QSA Global, Inc.
40 North Avenue
Burlington, MA 01803
Telephone: (781) 272-2000
Toll Free: (800) 815-1383
Facsimile: (781) 359-9191

8 August 2018

71-9314

Mr. John McKirgan
Branch Chief
Spent Fuel Licensing Branch
U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Mailstop 3WFN-14A44
11555 Rockville Pike
One White Flint
Rockville, MD 20852

RE: 10 CFR 71.95(a)(3) report for CoC number USA/9314/B(U)-96

Dear Mr. McKirgan:

QSA Global, Inc. is making a report under 10 CFR 71.95(a)(3) concerning the Model 976 Series Type B packages (CoC 9314). During the review of a component, prior to an additional purchase, an issue was identified where the package configuration under the Type B certificate may not have been observed in making Type B shipments.

Current descriptive drawings R97600, R1911, R3056 and R85590 include a generic commitment for all hardware used on the package to comply with ASME B18 standards. This commitment was added to the drawings during the original application for these packages as Type B in 2005. During the application review for the Model 976 Series, an RAI was issued in August 2004 requesting the drawings be revised to include applicable codes and standards per NUREG/CR-5502. In response, the company updated the drawings to add the ASME B18 compliance requirement for all hardware used on the package design.

Although not clearly identified in the notes added to these drawings, the intent of the ASME B18 requirement was for it to apply to hardware that was important to safety or ensuring the package integrity. Unfortunately, this was poorly worded when the commitment was added to the drawings, and it did not clearly make this distinction.

Because of the current wording in Model 976 descriptive drawings related to ASME B18 conformance for hardware, QSA Global, Inc. is unable to document ASME B18 conformance for a number of hardware components used on these package designs. This results in potential non-conforming Type B shipments occurring between June 2005 and August 8, 2018 for the Model 976 Series packages.

NM5524

In 2009, the Model 976 descriptive drawings were modified to add ASTM material specifications components on the drawing. Based on the construction of the Model 976 Series packages, the inner shield containers are held in place during transport inside the drum assembly by the cork inserts and the drum components (body, lid, lid securing screws and clamp band). The only safety critical piece of hardware on the Model 976 Series packages are the lid securing screws which ensure the drum lid stays attached to the drum body during the hypothetical accident condition test conditions. Failure of any of the shield assembly hardware would not result in a release of the package contents or reduction in the package integrity so long as the cork inserts remain secured around the shield assembly within the drum.

The rivets used to attach the package nameplate are important only to the extent that they can withstand the same fire condition as the nameplate during the thermal test. These rivets are specified as stainless steel on the current drawings and any further standards conformance for these parts is unnecessary to ensure they will perform their intended function on the packages.

The addition of the ASTM standards requirement for lid screws on the current drawing R97600 (which replaced drawings R976A, R976C and R976F) was initially added and became effective for components of the Model 976 Series packages as of August 1, 2008. The ASTM additions should have replaced the prior ASME B18 commitment for hardware on these package designs, however, removal of the ASME B18 notes did not occur at that time.

Enclosed are Revisions to drawings R97600, R1911, R3056 and R85590. These revisions remove the ASME B18 hardware requirement from the drawings, however, material specification requirements for the lid screw hardware which is important to safety remains on drawing R97600. Any other general material requirements for hardware components that are not important to safety (NITS) are listed on the applicable drawing sheets.

A root cause analysis of this issue was performed and identified that from 2005 to the present, the issues identified in this 71.95 notification, occurred due to a series of human errors and staffing limitations/workloads (see attached). At times, the human error aspect was compounded over the last 10 years due to a misinterpretation on the applicability of the ASME B18 requirement once compliance was met for the safety critical hardware. This error continued to be promulgated and remained unidentified until recently which resulted in this notification.

The corrective action taken includes the following:

a. A review of all QSA Global Type B approval descriptive drawing and SAR commitments was completed to ensure identification of all current Type B approvals where hardware conformance invokes compliance to ASME-B18. This was completed on August 3, 2018 and identified only the Model 702 and the Model 976 Series package designs.

b. As an interim response to this issue, QSA Global, Inc. will be obtaining and replacing the hardware on the Model 976C and 976F containers with hardware that is compliant to ASME B18 prior to further shipments of that container under the current Certificate of conformance (Revision 9).

Modification of the 976A containers must wait until revision of the Certificate of Conformance based on this amendment request since the 855 lid nut (used along with the lid eyebolt) is not currently identified as a service replaceable part (SRP), and the currently approved construction involves welding. Drawing R85590 is also revised to list the nut as a SRP and allow an alternate construction that does not require welding.

c. As long term correction, this letter will request amendment to the Model 976 Series Type B approval remove reference to the ASME B18 requirements based on the justification (i.e., ASTM material specifications) for safety critical hardware components described in this letter.

Engineering and Regulatory staff involved in Type B transport submissions and associated documentation has changed since 2008. This included additional staff hirings in both Engineering and Regulatory. Staff cross training is ongoing to ensure that the number of personnel available for ensuring Type B drawing and submission conformance is diversified and appropriately distributed. As such, no additional corrective action related to staffing levels or work load allocation is considered necessary at this time.

As of today, we have stopped shipments of the Model 976 Series containers until they can either be retrofitted with hardware we can document compliant to CoC Revision 9 or we receive amendments as requested under this letter.

The issues identified in this letter did not contribute to any incidents or failures related to their safe use in transport. The corrective actions identified in this letter are expected to ensure no future recurrence of this issue. Continued compliance will be verified as part of our routine Quality Assurance internal audits which include performance of Engineering and Regulatory Type B related activities.

For the changes made to the enclosed drawings, in addition to those discussed in this letter we have made a few other minor changes for clarification. All changes to the drawing are covered in the enclosed drawing change table.

There is currently an amendment pending for this Type B approval that was submitted to allow for an alternate construction of the drum clamp band (reference QSA Global letter dated 26 March 2018. We request that this amendment request be processed with that submission if possible. Otherwise we request that this submission be processed expeditiously after completion of the current pending, amendment. The Model 976 Series packages are critical to our ability to distribute industrial radiography sources to our customers. Should you have any additional questions, or wish to discuss our amendment request, please contact me.

Sincerely,

e-Signed by Lori Podolak
on 2018-08-08 20:23:32 GMT

Lori Podolak
Senior RA/QA Specialist
Ph: (781) 505-8241
Email: Lori.Podolak@qsa-global.com

e-Signed by Michael Fuller
on 2018-08-08 21:06:52 GMT

RA/QA Approval Date

e-Signed by Steve Grenier
on 2018-08-09 11:27:02 GMT

Engineering Approval Date

Enclosures:

- R97600 Rev D, R85590 Rev K, R3056 Rev H & R1911 Rev H
- Drawing Change Table for Model 976 Series Packages (8/8/2018)
- CR 2161 Root Cause Analysis & Corrective Action Plan

cc: ATTN: Document Control Desk
Director, Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
One White Flint
Rockville, MD 20852

Mr. Bernard White

MODEL CONFIGURATION	MAXIMUM PACKAGE WEIGHT	MAXIMUM PACKAGE CAPACITY (Ir-192)	DIMENSION "A"
976F	263 lbs	1000 CURIES	8-3/4 REF
976C	190 lbs	1250 CURIES	11 REF
976A	300 lbs	1000 CURIES	8-9/16 REF

BAND

PART NAME	976A	976C	976F	MATERIAL
	QTY			
LID SCREWS	4	4	4	SEE NOTE 6
CLAMP BAND	1	1	1	SEE DRAWING RCLM009 OR RCLM011
SEAL WIRE	AR	AR	AR	STEEL
RIVETS	4	4	4	STAINLESS STEEL
NAMEPLATE	1	1	1	FIREPROOF STEEL
BOTTOM INNER SPACER	0	1	0	SEE SHEET 4
TOP INNER SPACER	0	4	4	SEE SHEET 4
BOTTOM INNER INSERT	0	1	1	SEE SHEET 2
TOP OUTER INSERT	1	1	1	SEE SHEET 3
BOTTOM OUTER INSERT	1	1	1	SEE SHEET 2
SHIELD ASSEMBLY MODEL 1911	0	0	1	SEE DRAWING R1911
SHIELD ASSEMBLY MODEL 3056	0	1	0	SEE DRAWING R3056
SHIELD ASSEMBLY MODEL 855	1	0	0	SEE DRAWING R85590
DRUM ASSEMBLY	1	1	1	SEE DRAWING R97608

NOTES:

1. MODEL 976 SERIES TRANSPORT PACKAGE CONSISTS OF 3 DIFFERENT MODEL CONFIGURATIONS.
2. NOTES APPLY TO ALL PAGES.
3. TORQUE CLAMP BAND BOLT TO 10 ±2 FT-LB (EQUIVALENT TO 0.75 TO 1.25 INCH GAP IN BAND).
4. MAXIMUM PACKAGE WEIGHT PER TABLE.
5. "REF" OR () DENOTES A REFERENCE DIMENSION - FOR GENERAL INFORMATION ONLY. ACTUAL DIMENSION ON FINISHED ITEM MAY FALL OUTSIDE TOLERANCES SHOWN ON THIS DRAWING.
6. 3/8-16 X 3/4 LONG LID SCREWS INSTALLED BEFORE 1-AUG-2008 ARE 300 SERIES STAINLESS STEEL WHILE SCREWS INSTALLED OR REPLACED ON OR AFTER 1-AUG-2008 ARE STAINLESS STEEL PER ASTM A193 GRADE B8 (304).

