Summary Table of Changes to 865 Drawings

The descriptive drawings provided for the Model 865 package have been significantly revised and drawing R86590 Revision J has been replaced with two drawings to support the Type B(U) submission review and approval. Drawing R86590 Revision K is intended for use by NRC only during the review of QSA Global, Inc.s' amendment request. The new drawing R865-USER Revision A is intended for inclusion with the Certificate of Conformance for use by persons loading, preparing and transporting the Model 865 package as Type B(U).

Due to the substantial changes made to drawing R86590, no change mark identifiers are included on Revision K of the drawing. Instead all changes made are identified and evaluated in the following table. In general, the drawing R86590 was modified to:

- Remove unnecessary detail for package components that have no impact on the package containment or transport integrity. Revision J of this drawing included a significant amount of component detail for items that serve no purpose in ensuring package containment/integrity and are applicable only for the Model 865 as it pertains to its use as an industrial radiographic exposure device.
- The drawing specifications for welding were updated to reference applicable AWS standards with the intent to allow for future manufacturing of new Model 865 packages and/or allow future weld repairs on existing Model 865s. Additionally, the applicable AWS standard revision year has been deleted from the welding references. This change has no significant impact on the performance of the package and is consistent with similar changes that were approved under USA/9269/B(U)-96 as part of a request made in letter dated 1/13/15 which was incorporated at Revision 8 of the CoC.
- The drawing material specifications for components important to maintaining package containment and integrity were expanded to reference applicable material standards to allow for future manufacturing of new Model 865 packages.
- Notes and dimensional tolerances for each sheet of drawing R86590 are now specified on the sheet they apply to instead of the generic notes and tolerances present on the first sheet of the drawing.
- Drawing R86590 was revised to address the issues identified in our 71.95 report dated 20 December 2016.

Drawing R865-USER has been created specifically for use by transporters of the Model 865 package. This drawing does not include the in depth material and manufacturing data included in drawing R86590 which is necessary for use by the NRC to evaluate the package conformance, but does contain sufficient detail to allow packages users to prepare the Model 865 for transport under the certificate of conformance.

The changes identified in this summary document and indicated on drawings R86590 Revision K and R865-USER Revision A will not have any impact on Model 865 packages previously distributed until such time as amendment to the Type B approval incorporating these drawing revisions is approved by the NRC. As noted in our 20 Dec 2016 notification letter to NRC, QSA Global, Inc. has stopped transport of the Model 865 until amendment incorporating these changes is approved.

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Change Location	Summary Change	Impact of Change on Units Previously or Currently in Use under the Certificate
R86590 Rev K Sheet 1	Prior revision's Note 2 on weld requirements replaced and Note 3 removed. Notes regarding welding now appear on Sheets 2, 5, 6 & 7 where welding is identified. Notes on sheet 1 no longer apply to all pages on drawing R86590. • Note 2 now describes the maximum allowed package content. • Note 3 now specifies the material requirements for the cover and actuator guard bolts.	Changes made relocating weld requirements administrative in nature with no impact on units previously or currently in use. Material specification for cover and actuator guard bolts expanded to include conformance to material standards for components fabricated after Jan 1, 2017. This change complies with the recommendations of NUREG-CR-5502 Section 3.3.1 based on the bolts performance requirements necessary to ensure conformance under Normal Condition Transport (NCT) and Hypothetical Accident Condition (HAC) transport.
R86590 Rev K Sheet 1	The seal wire depiction for the cover bolts previously showed the seal wire passing through both cover and actuator guard bolt heads. The current revision shows the seal wire passing through two of the four cover bolts and now indicates the seal wire must be applied to at least two bolts.	The previously depicted seal wire application was overly restrictive. Based on the intended purpose of the seal wire to serve as a tamper indicating seal to identify if the package had possibly been accessed during transport, the minimum requirement of the seal wire being applied to two of the four bolts achieves this purpose. Change made to more accurately reflect the regulatory intent of the component during transport.
R86590 Rev K Sheet 1	The cover and actuator guard bolt specification has been revised to remove the requirement that these bolts be "hex head" bolts and to indicate that they have drilled heads to allow for the use of seal wire. The bolt specification for components used after 1 Jan 2017 added to the drawing. A notation has also been added for the bolts on this sheet to allow the optional use of threadlocker, material as dimethacrylate ester. The previous drawing note "Torque Hand Tight (approx. 70 lbs) has been deleted. Test units under Test Plan Report 84 used cover and actuator bolts that were hand tightened but not to a specific torque value.	The previous specification for the bolt heads was overly restrictive and this change will allow flexibility without adverse impact on package integrity. Allowance for the use of optional threadlocker will aid in retention of cover and actuator guard bolts with no adverse impact on package integrity. Since the current drawing requirement is for hand tight, the added reference note of approx. 70 in-lbs is irrelevant since installation of these bolts does not require compliance to a specific torque value prior to shipment. The depiction of hardware on the drawing with no specified torque value implies installation of that hardware to a "hand tightened" condition so removal of this note from the drawing has no impact on the package configuration as specified on the drawing.

