



QSA GLOBAL

QSA Global, Inc.

40 North Avenue

Burlington, MA 01803

Telephone: (781) 272-2000

Toll Free: (800) 815-1383

Facsimile: (781) 359-9191

20 December 2016

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

RE: 10 CFR 71.95(a)(3) report for CoC number USA/9187/B(U)-96

Dear Mr. Ruffin:

QSA Global, Inc. is making a report under 10 CFR 71.95(a)(3) concerning the Model 865 Type B packages (CoC 9187).

As part of the Type B package reviews initiated after issues identified on the Model 702 container, we noted some similar instances on the Model 865 package where the design was not adequately described under the descriptive drawings referenced under the CoC. Some of the packages in use under this certification were manufactured prior to 1997 and the majority of the devices in use were manufactured between 1998 and 2005. In some cases, the descriptive drawings do not adequately reflect construction requirements for Model 865 packages manufactured over 10 years ago. This 71.95 notification identifies the issues found and, includes root cause analysis and corrective actions intended to prevent recurrence.

1. Actuator Piston

The actuator piston on the Model 865 is specified as 304 stainless steel on sheet 4 of drawing R86590. A review of manufacturing records for this part identified that a lot of 12 components obtained in February of 1994 was accepted as 303 stainless steel instead of the specified 304 stainless steel. All other parts accepted for this component were compliant to 304 stainless steel.

The actuator piston on the Model 865 has no safety importance to the package containment or integrity. This component is applicable to the operation of the Model 865 as a radiographic exposure device and is not structurally important to the package in transport. For transport purposes, the source rod assembly is locked in placed in the actuator base by means of the plunger lock. During transport, the actuator piston is not relied upon to secure the source rod assembly in the shielded, locked position in the Model 865 package. Since the actuator piston is not important to safety during transport, this component manufactured from any grade of stainless steel would be able to ensure the Model 865 package integrity under normal and hypothetical accident transport conditions.

NM5501

As such, we will be requesting a revision to the material requirements for the actuator piston on R86590 to list the material as "Any Stainless Steel". This request will be part of an amendment submission we will file separately for the Model 865. This future amendment change will reflect units in use, and it will not adversely impact the transport package integrity, or create a substantial safety hazard under 10 CFR Part 21.

2. Actuator Body Weldment

The descriptive drawing for the actuator body weldment specifies a 3/16" fillet weld for attachment of the piston return adaptor mounting component. The production drawing for this component only specifies a 1/16" fillet weld for this attachment. Manufacturing records for this assembly were accepted compliant based on the 1/16" fillet weld requirement.

The return adaptor mounting actuator on the Model 865 has no safety importance to the package containment or integrity. This component is applicable to the operation of the Model 865 as a radiographic exposure device and is not structurally important to the package in transport. The weld for this component is not important to the integrity or safety of the Model 865 transport package. As such, welding of this assembly using a 1/16" fillet weld will have no adverse impact on ensuring the Model 865 package integrity under normal and hypothetical accident transport conditions.

A later amendment request will revise the weld specification for the actuator body weldment on R86590 to list this weld as a 1/16" fillet weld. This change reflects units in use, will not adversely impact the transport package integrity, and will not create a substantial safety hazard under 10 CFR Part 21.

3. Shield Assembly Locating Pin Drill Point Feature & Locating Pin

The bottom end of the 865 shield incorporates a $\approx 13/32$ by $1/4$ " deep drilled hole which is used in conjunction with the pin welded to the lower shield collar on sheets 3 & 8 of drawing R86590 for keeping the shield beam port aligned with the exposure window in the housing weldment. The presence or absence of the hole and corresponding alignment pin are not important to the package safety or shielding integrity during transport.

The shield alignment hole callout on both the descriptive and production drawings specifies a "Drill Point" for acceptance. The purpose of the drill point is to provide assembly clearance between the pin and the shield to ensure the bottom of the shield compresses against the brass ring and the lower shield collar. At assembly, the locating pin welded to the lower shield collar and used to locate the shield alignment is dimensioned as $\approx 1/4$ " x $1/2$ " long Type 304 stainless steel.

In July and November of 1996, there were a total of seventeen Model 865 shields that were accepted without having the "drill point" feature. In all seventeen of these cases, the drilled diameter for the locating pin hole was accepted for use although it was flat bottomed and did not include the drill point. Of these seventeen shields, the hole in seven shields did not meet the production drawing depth but did meet the descriptive drawing depth. The pin used in these seven packages were reworked to a shortened length to allow the parts to assemble. There is no record of the final pin length on these seven packages to ensure the length matches the descriptive drawing.

In addition, the location of the alignment hole, shown in line with and beneath the beam port on the descriptive drawing, were accepted on two shields in a different location, one at 90 degrees and one at 180 degrees from the location shown.

These identified issues do not adversely impact the transport package integrity of the Model 865 package under normal conditions of transport and during a hypothetical accident condition and they will not create a substantial safety hazard under 10 CFR Part 21.