ERF #	APPROVALS	DATE
3821		JAN 19
		JAN 18
		JAN 18

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE INCHES, TOLERANCE ±1/8

QSA GLOBAL

40 NORTH AVE, BURLINGTON, MA 01803

DESCRIPTIVE DRAWING

TITLE: MODEL 976 TRANSPORT PACKAGE

SIZE	DWG. NO.	REV
A	R97600	D
	SCALE: NONE	SHEET 1 OF 4

[redacted]

SECTION A2-A2
BOTTOM OUTER INSERT

SECTION B2-B2
976C BOTTOM INNER INSERT

976 BOTTOM INSERTS

PART NAME	MATERIAL
976F BOTTOM INNER INSERT	CORK WITH UREA FORMALDEHYDE RESIN BINDER. DENSITY: 17 ± 2 LB./CU. FT.
976C BOTTOM INNER INSERT	
BOTTOM OUTER INSERT	

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE INCHES, TOLERANCE ±1/8

QSA GLOBAL
40 NORTH AVE, BURLINGTON, MA 01803

DESCRIPTIVE DRAWING

TITLE: MODEL 976 TRANSPORT PACKAGE

SIZE	DWG. NO.	REV
A	R97600	D
	SCALE: NONE	SHEET 2 OF 4

[redacted]

TOP OUTER INSERT

976C TOP OUTER INSERT	CORK WITH UREA FORMALDEHYDE RESIN BINDER. DENSITY: 17 ± 2 LB./CU. FT.
976A & 976F TOP OUTER INSERT	
PART NAME	MATERIAL

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE INCHES, TOLERANCE ±1/8

QSA GLOBAL

40 NORTH AVE, BURLINGTON, MA 01803

DESCRIPTIVE DRAWING

TITLE: MODEL 976 TRANSPORT PACKAGE

SIZE	DWG. NO.	REV
A	R97600	D
	SCALE: NONE	SHEET 3 OF 4

[redacted]

INNER SPACERS

976C & 976F TOP INNER SPACER	CORK WITH UREA FORMALDEHYDE RESIN BINDER. DENSITY: 17 ± 2 LB./CU. FT.
976C BOTTOM INNER SPACER	
PART NAME	MATERIAL

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE INCHES, TOLERANCE ±1/8

QSA GLOBAL

40 NORTH AVE, BURLINGTON, MA 01603

DESCRIPTIVE DRAWING

TITLE: MODEL 976 TRANSPORT PACKAGE

SIZE	DWG. NO.	REV
A	R97600	D
	SCALE: NONE — SHEET 4 OF 4	

[redacted]

PART NAME	QTY	DESCRIPTION
HOUSING WELDMENT	1	SEE SHEET #3
COVER	1	SEE SHEET #2
EYEBOLT & NUT (SRP)	1	SEE SHEET #2
NAMEPLATE (SRP)	1	STAINLESS STEEL
RIVET (SRP)	4 MINIMUM	1/8 DIAMETER POP RIVET STAINLESS STEEL
COVER SCREW (SRP)	8	3/8–16 x3/4 LG 300 SERIES AUSTENITIC SS

AFTER 30 OCT 2003
AWS D1.1 STRUCTURAL WELDING CODE – STEEL
AWS D1.6 STRUCTURAL WELDING CODE – STAINLESS STEEL

2. NOTES APPLY TO ALL PAGES.
3. MAXIMUM DEVICE WEIGHT – 225 LBS.
4. THIS ASSEMBLY IS NOT TO BE MANUFACTURED AFTER 01 JANUARY 2009 EXCEPT FOR PARTS IDENTIFIED AS SERVICE REPLACEABLE PARTS (SRP).

K

ERF#	APPROVALS	
3821	S.G.	7 AUG 18
		8 Aug 18
		8 Aug 18

DIMENSIONS IN INCHES
TOLERANCES:
FRACTIONS ±1/8
X ± 0.1
XX ± 0.05
XXX ± 0.005

QSA GLOBAL

DESCRIPTIVE DRAWING

TITLE MODEL 855 SOURCE CHANGER

SIZE	DWG. NO.	REV
A	R85590	K
	SCALE: NONE SHEET 1 OF 6	

[redacted]

QSA GLOBAL

DESCRIPTIVE DRAWING

TITLE MODEL 855 SOURCE CHANGER

SIZE	DWG. NO.	REV
A	R85590	K
	SCALE: NONE	SHEET 2 OF 6

[redacted]

QSA GLOBAL

DESCRIPTIVE DRAWING

TITLE	MODEL 855 SOURCE CHANGER		
SIZE A	DWG. NO. R85590		REV K
	SCALE: NONE	SHEET 3 OF 6	

[redacted]

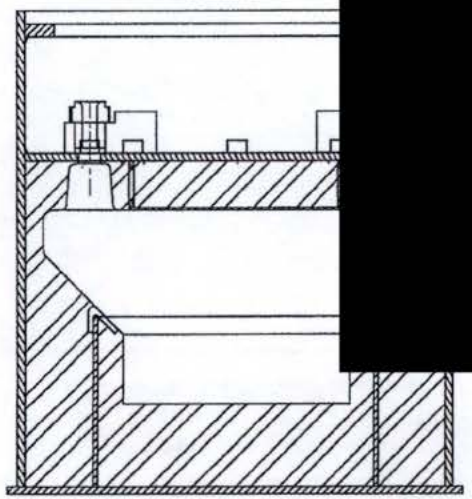
QSA GLOBAL

DESCRIPTIVE DRAWING

TITLE	MODEL 855 SOURCE CHANGER		
SIZE A	DWG. NO. R85590		REV K
	SCALE: NONE	SHEET 4 OF 6	

8 PLACES

[redacted]



QSA GLOBAL

DESCRIPTIVE DRAWING

DIMENSIONS IN INCHES
TOLERANCES:
FRACTIONS ±1/8
X ± 0.1
XX ± 0.05
XXX ± 0.005

TITLE MODEL 855 SOURCE CHANGER

SIZE	DWG. NO.	REV
A	R85590	K
	SCALE: NONE	SHEET 5 OF 6

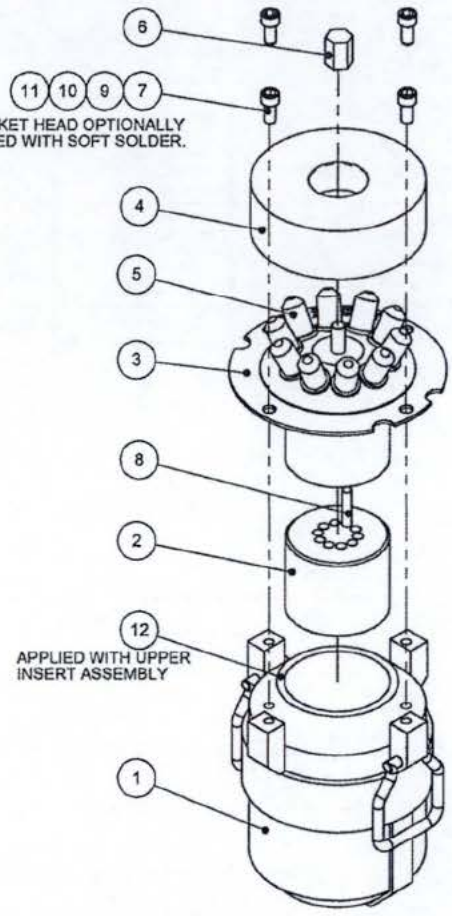
QSA GLOBAL

DESCRIPTIVE DRAWING

DIMENSIONS IN INCHES
TOLERANCES:
FRACTIONS ±1/8
X ± 0.1
XX ± 0.05
XXX ± 0.005

TITLE MODEL 855 SOURCE CHANGER

SIZE	DWG. NO.	REV
A	R85590	K
	SCALE: NONE	SHEET 6 OF 6



[redacted]

ITEM NO.	QTY	DESCRIPTION
12	AR	SILICONE RUBBER SEALANT, OPTIONAL (SRP)
11	AR	SOFT SOLDER, OPTIONAL (SRP)
10	AR	THREADLOCKER, OPTIONAL (SRP)
9	4	WASHER, STAINLESS STEEL, OPTIONAL (SRP)
8	10	LOWER INSERT TUBE - SEE SHEET 4 (SRP)
7	4	SOCKET HEAD SCREW, M10x1.5 20mm LG, 316 STAINLESS STEEL PER DIN 912-A4 (SRP)
6	1	RETAINING NUT - SEE SHEET 4 (SRP)
5	10	CAP NUT - SEE SHEET 4 (SRP)
4	1	TOP HAT - SEE SHEET 4
3	1	UPPER INSERT - SEE SHEET 3
2	1	LOWER INSERT - SEE SHEET 2
1	1	LEAD POT ASSEMBLY - SEE SHEET 2

NOTES:
1. ALL PERSONNEL QUALIFICATIONS, WELDING AND EXAMINATION PROCEDURES ARE IN ACCORDANCE WITH THE REQUIREMENTS OF THE AWS, ASME, OR BRITISH STANDARD WELDING CODES AT THE TIME OF FABRICATION AND INSPECTION.
2. NOTES APPLY TO ALL PAGES.
3. MAXIMUM WEIGHT = 114 LBS.
4. (H) "REF" DENOTES A REFERENCE DIMENSION PROVIDED FOR GENERAL INFORMATION ONLY. ACTUAL DIMENSION ON FINISHED ITEM MAY FALL OUTSIDE TOLERANCES SHOWN ON DRAWING.
5. THIS ASSEMBLY IS NOT TO BE MANUFACTURED AFTER 1 JAN 2009, EXCEPT FOR PARTS IDENTIFIED AS SERVICE REPLACEABLE PARTS (SRP) .

ERF #	APPROVALS	DATE
3821		

QSA GLOBAL
40 NORTH AVE, BURLINGTON, MA 01803

DESCRIPTIVE DRAWING

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES
TOLERANCES:
FRACTIONS ± 1/8
X.X ± 0.12
X.XX ± 0.06
X.XXX ± 0.020

TITLE: MODEL 3056 SHIELD CONTAINER

SIZE	DWG. NO.	REV
A	R3056	H
	SCALE: NONE	SHEET 1 OF 4

[redacted]

QSA GLOBAL

DESCRIPTIVE DRAWING

TITLE	MODEL 3056 SHIELD CONTAINER		
SIZE A	DWG. NO. R3056		REV H
	SCALE: NONE	SHEET 2 OF 4	

[redacted]

QSA GLOBAL

DESCRIPTIVE DRAWING

TITLE: MODEL 3056 SHIELD CONTAINER

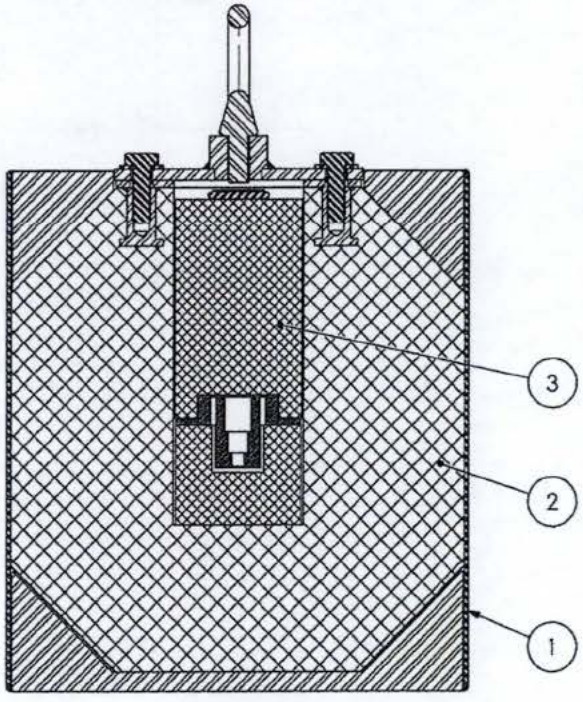
SIZE	DWG. NO.	REV
A	R3056	H
	SCALE: NONE	SHEET 3 OF 4

[redacted]

QSA GLOBAL

DESCRIPTIVE DRAWING

TITLE			
MODEL 3056 SHIELD CONTAINER			
SIZE A	DWG. NO. R3056		REV H
	SCALE: NONE	SHEET 4 OF 4	



SECTION A-A

[redacted]

ITEM	TITLE	QTY	MATERIAL
3	LEAD INSERT & PLUG WITH BRASS INNER	1	SEE SHEETS 4,5 & 6
2	1911 LEAD POT ASSEMBLY	1	SEE SHEET 3
1	JACKET BODY, MODEL 1911	1	SEE SHEET 2

UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE INCHES
TOLERANCE: LINEAR ±1/8 ANGULAR ±5°

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40 NORTH AVE, BURLINGTON, MA 01803

DESCRIPTIVE DRAWING

TITLE: MODEL 1911 SHIELD

SIZE	DWG. NO.	REV
B	R1911	H
	SCALE: 1:2	SHEET 1 OF 6

NOTES:

1. MAXIMUM PACKAGE WEIGHT - 184 lbs.
2. NOTES ON THIS PAGE APPLY TO ALL PAGES OF THIS DRAWING.
3. (H) SOURCE HOUSING, ITEM (3) MAY BE LEAD/BRASS, TUNGSTEN OR DU/STEEL FABRICATION.
4. " ( ) " DENOTES A REFERENCE DIMENSION PROVIDED FOR GENERAL INFORMATION ONLY.
   ACTUAL DIMENSION ON FINISHED ITEM MAY FALL OUTSIDE TOLERANCES SHOWN ON DRAWING.