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Change Location	Summary Change	Impact of Change on Units Previously or Currently in Use under the Certificate
R86590 Rev K Sheet 1	The depiction of the Model 865 was expanded to include a top end view and cross sectional view of the package on sheet 1. Previously the drawing only showed the side view of the package. This change also moves the package diameter dimension of 5 ¼" to this sheet. The expanded views also now include component call outs not previously listed in the view or related bill of material (BOM) table on this sheet.	No change to package construction or design. Change made to correct unintentional drawing error.
R86590 Rev K Sheet 1	The nameplate depiction has been revised to remove the detail information previously shown on the label as some of this information has no relevance to the Model 865 as a transport package. The minimum transport related information contained on the nameplate is now specified in Note 5 on the drawing.	No change to package construction or design. Change made to comply with the recommendations of NUREG-CR-5502.
R86590 Rev K Sheet 1 & 6	Identification and specification for the housing support reinforcement part moved from sheet 1 to sheet 6. Dimensional specifications for the reinforcement part removed and material requirements for parts manufactured after 1 Jan 17 expanded on sheet 6, Note 6 to include Type 304 or 304L per ASTM A240, A269, A276, A479, A511, A554 or A666.	The reinforcement parts have no impact on the transport package containment or package integrity. Compliance testing described under Test Plan Report 84 did not rely on any structural strength the reinforcement parts may add to the Model 865 to demonstrate that the package will comply with the NCT and HAC transport requirements. These parts are used on the Model 865 in its radiographic applications only and the size of the parts is irrelevant so long as the gross package weight does not exceed 60 pounds and the addition of these parts does not change the package's center of gravity. Specification of the material characteristics of the reinforcement parts is included to demonstrate weld compatibility with the rest of the package.
R86590 Rev K Sheet 1	The specification for the nameplate pop rivet changed to list the component as "rivet" and rivet diameter dimension removed.	Change made to use standard nomenclature for the component used to attach the nameplate. It is implied that the rivet size must be sufficient to attach the nameplate to the 865 shield encasement so specification of a specific rivet diameter size is not necessary to appear on this GA drawing.

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Change Location	Summary Change	Impact of Change on Units Previously or Currently in Use under the Certificate
R86590 Rev K Sheet 1 & 6	Handle Support and Handle components are now identified on Sheet 1 as the "Handle Weldment". These details for these components are now shown on sheet 6 and are identified as the "Handle Mount" and "Handle Tube". Material requirements for parts manufactured after 1 Jan 17 expanded on sheet 6, Note 6 to include Type 304 or 304L per ASTM A240, A269, A276, A479, A511, A554 or A666.	No change to package construction or design. Change made for administrative purposes based on reformatting of the drawing with this revision.
R86590 Rev K Sheet 1	Material specification for the seal wire revised to allow stainless steel or steel.	Both stainless steel and steel materials will meet the intent of the component to act as a tamper indicating seal during transport. The use of either material will comply with applicable regulatory requirements during transport.
R86590 Rev K Sheet 1	Note 6 added which changes dimensional tolerances for this sheet from ± 1/8 inch to ± ¼ inch.	The dimensions shown on this drawing are overall dimensions for the finished 865 transport package. Application of a ¼ inch tolerance for these dimensions is more applicable for a welded assembly of this size. This increase in dimensional tolerance for these dimensions will have no adverse impact on the Model 865 package integrity during transport.
R86590 Rev K Sheet 1	The specification for the nameplate changed from "304 stainless steel, 0.03 inch thick", to list the component as "Stainless Steel – Fireproof".	The current level of detail is unnecessarily restrictive based on the intended purpose of the nameplate on the package. So long as the nameplate material is stainless steel and fireproof the nameplate will meet the intended requirements for this component on the package. This level of detail is also consistent with the nameplate specifications for our other Type B packages such as the Model 880 Series (USA/9269/B(U)-96).
R86590 Rev K Sheet 1	Note 4 added to drawing to allow use of alternate fasteners so long as alternates have equal or greater cross-sectional stress area of size shown on the drawing.	Change made to allow flexibility in package configuration with no adverse impact on package integrity. This level of flexibility is also consistent with the hardware specifications for our other Type B packages such as the Model 360 Series (USA/9371/B(U)-96).
R86590 Rev K Sheet 2	865 depictions on this sheet modified to remove handle, actuator and cover components previously shown. Relevant information moved to sheet 5 & 6. Exploded view of 865 with cover removed from the sheet. Components of the body weldment called out on this sheet of drawing.	Changes made for clarity based on sub-assembly detail depictions on separate sheets. Exploded view of the package not necessary based on detail contained in the rest of the drawing. No impact on package integrity.

