

## **Attachment**

### **Industry Position on Helium Leak Testing of Dry Storage System Confinement Boundary**

#### **Establishment of Requirement through Guidance**

Industry is concerned that Interim Staff Guidance (ISG)-25 and the Standard Review Plan (SRP) guidance for storage cask reviews establish new requirements for applicants and certificate holders. Specifically, in the Technical Review Guidance Section of ISG-25, item #3 establishes a requirement through the statement that "A shop helium leakage test...must be performed..." (emphasis added). Use of the word "must" appears to imply a requirement, and is inconsistent with the statements in the introduction of ISG-25<sup>1</sup>. Similarly, the NRC establishes a requirement in Standard Review Plan NUREG-1536 Section 5.5.1.2 with the statement "The canister shell has been helium leak tested prior to its loading as required by 10CFR72.236(i)." (emphasis added) There is no requirement for a canister or cask leakage test in any section of 10 CFR Part 72. Thus, the statements in ISG-25 and NUREG-1536 are not consistent with 10 CFR Part 72 and effectively establish new requirements.

It is inappropriate to establish new requirements through revisions to SRPs, ISGs, or any other guidance document. If it is the NRC's intention to establish new requirements (i.e., to require Helium leak testing at the exclusion of all other alternatives), then the appropriate regulatory process is an amendment to 10 CFR Part 72. While rulemaking is an option, we believe that establishing a new requirement is not necessary in this instance. Instead, revised guidance would be appropriate. Development of a Regulatory Guide (RG) would be an appropriate vehicle to inform Industry of one or more alternatives the Staff finds acceptable for meeting an existing regulatory requirement. Specifically, guidance associated with the confinement boundary leakage that currently exists in ISG-25, ISG-18 and some of the related details in NUREG-1536 could be combined and issued as a RG. A Regulatory Guide would also be appropriate for endorsing codes or standards, such as ANSI-N14.5-1997, with clarifications and exceptions as the NRC may deem appropriate. This is similar to the approach taken under 10 CFR Part 71, which endorses ANSI-N14.5-1997 in Regulatory Guide 7.4. In any event, the guidance for existing regulations should describe a method of compliance that is acceptable to the NRC, and allow applicants or certificate holders to propose alternative approaches.

#### **Lack of Adequate Technical Basis for New Position**

Any guidance developed on this issue should clearly articulate the staff's technical basis. A clear and complete technical basis is vital in order for applicants and certificate holders to develop and propose viable compliance alternatives. Specifically, if it is the NRC's intention to establish guidance (i.e., propose Helium leak testing as one acceptable method of complying with an existing regulatory requirement), then the agency should provide a basis for requiring that the helium leakage test be performed at the shop, and that a helium leakage test be performed on the base materials. Specifically, ISG-25 states that "A shop helium leak test...must be performed..." and "...leak testing of the confinement boundary should encompass...surfaces of the confinement boundary including the base material."

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<sup>1</sup> The Introduction section of ISG-25 states: "This ISG provides guidance to the staff and is not a regulatory requirement. Alternative approaches are acceptable if technically supportable."

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It is acknowledged that the NRC may not have sufficient data to generically grant an exception to leak testing (as stated in ISG-25), however, a discussion in ISG-25 of the data which is the basis for the NRC's concern and position is essential to enable a certificate holder or applicant to propose an alternative. The current situation where the NRC has not clearly articulated its concerns has left applicants and certificate holders unable to propose alternative methods for addressing those concerns. In this way, the NRC position effectively establishes new requirements, even if the NRC establishes its position as guidance.

In addition, a lack of technical basis in the NRC's position creates confusion because it is inconsistent with the licensing bases of many of the current dry storage systems that were approved by the NRC, and with prior interpretations of ANSI-N14.5-1997. Without a basis for the new NRC position, it is not possible to determine why dry storage systems with existing licenses (currently loaded and those fabricated in the future) are acceptable without a helium leak test of base materials or without having that test performed in a shop, while systems licensed in the future would be subject to such testing.

#### **Specific Concerns about NRC's Position**

1. Industry is unaware of any conclusive scientific data that demonstrates a safety concern for leakage through base materials, especially multi-inch-thick solid steel canister lids. Although there has been some anecdotal evidence where leakage through base materials occurred, it is impossible to know whether such anecdotes are applicable to a specific dry storage system. Some discussion related to these cases indicates that leakage can be resolved through methods other than helium leakage testing (e.g. cold working or annealing). In fact, the discussions suggest that leakage may occur for bar stock, but may not occur for rolled or forged material. We believe that a basis, including scientific and/or engineering data, for the NRC's position requiring a helium leakage test of the base materials is necessary for a certificate holder or applicant to be able to propose an alternative. As part of this basis, it is important to include the conditions (e.g. material thickness or other material properties, fabrication processes, etc.) for which the NRC is concerned about leakage through base materials. For example, in ISG-18 the NRC provides guidance on the conditions that a leakage test would not be necessary for the confinement boundary lid weld (i.e. type, thickness, method and examination of the weld). Similarly, ISO-12807-96 provides guidance on the conditions that a leakage test would not be necessary for the containment vessel (e.g. thickness of the vessel).
2. ANSI-N14.5-1997 was developed for testing the containment boundary of transportation packages; however, ISG-25 is endorsing ANSI-N14.5 for the confinement boundary of dry storage systems. We are concerned about the endorsement, without exceptions, of a transportation standard for application to a dry storage system. We believe that it is important to fully consider the differences between the purposes and functions of the transportation package containment boundary and dry storage system confinement boundary (including the normal, off-

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normal and credible accident conditions). As part of this consideration, the provisions in ANSI-N14.5 should be evaluated to determine whether they are necessary in order to meet requirements for the dry storage system confinement boundary, or whether they are extraneous. It is also worth noting that, for canister-based, dual-purpose certified systems, the canister confinement boundary in a dry storage system is not the containment boundary for transportation – the outer overpack is the containment boundary to which ANSI N14.5 would apply. We believe that any endorsement of ANSI-N14.5 for applications other than transportation package containment boundaries should contain a discussion of these differences and modify or take exception to the provision of ANSI-N14.5 as necessary.