

REQUEST FOR ADDITIONAL INFORMATION
Volume 4, Chapter 2.4, Performance Confirmation Program, 2nd Set
(Department of Energy's Safety Analysis Report Section 4)

RAI #1: Clarify apparent inconsistencies between the Performance Confirmation Plan and the Safety Analysis Report (SAR) with respect to activities for design testing. Explain which parameters are associated with each activity related to the requirement for design testing (10 CFR 63.133). Describe how performance confirmation work for each parameter associated with an activity addresses the requirement for design testing.

Basis: In Table 2-1 of its Performance Confirmation (PC) Plan (SNL, 2008), the applicant identifies six activities as being related to accomplishing the requirement for design testing (10 CFR 63.133). These include:

- Seepage Monitoring
- Thermally Accelerated Drift Near-Field Monitoring
- Thermally Accelerated Drift In-Drift Environment
- Construction Effects Monitoring
- Thermally Accelerated Drift Thermal-Mechanical Monitoring
- Seal [and backfill] Testing

Section 3.3.3 (Design Testing) of the applicant's PC Plan (SNL, 2008) discusses only one of these areas, the seal testing activity. The PC Plan does not discuss which aspects (parameters) of the other five activities relate to design testing.

In Table 4-2 of its SAR, the applicant identifies only five activities as being related to accomplishing the requirement for design testing (10 CFR 63.133). These include:

- Seepage Monitoring
- Thermally Accelerated Drift near-field Monitoring
- Construction Effects Monitoring
- Thermally Accelerated drift Thermal-Mechanical Monitoring
- Seal and backfill testing

SAR Section 4.2.3 (Design Testing Other Than Waste Packages) discusses a set of activities that, except for the seal and backfill testing activity, differs from those identified in SAR Table 4-2. SAR Section 4.2.3 references the drift inspection, thermally accelerated drift near-field monitoring, thermally accelerated in-drift environment monitoring and thermally accelerated thermal-mechanical monitoring activities (SAR Sections 4.2.1.8, 4.2.1.9, 4.2.1.11, and 4.2.2.4 respectively). In addition, SAR 4.2.3 does not elaborate on which aspects (parameters) of these activities relate to design testing.

This information is needed to verify compliance with 10 CFR 63.133.

Reference:

SNL. 2008. "Performance Confirmation Plan." TDR-PCS-SE-000001. Rev. 05. ADD 01. Las Vegas, Nevada: Sandia National Laboratories.

RAI #2: Provide additional information on the performance confirmation program for design testing of the drip shield system.

Basis: The two engineered components within the emplacement drift that DOE classifies as important to waste isolation are the waste package and drip shield (SAR Section 1.3.4). SAR Section 4.2.1 states that the drip shield protects the waste package from seepage and rockfall, and must maintain integrity under expected post-emplacement conditions in order to function as anticipated. DOE identifies that some performance confirmation activities directly monitor waste package and drip shield condition in a thermally accelerated drift.

SAR Section 4.1 states that the performance confirmation program for testing engineered systems and components used in the design will be developed and initiated as early as practicable during construction, and will continue into the operational period. This program will include evaluation of materials and design for drip shields, as described in SAR Section 1.3.4.7. While Chapter 4 of the SAR provides information about the program for monitoring and testing waste packages, no information is provided in the SAR about design testing of drip shields. For instance, there is no description of the drip shield design testing program such as: its purpose, what aspects of the drip shield design (e.g., structural capacity to withstand peak loads) would be tested, a description of current understanding, and methodologies to be used in testing. Furthermore, no information is provided on testing the effectiveness of drip shield placement procedures. SAR Section 1.3.4 and SAR Chapter 4 provide only two references to performance confirmation testing of the drip shield system or related components. These are:

- Drip shield material specimens will be exposed in emplacement drifts as part of the dust buildup monitoring activity.
- Materials used to fabricate drip shield components will be evaluated in the corrosion testing activity.

While only two grades of titanium are used for the various drip shield components, it is not clear which specific components would be subject to design testing (see SAR Table 1.3.4-4; Standard Nomenclature for Drip Shield Components).

This information is needed to verify compliance with 10 CFR 63.133.