ERF #	APPROVALS	DATE
3821		7AUG18
		8AUG18
		8Aug18

[redacted]

ITEM	TITLE	QTY	MATERIAL
4	JACKET BODY, MODEL 1911	1	SEE NOTE 5
3	JACKET TOP PLATE, MODEL 1911	1	SEE NOTE 5
2	JACKET BOTTOM PLATE, MODEL 1911	1	SEE NOTE 5
1	1911 LEAD POT ASSEMBLY	1	SEE SHEET 3

UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE INCHES
TOLERANCE: LINEAR ±1/8 ANGULAR ±5°

QSA GLOBAL

40 NORTH AVE, BURLINGTON, MA 01803

DESCRIPTIVE DRAWING

TITLE: MODEL 1911 SHIELD

SIZE	DWG. NO.	REV
B	R1911	H
	SCALE: 1:2	SHEET 2 OF 6

[redacted]

RETED PER:
LS FOR WELDING, BRAZING AND NONDESTRUCTIVE EXAMINATION

N ON THIS PAGE WILL BE IN ACCORDANCE WITH:
AN 1 2009; BS EN 288 WELD PROCEDURE TESTS FOR ARC WELDING OF STEEL
2009; AWS D1.6 STRUCTURAL WELDING CODE - STAINLESS STEEL

R GMAW AND SHALL BE PERFORMED BY PERSONNEL
H THE STANDARD AS LISTED ABOVE.

TO BE VISUALLY (VT) INSPECTED BY INDIVIDUALS CURRENTLY QUALIFIED

AN 1 2009; BS 5500
2009; ASNT SNT-TC-1 A

NT TO SAFETY

ICATIONS ARE FOR ASSEMBLIES FABRICATED AFTER JUNE 1 2009
NLESS STEEL PARTS WERE SPECIFIED AS "AUSTENITIC STAINLESS STEEL"

ITEM	TITLE	QTY	MATERIAL
8	M10 X 1.5 EYEBOLT	1	FORGED PLAIN STEEL - NITS
7	SCREW, M8X1.25 X 25mm, HEX HEAD, SS	4	ASTM F593 - ALLOY GROUPS 1,2,3 - CONDITION CW
6	OPTIONAL PLAIN WASHER	4	STEEL - NITS
5	CLOSURE PLATE, HUB	1	ASTM A276, 304 STAINLESS STEEL
4	CLOSURE PLATE, DISK	1	ASTM A240, 304 STAINLESS STEEL
3	1911 LEAD POT TOP PLATE	1	ASTM A240, 304 STAINLESS STEEL
2	M8X1.25 X1 THREADED BOSS	4	ASTM A276, 304 STAINLESS STEEL
1	LEAD BODY, 1911	1	LEAD, 99.9% PURE

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE INCHES
TOLERANCE: LINEAR ±1/8 ANGULAR ±5°

QSA GLOBAL

40 NORTH AVE, BURLINGTON, MA 01803

DESCRIPTIVE DRAWING

TITLE: MODEL 1911 SHIELD

SIZE	DWG. NO.	REV
B	R1911	H
	SCALE: 1:2	SHEET 3 OF 6

[redacted]

ITEM	TITLE	QTY	MATERIAL
6	OPTIONAL #6-20 X 1/2 PHILLIPS PAN HEAD SCREW	2	STEEL OR PLASTIC - NITS
5	OPTIONAL STRAP & DEE RING	1	BRASS - NITS
4	PLUG LEAD INSERT	1	LEAD
3	OPTIONAL #6-20 X 1/2 PHILLIPS FLAT HEAD SCREW	2	STEEL OR PLASTIC - NITS
2	SOURCE HOUSING	1	BRASS
1	CAP LEAD INSERT	1	LEAD

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE INCHES
TOLERANCE: LINEAR ±1/8 ANGULAR ±5°

QSA GLOBAL

40 NORTH AVE, BURLINGTON, MA 01803

DESCRIPTIVE DRAWING

TITLE: MODEL 1911 SHIELD

SIZE	DWG. NO.	REV
B	R1911	H
	SCALE: 1:2	SHEET 4 OF 6

[redacted]

ITEM	TITLE	QTY	MATERIAL
3	OPTIONAL WIRE HANDLE	1	STAINLESS STEEL - NITS
2	TUNGSTEN PLUG	1	TUNGSTEN
1	TUNGSTEN INSERT	1	TUNGSTEN

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE INCHES
TOLERANCE: LINEAR ±1/8 ANGULAR ±5°

QSA GLOBAL

40 NORTH AVE, BURLINGTON, MA 01803

DESCRIPTIVE DRAWING

TITLE: MODEL 1911 SHIELD

SIZE	DWG. NO.	REV
B	R1911	H
	SCALE: 1:2	SHEET 5 OF 6

[redacted]

[redacted]

ITEM	TITLE	QTY	MATERIAL
3	OPTIONAL WIRE HANDLE	1	STAINLESS STEEL - NITS
2	DEPLETED URANIUM / STEEL PLUG	1	DU/CARBON STEEL
1	DEPLETED URANIUM / STEEL INSERT	1	DU/CARBON STEEL

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE INCHES
TOLERANCE: LINEAR ±1/8 ANGULAR ±5°

QSA GLOBAL

40 NORTH AVE, BURLINGTON, MA 01803

DESCRIPTIVE DRAWING

TITLE: MODEL 1911 SHIELD

SIZE	DWG. NO.	REV
B	R1911	H
	SCALE: 1:2	SHEET 6 OF 6

Drawing Change Table for Model 976 Series Packages (8/8/2018)

Change Location	Summary Change	Change Reported Pursuant to 71.95	Impact of Change on Units Previously or Currently in Use under the Certificate	Action Taken By QSA Regarding Affected Units
R97600 Rev D Sheet 1	Removed Note requiring hardware meet ASME B18.	Yes	Requirements to ASTM for the lid safety critical hardware was added effective 8/1/2008. It is not necessary for hardware that is not important to safety (NITS) to comply with ASME B18 due to the lack of impact on the package integrity. Removal of ASME B18 will have no adverse impact on the package safety or integrity during transport.	Shipments of the 976 Series packages stopped until packages can be demonstrated to comply with the Type B certificate.
R3056 Rev H, Sheet 1	Removed Note requiring hardware meet ASME B18 Removed.	No	Hardware specified on this drawing is not critical to safety or package integrity during transport. Based on the package construction, the hardware on this inner shield container serves as secondary or tertiary containment mechanisms. Material specifications of hardware representative of their importance for package integrity is otherwise specified on the drawing.	None. Not applicable.
R1911 Rev H, Sheet 1	Removed Note requiring hardware meet ASME B18 Removed.	No	Hardware specified on this drawing is not critical to safety or package integrity during transport. Based on the package construction, the hardware on this inner shield container serves as secondary or tertiary containment mechanisms. Material specifications of hardware representative of their importance for package integrity is otherwise specified on the drawing.	None. Not applicable.
R1911 Rev H, Sheet 3	Added "NITS" indicator next to Item 8 in the table.	No	No change to package construction or design. Change made for consistency of terminology use in the drawing for hardware identification not important to safety.	None. Not applicable.

Drawing Change Table for Model 976 Series Packages (8/8/2018)

Change Location	Summary Change	Change Reported Pursuant to 71.95	Impact of Change on Units Previously or Currently in Use under the Certificate	Action Taken By QSA Regarding Affected Units
R85590 Rev K, Sheet 1	Removed Note requiring hardware meet ASME B18 Removed.	No	Hardware specified on this drawing is not critical to safety or package integrity during transport. Based on the package construction, the hardware on this inner shield container serves as secondary or tertiary containment mechanisms. Material specifications of hardware representative of their importance for package integrity is otherwise specified on the drawing.	None. Not applicable.
R85590 Rev K, Sheet 1	Updated the table on sheet to identify the eyebolt and associated nut as service replaceable parts.	No	No change to package construction or design on this sheet. Replacement of the eyebolt under the currently approved design would require replacement of the nut as both are welded to the cover. Change made for accuracy and has no impact on the package integrity.	None. Implementation of this change will not occur prior to amendment of the Certificate of Conformance incorporating this change.
R85590 Rev K, Sheet 2	Revised sheet to show an alternate construction for attachment of the eyebolt and nut to the cover. Listed the eyebolt and nut as "NITS".	No	Based on the 976A package construction, the attachment of the eyebolt and nut to the Model 855 inner container lid does not require these components to be welded in place on the lid to ensure overall package integrity during transport. Change made for design simplification and has no adverse impact on the package integrity during transport.	None. Implementation of this change will not occur prior to amendment of the Certificate of Conformance incorporating this change.
R85590 Rev K, Sheet 3	Corrected typographical error in word "separated" in Note 1.	No	No change to package construction or design. Change made for accuracy.	None. Not applicable.

Drawing Change Table for Model 976 Series Packages (8/8/2018)

Change Location	Summary Change	Change Reported Pursuant to 71.95	Impact of Change on Units Previously or Currently in Use under the Certificate	Action Taken By QSA Regarding Affected Units
R85590 Rev K, Sheet 4	Corrected typographical error in word "Lock" in reference to the mounting plate.	No	No change to package construction or design. Change made for accuracy.	None. Not applicable.
R85590 Rev K, Sheet 4	Added identification as "NITS" to the roll pin and expansion plugs.	No	No change to package construction or design. Change made for consistency of identification of components not important to safety on the drawing.	None. Not applicable.
R85590 Rev K, Sheet 4	Replaced "typical" with "Reference" in regards to the source connector depiction on the drawing.	No	No change to package construction or design. Change made for accuracy and clarity of terminology use. The intent of this depiction was to show a source connector inserted into a source holder assembly but not to imply that all eight source holder assembly must contain a source connector to comply with a Type B shipment.	None. Not applicable.
R85590 Rev K, Sheet 6	Corrected typographical error in word "equally" in Note 1.	No	No change to package construction or design. Change made for accuracy.	None. Not applicable.

