



**QSA GLOBAL**

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22 May 2012

Mr. Pierre Saverot, Project Manager  
Licensing Branch  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
11555 Rockville Pike, Mailstop: EBB-3D-02M  
Rockville, MD 20852

RE: USA/9357/B(U)-96 – Models Sentry 110, Sentry 330 & 867

Dear Mr. Saverot:

As requested by email today please find a consolidated amendment action to replace our submissions dated 1 May 2012 and 15 May 2012 and including information subsequently provided via email to you in support of those original requests.

Enclosed please find copies of drawing R86000 Rev D and Rev E. Revision D to this drawing makes an optional change on page 4 which allows the use of lockwashers and thread lubricant in place of the threadlocker configuration shown on Rev C of the drawing. This change, as detailed in Notes 3 & 6 on sheet 4 of the drawing, apply only to the screws (48) and rib bolts (4) on that sheet. They do not apply to the Hex Bolts (24) which are the bolts that have a torque requirement. As currently approved on Rev C of Drawing R86000, the hex bolts can only use thread lubricant and are torqued to 70 ft-lbs.

The rib assembly screws and rib bolts shown on this drawing are not critical to safety and do not have any torque requirements associated with their use. The screws are used only to hold the polyethylene/polyurethane rib inserts in place in the rib link. The rib bolts are used to secure the package to a mobile device like a cart. The rib links are attached to each other by means of the 17-4 stainless steel pins and the assemblies are secured to the package by the torque hex bolts. This option will have no adverse impact on the packages during transport.

The thread lubricant on sheet 4 of the drawing is described as "Aluminum, copper and graphite blend". This description has not changed from the current approved version of R86000 Rev C since it was already used on the hex bolts (there has been no change from the approved configuration for the hex bolts installation and use). Based on the description currently on Rev C of the drawing, the thread lubricant will not contain chlorides which could cause the bolts to crack.

Revision E to drawing R86000 makes an optional change on page 9 which allows the attachment of supplemental depleted uranium (DU) disks to the shield surface in cases where initial shield profiles indicate the finished unit may exceed the allowable transport limits. This shielding will be attached to the shield by tape/strap prior to the polyurethane foam addition to the container body. This will prevent movement of the supplemental shielding after assembly.

MMSS01  
MMSS24

Regarding the "DU taping/strapping" process, it is not our intent that the DU remain in place on the shield by means of the tape/strap alone. The tape/strap is a temporary method of securing the added DU until addition of the polyurethane potting foam during the package fabrication process. As specified in note 6 on page 9 of the drawing (Rev E) the supplemental DU shielding is attached by tape or strap and **then potted in place with polyurethane fill** which acts to secure the DU in place against the shield.

This method of supplemental shield attachment has been used by us and approved for Type B containers previously, specifically on the 660 devices with lead (USA/9283/B(U)-96), the 680 devices with lead (USA/9035/B(U)-96), and the 741 devices with lead (USA/9027/B(U)-96). The added shielding is secured to the shield using tape prior to the filling operation of the polyurethane foam. Once the polyurethane foam is added to the container shell with the shield inside, the foam expands and fills inside the empty volume between the outer surface of the shielding and the inner surface of the container shell. Once solidified, the foam becomes the primary means for retaining the added shielding in place preventing its movement. Past history with this process, and the other packages using this technique, has confirmed the validity of this method as secure and reliable. There has never been an occurrence, during normal transport, where shielding has moved after placement and these packages have been in use for decades.

The tape is only a temporary securing mechanism until the polyurethane foam fill operation can be completed in the package fabrication process. Since the radiation profile of the package for QC acceptance is performed after the polyurethane foam fill has solidified, the profile is representative of the package shielding since the attached DU shielding will not move after attachment under normal conditions of transport. Under accident conditions the package foam is only vulnerable under the thermal test conditions. In this case, if the foam all pyrolyzed and the added DU moved away from the shield it would still meet the accident condition of less than 1 R/hr at 1 meter because supplemental shielding will only be added in a case where the initial shielding reads  $\leq 6$  mR/hr at a meter.

The current maximum package and shield weight limits currently approved will not be increased, therefore any supplemental shielding added will still comply with the existing shield and package weight limits.

I hope this letter serves to clarify our amendment requests for these packages at this time. If you have any questions or need additional information please contact me at (781) 505-8241.

