G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741 series sources distributed for domestic use shall be transferred only to specific U.S. Nuclear Regulatory Commission and Agreement State licensees.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 8 OF 23

SOURCE TYPE: Industrial Radiography Source Assembly

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE (continued):

2. The Model G-80 and G-80T series source assembly must be used with the AEA Model 680-OP industrial radiography system. **The Model G-80 684 and G-80T 684 series source assembly must be used with the AEA Model 680-OP industrial radiography system. The Model G-80 741 and G-80T 741 series source assembly must be used with the AEA Model 680-OP industrial radiography system.**
3. The Model G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series source assembly must be used only by authorized industrial radiography personnel in accordance with all safety regulations and the employers operating and emergency procedures. The proper use of an authorized, calibrated and operable survey instrument is required. Reliance on other "redundant" safety devices and procedures alone, instead of the proper use of a properly operating survey instrument, is strictly prohibited.
4. Radiography trainees, helpers and assistants must use this source and the QSA Global Model 680-OP, **QSA Global Model 684-OP, and QSA Global 741-OP** exposure device only under the direct visual surveillance of a qualified radiographer and must be trained in the safe use of the QSA Global Model 680-OP, **QSA Global Model 684-OP, and QSA Global 741-OP** exposure device being used and the biological effects of radiation.
5. The Model G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** source assemblies are manufactured using the SPEC source assembly connector that is compatible with the control assembly drive cable connector that will be used with the device. The G-80 is equipped with the Model #7 source assembly connector that is compatible with the Model #3 (SPEC fail safe) drive cable connector. The G-80T is equipped with a ball and socket source assembly connector that is compatible with the Ball and Socket (Tech-Op) drive cable connector.
6. The Model G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series and the QSA Global Model 680-OP, **QSA Global Model 684-OP, and QSA Global 741-OP** exposure device must be used with the AEA Posilok control adapter, Drawing No. B141101.
7. For normal (manual) use, the tensile and compressive loads applied to the source assembly should not exceed six foot pounds of torque applied to the crankshaft of the control assembly gear (i.e., to verify that the source assembly is secured after each exposure).

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 9 OF 23

SOURCE TYPE: Industrial Radiography Source Assembly

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE (continued):

8. When the **G-80 and G-80T** series source assembly and AEA Model 680 OP, **the G-80 684 and G-80T 684 series source assembly and AEA Model 684, and the G-80 741 and G-80T 741 series source assembly and AEA Model 741 OP** exposure devices are operated with an automatic control assembly controlling mechanism the torque applied to the crank shaft of the control assembly gear should not exceed 4 foot pounds of force.
9. Model G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series source assemblies should be returned to SPEC or other authorized facility for disposal.
10. The Model G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series sealed source capsule must not be subjected to environments or other condition of use which exceed the use conditions for ANSI classification 07C43515 sources, as specified in ANSI N43.6-2007.
11. The source shall not be transported or stored in Teflon-lined containers.
12. This registration sheet and the information contained within the references shall not be changed without the written consent of the Louisiana Department of Environmental Quality, Office of Environmental Services, Permits Division.
13. Users are required to use only those entities licensed by the US NRC or Agreement State to perform leak test analysis for removable contamination.

REVIEWER'S NOTES:

1. Use of the G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series source assembly with any other exposure device or associated equipment (drive cable connector and control adapter) must be authorized by the U.S. NRC or by an Agreement State.
2. Currently, there are no source changers compatible for use with the Model G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series source assembly. The device must be returned to SPEC or other authorized manufacturer for source replacement.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 10 OF 23

SOURCE TYPE: Industrial Radiography Source Assembly

REVIEWER'S NOTES (continued):

3. Though there is little chance and no history of source rupture or loss of radioactive content in a fire, it is likely that fire would alter the physical properties of the cable. Source assemblies should not be used after exposure to fire.
4. If the connector is not protected from foreign matter and slow salt corrosion, it is subject to jamming of the internal piston. The use of the lock cap on the QSA Global Model 680-OP, **QSA Global Model 684-OP, or the QSA Global 741-OP** device, when the source is in transport or storage is adequate to protect against ingress of foreign material and damage due to impact in normal working conditions.