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Change Location	Summary Change	Impact of Change on Units Previously or Currently in Use under the Certificate
R86590 Rev K Sheet 2	Weld notation for lower shield collar pin moved from sheet 8 of Revision J to this sheet of drawing.	Administrative change. No impact on package integrity.
R86590 Rev K Sheet 2	Dimension for base thickness of the lower shield collar beneath the depleted uranium shield shown on this sheet.	This dimension was not previously specified on the drawing but is added based on its impact relative to the package integrity. The dimension shown reflects the thickness present on test specimens used in NCT and HAC transport testing under Test Plan 84.
R86590 Rev K Sheet 2	Dimension for base thickness of the upper shield collar specified as 0.19 inches instead of the difference between to fractional dimension on sheet 8 of Revision J (e.g. 3/8 minus 3/16 inches).	These dimensions are essentially equivalent. The change is a reduced dimensional tolerance for the component as it is now held to a tighter tolerance requirement. All units previously manufactured comply with the revised dimension limits. No impact on package integrity.
R86590 Rev K Sheet 2	The outside 1/8 fillet weld for the upper shield collar to the shield tube now includes dye penetrant inspection (PT) testing for units manufactured after 1 January 2017.	The addition of PT inspection for this weld is reasonable based on its function as a radiography application as an underwater device. Testing performed on specimens demonstrating conformance to the NCT and HAC test requirements were not PT inspected, only visually inspected for weld conformance. The addition of PT inspection for any future manufacture has no adverse impact on the package integrity and only serves as an added mechanism to evaluate the package integrity.
R86590 Rev K Sheet 2	Note 9 added to indicate that the location of the shield pin and sleeve are allowed at any location on the bottom of the shield, excluding directly in-line with the source tube.	The shield pins function is to keep the shield beam port window aligned with the beam port indication on the shield tube. Its location on the base of the shield will have no adverse impact on the package integrity so long is its placement is not in-line with the source tube. This change is made to allow for manufacturing flexibility.
R86590 Rev K Sheet 2	The weld shown for the shield pin has removed the previous requirement for PT inspection of the weld.	This weld is not critical for package integrity or containment. Its presence is to prevent the shield pin from coming out of the lower shield collar. Visual inspection of the weld quality in accordance with Notes 3 and 4 of this sheet is adequate to ensure package conformance and integrity.
R86590 Rev K Sheet 2	Weld specification (1/8 fillet on two sides) for the lock holder to the upper shield collar added to the drawing.	Change made for completeness. These weld options has been present on previous 865 units, but had not been clearly identified on the descriptive drawing. This change is made for completeness and has no adverse impact on the package integrity.
R86590 Rev K Sheet 2	Added weld specification detail in detail view C2 for the set screw installed in the actuator base.	Change made for completeness. No impact on package integrity.