4. Locating Pin Weld to Lower Shield Collar

Sheet 8 of drawing R86590 specifies the alignment pin to be welded to the lower shield collar by a plug weld with a flush finish. Sheet 1, note 2 specifies that all welds on the drawing are to be visually inspected. Review of the manufacturing records for this welded assembly revealed that the welds on these assemblies were not 100% visually inspected, but were instead inspected based on a lot sampling using an AQL of 2.5 under the C=0 Sampling Plan Index criteria. This resulted in visual inspection of only 20 of a total of 58 manufactured assemblies used in fabrication of the Model 865 packages.

This weld acts as a secondary mechanism to ensure the press fit alignment pin does not back out of the body weldment during transport or use. The pin also prevents depleted uranium from the shield from being released from the Model 865 body weldment. To date, QSA Global, Inc. has never identified a Model 865 where the alignment pin has not remained welded in place to the lower shield collar. Should the pin weld fail during transport, its loss will not create a substantial safety hazard or adversely impact the package containment during transport.

QSA Global, Inc. will performed a visual inspection all Model 865 units prior to any future shipment of a Type B(U) source under the certificate of conformance to ensure the pin weld conforms to drawing R86590 requirements.

5. Housing Support Reinforcement Part Weld Inspection

Sheet 2 of drawing R86590 specifies the reinforcement parts to be welded to the housing supports by a 1/16" fillet weld to be 100% visually and dye penetrant inspected. The production drawing for this assembly specified visual inspection of these welds but did not require dye penetrant inspection per the descriptive drawing. All assemblies were accepted and used in manufacture based on visual inspection only.

This weld is not important to the package containment or integrity during normal condition transport (NCT) or hypothetical accident condition (HAC) transport. The reinforcement parts are used during operation of the Model 865 as a radiography device and these welds are not critical from a transport standpoint. The unimportance of this weld is further supported by the fact that the welds used to attach the housing support to the Model 865 body weldment does not require dye penetrant testing, yet currently the descriptive drawing requires dye penetrant testing on reinforcement parts welded to those housing supports.

Since the reinforcement part weld to the housing support will not adversely impact the transport package integrity and failure of these welds are unable to create a substantial safety hazard under 10 CFR Part 21, we will submit a revision to drawing R86590 to remove the dye penetrant inspection requirement for these welds.

6. Actuator Base

Sheet 4 of drawing R86590 in section B-B specifies the actuator base to measure 0.920 inches \pm 0.020 inches high. The production drawing for this part allows the height to measure 0.980 inches \pm 0.005 inches. All actuator parts used in Model 865 manufacture were accepted and used based on this larger height dimension.

The height dimension for the actuator base was added to the descriptive drawing at Revision D in December of 2002. At that time the overall height for this part was listed in error as 0.920 inches instead of 0.980 inches. This discrepancy in the actuator base height will have no adverse impact on the package integrity or source containment. The increase in the height dimension to 0.980 inches will also not create a substantial safety hazard under 10 CFR Part 21. As such, we will be correcting the actuator base height to measure 0.980 inches \pm 0.020 inches on a future amendment which will reflect the actual dimension of this part on Model 865 packages in transport.

7. Actuator Attachment Bolts

The actuator attachment bolts on the Model 865 are identified as 5/16 – 18 x 5 austenitic stainless steel hex head bolts on sheet 4 of drawing R86590. The current identification for this bolt used by purchasing indicates that no inspection of the component is required based on its quality classification of “C”, an item with minor impact on safety and whose failure is not likely to create an adverse safety condition. Failure of these actuator attachment bolts would require failure of two other securing mechanism (e.g., failure of all eight cover/actuator screws and failure of the plunger lock securing the source rod in the shielded position) prior to creating a threat to the source securement within the package.

Because of the age of the Model 865 design, this component was never detailed under a production drawing but was specified by reference on the bill of materials used for the finished 865 package assembly. It was treated as a class “C” for purchasing purposes which did not require incoming inspection by Quality Control to confirm the material of the stainless steel bolts as “austenitic”.

A review of inventory for this part indicates that it has not been used on any 865 since March of 2005. All in-house stock of this part was scrapped in 2007, and there has not been any use of these bolts, related to service of any Model 865 device, since 2005.

Since the bolts in use are stainless steel (just not confirmed to be austenitic) and failure of the actuator attachment bolts would require failure of two other securing mechanisms before creating a condition adverse to the transport package integrity, transport of Model 865 units with their current actuator attachment bolts will be insufficient to create a substantial safety hazard under 10 CFR Part 21.