SAFETY ANALYSIS:

The components critical to the safe operation of the AEA Model 680-OP, **AEA Model 684-OP, and AEA Model 741-OP** radiography system are the source assembly connector, the compatible drive cable connector, and the AEA Posilok adapter. The AEA Model 680-OP, **AEA Model 684-OP, and AEA Model 741-OP** systems may be used only in conjunction with this combination of components.

Based on a review of the information and test data contained within the references cited below, the Louisiana Department of Environmental Quality staff concludes that Model G-80, **G-80T, G-80 684, G-80T 684, G-80 741, and G-80T 741** series will maintain integrity under stresses likely to be encountered in normal use and, therefore, are acceptable for licensing purposes.

REFERENCES:

The following supporting documents with their enclosures are hereby incorporated by reference and made a part of this registry document:

Source Production and Equipment Company (SPEC), Registration request letter of January 14, 2000, to Louisiana Department of Environmental Quality (LDEQ).

Telephone conversation with Mr. Kenny Carrington of SPEC and Soumaya Ghosn of LDEQ on January 24, 2000 at 10:00 am.

SPEC letter and application dated August 11, 2003, requesting the amendment to LA-612-S-114-S.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 11 OF 23

SPEC FAX dated August 20, 2003 providing additional information as requested via a telephone conversation August 20, 2003 between Mary J. Haik and Kelley Richardt.

SOURCE TYPE: Industrial Radiography Source Assembly

REFERENCES (continued):

SPEC letter dated August 22, 2003 with additional check for review fee.

SPEC Fax dated August 25, 2003 providing additional information as requested via a telephone conversation August 25, 2003 between Mary J. Haik and Kelley Richardt.

SPEC Fax dated August 29, 2003 providing additional information as requested via a telephone conversation August 29, 2003 between Mary J. Haik and Kelley Richardt.

SPEC Fax dated September 2, 2003 providing additional information as requested via a telephone conversation between Mary J. Haik and Kelley Richardt.

SPEC Fax dated September 9, 2003 providing additional information as requested via a telephone conversation September 9, 2003 between Mary J. Haik and Kelley Richardt.

**SPEC letter dated September 29, 2009, provided additional information to amend the SSD No.: LA-612-S-114-S in its entirety and along with a check for the review fee.**

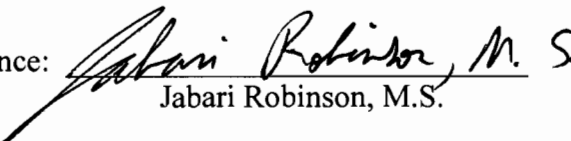
ISSUING AGENCY:

State of Louisiana, Department of Environmental Quality, Office of Environmental Services,  
Permits Division, Registrations and Certifications Section

Date: 11/25/2009

Reviewed By:  M.S.  
James M. Pate, M.S.

Date: 11/25/2009

Concurrence:  M.S.  
Jabari Robinson, M.S.

This document is not a license to receive, possess or distribute radioactive materials. Receipt, possession and distribution of radioactive materials, sealed sources and devices containing radioactive materials, are subject to terms and conditions of applicable Regulations and Licenses issued by the U.S. NRC or Agreement State.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 12 OF 23