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Change Location	Summary Change	Impact of Change on Units Previously or Currently in Use under the Certificate
R86590 Rev K Sheet 2	Shield tube alternate construction added for any future new package manufacturing which allows for a welded construction. Materials after 1 Jan 2017 for the shield tube, upper and lower shield collars, actuator base, lock holder and shield pin modified to allow any 304 or 304L per ASTM A240, A276, A479, A511, A554 or A666.	Alternate construction added for flexibility in future package fabrication. Identification of materials to allow 304L, in addition to 304 stainless steel, will have no adverse impact on the package integrity or performance. Both materials will perform similarly under the NCT and HAC transport conditions. The addition of reference to ASTM standard complaint materials after 1 Jan 2017 was done to comply with the recommendations of NUREG-CR-5502 for structurally important materials.
R86590 Rev K Sheet 2	Dimensions for the lock holder length and the actuator base length changed from fractional to decimal dimensions.	Administrative change. No impact on package integrity.
R86590 Rev K Sheet 2	Overall length dimension for the shield tube added to the drawing as well as the thickness of the shield tube wall, including the thickness of the beam port window feature on this tube.	Change made for completeness. These dimensions have been present on all 865 units but had not previously been specifically identified on the descriptive drawing. This change is made for completeness and has no adverse impact on the package integrity.
R86590 Rev K Sheet 2	The outer diameter of the shield tube dimension changed from ⌀5 inches ± 1/8 inch to read ⌀5.00 inches ± 0.12 inches.	Change slightly reduces the allowable tolerance for this component. All units previously manufactured comply with the revised dimension limits. No impact on package integrity.
R86590 Rev K Sheet 2	The dimension for the source tube changed from 0.045 ± 0.020 inches to now be specified as 0.04 ± 0.02.	Administrative change. No impact on package integrity.
R86590 Rev K Sheet 2	The dimension for the source tube end changed from 1/32 ± 1/8 inch to now be specified as 0.03 ± 0.01.	Administrative change. No impact on package integrity.
R86590 Rev K Sheet 2	Reference to use of a pin sleeve between the shield pin and the depleted uranium shield is now shown on the drawing. This pin sleeve is made from brass, bronze or copper.	This pin sleeve acts as a barrier between the stainless steel shield pin and the depleted uranium shield to prevent, although unlikely, any possible formation of a eutectic alloy during the hypothetical accident condition thermal test conditions. This pin sleeve has been present on all Model 865 packages manufactured including the test specimens. Its use was included in the Model 865 SAR section 2.2.2 identified as a brass spacer. This drawing revision to allow the pin sleeve (spacer) to alternatively be bronze or copper will have no adverse impact on the package integrity. Its identification on the drawing is for completeness only.

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R86590 Rev K Sheet 2	Removed the hardware specification for the set screw that is welded in place into the actuator base. Was previously identified as 10-32 x 1/8 long stainless steel and is now only referenced as a stainless steel set screw.	This component is not important to the Model 865 transport package integrity. It aids in the function of the Model 865 as a radiography exposure device. Its only impact on the 865 as a transport package would be in material compatibility to prevent any chemical or galvanic interactions between materials. As stainless steel, there will be no adverse chemical/galvanic interactions. The specification of the screw detail, beyond its material composition, will have no effect on the package conformance or integrity to the requirements of 10 CFR 71 so this level of detail has been removed from the drawing per guidance found in NUREG-CR-5502.
R86590 Rev K Sheet 2	Added dimensions for the eight cover/actuator holes in the shield encasement (8X ⌀ .34 THRU WITH ⌀ .50 SPOT FACE) and their location relative to the end of the shield encasement (8X .28).	These holes were shown on Revision J of the drawing but were not specified as to size. This addition is done for completeness and accuracy.
R86590 Rev K Sheet 2	Height of actuator base corrected from 0.920 to 0.98 inches.	Drawing updated based on issue identified in our 71.95 notification letter dated 20 December 16. The increased height has no adverse impact on the Model 865 package containment or integrity during transport.
R86590 Rev K Sheet 2	The dimension for the source tube inner diameter (now specified as the source channel on the drawing) changed from a nominal 3/8 OD minus 2X the wall thickness of 0.045 inch, or effectively an ID of 0.285 inches, to now be specified as 0.28 inches.	These dimensions are essentially equivalent. All units previously manufactured comply with the revised dimension limits. No impact on package integrity.
R86590 Rev K Sheet 2	The material specification for the upper and lower shield rings changed from brass to “brass, bronze or copper”.	These components are not structural, but act as a barrier between the stainless steel shield collars and the depleted uranium shield to prevent, although unlikely, any possible formation of a eutectic alloy during the hypothetical accident condition thermal test conditions. The previously manufactured Model 865 packages used brass shield rings as currently specified on the descriptive revision J. This change is intended to allow for flexibility for future manufactured packages since the alternate use of bronze or copper will have no adverse impact on the package integrity.
R86590 Rev K Sheet 2	Added 7 1/8 inch length of shield encasement.	Change made for completeness. No impact on package integrity.

