

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

NO.: LA-0612-S-105-S

DATE: October 18, 2010

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SOURCE TYPE: Industrial Radiography Source Assembly

MODEL: "G" Series

MANUFACTURER/DISTRIBUTOR:

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

ISOTOPE:

MAXIMUM ACTIVITY PER SOURCE:

⁶⁰ Cobalt

110 Curies (4,070 GBq)

¹⁹² Iridium

240 Curies (8,888 GBq)

⁷⁵ Selenium

240 Curies (8,888 GBq)

¹⁶⁹ Ytterbium

240 Curies (8,888 GBq)

LEAK TEST FREQUENCY:

Six (6) months

PRINCIPAL USE:

Code "A" Industrial Radiography for use under specific license

CUSTOM DEVICE:

Yes No

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SOURCE TYPE: Industrial Radiography Source Assembly

DESCRIPTION:

The Source Production and Equipment Company (SPEC) Model G series source assemblies are designed for use in industrial radiography exposure devices, as shown in the attached source selection chart (page 4).

The sealed source assemblies for use with ANSI Type 1 (crank out) devices consist of a source capsule swaged onto one end of a (flexible) cable with a connector on the other end of the cable. The cable lengths and connectors vary from model to model. Sources for use with ANSI Type 2 (Pipeliner – type) devices have no connector, cable, or locking ball.

All source capsules are fabricated from Type 316 or 316L stainless steel with an end cap which is heliarc (TIG) welded. The iridium-192 sources are singly or doubly encapsulated, while all cobalt-60 sources are doubly encapsulated. The minimum wall thickness of the outer encapsulation, in either case, is 0.030 inch. Except for Models G-23, G-36, G-38, and G-60, the connector, locking ball, and source capsule are crimped to 1/8 inch diameter stainless steel cable, and pigtail dimensional tolerances are maintained to $\pm 1/16$ inch. The G-60 connector is **not** swaged to the rigid shank of the locking ball.

Please see the attached figures.

LABELING:

The source capsules for use with ANSI Type 1 devices are stamped “Danger Radioactive”. Additional labeling information is provided on the source identification tag, to be attached to the exposure device.

DIAGRAM:

Please see attached figures.

CONDITIONS OF NORMAL USE:

The SPEC, Model “G” series, source assemblies are designed for use in industrial radiography exposure devices as shown in the source selection chart.

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SOURCE TYPE: Industrial Radiography Source Assembly

PROTOTYPE TESTING:

The "G" series source assembly consists of a single or double encapsulation. The manufacturer states that all prototype source encapsulations meet or exceed the requirements for industrial radiography sources found in ANSI Publication N43.6-2007 and have been assigned a classification of ANSI 07C43515, except for Models G-36, G-38, and G-42. The ANSI classification of G-36, G-38, and G-42 is 07C43313.

EXTERNAL RADIATION LEVELS:

The various sources have different isotopes and activity levels. Therefore, the external radiation levels differ from source to source. Since the encapsulation provides essentially no shielding, the radiation level for a particular source can be calculated using the standard emissivity values

QUALITY ASSURANCE AND CONTROL:

All of SPEC'S sources are manufactured under the control of the SPEC Quality Assurance Program in compliance with 10CFR Part 71.77. SPEC has been issued a Quality Assurance Program Approval for Radioactive Material Packages, Number 0102, by the NRC.

Each pigtail assembly is subjected to a 150 lb pull-test prior to radioactive material insertion and is subjected to a wipe test after the material is sealed in the capsule. If the results of the wipe test are inconclusive, a hot liquid bubble test or other tests are performed. No source will be shipped if removable contamination exceeds 0.002 microcurie. A decay chart and a source tag are supplied with each source, providing information concerning the activity and leak test results.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- A. Series "G" sources shall be distributed (in the US.) only to specific licensees of the U.S. NRC or Agreement States.
- B. Series "G" sealed sources shall not be subjected to environmental or other conditions of use which exceed ANSI 07C43313 for Models G-36, G-38, G-42, and ANSI 07C43515 for the remainder.
- C. Series "G" sources shall be leak tested at intervals not to exceed (6) months, using techniques approved by the licensing authority and capable of detecting at least 0.005 microcurie of removable contamination.