CR 2161 Root Cause Analysis & Corrective Action Plan

❖ Root Cause Analysis:

Problem Statement:

Purchasing controls and drawings associated with some of the non-safety critical hardware used on the Models 702 and the 976 Series packages fails to require the hardware comply with ASME B18 per the Type B descriptive drawings. Affected hardware part numbers include the following: RIV003, PIN011, WSH068, SCR336, A21771-1, BLT011, WSH045, SCR333, SCR334, 702-3-12, WSH004-07, WSH013, WSH031, WSH032, WSH033, NUT040 and Armstrong Shoulder Eyebolt #27.

Problem History:

Type B package reviews performed in 2008 originally identified an issue for the Model 650L and the Model 702 regarding a requirement that hardware used on the package needed to comply with ASME B18. For the 650L, this commitment was located in the SAR section 2.1.4, but was removed from the SAR under Revision 7 when applicable material requirements were moved to the descriptive drawings for this package (2010). For the Model 702 the requirement was added to the descriptive drawing at Revision N (2005). The ASME B18 requirement should have been removed in 2010 when Revision U to the descriptive was generated. Revision U referenced applicable ASTM material specifications for hardware used on the package and the use of ASTM specifications should have replaced the previously referenced ASME B18 requirements as conformance to ASTM is sufficient to control the material aspects of hardware components important to safety.

The status of the issues identified during the 2008 package reviews were first performed in July 2009 and tracked on a spreadsheet. This spreadsheet covered reviews of eight Type B package certification designs. These package reviews were completed over a period of nine months resulting in the spreadsheet which identified issues requiring resolution.

Review of records subsequent to the 2008 production drawing update requests (ERFs) identified that in some cases the requests generated from the package reviews were not processed as specified by internal procedures and in some cases these requests were never officially entered for processing by the Engineering department. Although attempts to follow-up on these issues were made by Regulatory, it appears that other priorities took precedence during that time period due to limitations in staffing and a number of pending projects. As such, in some cases, when attempts were made to address these older requests, instead of processing the original ERF requests, new ERF requests were initiated which did not fully cover all issues originally identified.

This 2008 drawing spreadsheet has been reviewed and updated periodically since then as issues were resolved. (See attached general overview table - 702 Type B Container History Timeline Review (8/3/2018)). Currently the only issue remaining is the original finding for the Model 702 regarding non-safety critical hardware.

It is worth noting, that this spreadsheet erroneously identified the issue as applicable to "safety critical" hardware instead of to "All hardware" as specified on the descriptive drawing. It is likely that it was intended this requirement apply only to safety critical hardware, but this was not clearly identified as such on the descriptive drawing submitted for Type B approval. Subsequent reviews by internal staff likely focused on ensuring conformance for only the "safety critical hardware" and inadvertently failing to address the non-critical hardware assuming they were not included under the intent.

A subsequent Type B package review, similar to the one performed in 2008, was completed for all active Type B packages in 2014 – 2016. This set of reviews included a review of the status of the 2008 review spreadsheet. In December 2015, the hardware issue for the 650L was considered closed as "Subsequent discussions with Engineering indicated that ASME-B18 is a generic standard and that all purchased hardware will meet the criteria under this standard." It was indicated that this was considered no longer an issue for the 650L.

For the 702, the hardware issue appears to have been further confused by assuming it applied only to "safety critical" hardware. It was noted during the December 2015 spreadsheet review and update that since safety critical hardware had been addressed on the 702 based on drawing revisions issued after completion of Technical Report 116, the status was identified as closed. Due to this error, the impact on the non-safety critical hardware was not addressed and corrected in 2015.

The review, in 2008 for the 976, involved review of only those package/components that were actively manufactured at that time, so it only covered the drum assemblies and the 1911 shield container. Although the ASME B18 hardware requirement was listed on the descriptive drawings for the reviewed assemblies, this issue was not identified during the 2008 package evaluation. It is assumed this oversight was due to human error.

In response to an August 2004 NRC request for additional information (e.g., "revise design drawings to include applicable codes and standards"), related to the initial application for the Model 976 Series packages, the company added the statement "ALL HARDWARE TO MEET ASME B18 STANDARDS." to all 976 descriptive drawings for the shield containers and the drum assemblies. (It did not appear on the cork descriptives or the descriptive for the clamp band which was essentially a dedicated commercial component obtained from a sole supplier.)

- Why did this occur?

  — (2005): Human Error. Staff addressing the NRC RAI regarding addition of applicable codes and standards, implemented a change whose wording was more inclusive than originally intended and resulted in a more restrictive requirement than necessary for package safety and integrity.
  — (2008-2010): Human Error. Engineering/Regulatory management did not recognize the necessity of adding ASME B18 hardware requirements to non-safety critical hardware on the 702 package.
  — (2008): Human error failed to identify during the 976 package review, the ASME B18 hardware requirement on the Model 1911 shield container and drum assemblies.
  — (2015): Human error failed to identify that the requirement on the 702 descriptive applied to all hardware and not just the "safety critical" hardware noted on the 2008 review spreadsheet.

- Staff Limitations. Results of package reviews relied on the performance of the same individual both in 2008 and 2014-2016. As such, identification of issues relied on the abilities of a single individual. This likely increased the potential for human error due to review repetition and the large number of documents involved.
- Staff Workloads. In addition to maintaining existing product approvals (Type B, Sealed Source and Device Approvals, Special Form Approvals, Type A evaluations, etc.), staff from Engineering and Regulatory are routinely involved in product improvement and new product development. In some cases, this new product development can compete with the work needed to maintain existing product approvals.
- Human Error – Compounded. Subsequent drawing revision reviews for the 702 and 976 Series packages failed to identify the hardware issue based on the acceptance as compliance determined in the 2008 and 2015 spreadsheet review updates.
- Human Error – Compounded. Unlike regular production drawings, descriptive drawings must reflect current as well as past production build requirements to ensure all packages transported under the Type B approval comply with the certification. For older package designs, this can be challenging due to changes in documentation detail level, and staff failure to recognize subtle material/constructions changes for inclusion on the descriptive drawings. The addition of generic commitment statements to descriptives was not properly focused on only those safety significant components that should be affective and inadvertently also affected non-safety related components that did not require that level of control to ensure package safety and integrity.

Root Cause:

The issues identified under CR 2161 resulted from a combination of human error compounded over time, which was aggravated by heavy staff work loads and limited staff availability to address comprehensive package reviews of multiple package designs in a relatively short time frame.

Due to the complexity of QSA Global Type B packages, including that these designs also function as operational devices as well as transport packages, the level of detail required on Type B descriptive drawings makes it challenging to ensure the appropriate level of detail is applied to only safety/integrity critical components. This is further compounded by a limited number of knowledgeable staff in Regulatory and Engineering who are relied upon for maintaining the Type B package submissions, including descriptive drawings associated with Type B approvals for the nine certificate approvals currently maintained by QSA Global, Inc. Although drawing and submission documentation is reviewed by multiple individuals prior to NRC application, company project priorities set on personnel involved with these reviews can lead to inadvertent human errors and oversights as a large volume of work is processed by a small number of staff.

❖ Recommended Corrective Actions to Prevent Recurrence

1. An additional review of all Type B descriptive drawings and SAR commitments was completed to ensure identification of all current Type B approvals where hardware conformance invokes compliance to ASME-B18. This was completed on August 3, 2018 and identified only the Model 702 and the Model 976 Series package designs.

2. Revision to the 702 and 976 descriptive drawings will be submitted to remove the ASME-B18 requirement from these drawings. Safety/integrity critical hardware on these packages are currently identified to require compliance to applicable ASTM material standards. Compliance to the ASTM standards is more applicable from a material performance standpoint and is sufficient to ensure the safety/integrity critical hardware. Further reference to ASME-B18 is no longer necessary to ensure component integrity for Type B transport. ***Expected completion by: August 10, 2018.***

Engineering and Regulatory staff involved in Type B transport submissions and associated documentation has changed since 2008. This included additional staff hirings in both Engineering and Regulatory. Staff cross training is ongoing to ensure that the number of personnel available for ensuring Type B drawing and submission conformance is diversified and appropriately distributed. As such, no additional corrective action related to staffing levels or work load allocation is considered necessary at this time.

❖ Verification of Effectiveness

Verification will be performed as part of the routine internal audit process of Regulatory and Engineering operations.

2008 Type B Review ERF Status - August 3, 2018

976 Type B Package

Description	Drawing Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments
Change 2.05 Ref dim to non-reference dim. Specified to tolerance on descriptive.	Production	191102 Rev B	1/29/2008	2003	4/10/2009	Completed.	
Change 2.06 Ref dim to non-reference dim. Specified to tolerance on descriptive.	Production	191101 Rev B	1/29/2008	2003	4/10/2009	Completed.	
Add weld requirement and VT for welds per descriptive requirement.	Production	191100 Rev A	1/29/2008	1849	3/7/2008	Completed.	
Add weld requirement and VT for welds per descriptive requirement.	Production	191106 Rev A	1/29/2008	2164	6/29/2009	Completed.	
On production drawing correct errors, delete fit test criteria for acceptance and open tolerances to limit allowed under descriptive.	Production	97615 Rev B	2/4/2008	1839	2/16/2008	Completed.	
On production drawing correct errors, delete fit test criteria for acceptance and open tolerances to limit allowed under descriptive.	Production	97615-1 Rev B	2/4/2008	1839	2/16/2008	Completed.	
On production drawing correct errors, delete fit test criteria for acceptance and open tolerances to limit allowed under descriptive.	Production	97615-2 Rev B	2/4/2008	1839	2/16/2008	Completed.	
Obsolete drawing and BOM, replaced by 97626	Production	97622 Rev A and Associated BOM	2/4/2008	1839 & 3254	4/28/2015	Completed.	Completed with ERF 3254
Revise BOM to correct item designations from drawing.	Production	BOM 97624 Rev A	2/4/2008	1839	2/16/2008	Completed.	
Change 3/4" weld length to require full weld along all four sides of lid bolt blocks.	Production	97608 Rev C	1/30/2008	1877	4/24/2008	Completed.	

