

71-6574



May 13, 2005

US Nuclear Regulatory Commission
Attention: Mr. Rob Lewis
Spent Fuel Project Office
Office of Nuclear Materials Safety and Safeguards
One White Flint North
11555 Rockville Pike, Mail Stop 13D13
Rockville, Maryland 20852-2738

Subject: Docket #71-6574, Request for Amendment to Certificate of Compliance USA/6574B().

Dear Mr. Lewis:

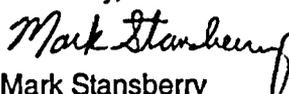
RWE NUKEM Corporation (RNC) requests an amendment to Certificate of Compliance No. USA/6574B() (Docket #71-6574) for the Model 3-82B Shipping cask. Previously, a letter amendment was granted to allow shipment with the cask through December 31, 2004.

This amendment became necessary when it was discovered during inspection that one of the three cask lifting lugs was modified. An investigation into the discrepancy revealed that the lug hole diameter for one of the cask body lift lugs was increased from 1.87 inches to 2.2 inches (C of C Drawing No. STD-02-076 Rev. 7).

Enclosed for your review are SAR change pages 2-18 and 2-19 which should be replaced in entirety. Revised drawing STD-02-076 Rev. 8 depicting the current configuration of the cask should also be replaced. RNC would like to amend the C of C No. USA/6574B() to reflect this as-is condition and continue shipment for the remaining life of the cask or when cask becomes obsolete under current regulatory environment. As shown on the enclosed change pages and in the letter amendment dated October 4, 2004, the configuration as described does not affect the ability of the package to meet the requirements of 10 CFR Part 71.

RNC regrets the urgency of this request, but dispatch of the cask for the shipment is planned for August 15th, 2005. If you have any questions, please feel free to contact the undersigned at 865-813-4069.

Sincerely,


Mark Stansberry
Sr. Cask Engineer

Enclosures: 1. SAR Change Pages 2-18 and 2-19
2. Revised Drawing STD-02-076 Rev. 9

RWE NUKEM Corporation

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Columbia SC 29210-3854

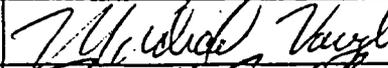
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Mission Statement:

To provide safe, compliant, and cost-effective radioactive waste management solutions through the innovative application of proven technologies.

NMSSO1

Safety Analysis Report for the 3-82B Radwaste Shipping Cask

Title	Signature	Date
Quality Assurance		5/13/05
Engineering	Mark Stansberry	5/13/05
Approval		5/13/05
Document Control		5/13/05

$$P_{crit} = \frac{1}{4} \frac{1}{4} \frac{30 \times 10^6 \text{ psi}}{1 - (0.3)^2} \left(\frac{1.0}{32.1} \right)^3 = 250 \text{ psi}$$

$$25 \text{ psi} < 250 \text{ psi}$$

Hence, the shell will not buckle.

2.10.2.2 Cask Internal Vacuum

The 3-82B cask will also withstand an internal pressure of ½ atmosphere (7.35 psia).

(a) Inner Steel Shell Stress

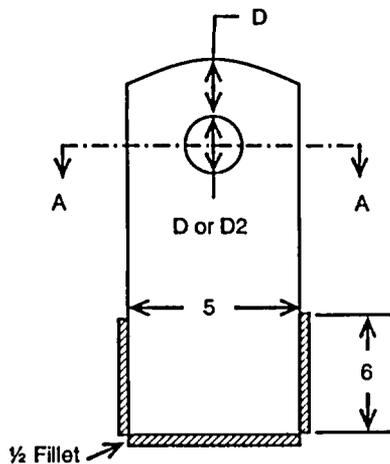
The hoop stress in the inner steel shell is:

$$\sigma = \frac{Pr}{t} = \frac{(7.35 \text{ psia})(27 \text{ in.})}{0.375 \text{ in.}} = 528 \text{ psi}$$

$$\text{Safety factor} = \frac{30,000 \text{ psi}}{528 \text{ psi}} = 57$$

2.10.3 Cask Lifting Devices

The cask lifting lugs are designed to support at least three (3) times the total loaded weight of the 3-82B cask. Hence, each of the three lift lugs can support the total weight of the cask. Note one cask lift lug has a hole diameter of 2. inches, while the remaining two lugs have a hole of 1.87 inches. The worst case condition is in Section 2.10.3.1.



W=50,000 lbs.
 D=Hole Diameter = 1.87 in.
 D2=Oversized Lug Hole Dia. = 2.2 in.
 d = Pin Diameter = 1.75 in.
 t = Lug Thickness = 1.0 in.