## **Attachment 1**

### **Drawings**

#### **NON-PROPRIETARY G-80 DRAWINGS**

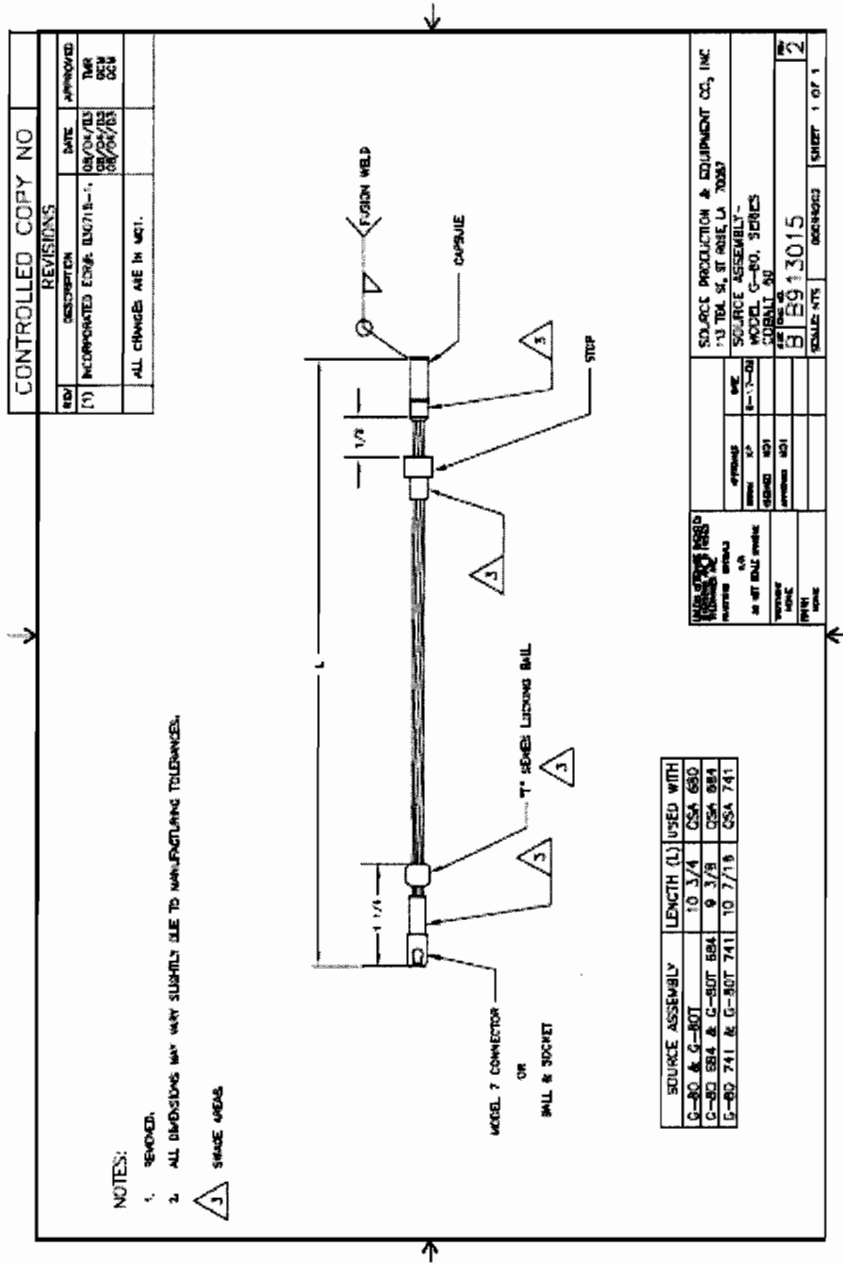
<b>Drawing #</b>	<b>Revision</b>	<b>Title</b>
<b>B913015</b>	<b>2</b>	<b>G-80 Series Source Assembly</b>
<b>19B002</b>	<b>1</b>	<b>G and T Series Source Capsule</b>
<b>B910034</b>	<b>0</b>	<b>T-Series Locking Ball</b>
<b>B151203</b>	<b>0</b>	<b>SPEC Model #7 Source Connector</b>
<b>B910031</b>	<b>0</b>	<b>SPEC Ball and Socket Source Connector</b>
<b>19B004</b>	<b>0</b>	<b>SPEC Outer and Inner Source Capsules</b>
<b>B141101</b>		<b>Control Adaptor- AEA Posilock System, SPEC Version</b>
<b>B190512</b>	<b>0</b>	<b>SPEC G Series Source Stop</b>

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
 SAFETY EVALUATION OF A DEVICE  
 (Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 13 OF 23