2008 Type B Review ERF Status - August 3, 2018

650LType B Package

Description	Document Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments	Status of Action August 2018
Request Technical Report to identify safety critical hardware on 650L and to document how the hardware used on the package is controled to ensure that "All safety critical hardware meets ASME-B18 standards" per Type B approval.	SAR	4	8/27/2008	None		Closed	Technical Report 116 did identify SCR200 and screw 65021 as critical to safety, it did not evaluate/assess that these screws met the ASME-B18 standard specifications so the action remains open since we have no documentation that confirms this hardware meets the SAR requirement as compliant to ASME-B18.	Subsequent discussions with Engineering indicated that ASME-B18 is a generic standard and that all purchased hardware will meet the criteria under this standard. This should no longer be an issue for the 650L. (Update: ASME B18 removed from SAR at Revision 7. No requirement on drawings. No longer applicable to package. - 8/2/18)
Obsolete BOMs and drawings which should be removed from the K drive active folders and placed in obsolete folder	Production	Multiple, see ERF request form	8/27/2008	1999	10/3/2008	Closed	Obsoleted all recommended files except for drawing 650 Rev - and drawing 650WS Rev -. These two were kept active for informational purposes.	NA
Generate specification sheet for the weld nut called out for use on the bottom plate (65000-6 Rev F). This part must meet requirements on drawing R65006 Rev H (weld nut, stainless steel, 0.31 minimum thread engagement).	Production	Drawing references Ohio Weld Nut #RHZ 2708 (stain steel)	8/27/2008	3190		Closed	Part of original Regulatory ERF request that was partially processed under ERF 1999. This item remains unaddressed from the original ERF request.	Weld nut from drawing still obtainable from Ohio Nut website and is stainless steel. Thread length should be sufficient to allow 0.31 min thread engagement. Since this weldnut is an off the shelf item, it needs to have a commercial spec sheet generated for it as Safety Class B since failure of the weld nuts due to a lot material issue could lead to failure and loss of the bottom plate on this Type B package. Welding of the nut to the plate was still needed in November 2014 on production drawing although the option had been already added to the descriptive. ERF 3190 addressed remaining issues with revision to drawing 65000-6 and generation of spec sheet for weld nut (NUT048). This was completed in July 2015.
Revise drawing 65000-6 once weld nut specification is created (see action above) to reference the part number.	Production	65000-6 Rev F	8/27/2008	3190		Closed	Part of original Regulatory ERF request that was partially processed under ERF 1999. This item remains unaddressed from the original ERF request. Item was placed on Suspension by Materials and as of 22 Jul 09 this part remains suspended in Mapics. Regulatory cannot access or ensure continued suspension as this is a Materials function.	See above.
Generate specification sheet for rivnut used on top plate. Mapics indicates QC B but unknown if QC sheet ever generated for this component. Descriptive required part be Stainless steel and have minimum thread engagement of 0.25".	Production	#SS25-151 (1/4-20)	8/27/2008	None		Closed	Part of original Regulatory ERF request that was partially processed under ERF 1999. This item remains unaddressed from the original ERF request.	No change to drawing for rivnut. Still calls for part number for the two rivnuts used on top plate. (4) #SS37-211 (3/8-16) rivnuts used to secure cover to base and (8) 1/4-20 #SS25-151 rivnuts used to secure lock assemblies to base. Per Descriptive Rev K, Cover rivnuts specified to be stainless steel with 0.25 min engagement. Lock rivnuts specified as 430 SS with 0.38 min engagement. Email from S. Grenier 12/17/15 confirmed that the drawing specification is sufficient to ensure parts received met basic requirements on descriptive. For clarity and conformance to current formatting practices, and ERF will be requested to generate spec sheets for both rivnuts and revise 65000-13 to reflect cert. of conformance for all parts. (ERF 3414 added CoC requirement to RIV001 and RIV002 drawings issued to Rev A on 2/3/16).
Revise drawing to reference RIV001 and RIV002 part numbers from Mapics.	Production	65006-13 Rev C	8/27/2008	None		Closed	Part of original Regulatory ERF request that was partially processed under ERF 1999. This item remains unaddressed from the original ERF request.	See above for #SS25-151 part. Drawing 65006-13 to be requested for revision to address original recommentation. Current drawing sufficient to comply with Type B approval but change for comformance to current documentation practices. (Drawing revised at Rev D under ERF 3414 to make this change).
Revise drawing to add welding and inspection to AWS for outer body sleeve. Though not on descriptive, compliance is still required based on Section 2.1.4.2 of SAR 4. Drawing also refs obsolete WI for welding and the component could be fabricated for service to existing containers. QC on drawing lists as "NS". QC should be pdated to "C" as the component provides some support to the body of the device in drop and puncture testing compliance.	Production	65000-17 Rev J	8/27/2008	None	3190, 3212, 3226, 3259, 3296	Closed	Part of original Regulatory ERF request that was partially processed under ERF 1999. This item remains unaddressed from the original ERF request.	Part drawing is now to Rev P. Revisions have added weld notes, changed safety class to B. Changes to latest version of drawing were to address requirements added during NRC Type B amendment review. Part drawing compliant to descriptive. Action closed.
Revise drawing to add welding and inspection to AWS for lid weldment. Though not on descriptive, compliance is still required based on Section 2.1.4.2 of SAR 4. Drawing also refs obsolete WI for welding and the component could be fabricated for service to existing containers.	Production	65000-21 Rev A	8/27/2008	None	9/24/1908	Closed	Part of original Regulatory ERF request that was partially processed under ERF 1999. This item remains unaddressed from the original ERF request.	Drawing to Rev B which added weld requirements and addressed original issues. Review of drawing to descriptive identified minor discrepancies with weld specification and material requirement for part does not meet note 7 of descriptive. ERF requested to correct drawing for any future fabrication. No non-conformance exists, part has not been manufactured or replaced on a 650L since 11/1/2010. (Rev C of drawing under ERF 3414 corrects issue fully).

2008 Type B Review ERF Status - August 3, 2018

650LType B Package

Description	Document Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments	Status of Action August 2018
Revise drawing to add welding and inspection to AWS for weld nuts on bottom flange. Though not on descriptive, compliance is still required based on Section 2.1.4.2 of SAR 4. Drawing also refs obsolete WI for welding and the component could be fabricated for service to existing containers.	Production	65000-6 Rev F	8/27/2008	None	3190, 3265, 3296	Closed	Part of original Regulatory ERF request that was partially processed under ERF 1999. This item remains unaddressed from the original ERF request.	**Drawing to Rev J currently. Redrawn at Rev G to add plarts and weld notes. Additional weld requirements added at Revs H and J. Drawing complies with descriptive. Action closed**
Revise drawing to remove obsolete source wire assembly references and adaptors (items 2 and 3). Transfer tube manufacture may be needed to continue use of the 650L device though this part is not included under Type B. Change is recommended for accuracy of expected future fabrication. **{Change Not Required for Type B compliance.}**	Production	65004 Rev A	8/27/2008	None		Open, but no impact on Type B	Part of original Regulatory ERF request that was partially processed under ERF 1999. This item remains unaddressed from the original ERF request.	**Drawing still active. Recommend making drawing obsolete under ERF since no longer used in active manufacturing to support current products. (Drawing obsoleted under ERF 3414, 2/29/16)**
Multiple revisions to drawing for accuracy with the descriptive drawing. See original ERF request for full details but includes limits on lead weight addition, limits on thickness of lock spacers (items 17 and 19) and use of optional tungsten washers.	Production	65020 Rev E	8/27/2008	None		Open	Drawing was revised for separate changes under ERF 2059 completed 5 Jan 09. The changes requested under the 27 Aug 08 ERF from Regulatory were not addressed at that time. These actions remain open.	**Original ERF recommendations: Tunsten washer issue not addressed. No indication on assembly that part 650 Rev - washers were ever used on a 650L unit and if used was only on predecessor model 650 assembly. No longer applicable. Current version of drawing addresses FOM001 and safety wire issue on drawing 65020 Rev F. Limit for added lead weight to drawing not addressed. Addl ERF request will be made to address. No non-conformance as no units have been manufactured with lead addition since lead option added to R65006 Rev A in 1995. The issue related to lock spacers (items 17 and 19 from 65020) not addressed. Drawing contains no note to ensure stack height does not exceed 1/2 inch max. Note to correct drawing included in addl ERF. Review of existing units needed to ensure no stack exceeds 1/2 thick for these spacers. THis would equal a max of 8 spacers using part 65010-13 or 16 max for part 65010-22. Email to RL Supervisor to visually inspect and document number of spacers used on 650L QC turnaround inspections. Any container with 8 or more spacers to be pulled from service and stack height determined by QC. If the height exceeds 1/2 in on any 650L, QC to advise RA for further action. As of 12/21/2015, 125 units inspected with largest number of spacers found equal to 6. Majority of units used 0-3 spacers at most. Considered closed unless additional inspections identify a unit exceeding 8. (Drawing currently at Reg G. Lead weight issue addressed, lock spacer issue addressed including stack height limitation.)**
Route Card generation required for lid weldment (65000-3), bottom plate weldment (65000-6), source transfer tubes (65004), rivnut installation on top plate (65006-13), plunger assembly (65010-20) and new RWK or CONV route cards for conversions of old style 650 devices to the current approved 650L configuration			8/27/2009	None		Closed	Route cards still have not been fabricated for manufacture/assembly of these items. Two TMI's were issued (142 and 168) to upgrade SS bolts on 650Ls.	**Parts 65000-3, 65000-6, & 65006-13 are purchased from vendors as finished assemblies and no longer done in house. 65004 is not an assembled item under current production. None of these assemblies currently require route cards. Route cards for 65010RWK, 65010F REW and 65010-11 RWK are still the old AEA format. An email was issued on 3/5/15 to staff to advise that any Route Card with the AEA header could not be used for product fabrication and would require revision before use. A further request was emailed to Materials specific to these route cards to remove them from access on the master file drive to further ensure they are not used. Issues raised considered closed based on actions taken.**
Make following Route Cards obsolete: 65010RWK, 65010-10, 65010-11, 65010FRWK and 65020.			8/27/2009	None		Closed	Route cards remain available for fabrication from the Released Files on K drive.	**See above**

2008 Type B Review ERF Status - 12-2015

Type B Approval for this Container Expired without Renewal on 6/30/2013 - Actions No Longer Applicable