Figure 2.10.2 Lifting Lug Model

2.10.3.1 Tear Stress (Across Plane A-A)

$$\sigma_T = \frac{W}{A} = \frac{50,000\text{lbs.}}{2 \frac{(5.0\text{in.} - 2.2\text{in.})}{2} (1.0\text{in.})} = 17,857 \text{ psi}$$

$$\text{Safety factor} = \frac{30,000 \text{ psi}}{17,857 \text{ psi}} = 1.68$$

2.10.3.2 Pin Bearing Stress

$$\sigma_{BR} = \frac{W}{d(1)} = \frac{50,000\text{lbs.}}{1.75\text{in.}^2} = 28,571 \text{ psi}$$

$$\text{Safety factor} = \frac{30,000 \text{ psi}}{28,571 \text{ psi}} = 1.05$$

2.10.3.3 Pin Shear (Double Shear)

$$\sigma_T = \frac{W}{2(0.785)(d^2)} = \frac{50,000\text{lbs.}}{2(0.785\text{in.})(1.75\text{in.})^2} = 10,399 \text{ psi}$$

$$\text{Safety factor} = \frac{30,000 \text{ psi}}{10,399 \text{ psi}} = 2.88$$

2.10.3.4 Minimum Weld Length

l_A Actual weld length = 17 inches

$$l_R \text{ Required Weld length} = \frac{50,000\text{lbs.}}{\frac{18,000}{\sqrt{3}}(0.5\text{in.})(0.707)} = 13.6\text{inches}$$

$l_A > l_R$ or 17 in > 13.6 in; Hence there is adequate weld length.

$$\text{Safety factor} = \frac{17\text{in.}}{13.6\text{in.}} = 1.25$$

2.10.3.5 Bending of Cask Lifting Device

The sideload necessary to yield the cask lifting lugs was calculated by:

$$M_{\max} = \frac{S_{\max} I}{c} = \frac{30,000(0.417)}{0.5} = 25,000 \text{ in-lbs.}$$

FIGURE WITHHELD UNDER 10 CFR 2.390

<i>Bill Kelly</i> <i>Yip</i> <i>Michael Smith</i> <i>Chief</i> <i>Ken Halton</i> <i>Chief</i> <i>Carl Beckman</i> <i>Chief</i> <i>Mark Smith</i> <i>Chief</i>		DIMENSIONS ARE IN INCHES AND DEGREES UNLESS OTHERWISE NOTED. DRAWING AND REVISIONS IN ACCORDANCE WITH ANSI Y14.5M-1994. FRACTIONS DECIMALS ANGLES 1/8 .125 ± ° .01 ± ° .001 ± °	 RWE NUKEM Corporation 3000 Furman Ave. Ste 200 Columbia, S.C. 29210 Telephone (803) 214-6600 Fax (803) 214-5901 www.rwe.com	3-82 B CASK CERTIFICATION DRAWING		
BREAK AND DETAIL 02 ALL SHARP EDGES		3D PROJECTION 				
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FIGURE WITHHELD UNDER 10 CFR 2.390

DESIGNED BY <u>Carl Adley</u> DATE <u>7/24</u> DRAWN BY <u>Michael Wright</u> DATE <u>7/24/05</u> CHECKED BY <u>Van Hellen</u> DATE <u>7/24/05</u> IN CHARGE BY <u>Carl Adley</u> DATE <u>7/24/05</u> APPROVED BY <u>Mark Stanley</u> DATE <u>7/24/05</u>	DIMENSIONS ARE IN INCHES AND DECIMALS UNLESS OTHERWISE NOTED. DIMENSIONS AND TOLERANCING IN PARENTHESIS WITH ACH: 114.50-10M DIMENSIONS DECIMALS ANGLES 0.005 0.001 0.1° JAN 2 2005 FOR 2.001		RWE NUKEM Corporation 3000 Ferndale Rd. Box 200 Columbia, S.C. 29218 Telephone: (803) 714-5800 Fax: (803) 714-0901 www.rwe-nukem.com	
BREAK AND DETAIL AS SHOWN ON ALL SHARP EDGES		3-82 B CASK CERTIFICATION DRAWING		
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FIGURE WITHHELD UNDER 10 CFR 2.390

DESIGNER <u>Bob Adkins</u> DATE <u>4/16/05</u> APPROVED <u>Mark Stohly</u> DATE <u>5/11/05</u> DRAWN <u>Steve Heltz</u> DATE <u>5/11/05</u> QA <u>Carl Cook</u> DATE <u>5/11/05</u> CAL <u>Mark Stohly</u> DATE <u>5/11/05</u>		DIMENSIONS ARE IN INCHES AND DEGREES UNLESS OTHERWISE NOTED. DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M-1994. FRACTIONS DECIMALS ANGLES $\pm 1/8$ $\pm .1$ $\pm 1^\circ$ $\pm .001$ $\pm .003$ $\pm .001$		RWE NUKEM Corporation 2702 Fernside Rd. Ste 200 Columbia, S.C. 29214 Telephone: (803) 214-0000 Fax: (803) 214-0001 www.rwe-nukem.com	
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