Certificate

for
Radiation Device

Certificate Number	Date of Issue	Date of Expiry
R-061-0001-15-2036	February 26, 2026	August 31, 2036

The radiation device identified below is certified by the Canadian Nuclear Safety Commission pursuant to paragraph 21(1)(h) of the *Nuclear Safety and Control Act* and section 12 of the *Nuclear Substances and Radiation Devices Regulations.*

Manufacturer: QSA Global, Inc.

Make and Model: QSA Global Models 880 Delta, 880 Sigma, 880 Elite

Prev. Mfr. Name: AEA Technology

Device Type: EXPOSURE DEVICE, CABLE

Description: The QSA Global Model 880 Delta, 880 Elite and 880 Sigma radiation devices consist of a cylindrical stainless steel shell enclosing depleted uranium shielding and a titanium "S" tube which houses the source. The gap between the depleted uranium shield and the shell is filled with polyurethane foam. Associated accessories such as guide tubes and controls are connected to this radiation device.
The radiation devices can also be equipped with an optional polyethylene jacket for ease of transport or an "IRSS Pipeliner" jacket to facilitate its use as an industrial radiography exposure device or Version 3 jacket incorporating a persistent monitoring tag assembly used for unit tracking purposes.
The IRSS PipeLiner System consists of an 880 exposure device, a plastic jacket, a collimating guide tube and a removable pipe shoe and swing arm assembly. When using the IRSS PipeLiner System, only QSA Global remote controls and source assemblies, except for the Yb-169, can be used.

For further information refer to the attached Summary Evaluation. Reference CNSC application number 65336.

The radiation device may contain any of the following nuclear substances in a quantity not exceeding the corresponding quantity indicated:

Nuclear Substance	Maximum Quantity
Cobalt 60	925 MBq
	2,405 MBq
Cesium 137	14 GBq
Depleted Uranium (used as shielding)	11.4 kg
	15.6 kg
Iridium 192	1,850 GBq
	4,810 GBq
	5,550 GBq
Selenium 75	5,550 GBq
Ytterbium 169	740 GBq

Designated Officer pursuant to paragraph 37(2)(a) of the *Nuclear Safety and Control Act*

Summary Evaluation

For certificate number R-061-0001-15-2036

1. Identification of Radiation Device

Manufacturer:	QSA Global, Inc.
Model(s):	880 Delta, 880 Sigma, and 880 Elite
Type:	Exposure Device

2. Description

The QSA Global 880 Delta, 880 Elite and 880 Sigma radiation devices consist of a cylindrical stainless steel shell enclosing depleted uranium shielding and a titanium "S" tube which houses the source. The gap between the depleted uranium shield and the shell is filled with polyurethane foam. Associated accessories such as guide tubes and controls are connected to this device.

The radiation device can also be equipped with an optional polyethylene jacket for ease of transport or an "Industrial Radiography Supplies and Services (IRSS) Pipeliner" jacket to facilitate use as an industrial radiography exposure device or Version 3 jacket incorporating a persistent monitoring tag assembly used for unit tracking purposes.

The IRSS PipeLiner System consists of an 880 exposure device, a plastic jacket, a collimating guide tube and a removable pipe shoe and swing arm assembly. When using the IRSS PipeLiner System, only QSA Global remote controls and source assemblies except for the Yb-169 can be used. The maximum weight of the IRSS PipeLiner system is approximately 31.8 kg.

The dimensions of the radiation devices with the optional transport jacket are 191 mm wide x 229 mm high x 338 mm long. Total mass including the optional transport jacket of Models 880 Delta and 880 Sigma is 24 kg and for Model 880 Elite is 19 kg. The height of the radiation devices with the optional Version 3 jacket is 254 mm and the total mass of 880 Delta and 880 Sigma is 25 kg and the total mass of Model Elite is 21 kg. The dimensions of the device with the optional "IRSS PipeLiner" jacket are 152 mm wide x 288 mm high x 343 mm long and the total mass of Models 880 Delta and 880 Sigma is approximately 25 kg and the total mass of Model 880 Elite is approximately 20 kg.