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R86590 Rev K Sheet 3	The exploded view of the 865 device no longer appears on Revision K of the drawing. (Revision K sheet 3 now depicts the shield.) Revision J of the drawing previously listed specifications for the beam port label. These details/specifications are no longer included in Revision K of the drawing.	Construction details are shown on other sheets of the descriptive drawing. Use of an exploded detail is not necessary to describe the package. Removal of the beam port label details will have no adverse impact on any Model 865 package integrity or safety during transport. This label is applied and used during operation of the Model 865 as a radiography device and it has no bearing on the transport safety of the unit as a Type B package.
R86590 Rev K Sheet 3	Note 2 indicates that 865 shields on units manufactured after 1 Jan 2017 will be 99% depleted uranium with optional painted exterior. Previously manufactured Model 865 shields were certified as depleted uranium with no minimum percentage specified and the painted exterior was not required under production drawings.	This change reflects the requirements that would be instituted for new production at this time for depleted uranium shields. All existing units comply with the current material specifications on sheet 6 of drawing R86590 Revision J. This change will have no adverse impact on the package integrity.
R86590 Rev K Sheet 3	The shield dimensions were modified as follows: • The 3/8 and 3/16 dimensions have been removed and replaced with 1.28 ± .25 and 1.81 ± .25 dimensions for features of the beam port. • The ⌀.377 source shield hole identified as "center hole" and the tolerance changed from ± 0.020 to ± 0.030. • The 2 inch reference dimension for the length of the largest diameter on the shield OD has been removed. • The diameter of the drilled hole in the base of the shield has been changed from 13/32 to 0.41 inches and the drill point feature has been made optional. • Note 5 has been added to indicate that the location of the bottom hole drilled in the base of the shield can appear at any location on the bottom of the shield so long as it is not in-line with the center hole. This hole must also meet the 0.75 centerline offset from the center of the shield as shown on the drawing. • Note 3 was added to indicate that shielding is verified by radiation survey inspection.	These changes were made to facilitate future manufacturing, reflect prior shield construction as identified in our 20 December 2016, 71.95 notification letter and to add detail related to the inspection and acceptance criteria used to accept Model 865 packages for Type B(U) transport containers. The removed dimensions provide unnecessary detail to the drawing as it relates to shield acceptance without adding to the package containment or integrity. The overall shield weight, regardless of specific DU location, is limited by Note 1. The shielding effectiveness for all Model 865 packages is controlled directly based on radiation survey inspections, performed on all newly manufactured packages, to document conformance to the regulatory requirements. Any shield that exceeds 42 lbs of DU or that allows a radiation dose on the surface of the package over 200 mrem/hr or 10 mrem/hr at 1 meter from the surface of the package is rejected and not approved for use as a Type B transport package.