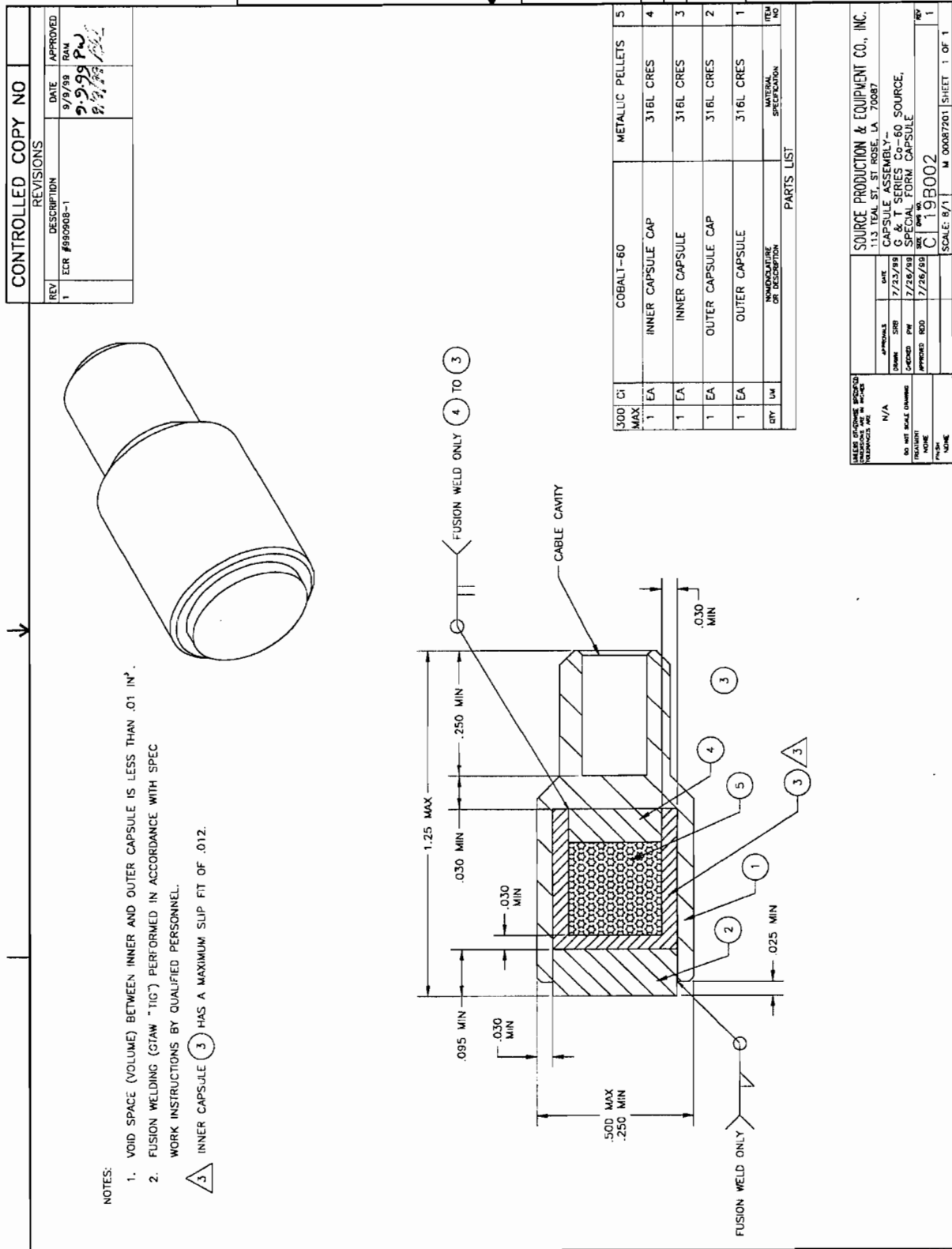


**REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES**  
**SAFETY EVALUATION OF A DEVICE**  
 (Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 14 OF 23



**NOTES:**

1. VOID SPACE (VOLUME) BETWEEN INNER AND OUTER CAPSULE IS LESS THAN .01 IN<sup>3</sup>.
2. FUSION WELDING (GTAW "TIG") PERFORMED IN ACCORDANCE WITH SPEC WORK INSTRUCTIONS BY QUALIFIED PERSONNEL.
3. INNER CAPSULE (3) HAS A MAXIMUM SLIP FIT OF .012.

CONTROLLED COPY NO	
REV	DESCRIPTION
1	ECR #980908-1
DATE	APPROVED
9/9/98	<i>[Signature]</i>

QTY	UM	DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO
1	EA	INNER CAPSULE CAP	316L CRES	4
1	EA	INNER CAPSULE	316L CRES	3
1	EA	OUTER CAPSULE CAP	316L CRES	2
1	EA	OUTER CAPSULE	316L CRES	1

APPROVALS	DATE
DESIGN: N/A	7/23/98
CHECKED: PW	7/26/98
APPROVED: RDD	7/26/98

SOURCE PRODUCTION & EQUIPMENT CO., INC.  
 113 TEAL ST. ST. ROSE, LA. 70087  
 CAPSULE ASSEMBLY -  
 C & T SERIES Co-60 SOURCE,  
 SPECIAL FORM CAPSULE  
 SIZE: 1.25 IN  
 PART NO: C198002  
 SCALE: 8/1 M 00087201 SHEET 1 OF 1



REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
 SAFETY EVALUATION OF A DEVICE  
 (Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: October 26, 2009

PAGE 16 OF 23

CONTROLLED COPY NO	
REVISIONS	DATE
DESCRIPTION	DATE

NOTES:

1. ACTUAL DIMENSIONS AND TOLERANCES ARE PROPRIETARY.

FOR ILLUSTRATIONS PURPOSES ONLY

<b>DATE</b>	7/26/09	<b>DATE</b>	
<b>APPROVALS</b>		<b>DATE</b>	
<b>DESIGNER</b>		<b>DATE</b>	
<b>CHECKED</b>		<b>DATE</b>	
<b>APPROVED</b>		<b>DATE</b>	
<b>SCALE</b>		<b>SCALE</b>	
<b>FIG. NO.</b>		<b>FIG. NO.</b>	
<b>REV.</b>		<b>REV.</b>	
<b>NO.</b>		<b>NO.</b>	
<b>DATE</b>		<b>DATE</b>	
<b>SCALE</b>		<b>SCALE</b>	
<b>SHEET</b>		<b>SHEET</b>	

<b>MANUFACTURER'S NAME AND ADDRESS</b>	SOURCE PRODUCTION & EQUIPMENT CO., INC.
<b>MODEL #</b>	113 TEAL ST. ST. ROSE, LA 70087
<b>SPEC</b>	SOURCE CONNECTOR-
<b>REV.</b>	MODEL #7.
<b>NO.</b>	
<b>DATE</b>	
<b>SCALE</b>	
<b>SHEET</b>	

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
 SAFETY EVALUATION OF A DEVICE  
 (Amended in its Entirety)

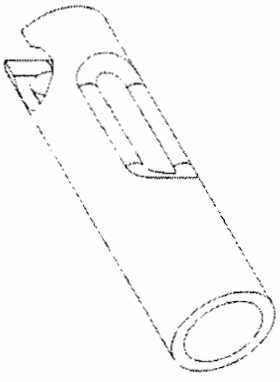
NO.: LA-0612-S-114-S

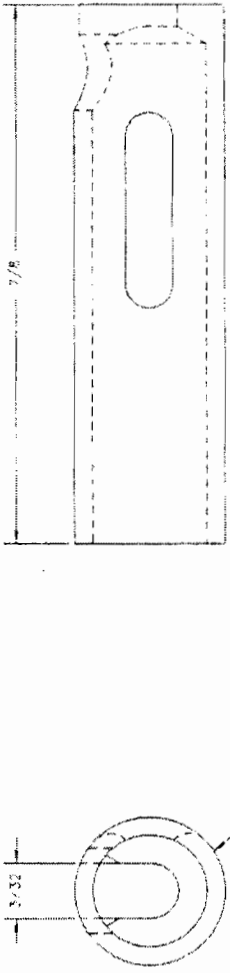
DATE: **October 26, 2009**

PAGE 17 OF 23

CONTROLLED COPY NO							
REV	REVISIONS	DATE	APPROVED				





FOR ILLUSTRATIONS PURPOSES ONLY

NOTES:

