

June 10, 2008

Mr. Patrick L. Paquin
GM – Engineering & Licensing
EnergySolutions
140 Stoneridge Drive
Columbia, SC 29210

SUBJECT: CERTIFICATE OF COMPLIANCE NO. 5805 FOR THE MODEL NO.
CNS 3-55

Dear Mr. Paquin:

As requested by your letter dated June 6, 2008, enclosed is Certificate of Compliance No. 5805, Revision No. 26, for the Model No. CNS 3-55 package. Changes made to the certificate are indicated by vertical lines in the margin. The staff's Safety Evaluation Report is also enclosed.

Those on the attached list have been registered as users of the package under the general license provisions of 10 CFR 71.17. The approval constitutes authority to use the package for shipment of radioactive material and for the package to be shipped in accordance with the provisions of 49 CFR 173.471.

If you have any questions regarding this certificate, please contact me or Kimberly Hardin of my staff at (301) 492-3339.

Sincerely,

/RA/

Eric J. Benner, Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-5805
TAC No. L24220

- Enclosures:
1. Certificate of Compliance No. 5805, Rev. 26
 4. Safety Evaluation Report
 5. Registered Users

cc w/encls 1 & 2: R. Boyle, Department of Transportation
J. Shuler, Department of Energy

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SAFETY EVALUATION REPORT

Docket No. 71-5805
Model No. CNS 3-55 Package
Certificate of Compliance No. 5805
Revision No. 26

INTRODUCTION

By application dated June 6, 2008, EnergySolutions (the applicant) requested an amendment to Certificate of Compliance (CoC) No. 5805, for the Model No. CNS 3-55 shipping canister. The applicant requested changes to Chapter 7 of the SAR and CoC in response to a recently observed condition which was identified during unloading of a loaded shipping canister.

During the unloading procedure, it was recently noted that one or more of the 12 lid attachment bolts were loose. Although this condition has not led to any containment leakage, there is uncertainty whether the existing CoC was met, which requires the lid attachment bolts to be torqued to 75 foot-pounds to ensure the containment leakage rate is not exceeded. Since there is no specified or measured leak rate for a bolt torque of less than that specified, it must therefore be assumed that the package may not have been in compliance with the CoC. Thus, a change to the bolt torquing procedures is warranted to ensure that the torque, and therefore maximum permitted leak rate is maintained throughout the transportation regime.

EVALUATION

The applicant discussed their evaluation of the cause of the bolt loosening with the NRC staff during two telephone conference calls. Possible causes were identified. Among the causes, the most significant in the staff's view was the difference in the specified torque values for the lid bolts and the impact limiter bolts.

The lid bolts and the impact limiter bolts share the same canister body flange and bolt circle. During the loading process, the lid is first attached to the canister body with the 12 lid bolts. Then the impact limiter, which fits over the lid, is attached by bolting through the body flange. Tightening the impact limiter bolts also applies a further clamping force on the lid closure flanges. Although this additional clamping force is not credited or considered in the containment analysis, it does provide a redundant sealing force on the lid closure gasket and likely contributes to the leak-tightness of the design.

However, it was noted by the licensee that the application of the additional clamping force (by way of the impact limiter bolts) could cause a reduction in the bolt tension in the lid bolts by way of additional compression on the flange gasket material. This effect was judged by the licensee to be exacerbated by the fact that the impact limiter bolts were typically torqued to a higher value than that for the lid bolts. It was noted that the existing CoC has no specified torque value for the impact limiter bolts. Typically, upon assembling the package for transport, a torque is employed on the impact limiter bolts that is about twice that of the specified torque for the lid bolts. Thus, due to the sequence of tightening and the difference in employed torque values, the impact limiter bolts compressed the gasket material more than the lid bolts. This additional compression effectively unloaded the lid bolts resulting in their loosening or potential for loosening when subjected to normal transportation vibration loads.

Based upon this assessment, EnergySolutions submitted an amendment request for a revised certificate to incorporate several proposed changes. The proposed changes include, among others:

- Delete the use of a thread lubricant on the lid bolts.
- Apply a thread adhesive (Loctite) to the lid bolts.
- Specify a torque value for the impact limiter bolts which is less than the torque value for the lid bolts.
- Verify, upon unloading of the canister at the receiving site, that the lid bolts are still torqued to a specified minimum value, thus confirming that the specified leakage rate limit was maintained throughout the transportation regime.

Based on the statements and representations in the application and the conditions listed in the CoC, the staff concludes that the design has been adequately described and evaluated and meets the requirements of 10 CFR Part 71.

CONDITIONS

The previous Condition No. 12 was deleted. No previous revisions to this CoC will be authorized.

The supplements were revised to add the application dated June 6, 2008, which includes the Chapter 7, Safety Analysis Report changes that are incorporated by Condition No. 9.

CONCLUSION

The staff has evaluated the likely cause(s) for the bolt loosening incidents and the licensee's proposed corrective actions. The staff finds the proposed corrective actions and CoC changes to be acceptable. Based on the statements contained in the application, the staff concludes that the Model No. CNS 3-55 package meets the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No. 5805, Revision No. 26, on June 10, 2008.