REQUEST FOR ADDITIONAL INFORMATION
Volume 2 – Preclosure
Chapter 2.1.1.4, Set 3 – Identification of Event Sequences
(RAI #1 - #5)

The following questions pertain to DOE's evaluation of subsurface categorization of event sequences described in SAR Section 1.7.5.6. This information is needed to assess whether or not DOE has demonstrated compliance with 10 CFR 63.112(b), which requires DOE to describe and discuss analyses for identification and categorization of potential event sequences resulting from surface and subsurface operations and demonstration of compliance with the requirements of §63.111(a) and (b). In addition to the SAR, these questions also refer to other references in the LA and on the docket. Unless otherwise specified, references cited in the following RAIs are from SAR Section 1.7.6.

BSC 2008a, *Subsurface Operations Reliability and Event Sequence Categorization Analysis*, 000–PSA–MGR0–00500-000–00A. Las Vegas, Nevada: Bechtel SAIC Company, LLC

BSC 2008b, *Subsurface Operations Event Sequence Development Analysis*, 000–PSA–MGR0–00400-000–00A. Las Vegas, Nevada: Bechtel SAIC Company, LLC

RAI #1

Provide an analysis of potential event sequences related to failure of subsurface structures or systems (e.g., network of underground openings, the invert structure and rails, power distribution infrastructure, and subsurface ventilation), or explain how these event sequences will be prevented or mitigated.

The applicant has not considered potential event sequences that may initiate from or be aided by a failure of a subsurface structure or system during approximately 100 years of waste emplacement, observation, and closure operations, e.g., failure of the invert structure due to corrosion, thermal expansion, or loss of rock support; collapse of an emplacement drift, etc. SAR Section 1.6.3.4.2 states that these events would occur slowly and there would be adequate time to mitigate the events by relocating waste packages. However, the applicant has not explained how the onset of the events will be determined early enough to prevent event sequences. This information is needed to determine compliance with 10 CFR 63.21(c)(5) and 63.112(b).

RAI #2

Provide a basis for zero frequency of failure of administrative controls against (i) inadvertent entry into an emplacement drift and (ii) worker proximity to a loaded transport and emplacement vehicle.

The applicant has relied on administrative controls to assign zero frequency to the event sequences (i) inadvertent entry into an emplacement drift and (ii) worker proximity to a loaded transport and emplacement vehicle (BSC, 2008a, Table G-1). However, the applicant has not explained how the controls will be implemented to assure zero frequency of occurrence of the event sequences.

RAI #3

Explain why the administrative controls relied on to assign a zero frequency of occurrence to the following event sequences are not included in the list of preclosure procedural safety controls: (i) inadvertent entry into an emplacement drift and (ii) worker proximity to a loaded transport and emplacement vehicle.

The applicant has relied on administrative controls to assign zero frequency to the event sequences (i) inadvertent entry into an emplacement drift and (ii) worker proximity to a loaded transport and emplacement vehicle (BSC, 2008a, Table G-1). However, the applicant has not included these administrative controls into the list of preclosure procedural safety controls in SAR table 1.9-10.

RAI #4

Explain how the applicant's design requirement that the transport and emplacement vehicle (TEV) shielding will sustain the thermal load for all waste package loadings (BSC, 2008b, section B1.4.5.3) is represented in the list of preclosure nuclear safety design bases for subsurface operations (SAR Table 1.9-7).

The applicant has estimated 8.5 potential occurrences of loss of movement of a loaded TEV that could result in degradation of the TEV shielding due to overheating, but assigned a zero frequency of direct exposure from the event sequence. The applicant appears to have relied on a design requirement in BSC (2008b, section B1.4.5.3) that the TEV shielding be able to sustain the thermal load for all waste package loadings. However, the applicant did not propagate the design requirement to the list of preclosure nuclear safety design bases for subsurface operations (SAR table 1.9-7).

RAI #5

Provide information to show that the TEV design satisfies the applicant design requirement that the TEV shielding be able to sustain the thermal load for all waste package loadings.

The applicant estimated 8.5 potential occurrences of loss of movement of a loaded transport and emplacement vehicle that could result in degradation of the TEV shielding due to overheating, but assigned a zero frequency of direct exposure from the event sequence. The applicant appears to have relied on a design requirement in BSC (2008b, section B1.4.5.3) that the TEV shielding be able to sustain the thermal load for all waste package loadings. However, the applicant did not provide analysis to show the design of the transport and emplacement vehicle satisfies the design requirement.