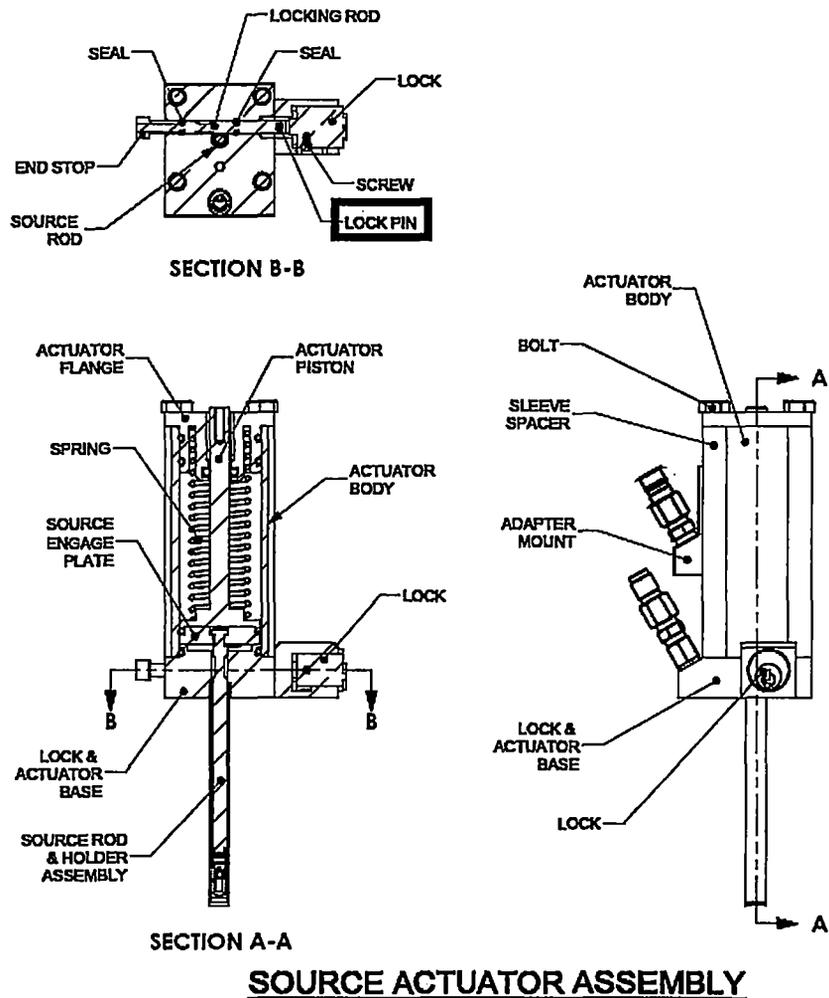
8. Plunger Lock Screw

The production drawing for the socket head screw installed into the plunger lock specifies the use of Loctite 242 or Vibratite. The descriptive drawing limits this part's installation to use of Loctite 242 only and does not allow the use of Vibratite as an option.

The use of either of these thread locker materials on installation of the socket head screw into the plunger lock will have no adverse impact on the package integrity and the use of Vibratite instead of Loctite will not create a substantial safety hazard under 10 CFR Part 21. We request amendment to descriptive drawings R86590 to allow for the use of any dimethacrylate ester thread locker on this socket head screw at installation instead of limiting it to Loctite 242. This change will cover all potential packages in use which may not be covered on the current descriptive drawing.

9. Lock Connecting Pin

The exploded view of the actuator assembly shown on sheet 4 of drawing R86590 Revision J does not show the pin connecting the plunger lock to the locking rod. The pin has always been present in all Model 865 transport packages and all Model 865 Type-B test specimens. The pin is needed to unlock the source from the shield, but is NOT needed to lock the source into the fully shielded position in the package. See figure below for pin location:



SOURCE ACTUATOR ASSEMBLY

The pin material is 300 series stainless steel and is fully compatible with all adjacent component materials. The presence or absence of the lock connecting pin does not adversely affect the safety and integrity of the Model 865 transport package and does not create a substantial safety hazard under 10 CFR Part 21.

10 CFR 71.95 Root Cause Analysis and Corrective Actions to Prevent Recurrence

The issues identified for the 865 package are similar in nature and cause to the issues identified for the 650L, 770, 702, 680-OP, 741-OP, 976 Series, 880 Series and Sentry Series transport packages addressed with your office under their respective CoCs. Based on the age of the transport packages in use (over 10 years) and because no manufacturing of this package has occurred during this time period, issues related to the manufacture of the existing packages had not been identified until a full review of the production drawings and manufacturing records was initiated. Since no new manufacture is currently approved for this package at this time, the actions taken to prevent recurrence in response to our previously identified container issues will be adequate to prevent recurrence for the Model 865 package design. In regards to the issues identified, no additional corrective actions are considered necessary at this time specific to the 865 package review.

The issues identified in this letter did not contribute to any incidents or package failures related to the safe use of the Model 865 packages in transport. The corrective actions identified in previous Type B CoC reviews for QSA Global, Inc. packages are considered sufficient to prevent recurrence of the issues identified for the Model 865. Continued compliance will be verified as part of our routine Quality Assurance internal audits which include performance of Type B container processing for production staff.

Until amendment can be requested and received, QSA Global, Inc. will inform package users of the need to stop shipment until an amendment to the Type B Certificate of Conformance to address the identified issues is obtained. Should you have any additional questions, or wish to discuss this issue, please contact me.

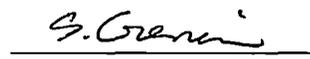
Sincerely,



Lori Podolak
 Manager,
 Regulatory Affairs/Quality Assurance
 Ph: (781) 505-8241
 Fax: (781) 359-9191
 Email: Lori.Podolak@qsa-global.com


 RA/QA Approval

20 DEC 2016
 Date


 Engineering Approval

20 DEC 2016
 Date

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