Sincerely,



Lori Podolak  
Senior Regulatory Affairs Specialist  
Regulatory/Health Physics Department

  
Regulatory Approval

22 MAY 2012  
Date

Enclosure: R86000 Rev D  
R86000 Rev E

cc: Document Control

Figure Withheld Under 10 CFR 2.390

ERF #	APPROVALS	DATE
2762	<i>SG</i>	<i>1 May 12</i>
	<i>R. Decker</i>	<i>1 May 12</i>

 <b>QSA GLOBAL</b>		<b>DESCRIPTIVE DRAWING</b>	
<small>40 NORTH AVE, BURLINGTON, MA 01803</small>			
TITLE <b>SENTRY TRANSPORT PACKAGE</b>			
SIZE	DWG. NO.	<b>R86000</b>	REV
<b>A</b>	SCALE: NONE	SHEET 1 OF 10	<b>D</b>

Figure Withheld Under 10 CFR 2.390

 <b>QSA GLOBAL</b>		<b>DESCRIPTIVE DRAWING</b>	
<small>40 NORTH AVE, BURLINGTON, MA 01803</small>			
<b>TITLE</b>		<b>SENTRY TRANSPORT PACKAGE</b>	
<b>SIZE</b>	<b>DWG. NO.</b>	<b>R86000</b>	<b>REV</b>
<b>A</b>	<b>SCALE: NONE</b>	<b>SHEET 2 OF 10</b>	<b>D</b>

Figure Withheld Under 10 CFR 2.390



**QSA GLOBAL**

40 NORTH AVE, BURLINGTON, MA 01803

**DESCRIPTIVE  
DRAWING**

**TITLE SENTRY TRANSPORT PACKAGE**

<b>SIZE</b>	<b>DWG. NO.</b>	<b>R86000</b>	<b>REV</b>
<b>A</b>	<b>SCALE: NONE</b>	<b>SHEET 3 OF 10</b>	<b>D</b>

Figure Withheld Under 10 CFR 2.390

 <b>QSA GLOBAL</b>		<b>DESCRIPTIVE DRAWING</b>	
<small>40 NORTH AVE, BURLINGTON, MA 01803</small>			
<b>TITLE</b> <b>SENTRY TRANSPORT PACKAGE</b>			
<b>SIZE</b>	<b>DWG. NO.</b>	<b>R86000</b>	<b>REV</b>
<b>A</b>	<b>SCALE: NONE</b>	<b>SHEET 4 OF 10</b>	<b>D</b>

Figure Withheld Under 10 CFR 2.390

 <b>QSA GLOBAL</b>		<b>DESCRIPTIVE DRAWING</b>	
<small>40 NORTH AVE, BURLINGTON, MA 01803</small>			
<b>TITLE</b> <b>SENTRY TRANSPORT PACKAGE</b>			
<b>SIZE</b>	<b>DWG. NO.</b>	<b>R86000</b>	<b>REV</b>
<b>A</b>	<b>SCALE: NONE</b>	<b>SHEET 5 OF 10</b>	<b>D</b>

Figure Withheld Under 10 CFR 2.390

		<b>QSA GLOBAL</b>	<b>DESCRIPTIVE DRAWING</b>
40 NORTH AVE, BURLINGTON, MA 01803			
TITLE		<b>SENTRY TRANSPORT PACKAGE</b>	
SIZE	DWG. NO.	<b>R86000</b>	REV
<b>A</b>	SCALE: NONE	<b>D</b>	
		SHEET 6 OF 10	

Figure Withheld Under 10 CFR 2.390

 <b>QSA GLOBAL</b>		<b>DESCRIPTIVE DRAWING</b>	
<small>40 NORTH AVE, BURLINGTON, MA 01803</small>			
<b>TITLE</b> <b>SENTRY TRANSPORT PACKAGE</b>			
<b>SIZE</b>	<b>DWG. NO.</b>	<b>R86000</b>	<b>REV</b>
<b>A</b>	<b>SCALE: NONE</b>	<b>SHEET 7 OF 10</b>	<b>D</b>

Figure Withheld Under 10 CFR 2.390

 <b>QSA GLOBAL</b>		<b>DESCRIPTIVE DRAWING</b>	
<small>40 NORTH AVE. BURLINGTON, MA 01803</small>			
<b>TITLE</b>		<b>SENTRY TRANSPORT PACKAGE</b>	
<b>SIZE</b>	<b>DWG. NO.</b>	<b>R86000</b>	<b>REV</b>
<b>A</b>	<b>SCALE: NONE</b>	<b>SHEET 8 OF 10</b>	<b>D</b>

Figure Withheld Under 10 CFR 2.390

 <b>QSA GLOBAL</b>		<b>DESCRIPTIVE DRAWING</b>
<small>40 NORTH AVE, BURLINGTON, MA 01803</small>		
<b>TITLE</b> <b>SENTRY TRANSPORT PACKAGE</b>		
<b>SIZE</b> <b>A</b>	<b>DWG. NO.</b> <b>R86000</b>	<b>REV</b> <b>D</b>
<b>SCALE:</b> NONE		<b>SHEET 9 OF 10</b>

Figure Withheld Under 10 CFR 2.390

 <b>QSA GLOBAL</b>		<b>DESCRIPTIVE DRAWING</b>	
40 NORTH AVE, BURLINGTON, MA 01803			
<b>TITLE SENTRY TRANSPORT PACKAGE</b>			
<b>SIZE</b>	<b>DWG. NO.</b>	<b>R86000</b>	<b>REV</b>
<b>A</b>	<b>SCALE: NONE</b>	<b>SHEET 10 OF 10</b>	<b>D</b>