660-OP Type B Package							
Description	Drawing Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments
Revise drawing to identify weld not as IAW MIL-SPEC or applicable AWS standard.	Descriptive	R66060 Rev B	7/30/2008	1952 & 2076	9/22/2008	Complete	Drawing revised to note that no manufacture of this welded item would be done after the approval date of this drawing revision which is 18 Feb 09.
Add reference to split lock washers for both lock designs.	Descriptive	R66060 Rev B	7/30/2008	1952	9/22/2008	Complete	Engineering note on ERF indicates lock washers were not used on test units. Items not added to drawing. Items use loctite so this was added to the drawing.
Add reference to loctite/vibrative on end plate screws for 660 per current fabrication drawings.	Descriptive	R66060 Rev B	7/30/2008	1952	9/22/2008	Complete	
Add material specifications for plunger lock, bolt cover, source stop wire, lock slide, lock cover, selector ring and lock pins as these parts were integral to the package's ability to comply with test requirements.	Descriptive	R66060 Rev B	7/30/2008	1952	9/22/2008	Complete	
Add note regarding construction of plywood and foam inserts.	Descriptive	R66050 Rev C	7/30/2008	1952	9/22/2008	Complete	
Add note regarding heat sealing of bottom foam inserts	Descriptive	R66050 Rev C	7/30/2008	1952	9/22/2008	Complete	
Revise proper shipping name and UN numbers to reflect current regulation changes	Descriptive	R66050 Rev C	7/30/2008	1952	9/22/2008	Complete	
Add material specification of hollow rivets and Type B label.	Descriptive	R66050 Rev C	7/30/2008	1952	9/22/2008	Complete	
Revise note 1.5 on sheet 1 to include OP-660 reference.	Descriptive	R66050 Rev C	7/30/2008	1952	9/22/2008	Complete	
Update BOM items to reflect current production, specifically Items 19, 20 and 2	Production	66001 Rev Q	7/30/2008			No Longer Applicable.	No action on ERF request.
Update BOM 66001-39 to correct items 5 and 6 and to update QC for items on sheet 1 and 4 of package review.	Production	66001-39 Rev H	7/30/2008			No Longer Applicable.	No action on ERF request.
Identify the Insertion Tool by drawing number on the BOM or delete reference to the tool on the BOM	Production	66001-5 Rev N	7/30/2008			No Longer Applicable.	No action on ERF request.
Update BOM items to reflect current production, specifically Items 19, 24 and 20	Production	66010 Rev F	7/30/2008			No Longer Applicable.	No action on ERF request.
Update BOM items to reflect current production, specifically Items 19, 24 and 20	Production	66011 Rev A	7/30/2008			No Longer Applicable.	No action on ERF request.
Update BOM items to reflect current production, specifically Items 19. Delete Item 24	Production	66020 Rev E	7/30/2008			No Longer Applicable.	No action on ERF request.
BOM item 29 should reference 66090. Current BOM references old bumper assembly. Review and update BOM against the Mapics BOM to ensure accurate for use in service/repair of 660 devices.	Production	660BE01 Rev G	7/30/2008			No Longer Applicable.	No action on ERF request.
Review Engineering BOM against Mapics BOM to ensure accurate for use in service/repair of 660 devices.	Production	660E01 Rev N	7/30/2008			No Longer Applicable.	No action on ERF request.
Update BOM items 19 and 20 to reflect current production, and delete item 24.	Production	660E10 Rev E	7/30/2008			No Longer Applicable.	No action on ERF request.
Update BOM items to reflect current production, specifically Items 19. Delete Item 24	Production	660E20 Rev E	7/30/2008			No Longer Applicable.	No action on ERF request.

2008 Type B Review ERF Status - 12-2015

660-OP Type B Package

Type B Approval for this Container Expired without Renewal on 6/30/2013 - Actions No Longer Applicable

Description	Drawing Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments
Update BOM to identify white plastic box as BOX-013 per Mapics BOM. Update drawing/BOM based on current Mapics BOM for KIT-001 which is used and sold as current product to Navy.	Production	KIT-001 Rev -	7/30/2008			No Longer Applicable.	No action on ERF request.
Revise drawing to replace "Amersham" with "QSA Global, Inc.". Max container weight should also be increased to 56 lbs to reflect current transport and device approval maximum for 660 device.	Production	66001-10 Rev B	7/30/2008			No Longer Applicable.	No action on ERF request.
Revise welding on drawing to bring into compliance with descriptive requirements or make this drwing obsolete to prevent future fabrication/repair to this drawing (660 shell weldment).	Production	66001-15 Rev S	7/30/2008			No Longer Applicable.	Per rev D of drawing R66060 we committed that the 660 shell will not be repaired/replaced. The production drawing has not been made obsolete.
Move Rev G of drawing to obsolete folder on K drive. Current Rev is H and both revs are in the active folder.	Production	66001-52 Rev H	7/30/2008			No Longer Applicable.	No action on ERF request. Both revisions still in active folder.
Revise to replace "AEAT" with "QSA Global, Inc." and correct maximum DU weight to 37 lbs not 40 lbs.	Production	66001-53 Rev C	7/30/2008			No Longer Applicable.	No action on ERF request.
Revise to replace "AEAT" with "QSA Global, Inc." and correct maximum DU weight to 37 lbs not 40 lbs.	Production	66001-55 Rev C	7/30/2008			No Longer Applicable.	No action on ERF request.
Revise to replace "AEAT" with "QSA Global, Inc." and correct maximum DU weight to 37 lbs not 40 lbs.	Production	66001-57 Rev C	7/30/2008			No Longer Applicable.	No action on ERF request.
Add scan of drawing to current product drawing folder, PDF is missing.	Production	66001-7 Rev AB	7/30/2008	NA		No Longer Applicable.	Current drawing revision is at Rev AC and this PDF is in the current folder so action is no longer needed.
Update drawing BOM for Item 3. Should be WSH004-02 instead of the current listing of WSH-004.	Production	66008-3 Rev A	7/30/2008			No Longer Applicable.	No action on ERF request.
Delete Note 2 as posilock checklist no longer requred for service/repair of this assembly.	Production	66010 Rev F	7/30/2008			No Longer Applicable.	No action on ERF request.
Delete Note 2 as posilock checklist no longer requred for service/repair of this assembly.	Production	66011 Rev A	7/30/2008			No Longer Applicable.	No action on ERF request.
Revise to change source ID part number to 88043 to reflect current operations. Add location of control label 66010-1 to drawing.	Production	66018 Rev D	7/30/2008			No Longer Applicable.	No action on ERF request.
Delete Note 2 as posilock checklist no longer requred for service/repair of this assembly.	Production	66020 Rev E	7/30/2008			No Longer Applicable.	No action on ERF request.
Clarify use of GLU003 for adhesion of plywood and foam layers on lid insert.	Production	66051 Rev E	7/30/2008	1946	8/11/2008	Complete	Original action requested on ERF predating the package review submitted 14 Jul 08. Correction repeated as not corrected at time of package review and re-submitted in 30 Jul 08 ERF request.
Correct dimensional tolerance/specification for lead width to ensure compliance with descriptive drawing. Production drawing should not allow width to be less than 4 7/8" (4.875"). Current drawing allows width to go down to 4.8125" which is less than the minimum allowed under the descriptive drawing.	Production	66056 Ref F	7/30/2008			No Longer Applicable.	No action on ERF request.

2008 Type B Review ERF Status - 12-2015

660-OP Type B Package

Type B Approval for this Container Expired without Renewal on 6/30/2013 - Actions No Longer Applicable

Description	Drawing Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments
Stamp drawing to require full review prior to future fabrication of this part or make drawing obsolete. Drawing is old nameplate for OP-660 referencing - 85 Type B information and Amersham reference.	Production	66058-2 Rev E	7/30/2008			No Longer Applicable.	No action on ERF request.
Add max weight of overpack assembly of 32 lbs to ensure compliance for shipment with heaviest allowed 660.	Production	66060-1 Rev D	7/30/2008	NA	9/25/2008	No Longer Applicable.	Action addressed further under CR 947 and NCR 146838. Determination made that complete package weight is required prior to shipment and this measurement would prevent package shipment above Type B limit. No separate limit on descriptive for overpack box without 660 device. CR 947 required CA of letter to customers reminding them of need to weigh package prior to shipment to ensure compliance to Type B weight limit.
Stamp drawing to require full review prior to future fabrication of this part or make drawing obsolete. Drawing calls for the use of the outdated drawing 66058-2 which has not yet been corrected.	Production	66060-2 Rev A	7/30/2008			No Longer Applicable.	No action on ERF request.
Add max weight of 32 lbs and replace "Special Form, N.O.S. UN2974" shown on label with "Type B(U) Package UN2916" per current regulations.	Production	66060-3 Rev A	7/30/2008	NA	7/23/2009	Closed.	Weigh issue resolved under CR 947. Drawing still pictorially incorrect for label information shown, however, actual label part number (66058-1) has been corrected with accurate information so if the specified parts are used for fabrication then the actual component manufactured will be correct although this drawing shows incorrect/outdated information for the label details. No further action to correct drawing worth pursuing at this time.
Update Item 3 on drawing to reflect WSH004-02 based on drawing WSH004-XX desiginations and delete Item 5 (retrofit instructions) and replace with a note on assembly instructions as the referenced instructions are no longer available to be provided.	Production	66090 Rev B	7/30/2008			No Longer Applicable.	No action on ERF request.
Delete Note 2 as posilock checklist no longer requred for service/repair of this assembly.	Production	660E10 Rev E	7/30/2008			No Longer Applicable.	No action on ERF request.
Delete Note 2 as posilock checklist no longer requred for service/repair of this assembly.	Production	660E20 Rev E	7/30/2008			No Longer Applicable.	No action on ERF request.
Generate specification sheet for this component.	Production	BOX013	7/30/2008			No Longer Applicable.	No action on ERF request.
Generate material specification sheet to replace old commercial component specification sheet which does not meet current drawing requirements. (Spec sheet calls for box to MIL-S-23389 and actual reference should be "MIL-S-23389B". Mapics entry has correct specification referenced.	Production	BOX017	7/30/2008			No Longer Applicable.	No action on ERF request.
Generate specification sheet for following components: CON038, LUG007, NUT025, NUT032, RIN014, SCR034, SCR036, SCR126, SCR127, SCR133, SCR139, SWT001, WIR002, WIR003, WIR006, WIR013, WSH018 and WSH020	Production	Multiple see description.	7/30/2008			No Longer Applicable.	No action on ERF request.
Locate and scan in sheet 2 of this drawing as referenced on sheet 1 of the drawing currently on the K drive.	Production	GRE-TUB Rev B	7/30/2008			No Longer Applicable.	No action on ERF request.

2008 Type B Review ERF Status - 12-2015

660-OP Type B Package

Type B Approval for this Container Expired without Renewal on 6/30/2013 - Actions No Longer Applicable

Description	Drawing Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments
Obsolete following drawings or stampe to prevent use in fabrication w/o review and accemptance under QA program: 66065 Rev B (drawing & BOM), 66000-1A Rev A, 66001-10TA Rev A, 66001-18 Rev A, 66001-22 Rev D, 66001-23A, Rev -, 66001-51 Rev C, 66001-54 Rev E, 66001-56 Rev C, 66001-58 Rev B, 66001-60 Rev -, 66001-61 Rev -, 66001-62, Rev -, 66001-63 Rev -, 66001-64 Rev -, 66001-9 Rev D, 66001-94 Rev B, 66002 Rev S, 66065 Rev B, 66065-1 Rev A, 66096 Rev -, 660E Rev -, 660E00 Rev K, 660E00-1 Rev J and 660K Rev -	Production	Multiple see description.	7/30/2008			No Longer Applicable.	No action on ERF request. Many of parts are old 660 device labels which still have obsolete Type B complaince information. Since the type B on the device no longer exists these drawings should be removed to prevent accidental selection and use as part of device service/repair.
Quality Class Review/Revisions (see 660-OP Type B package review 30 Jul 08 for specific details on need for review/revision change).	Production	66001-13 (C→B) 66001-14 (B→C) 66008-1 (B→C) SCR034 (- →B) NUT032 (- →B) GRE-TUB (NA→B)	7/30/2008			No Longer Applicable.	No action on ERF request.