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R86590 Rev K Sheet 4	The 0.160 inch dimensions on the source rod were removed from the drawing.	This dimension has no impact on the securing of the source rod in the Model 865 package and has no impact on the package integrity. The specification of these dimension details has been removed from the drawing per guidance found in NUREG-CR-5502 regarding information applicable for inclusion in package submission drawings.
R86590 Rev K Sheet 4	The length of the capsule holder has been changed from 0.937 inches to be listed as 0.94 inches. The dimensions for this capsule holder as follows were removed: • 1/32 x 45° and 3/8 inch dimensions • ⌀.218 ±0.001, M6 x .75 Tap 3/8 MFT • Tolerance of ± 0.002 changed to 0.01 and the dimension changed from ⌀.275 to ⌀.27 on the drawing. • Tolerance of ± 0.002 changed to 0.01 and the dimension changed from ⌀.170 to ⌀.17 on the drawing. • Dimensions for the roll pin (now identified as the holder pin) have been removed.	The capsule holder, which contains the radioactive source capsule, is attached to the source rod by the stainless steel holder pin. Once the pin is inserted through the capsule holder and the holder rod and the assembly is inserted into the Model 865 source tube, the pin cannot be removed from the assembly and will therefore retain the parts attached and the source capsule contained within the assembly. The additional details that were changed or removed have no impact on maintaining the package containment or integrity and have therefore been removed/modified as applicable per guidance found in NUREG-CR-5502.
R86590 Rev K Sheet 4	Notes 1 and 2 added to the drawing to identify the material requirements for the source rod and capsule holder material before and after 1 Jan 2017.	This change is made to reflect material requirements for any newly manufactured components while still covering material requirements for components accepted compliant to the current Type B approval. This change will have no adverse impact on the package integrity and to more fully follow the current guidance found in NUREG-CR-5502.
R86590 Rev K Sheet 5	Removed material and dimensional specifications for the majority of actuator assembly components.	Except for the actuator base, actuator piston, actuator body, actuator assembly attachment bolts and the locking rod, the components of the source actuator assembly are not important to the package safety, source containment or package integrity. As demonstrated in Section 5.5.1 of the Safety Analysis Report (SAR), the Model 865 will comply with the radiation dose rate requirements with or without the relative shielding added by the unessential transport source actuator assembly components. During testing under Test Report 84, the Model 865 retained both the cover and actuator guard assemblies after the drop testing. Assuming that the actuator assembly may have absorbed some of the drop impact damage for the cover drop performed on test specimen TP84(A), this impact energy would have been absorbed by the actuator bolts, actuator flange, and actuator body components. So long as these components are any grade of stainless steel, the Model 865 package will meet the performance test

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		requirements for NCT and HAC transport as demonstrated under Test Plan Report 84. Based on this assessment, detailed material specifications for the components shown on sheet 5 and listed as "optional" is not necessary to ensure the Model 865 package containment or integrity for transport. These changes will have no adverse impact on the package and are made to remove unnecessary detail from the drawing per the guidance found in NUREG-CR-5502.
R86590 Rev K Sheet 5	The previous drawing note for the actuator bolts indicating "Torque Hand Tight (approx. 70 lbs) has been deleted. Test units under Test Plan Report 84 used cover and actuator bolts that were hand tightened but not to a specific torque value.	Since the current drawing requirement is for hand tight, the added detail of approx. 70 in-lbs is irrelevant since installation of these optional bolts does not require compliance to a specific torque value prior to shipment. The depiction of hardware on the drawing with no specified torque value implies installation of that hardware to a "hand tightened" condition so removal of this note from the drawing has no impact on the package configuration as specified on the drawing.
R86590 Rev K Sheet 5	Materials for the locking rod after 1 Jan 2017 modified to allow any 303, 304 or 304L per ASTM A240, A276, A479 or A666. Locking rod diameter important for source rod security during transport added to the drawing (⌀.25).	Alternate material construction added for flexibility in future package fabrication. Identification of materials to allow 304 and 304L in addition to 303 stainless steel will have no adverse impact on the package integrity or performance. All materials will perform similarly under the NCT and HAC transport conditions. The addition of reference to ASTM standard complaint materials after 1 Jan 2017 was added to comply with the recommendations of NUREG-CR-5502 for structurally important materials.
R86590 Rev K Sheet 5	Combined references to Loctite and vibratite into a single generic description for "threadlocker" as any dimethacrylate ester. References to use of Loctite or vibratite for actuator assembly components changed to optional use of threadlocker. Added use of threadlocker for the locking rod set screw.	Change made for flexibility and consistency. Optional use of any dimethacrylate ester will have no adverse impact on package integrity.
R86590 Rev K Sheet 5	Added optional use of lock wire for actuator bolts.	Change made to address configuration option of finished assembly. This change has not adverse impact on the package containment or integrity and the added detail is for completeness only.