1 ACTUAL DIMENSIONS AND TOLERANCES ARE PROPRIETARY

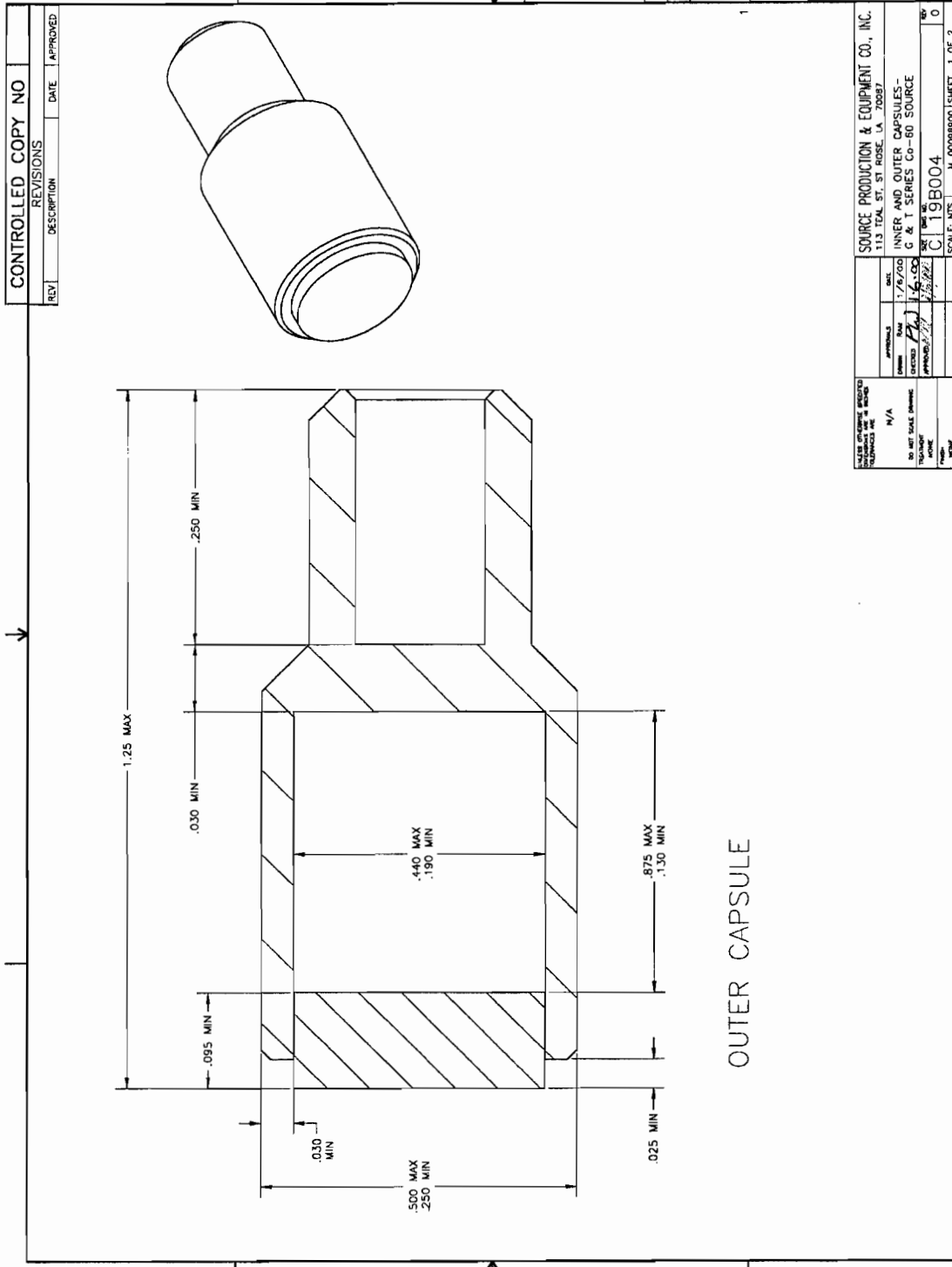
DATE	7/21/03	SHEET	1	OF	1
APPROVED	DRAWN	CHECKED	APPROVED	SCALE	PART NO.
N/A	N/A	N/A	N/A	N/A	N/A
SOURCE PRODUCTION & EQUIPMENT CO., INC. 111 TEAL ST. ROSE, LA. 70087					
SOURCE CONNECTOR - BALL & SOCKET					
SPEC C 8910031					

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
 SAFETY EVALUATION OF A DEVICE  
 (Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 18 OF 23