2008 Type B Review ERF Status - August 3, 2018

680-OP Type B Package

Description	Drawing Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments	Status of Action August 2018
Update BOM to replace Item 4 with 40221-T instead of obsolete 5222.	Production	52401-1 Rev H	5/15/2008			Closed	No action on ERF request.	Drawing 5222 Rev B references 40221-T for materials. Not an issue.
Obsolete drawing (projector daily checklist), part no longer used.	Production	66001-22 Rev C	5/15/2008			Closed	No action on ERF request.	Referenced drawing no longer accessible/active. Issue no longer applicable.
Obsolete drawing (posilock daily checklist), part no longer used.	Production	85701-7 Rev E	5/15/2008			Open but No Compliance Impact	No action on ERF request.	Drawing still active but outdated (Ref AEAT) and not in use by any production BOM. ERF Request made to Obsolete drawing 12/2015.
BOM Items 5 & 6 updated to reference current parts SCR039 and SLV003 respectively.	Production	66001-39 Rev H	5/15/2008	3242	3/25/2015	Closed	No action on ERF request.	BOM updated under ERF 3242 addressing issue on 3/25/15.
Change QC from "NS" to "C". (See 680-OP Package review dated 14 May 08 for additional details).	Production	66001-7 Rev AB (now AD)	5/15/2008	3242	3/25/2015	Closed	No action on ERF request.	Issue addressed.
Change QC from "NS" to "C". (See 680-OP Package review dated 14 May 08 for additional details).	Production	66001-907 Rev N	5/15/2008	3242	3/25/2015	Closed	No action on ERF request.	Issue addressed.
Revise to reflect current approval maximum weights.	Production	68001-10 Rev U	5/15/2008	3184	11/14/2014	Closed	No action on ERF request.	Issue addressed.
Revise drawing to remove "or equivalent" criteria.	Production	68001-32 Rev C	5/15/2008	1887	4/28/2008	Closed	Change processed and corrected prior to completion of package review.	
Revise drawing to reflect MAT001 in Note 5. Revise Note 3 to state max DU wgt 302 lbs. Evaluate if toleranced dims on drawing should be made "Ref" as historically these dims have not been inspected by QC and all shield dims on descriptive are reference only.	Production	68002 Rev M	5/15/2008			Closed	No action on ERF request.	Assembly no longer actively manufactured. Drawing obsolete. All dimensions from original issue listed as reference on current descriptive R68090 Rev N. Issue no longer applicable.
Obsolete drawing. Was side plate screw but now replaced by SCR004.	Production	68050-1 Rev A	5/15/2008			Closed	No action on ERF request.	Drawing obsolete.
Create specification sheets for Items 8-11 on current BOM for this assembly.	Production	680E15 Rev E	5/15/2008			Closed	No action on ERF request.	Assembly no longer actively manufactured. Drawing obsolete. Issue no longer applicable.
Engr BOM Item 8 should reference 68001-10 not 680E1-10. Item 21 on BOM should reference 88043. Typo on Item 38, reference should be 66010-1 not 660010-1.	Production	BOM 680 Rev F & BOM 680E Rev F	5/15/2008			Closed	No action on ERF request.	Assembly no longer actively manufactured. Drawing obsolete. Issue no longer applicable.
Create specification sheets for RIN014, SCR005, SCR091, WRS032, WRS036, WSH012, and WSH014.	Production	See Description.	5/15/2008			Open but No Compliance Impact	No action on ERF request.	All but WRS036 issued under ERFS referenced. WRS036 is used to seal wire lock/actuator bolts on various devices still loaded so ERF request remade to create specification sheet for this part. Safety wire referenced on 680 descriptive required to be steel which this part meets. Per obsolete drawing 68005, this is used to act as a tamper indicating seal on the shipping plug to the front nut. Its use is not required on the Type B and will not create a nonconformance under the Type B.

2008 Type B Review ERF Status - August 3, 2018

741-OP Type B Package

Description	Drawing Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments	Status of Action August 2018
Create drawing 741-XX at Rev D and obsolete drawing 741OP-XX Rev C. (This is to complete changes similar to how the 680 OP drawings were revised - ref. drawing 680-XX). Need to include max wtg of pkg of 510 lbs. BOMs 741OP-01 thru 07 should then be made obsolete at same time.	Production	see description	8/6/2008	3278	6/29/2015	Closed	No action on ERF request.	Issue no longer applicable. 741-OP as full assembly no longer manufactured. Service components covered under drawing 741-SP Rev A and overpack replacement under drawing 741OP Rev D.
Change Item 21 from ST1-18S to 88043. Items 37 and 39 should be deleted as no longer required for service.	Production	BOMs for 74105, 74107 & 74108	8/6/2008	3278	6/29/2015	Closed	No action on ERF request.	Issue no longer applicable. 741-OP as full assembly no longer manufactured. Service components covered under drawing 741-SP Rev A.
Change Item 21 from ST1-18S to 88043. Item 37 should be deleted as no longer required for service.	Production	BOMs for 74101 & 741E01	8/6/2008	3278	6/29/2015	Closed	No action on ERF request.	Issue no longer applicable. 741-OP as full assembly no longer manufactured. Service components covered under drawing 741-SP Rev A.
Add max device weight to drawing since drawing can be used for service/maintenance of 741s. Remove note 2.	Production	74101 Rev L 74105 Rev E 74106 Rev E 74107 Rev E 74108 Rev E	8/6/2008	3278	6/29/2015	Closed	No action on ERF request.	Drawings obsolete. Service addressed under 741-SP Rev A.
Obsolete drwgs, not needed for service or manufacture: 74101-1 thru 74101-9, 74102-1, 74102-2, 74104, 74104-2, 74104-2A	Production	see description	8/6/2008			Closed	No action on ERF request.	Drawings obsolete. Issue closed
Revise to reflect max weight and replace AEAT on label with QSA Global, Inc.	Production	74101-10 Rev P	8/6/2008	2084	2/10/2009	Closed	Corrected based on separate ERF request submitted by Jim Drolette (Materials) on 2 Feb 09.	
Drawing missing from scanned PDFs on K drive. Recommend review assuming same changes as other production units (max wgt and note 2 deletion).	Production	741E01 Rev ?	8/6/2008			Closed	No action on ERF request.	Drawings obsolete. Issue closed
Generate specification for SCR144 and WSH012 as parts used in service.	Production	see description	8/6/2008			Closed		Parts no longer used on any active assemblies for manufacture or service. Issue closed.
Committed to submitting amendment request to Type B by 30 Apr 2009 to address shield weight issue identified in our 10 CFR 71.95 notification letter dated 9 Feb 09.	Descriptive		8/6/2008			Completed		Amendment request was submitted 8/13/2009 to address weight issue. Amendment 21 of CoC incorporating change issued 10/12/2010. Action closed.

2008 Type B Review ERF Status - 12-2015

Type B Approval for this Container Terminated on 1/20/2013 - Actions No Longer Applicable

770 Type B Package

Description	Drawing Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments
Revise drawing Rev J to eliminate all changes added at Revs E thru J (these were never approved/used).	Descriptive	R77090 Rev J (Current approve drwg is Rev D)	9/22/2008			Open	No action on ERF request.
Revise sheet 1 to identify fill foam as 18 PCF min instead of current listing of 20 PCF to accurately reflect production unit	Descriptive	R77090 Rev J (Current approve drwg is Rev D)	9/22/2008			Open	No action on ERF request.
Review all weld specifications on descriptive to ensure accurate. Cover corrections under an ERF.	Descriptive	R77090 Rev D (Baseline)	9/22/2008			Open	No action on ERF request.
Revise sheet 2, RBS-1 description should be 16 not 16 1/2"	Descriptive	R77090 Rev D (Baseline)	9/22/2008			Open	No action on ERF request.
Revise sheet 2, Hex Head Screw should be 5/16-18 x min 0.6 long stainless steel not 1" long	Descriptive	R77090 Rev D (Baseline)	9/22/2008			Open	No action on ERF request.
Revise sheet 3, RBS-6 description should be 2 x 2 x 23 LG not 1 1/2 x 1 1/2 x 23 LG	Descriptive	R77090 Rev D (Baseline)	9/22/2008			Open	No action on ERF request.
Revise sheet 3, inner container end plate should be 16 1/2 not 16 per 77002-1 Rev F.	Descriptive	R77090 Rev D (Baseline)	9/22/2008			Open	No action on ERF request.
Revise sheet 4 to change thickness of spacer plate 3 and 4 to 1/4" instead of 3/8" (Per ERF 1662 and confirmation from S. Grenier on as built condition of test units. Ref parts 77002-29 and 77002-24	Descriptive	R77090 Rev D (Baseline)	9/22/2008				No action on submission yet.
Revise sheet 6 to show tab plate on exploded view of lock.	Descriptive	R77090 Rev D (Baseline)	9/22/2008			Open	No action on submission yet.
Revise sheet 6 to show lock body in the exploded view of the lock assembly.	Descriptive	R77090 Rev D (Baseline)	9/22/2008			Open	No action on submission yet.
Revise sheet 6 to correct description of lock to read 1 1/8 cyclinder length not the current Ø 1 1/8.	Descriptive	R77090 Rev D (Baseline)	9/22/2008			Open	No action on submission yet.
Revise sheet 6 to correct description of lock holder from 1 1/2 to 1 3/8.	Descriptive	R77090 Rev D (Baseline)	9/22/2008			Open	No action on submission yet.
Revise drawing to reflect welding performed on source tunnel component based on inspection of Model 770 sn 12.	Descriptive	R77090 Rev D (Baseline)	9/22/2008			Open	No action on submission yet.
BOMs for 77002 and 77003 are for obsolete assemblies and should be moved from Released Product folder on K drive.	Production	see description	9/22/2008			Open	No action on submission yet.
Add AWS welding not requirement in case of any weld repairs for welds shown on drawing in support of 770 sn 12 (e.g., replacement of skid foot, repair of broken weld, etc.)	Production	77000 Rev K	9/22/2008			Open	No action on submission yet.
Revise drawing to remove label information as current depiction is out of date. Refer to Item 17 label drawing only.	Production	77000 Rev K	9/22/2008			Open	No action on submission yet.
Revise drawing to reference QSA Global, Inc. instead of AEA Technology. This label is used as a make from item for the 770 device label which may require replacement to support 770 sn 12.	Production	80004 Rev T	9/22/2008			Open	No action on submission yet.