An illustration of the device is shown on QSA Global drawing number R88000 (Rev. X) and an illustration of the IRSS PipeLiner system is shown on QSA Global drawing number R88095 (Rev. A). An overview of the 880 series devices is shown in figure 1 and an illustration of the radiation device with the optional mounting jacket to be used as the IRSS PipeLiner System is shown in Figure 2 below.

3. Intended Use

The radiation device is used for industrial applications of gamma radiography to inspect material and structure of various densities. The radiation device can be used portably or with the IRSS PipeLiner System to mount it to a pipe. The IRSS PipeLiner system has been designed for the industrial applications of gamma radiography of pipeline butt welds using double wall contact and single wall viewing techniques.

4. Authorized Nuclear Substances

The radiation device models 880 Sigma, 880 Delta and 880 Elite are authorized to contain one of the following nuclear substances and corresponding maximum activity within the listed source assemblies:

Nuclear Substance	Maximum Activity			Source Assembly	Special Form certificate	Source Assembly Manufacturer
	880 Delta	880 Sigma	880 Elite			
Ir-192	5550 GBq	4810 GBq	1850 GBq	A424-9	USA/0335/S-96 USA/0392/S-96	QSA Global Inc.
Se-75	5550 GBq	5550 GBq	5550 GBq	A424-25W	USA/0335/S-96 USA/0502/S-96	QSA Global Inc.
Yb-169	740 GBq	740 GBq	740 GBq	91810	N/A	QSA Global Inc.
Cs-137	14 GBq	14 GBq	14 GBq	A424-30	USA/0335/S-96	QSA Global Inc.
Co-60	2405 MBq	925 MBq	925 MBq	A424-19	USA/0335/S-96 USA/0165/S-96	QSA Global Inc.
Ir-192	5550 GBq	4810 GBq	1850 GBq	T-5	USA/0608/S-96	SPEC
Se-75	5550 GBq	5550 GBq	5550 GBq			
Yb-169	740 GBq	740 GBq	740 GBq			
Ir-192	5550 GBq	4810 GBq	1850 GBq	T-5F	USA/0608/S-96	
Se-75	5550 GBq	5550 GBq	5550 GBq			
Yb-169	740 GBq	740 GBq	740 GBq			
Ir-192	5550 GBq	4810 GBq	1850 GBq	7	USA/0297/S-96	Industrial Nuclear Company Inc. (INC)
Ir-192	5550 GBq	4810 GBq	1850 GBq	702	USA/0393/S-96	
Ir-192	5550 GBq	4810 GBq	1850 GBq	GAMSENT (880) – NCP0194	RUS/6528/S-96 ZA/004/S-96 (Rev. 8) H/009/S-96 H/106/S (Rev.3) PL/0028/S (Rev. 2) PL/0029/S (Rev. 2)	Gammatec NDT Supplies SOC Ltd
Se-75	3330 GBq	3330 GBq	3330 GBq		RUS/6546/S-96	
	5180 GBq	5180 GBq	5180 GBq		RUS/6546/S-96	
DU	15.6 kg	15.6 kg	11.4 kg	N/A	N/A	N/A

When using the IRSS PipeLiner system, only QSA Global remote controls and source assemblies can be used except for the Yb-169 source which is not authorized for use with the IRSS PipeLiner system.

5. Maximum Expected Radiation Dose

880 Delta Maximum expected radiation dose with maximum activity

Nuclear Substance	Activity	Dose rate (µSv/hr)					
		@ Surface		@ 30 cm		@ 100 cm	
		Closed shutter	Open shutter	Closed shutter	Open shutter	Closed shutter	Open shutter
Ir-192	5550 GBq	1,900	$2.9x10^8$	Not provided	$8x10^6$	13	$7.2x10^5$
Co-60	2405 MBq	1,900	$3.07x10^6$	Not provided	$8.5x10^4$	5	$7.7x10^3$
Se-75	5550 GBq	< 240	$1.5x10^6$	Not provided	$4.3x10^4$	< 2	$3.76x10^3$
Cs-137	14.1 GBq*	< 390	$4.86x10^5$	Not provided	$1.35x10^4$	< 0.5	$1.23x10^3$
Yb-169	1110 GBq*	< 240	$7.9x10^7$	Not provided	$2.21x10^6$	< 2	$2.0x10^5$