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SOURCE TYPE: Industrial Radiography Source Assembly

<u>Model #</u>	<u>Connector</u>	<u>Exposure Devices</u>	<u>Isotope</u>	<u>Source Changer</u>
G-1F or G-3F	F	Gamma 35, Gamma 35S, Gamma Century S, Gamma Century S Universal, SPEC 2-T or NEEI Model 20V, 20VS, 40V, or 40VS	Ir	SPEC C-1 IR-50
G-1T	T/O	SPEC 2-T or NEEI Model 20V, 20VS, 40V, or 40VS	Ir	Same as above
G-19F	F	Gammatron 50A	Co	None
G-21F	F	Gammatron 100A	Co	None
G-23	None	Gamma Pipeliner, PTL-100, PTL-125U, PTL-230U, CRC-100 or SPEC CHECK Model I	Ir/Se/Yb	None
G-36	None	SPEC-CHECK Model I	Ir/Se/Yb	None
G-37F	F	SPEC Co-60 Model I	Co	None
G-38	None	Gamma Pipeliner, Model 201	Ir/Se/Yb	None
G-40F	F	Industrial Nuclear IR-100	Ir/Se/Yb	SPEC C-1
G-40T	T/O	Industrial Nuclear IR-100	Ir/Se/Yb	SPEC C-1
G-41F	F	MX-IC-100	Ir	SPEC C-1 IR-50
G-41T	T/O	MX-IC-100	Ir	SPEC C-1 IR-50
G-42	None	Device Source Holders	Ir/Se/Yb	SPEC C-1
G-60	7	SPEC-150	Ir/Se/Yb	SPEC C-1

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F SPEC Fail-Safe Connector

7 SPEC connector No. 7

T/O T/O Ball and Socket

Abbreviations used:	SPEC	Source Production and Equipment Co.
	AM	Amersham
	GI	Gamma Industries
	GN	Gulf Nuclear, Inc.
	PTL	Pittsburg Testing Laboratory
	NEEI	Nuclear Environmental Engineering, Inc.
	INC	Industrial Nuclear Company, Inc.

Note: Compatibility of G-Series Sources for use with ANSI Type 1 exposure devices and the SPEC C-1 are determined by testing. Compatibility of sources with other source changers is based upon authorizations issued to the licensees by the NRC and agreement states.

REVIEWER'S NOTES:

All G series sources are intended for specific (registered) devices. The device registration sheet should be checked for all applicable conditions.

SAFETY ANALYSIS:

All of these sealed sources have been in use for many years. Their operational history justifies the conclusion that they are safe for their intended uses.

REFERENCES:

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

An undated letter from SPEC, received in 1974; a letter from SPEC, dated January 19, 1979; an undated letter from SPEC, received January 27, 1984; a letter from SPEC, dated May 15, 1988; and a letter from SPEC, dated June 21, 1989.

RADIOACTIVE SEALED SOURCE SAFETY EVALUATION and REGISTRATION APPLICATION, MODEL G-60 SOURCE, Revision No. (0) September 16, 1994.

Fax of October 21, 1994, from Kenneth N. Carrington (SPEC) to Clifford Russell (DEQ-RPD) C/O USNRC.

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Fax of January 10, 1995, from Kenneth N. Carrington (SPEC) to Clifford Russell (DEQ-RPD).

Faxes (2) of January 11, 1995, from Kenneth N. Carrington (SPEC) to Clifford Russell (DEQ-RPD).

Fax of January 17, 1995, from Kenneth N. Carrington (SPEC) to Clifford Russell (DEQ-RPD).

Letter from Kelley Richardt (SPEC) dated August 23, 2010, requested to amend the SSD No.: LA-612-S-105-S.