CONTROLLED COPY NO		
REV	DESCRIPTION	DATE

APPROVED

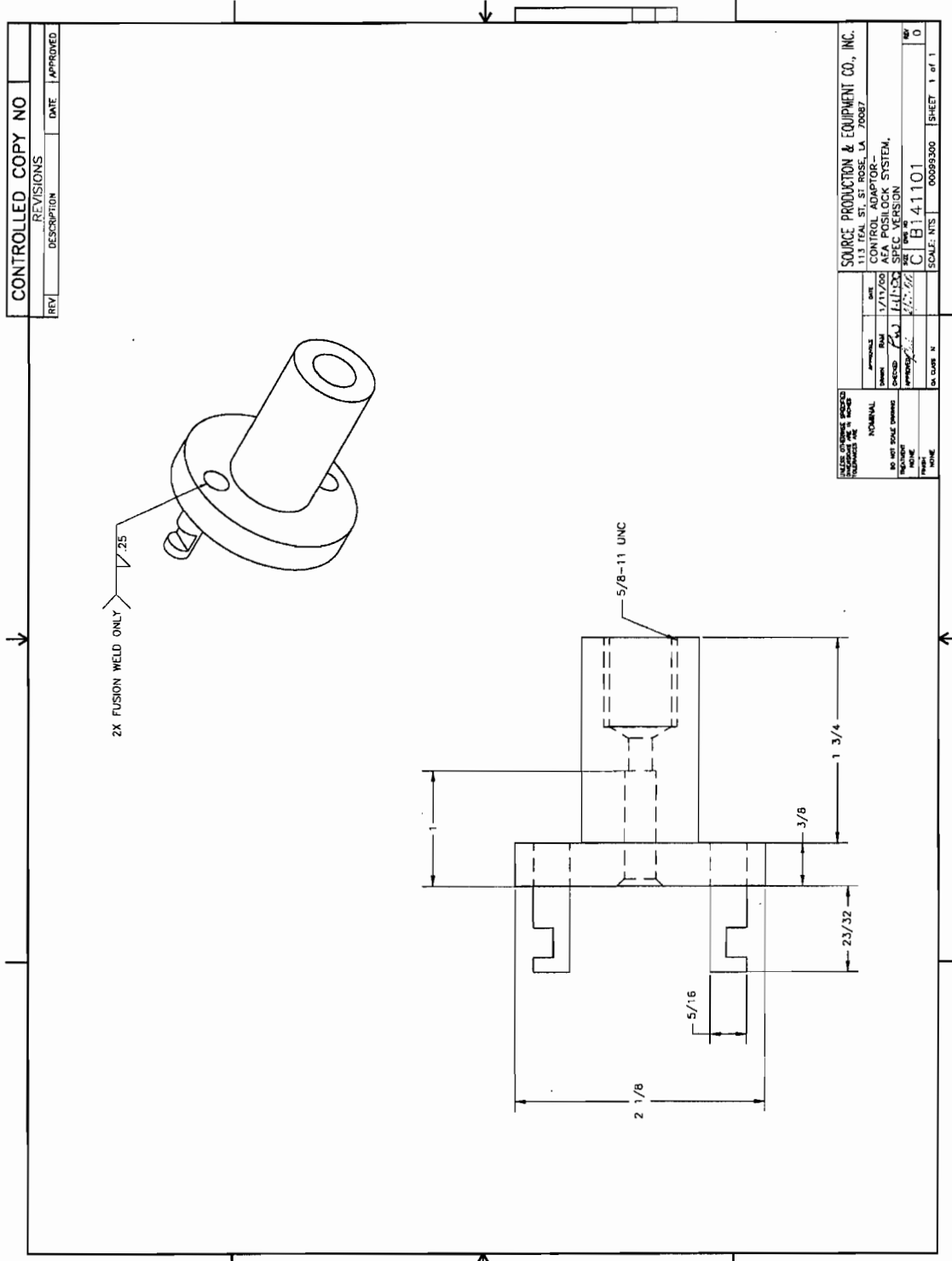
SOURCE PRODUCTION & EQUIPMENT CO., INC. 113 TEAL ST. ST. ROSE, LA. 70087	
DATE	1/8/00
DESIGNED BY	J. C. CO
CHECKED BY	J. C. CO
APPROVED BY	J. C. CO
SCALE	N/A
NO. OF THIS DRAWING	1
TOTAL NO. OF DRAWINGS	1
DATE	1/8/00
BY	J. C. CO
SCALE	N/A
SHEET NO.	1 OF 2

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
 SAFETY EVALUATION OF A DEVICE  
 (Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 19 OF 23