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R86590 Rev K Sheet 5	The fillet weld call out for the adaptor mount to the actuator base is corrected from 3/16 to 1/16.	As described in our 71.95 notification letter dated 20 December 2016, all previously manufactured units, including test units, were manufactured to the 1/16 specification. The listing of 3/16 on Revision J of drawing R86590 was in error and is corrected with this revision. This change reflects units in use and will not adversely impact the transport package integrity, nor create a substantial safety hazard under 10 CFR 21.
R86590 Rev K Sheet 5	Added Note 6 regarding construction of the actuator flange as optionally consisting of multiple parts welded together.	Alternate construction added for flexibility in new package fabrication. Revision will have no adverse impact on package integrity or performance for transport as any alternate construction only needs to keep the actuator piston in place over the shield center hole.
R86590 Rev K Sheet 6	Materials for the handle mount, handle tube, reinforcement part and housing support after 1 Jan 2017 modified to allow any 304 or 304L per ASTM A240, A269, A276, A479, A511, A554 or A666.	Alternate material construction added for flexibility in new package fabrication. Revision for materials to allow 304L, in addition to 304 stainless steel, will have no adverse impact on the package integrity or performance. Both will perform similarly under the NCT lifting and tie-down transport conditions. The addition of reference to ASTM standard complaint materials after 1 Jan 2017 was added to comply with the recommendations of NUREG-CR-5502 for structurally important materials.
R86590 Rev K Sheet 6	Added identification for the typical housing support cut outs and holes as optional.	These features are present on the Model 865 to facilitate use for radiography and have no impact on the transport package structural integrity or transport compliance. The housing support and its features are not important to the Model 865 package compliance under NCT and HAC transport requirements.
R86590 Rev K Sheet 6	Dye penetrant (PT) inspection of the weld attaching the reinforcement part to the housing support has been removed.	As described in our 71.95 notification letter dated 20 December 2016, This weld is not important to the package containment or integrity during NCT or 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 PT testing even though the current descriptive drawing requires PT testing for the 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, removal of the PT inspection of these welds will not reduce the safety or compliance integrity of the Model 865 for transport.

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R86590 Rev K Sheet 6	Details added for the handle tube and handle mount.	This information was added to support the material performance requirements when the handle is used as a lifting or tie-down device for the Model 865 transport package. Handle/support details related to the handle compliance when used for lifting/tie-down is included in Section 2.5 of the SAR Revision 13. The specifications added to drawing R86590 Revision K are included to comply with the recommendations of NUREG-CR-5502 for structurally important materials.
R86590 Rev K Sheet 6	Dimensions for the Housing support removed from the drawing.	This information is unimportant to the package safety and integrity under NCT and HAC transport conditions. The housing supports act as shock absorbers on the side they are located and any impact on that side will be less damaging to the package than other impact locations covered under Test Plan Report 84. Based on this, detailed dimensional specifications for the housing support are not necessary to ensure the Model 865 package containment or integrity for transport. This change will have no adverse impact on the package and is made to remove unnecessary detail from the drawing per the guidance found in NUREG-CR-5502
R86590 Rev K Sheet 7	Materials for the actuator guard and shipping cover after 1 Jan 2017 modified to allow any 304 or 304L per ASTM A182, A240, A276, A479, A511, A554 or A666.	Alternate material construction added for flexibility in new package fabrication. Revision for materials to allow 304L, in addition to 304 stainless steel, will have no adverse impact on the package integrity or performance. Both will perform similarly under the NCT and HAC transport conditions. The addition of reference to ASTM standard complaint materials after 1 Jan 2017 was added to comply with the recommendations of NUREG-CR-5502 for structurally important materials.
R86590 Rev K Sheet 7	Note 5 added to allow for alternate construction for the actuator guard and shipping cover. These alternate constructions would allow for fabrication of these parts as fully machined components without welding and/or some welded parts replaced by machined features.	This change is made for flexibility in future construction. The alternate construction described in Note 5 will produce parts that are as strong or stronger than the construction currently approved. This change will have no adverse impact on the Model 865 transport package integrity.
R86590 Rev K Sheet 7	On the actuator guard: • the 1/16” dimension is now shown as 0.06 ± 0.030 inches • the 1/8” dimension is now shown as 0.12 ± 0.030 inches • the 9/16” dimension is now shown as 0.56 ± 0.030 inches	The change from fractional to decimal for these dimensions are essentially equivalent. The change in tolerance is more restrictive than previously allowed and made to more accurately reflect tolerances applied to these components. All units previously manufactured comply with the revised dimension limits. No impact on package integrity.

