



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

**SAFETY EVALUATION REPORT  
Docket No. 71-9320  
Model No. MIDUS  
Certificate of Compliance No. 9320  
Revision No. 6**

**SUMMARY**

By letter dated March 23, 2022 (Agencywide Documents Access and Management System Accession No ML22083A117), EnergySolutions (or the applicant) requested an amendment to Certificate of Compliance (CoC) No. 9320 for the MIDUS packaging.

The applicant identified opportunities for improvement of the leak rate test procedures within the MIDUS package Safety Analysis Report (SAR) by removing prescriptive language that does not provide any flexibility to follow the latest techniques in leak rate testing. The applicant did not change any acceptance criteria or reduce leak rate testing commitments for this package and the proposed changes, while consistent with all applicable requirements and guidance documents, do provide flexibility during performance of these leak rate tests.

The staff reviewed the application and determined that the changes do not affect the ability of the package to meet the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 71. The certificate has been updated to Revision No. 6.

**EVALUATION**

The applicant provided the following background for the request:

During the development and qualification of procedures for periodic/maintenance and pre-shipment leakage rate testing for MIDUS packaging per latest NRC Regulatory Guide 7.4, "Leakage Tests on Packages for Shipment of Radioactive Material," (endorsing ANSI N14.5-2014), opportunities for improvement of leakage rate test procedures within the MIDUS package application were identified. Prescriptive language in the current SAR revision for leakage rate tests does not provide any flexibility to follow the current/latest techniques in leakage rate testing. Therefore, a revision of the MIDUS package application became critical for EnergySolutions and MIDUS packaging users (domestically and internationally).

According to the applicant, the requested changes "do not change any acceptance criteria or reduce leakage rate testing commitments. In fact, proposed changes are consistent with applicable latest requirements/guidance documents while providing needed flexibility during performance of these leakage rate tests." The requested changes do not alter the confinement boundary or affect the containment performance of the package.

The applicant edited for consistency several sections of the application and clarified requirements for testing applicability: leaktight criteria are defined as equivalent to  $1 \times 10^{-7}$  ref-

Enclosure

cm<sup>3</sup>/s (air) as required by ANSI N14.5-2014. The applicant committed to ANSI N14.5-2014 throughout the application. A new reference (written practice for NDT – SNT-TC-1A-2006 edition or later) was added and the requirements for packagings fabricated before or after January 1, 2022, were revised.

## 1 Containment Boundary

There have been no changes to the containment boundary of the package; therefore, the staff's previous findings still apply.

## 2 Summary of Proposed Changes

The applicant has proposed changes to the text of the SAR in Chapters 4, 7, and 8, all related to the leakage rate testing of the MIDUS package, in line with the provisions of ANSI N14.5 2014. The changes proposed by the applicant are summarized, in detail, in Attachment 1 of the applicant's letter to the NRC (ESCD/NRC 22-002), dated March 23, 2022. The applicant describes the changes as being necessary to provide additional flexibility to the users of the MIDUS package, specifically in the leakage rate testing of the package.

The applicant has not proposed any changes to the design or fabrication of the MIDUS package.

### 2.1 Changes to SAR Chapter 4, "Containment."

The applicant modified the text in Sections 4.1, 4.2.2, 4.3.2, 4.4.1, 4.4.2, 4.4.3, 4.4.4, and 4.5 of the SAR. The changes included clarifying pre-shipment leakage rate testing options, clarifying the "leaktight" criteria for leakage testing as provided in ANSI N14.5-2014, committing to ANSI N14.5 2014, as well as some editorial corrections.

### 2.2 Changes to SAR Chapter 7, "Package Operations."

The applicant modified the text in Sections 7.1.1, 7.1.2, 7.1.3, 7.4, 7.4.1, and 7.5 of the SAR. These changes were primarily focused on the actual steps involved in preparing a package for transportation and included several editorial corrections, changes to provide consistency with other Sections of the SAR, highlighting the applicant's commitment to the new edition of ANSI N14.5 (2014), and speaking to specific requirements of ANSI N14.5 2014 related to the pre-shipment leakage rate testing and non-destructive testing (NDT) practices.

### 2.3 Changes to SAR Chapter 8, "Acceptance Tests and Maintenance Program."

The applicant modified the text in Sections 8.1.4, 8.2.2, 8.3.1, and Table 8-1 of the SAR. The applicant added specific requirements for packages fabricated before and after January 1, 2022, defined periodic and maintenance leakage rate tests in ANSI N14.5-2014, made an editorial correction to Table 8-1 of the SAR, and reiterated the applicant's commitment to the new edition of ANSI N14.5 (2014) and spoke to specific requirements of ANSI N14.5 2014 and NDT practices.

## 3 Review of Proposed Changes

The changes proposed by the applicant are primarily focused on introducing additional flexibility for operators of the MIDUS package in conducting leakage rate testing of the package prior to

shipment. Detailed procedures for leakage rate testing are developed by the operators of the package, and these procedures will be developed in accordance with the provisions in ANSI N14.5-2014, as committed to by the applicant in the SAR.

NRC staff does not generally review detailed procedures as part of its review of the design, fabrication, and/or operation of a transportation package; however, as part of NRC's oversight role, inspections or audits may be carried out, in this case specifically in order to review detailed procedures developed for leakage rate testing of the MIDUS package, if the staff felt it was necessary. This regulatory approach, which considers risk insights in its application, generally allows for less operational detail, such as those included in detailed procedures, to be provided in the SAR, offering additional flexibility to operators, without having an impact on the safe operation of the package.

#### 4 Evaluation Findings

Based on the staff's review of the containment and other related sections of the application, the staff finds that the nature of the changes proposed do not have any effect on the overall safety of the MIDUS package design and the staff agrees with the applicant's conclusion that the MIDUS package continues to meet the containment requirements for normal conditions of transport and hypothetical accident conditions found in 10 CFR 71.71 and 71.73, respectively.

The staff also agrees that those proposed changes do not affect any acceptance criteria nor do they reduce leakrate testing commitments.

The staff reviewed the applicant's requested changes to the Certificate of Compliance and determined that the applicant's proposed changes to the CoC would not affect the ability of the Model No. MIDUS package to meet all the requirements of 10 CFR Part 71.

#### **CONDITIONS**

The following changes were made to the certificate of compliance:

Item No. 3(b) identifies the latest application dated March 23, 2022.

Condition No. 8 has been modified to extend the previous revision of the certificate for approximately one year.

The expiration date of the certificate (Condition No. 9) was not modified.

The References section of the certificate was updated to include the application dated March 23, 2022.

#### **CONCLUSION**

Based on the statements and representations in the application, the staff finds that these changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No. 9320, Revision No. 6.