880 Sigma Maximum expected radiation dose with maximum activity

Nuclear Substance	Activity	Dose rate (µSv/hr)					
		@ Surface		@ 30 cm		@ 100 cm	
		Closed shutter	Open shutter	Closed shutter	Open shutter	Closed shutter	Open shutter
Ir-192	4810 GBq	1810	$2.5x10^8$	Not provided	$6.93x10^6$	15	$6.24x10^5$

Nuclear Substance	Activity	Dose rate (μSv/hr)					
		@ Surface		@ 30 cm		@ 100 cm	
		Closed shutter	Open shutter	Closed shutter	Open shutter	Closed shutter	Open shutter
Co-60	925 MBq	< 1720	$1.18x10^6$	Not provided	$3.3x10^4$	< 10	$3 x10^3$
Se-75	5550 GBq	< 240	$1.5x10^6$	Not provided	$43 x10^4$	< 2	$3.76x10^3$
Cs-137	14.1 GBq*	< 390	$4.86x10^5$	Not provided	$1.35 x10^4$	< 0.5	$1.23x10^3$
Yb-169	1110 GBq*	< 240	$7.9x10^7$	Not provided	$2.21x10^6$	< 2	$2.0x10^5$

880 Elite Maximum expected radiation dose with maximum activity

Nuclear Substance	Activity	Dose rate (μSv/hr)					
		@ Surface		@ 30 cm		@ 100 cm	
		Closed shutter	Open shutter	Closed shutter	Open shutter	Closed shutter	Open shutter
Ir-192	1850 GBq	1680	$9.6x10^7$	Not provided	$2.67x10^6$	5	$2.4x10^5$
Co-60	925 MBq	1720	$1.18x10^6$	Not provided	$3.3x10^4$	10	$3 x10^3$
Se-75	5550 GBq	240	$1.5x10^6$	Not provided	$43 x10^4$	< 2	$3.76x10^3$
Cs-137	14.1 GBq*	390	$4.86x10^5$	Not provided	$1.35 x10^4$	< 0.5	$1.23x10^3$
Yb-169	1110 GBq*	240	$7.9x10^7$	Not provided	$2.21x10^6$	< 2	$2.0x10^5$

*Maximum authorized activity for Cs-137 is 14 GBq and 740 GBq for Yb-169; however, the radiation level reported are for 14.1 GBq of Cs-137 and 1110 GBq for Yb-169.

6. Conditions of Use and Storage

The radiation device is designed to operate or stored in the temperature range of -40 °C to 149 °C. Humidity is not expected to affect the device.

7. Leak Tests

The leak test is to be conducted in accordance with QSA Global, Inc. document *SENTINEL 880 Series Gamma-Ray Source Projector & Transport Container Operations and Maintenance Manual, MAN-027* and in accordance with the *Nuclear Substances and Radiation Devices Regulations*.

8. Emergency and Accident Response

Emergency and accident response are to be dealt with in accordance with QSA Global, Inc. document *SENTINEL 880 Series Gamma-Ray Source Projector & Transport Container Operations and Maintenance Manual, MAN-027* and in accordance with the *Nuclear Substances and Radiation Devices Regulations*.

9. Quality Assurance

The design, testing and manufacture of the exposure device are made in accordance with *QSA Global Quality System Manual, QSM-1*, which complies with ISO 9001:2015 requirements. The exposure device has been demonstrated to meet ANSI N432-1980 and ISO 3999:2004 (E) standards.

10. Inspection, Maintenance and Servicing

The radiation device is to be inspected and maintained in accordance with the instructions provided by QSA Global, Inc. in the document *SENTINEL 880 Series Gamma-Ray Source Projector & Transport Container Operations and Maintenance Manual, MAN-027, Pipeliner Operations and Maintenance Manual* when using the IRSS PipeLiner system and in accordance with the *Nuclear Substances and Radiation Devices Regulations*. QSA Global, Inc. accepts the radiation device for disposal.

11. Packaging and Transport

The radiation device is transported as a Type B package which is certified under CDN/E199/-96. The source is secured in the locked position during transport. The radiation device is to be transported in accordance with the *Packaging and Transport of Nuclear Substances Regulations, 2015*.