Summary Table of Changes to 865 Drawings

Change Location	Summary Change	Impact of Change on Units Previously or Currently in Use under the Certificate
R86590 Rev K Sheet 7	On the actuator guard: • the R7/8 and 2 11/32 dimensions for the cut out has been deleted. The cut out is also listed as optional. • the 13/32 dimension has been deleted • the 4X #8 (⌀13/64) thru 6 mm x 1.0mm UNC thru on a 3.75 B.C. dimensions have been deleted • the 15° and 45° angle designations have been deleted • the ⌀3 inch dimension has been deleted • the 5 5/16 dimension has been deleted	These dimensions were deleted as unnecessary for performance of this component under NCT and HAC transport requirements. Under NCT testing, the cover and cover bolts absorb the impact force under the drop test conditions. Reliance on the actuator guard is unnecessary for the NCT transport testing compliance. Under the HAC testing, the Model 865 can lose the cover, actuator guard and the actuator assembly so long as the actuator base remains welded to the shield encasement. Based on profiles performed after testing under Test Plan Report 84, and as further supplemented by the profiles contained in Section 5.5.1 of the SAR, the Model 865 will still comply with the package requirements if all the components identified above are missing from the package. As such, the deleted dimensions are not important to the Model 865 structural integrity or transport compliance and have been removed from the drawing based on the recommendations of NUREG-CR-5502 for structurally important materials.
R86590 Rev K Sheet 7	On the actuator guard: • the distance locating the M6 drilled holes on the guard is now specified as .28 inches • the thickness of the inner portion of the actuator guard top is specified as .06 inches and the thickness around the outer edge is specified as .12 inches • the side thickness of the guard is specified as .065 inches • the lower edge of the actuator guard is specified as .56 inches • the height of the cutouts on the actuator guard base are now specified as 1 inch in two locations.	Change made for clarity. All units previously manufactured comply with this added specification. No impact on package integrity.
R86590 Rev K Sheet 7	On the actuator guard added the 8X ⌀ M6 x 1.0mm thread thru specification for the actuator guard attachment holes.	Change made for clarity. All units previously manufactured comply with this added specification. No impact on package integrity.
R86590 Rev K Sheet 7	The overall height of the cover is now shown as a dimension on the drawing (5 11/16 inches).	Change made for clarity. No impact on package integrity or conformance to applicable requirements.

Summary Table of Changes to 865 Drawings

Change Location	Summary Change	Impact of Change on Units Previously or Currently in Use under the Certificate
R86590 Rev K Sheet 7	On the cover: • removed the ⌀5.050 (after welding) diameter and replaced this with the material thickness of the welded component as 0.11 ± 0.030 inches • the 1/8" dimension for the top of the cover is now shown as 0.12 ± 0.030 inches • the 4X ⌀11/32 at 90° is replaced with 4X ⌀.34 thru • the slot width dimensions on the cover are now shown as 4X .56 inches • the 9/32 dimension for the through holes from the base of the cover are now specified as .28 ± 0.030 inches	The changes from fractional to decimal, as well as the other dimensional changes for these dimensions are essentially equivalent. All units previously manufactured comply with the revised dimension limits. No impact on package integrity.
R86590 Rev K Sheet 7	On the cover: • the 1 1/8 dimensions has been deleted • the 9/32 dimension has been deleted • the 4 7/16 dimension has been deleted • the 15° angle designation has been deleted • the ⌀ 4 7/8 dimension has been deleted	These dimensions were deleted as unnecessary for performance of this component under NCT and HAC transport requirements. The cover dimensions as now specified on Sheet 7 of R86590 Revision K are sufficient to detail the cover assembly and adequately describes the structurally important specifications of the cover as applicable to the NCT and HAC testing requirements. Under the HAC testing, as previously indicated, the Model 865 can lose the cover, actuator guard and the actuator assembly so long as the actuator base remains welded to the shield encasement. Based on profiles performed after testing under Test Plan Report 84, and as further supplemented by the profiles contained in Section 5.5.1 of the SAR, the Model 865 will still comply with the package requirements if all the components identified above are missing from the package. As such, the deleted dimensions are not important to the Model 865 structural integrity or transport compliance and have been removed from the drawing based on the recommendations of NUREG-CR-5502 for structurally important materials.