2008 Type B Review ERF Status - 12-2015

Type B Approval for this Container Terminated on 1/20/2013 - Actions No Longer Applicable

770 Type B Package							
Description	Drawing Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments
Locate and place PDF on K drive or generate drawing for BSK2562-4 for the Model 770 check gauge. Drawing could not be located at time of review and will periodically need replacement on Model 770 sn 12.	Production	BSK2562 Rev N	9/22/2008			Open	No action on submission yet. Drawing still not scanned onto K drive SK folder. Copy of drawing located in response to CR 1045 which involved failure by staff to use check gauge for 855 which was also covered by this drawing. TMI 266 (July 09) was generated to fabricate the 855 gauges on this drawing as a make from item using the 650L check gauge as a template. A PDF version of this drawing was emailed to D. Kalas on 06 Jul 09. The master sketch drawing for the 770 and 855 check gauges (BSK2562 Rev N) is still not available on the K drive of released drawings for future fabrication.
Generate specification sheets for CHN004, PIN017, PIN022, PIN023 and POL001	Production	see description	9/22/2008			Open	No action on submission yet.
Revise LCK009. Drawing references CCL part number 02291. From the CCL website, this part number is available in multiple cylinder lengths, however, the drawing does not specify what cylinder length should be used/purchased for use on 770. Production drawing shold be revised to specify the 1 1/8 length cylinder.	Production	LCK009 Rev A	9/22/2008			Open	No action on submission yet.
Generate route cards for 77103 and 77104 source hold down assemblies which may be required for replacement on 770 sn 12.	Production	77103 Rev A 77104 Rev A	9/22/2008			Open	No action on submission yet.
Obsolete 31 drawings from ERF request and package review as the 770 is no longer fabricated and these drawings are not needed to support service/maintenance of the existing device.	Production	see description	9/22/2008			Open	No action on submission yet.

2008 Type B Review ERF - Status - August 3, 2018

702 Type B Package

Description	Drawing Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments	Status of Action August 2018
Request Technical Report to identify safety critical hardware on 702 and to document how the hardware used on the package is controled to ensure that "All safety critical hardware meets ASME-B18 standards" per Type B approval. **(The Descriptive requirement is actually "ALL HARDWARE..." and is not specific to 'safety critical hardware'. As of 7/30/18, non critical hardware does not meet the descriptive requirement.)**	Descriptive	R70290 Rev S	8/12/2008			OPEN	Technical Report 116 did identify BLT004 as critical to safety but it did not evaluate/assess that this screw as meeting the ASME-B18 standard specifications so the action remains open since we have no documentation that confirms this hardware meets the requirement as compliant to ASME-B18.	Current drawing revision at X for R70290. Original issue no longer applicable based on revisions to material specifications of hardware on drawing. Issue closed as of December 2015. **Review under CR 2161 clarified that requirement was not specific to safety critical hardware. Non-safety critical hardware as of 7/30/18 cannot be documented as meeting ASME B18 on the 702. ERF 3817 currently pending sign-off adds the ASME B18 requirement to all remaining hardward on the 702 and units will be retrofited for conformance to meet the Type B requirement. Addl 71.95 notification in process for this issue. 8/3/18.**
Make drawing obsolete. It has been replaced by 97525 Rev F.	Production	70204-2 Rev K	8/12/2008	?	7/23/2009	Closed	Drawing is no longer present in Released Product file folder at time of this review.	
Drawing does not include weigth limitation of 7.6 lbs Max per descriptive for this component. Drawing should be revised to add.	Production	70209 Rev E	8/12/2008			Closed	No action on ERF request.	Since 2008 review, Type B revised to remove reference to specific insert and the 7.6 lb limit no longer applicable. Container transport based on max of finished assembly and not weight of insert. Issue closed.
Generate specification sheet for BLT001, though this parts QC changed from a C to a B under technical report 116 Rev B, the part has no specification sheet on the K drive and it is not clear whether a QC sheet was generated under the Technical Report to cover the change in classification. If not this should be generated as well.	Production	BLT001 Rev A	8/12/2008	1901	4/21/2009	Closed	QC sheet included as part of ERF file, but not copied to the K drive folder for QC sheets. It exists but not in its intended location.	
Generate specification sheet for BLT002.	Production	BLT002 Rev A	8/12/2008	1901	4/21/2009	Closed	QC sheet included as part of ERF file, but not copied to the K drive folder for QC sheets. It exists but not in its intended location.	
Generate specification sheet for NUT002	Production	NUT002 Rev A	8/12/2008	1832	3/19/2009	Closed	Issued under ERF 1832 April 2009	

865 Type B Package								
Description	Document Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments	2008 Type B Review ERF Status - August 2018
Change material to replace MAT-069 (18-8 SS) with 304 SS per descriptive requirements. Alternate 300 series materials are not approved under Type B	Production	BLT009 Rev B	5/22/2008	1913	10/8/2008	Complete	Completed at Rev C under ERF 1913	
Mark drawings not for production use pending Engr Review as these components are used in fabrication of a new device and not expected for service.	Production	86500 Rev F (H) 86500-3 Rev C (D) 865KIT (BOM) (NA) 86500-5 Rev G (H) 86500-11 Rev A (B) 86501 Rev G (H) 86500-12 Rev F (G) 86505 Rev C (D) 86500-13 Rev A (OBS ERF 3559)	6/18/2008	None		Closed	Part of original Regulatory ERF request that was partially processed under ERF 1999. This item remains unaddressed from the original ERF request.	(No action on issues. Generated New ERF to address 12/2015. Only replacement nameplates, locks and engagement plates replaced since last audit. None of the parts/assemblies listed have been manufactured. No compliance issue. - 12/2015) **(2018 - 865KIT (BOM) no longer accessible on K drive. 86500-5 Rev H revised to remove welding so no longer applicable. 86500 Rev H, 86500-3 Rev D, 86500-11 Rev B (welded to assy), 86501 Rev H, 86500-12 Rev G, 86505 Rev D do not include Marking. 865 drawings revised in 2017 intending to amend to allow welding/manufacture. Not yet approved under Type B although current renewal has again requested this change. Reg Holds existed for all but 86500 and 86500-11. Reg Holds put in place for these parts on 8/3/2018. Issue Closed**
Review with production regarding use of vibratite in assembly. If matl not used, remove reference from drawing and leave drawing active to support service.	Production	86512 Rev B	6/28/2008	None		Closed	Part of original Regulatory ERF request that was partially processed under ERF 1999. This item remains unaddressed from the original ERF request. Item was placed on Suspension by Materials and as of 22 Jul 09 this part remains suspended in Mapics. Regulatory cannot access or ensure continued suspension as this is a Materials function.	Vibratite and locktite are referenced for use as required on drawing R86590 Sheet 4 which covers assembly of the source actuator. Use of Vibratite on production drawing covered by current descriptive. No additional action needed.
Obsolete following drawings related to a special actuator assembly.	Production	86515 86515-1 86515-2 86515-3 and BOM 86515	6/28/2008	None		Closed	Part of original Regulatory ERF request that was partially processed under ERF 1999. This item remains unaddressed from the original ERF request.	No action on issues. Generated New ERF to address 12/2015. No record of manufacture of the 86515 assembly in Mapics history. Differences in assemblies include minor change in flange parts (86500-5 vs 86515-1, and replacement of bushing BBS002 with Adjusting screw 86515-2). Dimensionally part for special assembly flange meet dimensions from descriptive. Adjustig screw has no impact on safety of device transport. No known compliance issue. **(Drawings obsoleted under ERF 3559)**
Generate specification sheets for components BBS-022, FIT-010, FIT-011, FIT-041, PLU-003, RIN-005, RIN-010, RIN-011, RIN-012, SCR-010, SCR-030 and TAP-003	Production	see description	6/28/2008	1920, 1923	7/14/2008	Closed	Part of original Regulatory ERF request that was partially processed under ERF 1999. This item remains unaddressed from the original ERF request.	Only parts RIN010, RIN011, RIN012 and SCR030 issued as spec sheets. Remaining components still have no generated specification sheets. ERF to either generate spec sheets or obsolete these parts from active BOM so that Materials can suspend them from purchasing in Mapics. **(Parts issued under ERFs as drawings, closed.)**
Remove notations all sheets for weld symbols that call for VT. Covered by notes 2 and 3 on sheet 1.	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Source tube material and dimensions not specified on drawing and need to be added	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Silver solder attachment of source tube to actuator base and soure tube to source tube end cap needs to be shown	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Review welding on drawing against production drawings for accuracy.	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Replace the first sentence of note 2 on R86590 with contents of Note 2 from R70290 Rev S (Retain the last sentence from note 2 on R86590 Rev G in revision).	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
On BOM change pop rivet material from 304 SS to just SS. Do not specify a grade unless there is a grade of SS that could fail during fire test.	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Sheet 2, add weld of actuator base to upper shield collar.	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		

865 Type B Package

Description	Document Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments	2008 Type B Review ERF Status - August 2018
Sheet 2 add weld of lock holder to upper shield collar.	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Sheet 4 add note for welding in place of set screw after installation	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Sheet 4 add loctite matl to BOM and include its use with soc. Hd. Screw on lock assembly.	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Sheet 4 add vibratite as matl to BOM and include its use with two screws that install into the source engagement plate.	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Review the 0.781 dim shown on lock holder/actuator base against production drawings to confirm.	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Sheet 4 add 3/8 drill 1/4 deep this side only to 2nd view of lock holder/actuator depictions.	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Sheet 4, on BOM change material for spring, compression and the 6-32 x 1/2 long screw in bolh cases to SS. Currently read as 304 SS.	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Sheet 4, last view under lock holder/actuator base depictions, calls for 0.234 thru etc. (see package review or ERF for full details).	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Sheet 4 matl for soc hd screw change from 304 SS to 18-8 SS per drawing SCR023 Rev B (make change if argument can be sustained based on material characteristics to ensure package integrity.)	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Sheet 6 1/8 dim appears to be 3/16 on production drawing 86501-3 Rev G.	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Sheet 7 1/4 dim from end of shipping cover to center of 11/32 holes appears to be 9/32 on drawing 86500-8 Rev D	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Sheet 7 review the 3/8 dim on descriptive against production drawings to confirm dimension corect as shown on 86500-12 Rev F	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		
Update descriptive where applicable based on parts equivalency review for parts noted BBS-022, PLU-003, RIN-010, RIN-011, RIN-012, SCR-030	Descriptive	R86590 Rev G (Current Rev J)	6/2/2008	1920	7/14/2008	Complete		

880 Type B Package								
Description	Drawing Type	Drawing Ref.	Request Submitted	ERF	ERF Completed Date	Status	Comments	2008 Type B Review ERF Status - August 2018
QC for 880 lock cover is currently "C". Based on item as used on device, should be re-classified to "B".	Production	88014 Rev A	3/25/2008	3327	9/22/2015	Closed	Drawing has been revised to C level but QC has not yet been changed/evaluated.	Drawing revised to QC B under ERF 3327. Closed
Demo assembly parts should be QC "NA" not QC B as curreny approved	Production	88051-D Rev A 88055-D Rev A 88056-D Rev B and 88057 Rev A	3/25/2008			Closed		All referenced parts obsolete. Action closed.
Add material cert requirement to drawing.	Production	88008 Rev C	3/25/2008	1912	3/27/2008	Complete	Processed based on separate ERF request by S. Grenier	

QSA Global, Inc.

40 North Avenue
Burlington, MA 01803

ATTN: Document Control Desk
Director, Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
One White Flint
Rockville, MD 20852