12. Authorized Configurations and Accessories

The following accessories are authorized for use with this device:

Equipment	Model No	Manufacturer
Control assemblies	664XX*, 692XX*, 693XX*, SAN882XX, SAN882RXX, SAN885XX, SAN885RXX, SAN886XX, SAN886RXX, SAN887XX, SAN887RXX	QSA Global, Inc.
	K125664-129 (issue D)	MDS Nordion
	256xxx**	SPEC
	Cs-QSA880-13	IRISNDT
	3740-04 SAE100R7	Acuren
Control Tubes	242825, 242835	SPEC
Guide Tubes	48906-X*, 48930-X*, 48931-X*, 95020-X*, 95021-X*, 48907-X*, 48998-X*, 48999-X*, 95073-X*, 95074-X*, 95075-X*, 95076-X*, 48912G-X, 48912GTUB-XX, 48906G-X, 95020G-X Model 489- and Model 950- style guide tubes may be used with Model TUB011-X guide tube shield assembly as an option.	QSA Global, Inc.
	224107, 224207, 224307, 228107	SPEC
Collimators	717, 827, 828, 846	QSA global, Inc.
Cable Male Connectors	550	QSA Global, Inc.
	D898, G140301-027	MDS Nordion
	244002, 244003	SPEC
Drive Connector	661	QSA Global, Inc.
Control Adaptor	141101	SPEC
Threaded End Stops	222510	SPEC
	TAN691, 8011003202	QSA Global, Inc.
PipeLiner assembly	PL1000	IRSS
Centering device	CANSPEC-045	Acuren
Rigid Tube	J-tube CANSPEC-048	Acuren
	J-tube 91500-XX	QSA Global, Inc.
	69130-XX	QSA Global, Inc.

* Where X represents the length of guide tube in ft

** where xxx varies based on the specific configuration of the Sentinel style control assembly model. For example, control assemblies could include 256025, 256035, 256036, 256037, 256050, 256125

13. Reference Documents

No.	Description	Date	CNSC Reference No.
1	Application	2022-03-23	6763551

2	Application form	2022-11-01	6904862
3	Application	2025-08-21	55DAD1PYT9B8-1569068575-343

Figure 1: Overview of 880 Series Devices

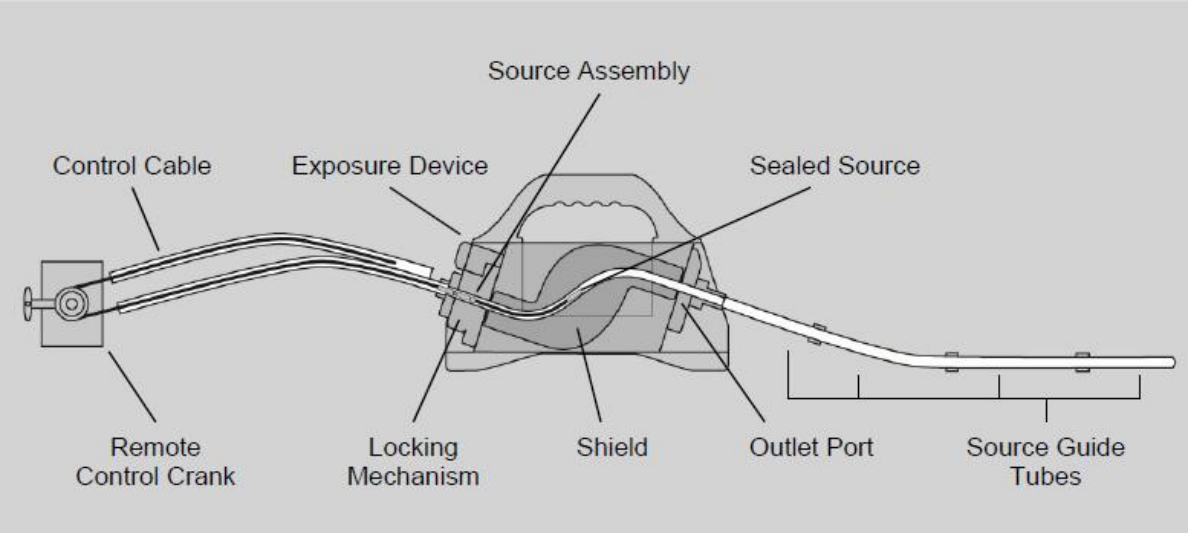

Figure 2: Illustration of the IRSS PipeLiner System