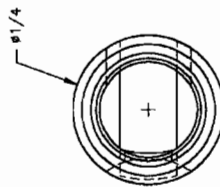
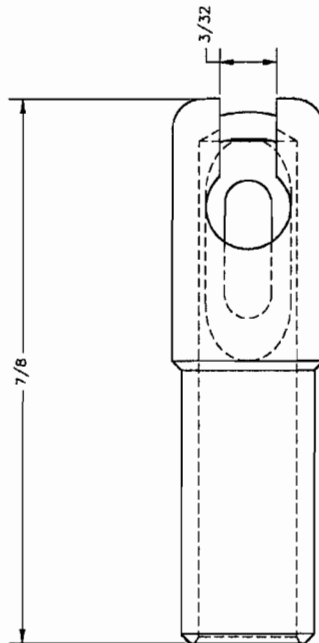
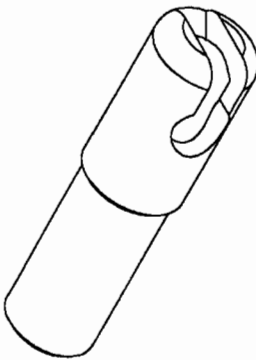
REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
 SAFETY EVALUATION OF A DEVICE  
 (Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 20 OF 23

CONTROLLED COPY NO		
REV	DESCRIPTION	DATE



NOTES:  
 1. ACTUAL DIMENSIONS AND TOLERANCES ARE PROPRIETARY.

FOR ILLUSTRATIONS PURPOSES ONLY

MAKE DRAWING PERIODICALLY RECHECKED N/A DO NOT SCALE DRAWING TOLERANCE NONE NONE	APPROVED DATE 7/20/09 CHECKED 1/1/09 APPROVED 1/1/09	SOURCE PRODUCTION & EQUIPMENT CO., INC. 113 BIAL ST. ROSE, LA 70067 SOURCE CONNECTOR— MODEL #7. SPEC. SIZE CIB151203	SCALE: NTS 00086200 SHEET 1 OF 1
---	--	--	--

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

PAGE 21 OF 23

Attachment 2

SPECIAL FORM CERTIFICATE OF  
COMPETENT AUTHORITY  
USA/0566/S

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: October 26, 2009

PAGE 22 OF 23



U.S. Department  
of Transportation  
  
Pipeline and  
Hazardous Materials  
Safety Administration

IAEA CERTIFICATE OF COMPETENT AUTHORITY  
SPECIAL FORM RADIOACTIVE MATERIALS  
CERTIFICATE USA/0566/S-96, REVISION 2

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

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 Agency<sup>1</sup> and the United States of America<sup>2</sup> for the transport of radioactive material.

1. Source Identification - Source Production & Equipment Co. Model Nos. G and T.
2. Source Description - Cylindrical double encapsulations made of 316L Corrosion Resisting (CRS) stainless steel and gas tungsten arc (TIG) seal welded. Approximate exterior dimensions are between 6.4 mm (0.25 in.) and 12.7 mm (0.5 in.) in diameter and a maximum of 31.8 mm (1.25 in.) in length, including the outer end plug and the projection for the cable attachment. Minimum wall thickness is 0.76 mm (0.03 in.). Construction shall be in accordance with attached SPEC Drawing No. 19B002, Rev. 1.
3. Radioactive Contents - No more than 11.1 TBq (300 Ci) of Cobalt-60 in the form of solid metal pellets.
4. Quality Assurance - Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations<sup>1</sup> 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 applicable requirements of Subpart H of 19 CFR 71.
5. Expiration Date - This certificate expires on October 31, 2013.

---

<sup>1</sup> "Regulations for the Safe Transport of Radioactive Material, 1996 Edition (Revised), No. TS-R-1 (ST-1, Revised)," published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

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

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF A DEVICE  
(Amended in its Entirety)

NO.: LA-0612-S-114-S

DATE: **October 26, 2009**

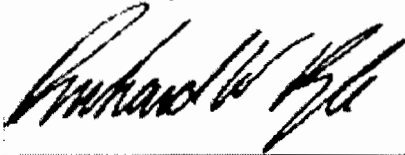
PAGE 23 OF 23

(- 2 -)

**CERTIFICATE USA/0566/S-96, REVISION 2**

This certificate is issued in accordance with paragraph 804 of the IAEA Regulations and Section 171.476 of Title 49 of the Code of Federal Regulations, in response to the September 17, 2008 petition by Source Production and Equipment Company, St. Rose, LA. and in consideration of other information on file in this Office

Certified By:



Robert A. Richard  
Deputy Associate Administrator for Hazardous Materials Safety

**Oct 16 2008**  
(DATE)

Revision 2 - Issued to extend the expiration date.