Letter from Kelley Richardt (SPEC) dated September 10, 2010, provided some additional information to amend the SS&D.

Email from Kelley Richardt (SPEC) dated September 13, 23, & 28 2010, provided some additional information and updates to amend the SS&D.

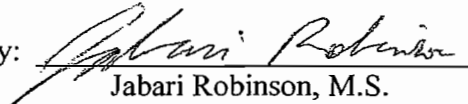
Emails for Kelley Richardt (SPEC) dated October 1 & 4, 2010 provided some additional information to amend the SS&D.

ISSUING AGENCY:

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


Date: 10/21/10

Reviewed By:


Jabari Robinson, M.S.

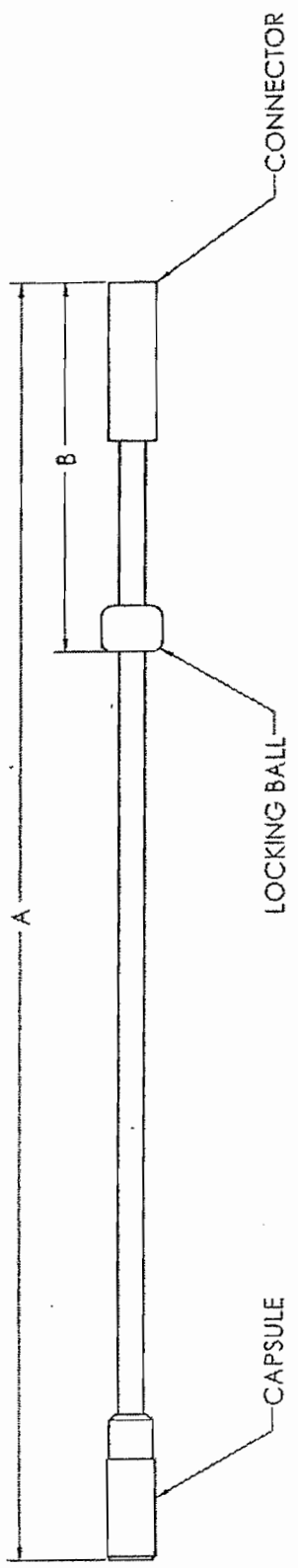
Date: 11/16/2010

Concurrence


James M. Pate, M.S.

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REVISIONS		
REV	DESCRIPTION	DATE
	MIT CHARGES: MR. B. T. G. J.	02/23
		02/23



SPEC MODEL "G" SERIES SOURCE ASSEMBLY DIMENSIONS

SOURCE	CONNECTOR	A	B
G-1F	Fail Safe	7 1/8"	2 1/16"
G-3F	Fail Safe	7 7/8"	2 1/2"
G-1T	Ball and Socket	7 1/8"	2 1/16"
G-19F	Fail Safe	13"	2 3/4"
G-21F	Fail Safe	13 1/4"	2 3/4"
G-23	NA	NA	NA
G-36	NA	NA	NA
G-37F	Fail Safe	11 3/8"	1 7/8"
G-38	NA	NA	NA
G-40F	Fail Safe	7"	1 3/4"
G-40T	Ball and Socket	7"	1 3/4"
G-41F	Fail Safe	8"	2 3/16"
G-41T	Ball and Socket	8"	2 3/16"
G-42	NA	NA	NA
G-60	#7	7 7/8"	1 3/4"

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		DATE		SOURCE PRODUCTION & EQUIPMENT CO., INC.	
APPROVALS	DATE	6-13-10	111 TEAL ST. ST. ROSE, LA 70087		
DRAWN BY	6-13-10	MOJ	MODEL G-SERIES SOURCE ASSEMBLY		REV
CHECKED BY	MOJ	MOJ	SPEC		1
APPROVED BY	MOJ	MOJ	SIZE	DWG. NO.	
			C	B9120000	
TREATMENT	NONE		SCALE: NTS	B91200001	SHEET 1 OF 1
FINISH	NONE				
DOC NO: 30 ALL DRAWING					