Figure Withheld Under 10 CFR 2.390

		<b>QSA GLOBAL</b>	<b>DESCRIPTIVE DRAWING</b>
40 NORTH AVE. BURLINGTON, MA 01803			
<b>TITLE</b> <b>SENTRY TRANSPORT PACKAGE</b>			
<b>SIZE</b>	<b>DWG. NO.</b>	<b>R86000</b>	<b>REV</b>
<b>A</b>	SCALE: NONE	SHEET 1 OF 10	<b>E</b>

Figure Withheld Under 10 CFR 2.390

		<b>QSA GLOBAL</b>		<b>DESCRIPTIVE DRAWING</b>	
<small>40 NORTH AVE, BURLINGTON, MA 01803</small>					
<b>TITLE SENTRY TRANSPORT PACKAGE</b>					
<b>SIZE</b>	<b>DWG. NO. R86000</b>			<b>REV</b>	
<b>A</b>	<b>SCALE: NONE</b>			<b>E</b>	
				<b>SHEET 2 OF 10</b>	

Figure Withheld Under 10 CFR 2.390



**QSA GLOBAL**

10 NORTH AVE, BURLINGTON, MA 01803

**DESCRIPTIVE  
DRAWING**

TITLE

**SENTRY TRANSPORT PACKAGE**

SIZE

DWG. NO.

**R86000**

REV

**A**

SCALE: NONE

SHEET 3 OF 10

**E**

Figure Withheld Under 10 CFR 2.390

		<b>QSA GLOBAL</b>	<b>DESCRIPTIVE DRAWING</b>
<small>40 NORTH AVE, BURLINGTON, MA 01803</small>			
<b>TITLE</b>		<b>SENTRY TRANSPORT PACKAGE</b>	
<b>SIZE</b>	<b>DWG. NO.</b>	<b>R86000</b>	<b>REV</b>
<b>A</b>	<b>SCALE: NONE</b>	<b>SHEET 4 OF 10</b>	<b>E</b>

Figure Withheld Under 10 CFR 2.390

 <b>QSA GLOBAL</b>		<b>DESCRIPTIVE DRAWING</b>	
<small>40 NORTH AVE, BURLINGTON, MA 01803</small>			
<b>TITLE</b> <b>SENTRY TRANSPORT PACKAGE</b>			
<b>SIZE</b>	<b>DWG. NO.</b>	<b>R86000</b>	<b>REV</b>
<b>A</b>	<b>SCALE: NONE</b>	<b>SHEET 5 OF 10</b>	<b>E</b>

Figure Withheld Under 10 CFR 2.390

		<b>QSA GLOBAL</b>	<b>DESCRIPTIVE DRAWING</b>
<small>40 NORTH AVE, BURLINGTON, MA 01803</small>			
<b>TITLE</b>			
<b>SENTRY TRANSPORT PACKAGE</b>			
<b>SIZE</b>	<b>DWG. NO.</b>	<b>R86000</b>	<b>REV</b>
<b>A</b>	<b>SCALE: NONE</b>	<b>SHEET 6 OF 10</b>	<b>E</b>

Figure Withheld Under 10 CFR 2.390

 <b>QSA GLOBAL</b>		<b>DESCRIPTIVE DRAWING</b>
<small>40 NORTH AVE, BURLINGTON, MA 01803</small>		
<b>TITLE SENTRY TRANSPORT PACKAGE</b>		
<b>SIZE</b>	<b>DWG. NO.</b>	<b>REV</b>
<b>A</b>	<b>R86000</b>	<b>E</b>
<b>SCALE: NONE</b>		<b>SHEET 7 OF 10</b>

Figure Withheld Under 10 CFR 2.390

 <b>QSA GLOBAL</b>		<b>DESCRIPTIVE DRAWING</b>	
<small>40 NORTH AVE, BURLINGTON, MA 01803</small>			
<b>TITLE</b> <b>SENTRY TRANSPORT PACKAGE</b>			
<b>SIZE</b>	<b>DWG. NO.</b>	<b>R86000</b>	<b>REV</b>
<b>A</b>	<b>SCALE: NONE</b>	<b>SHEET 8 OF 10</b>	<b>E</b>

Figure Withheld Under 10 CFR 2.390

 <b>QSA GLOBAL</b>		<b>DESCRIPTIVE DRAWING</b>
<small>40 NORTH AVE, BURLINGTON, MA 01803</small>		
<b>TITLE</b> <b>SENTRY TRANSPORT PACKAGE</b>		
<b>SIZE</b> <b>A</b>	<b>DWG. NO.</b> <b>R86000</b>	<b>REV</b> <b>E</b>
<b>SCALE:</b> NONE		<b>SHEET 9 OF 10</b>

Figure Withheld Under 10 CFR 2.390

		<b>QSA GLOBAL</b>	<b>DESCRIPTIVE DRAWING</b>
<small>40 NORTH AVE, BURLINGTON, MA 01803</small>			
<b>TITLE SENTRY TRANSPORT PACKAGE</b>			
<b>SIZE</b>	<b>DWG. NO.</b>	<b>R86000</b>	<b>REV</b>
<b>A</b>	<b>SCALE: NONE</b>	<b>SHEET 10 OF 10</b>	<b>E</b>