May 30, 2002

Joseph D. Ziegler, Acting Assistant Manager
Office of Licensing and Regulatory Compliance
U.S. Department of Energy
Yucca Mountain Site Characterization Office
P.O. Box 364629
North Las Vegas, NV 89036-8629

SUBJECT: CONTAINER LIFE AND SOURCE TERM KEY TECHNICAL ISSUE AGREEMENT

Dear Mr. Ziegler:

During a Technical Exchange and Management Meeting held on September 12-13, 2000, the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy (DOE) reached agreement on a number of issues within the Container Life and Source Term (CLST) Key Technical Issue (KTI). By letter dated February 2, 2001, DOE provided information pertaining to CLST Agreement 6.04. By letter dated December 21, 2001, the NRC requested additional information for this agreement. Specifically, NRC requested that DOE provide the output files or plots of temperature as a function of time for the drip shield for the no-backfill case. By letter dated January 31, 2002, DOE provided the Multiscale Thermohydrologic Model Analysis and Model Report (AMR) in response to Thermal Effects on Flow Agreement 2.09. Subsequently, during a Technical Exchange and Management Meeting held on April 15-16, 2002, DOE requested that NRC review the AMR as it pertains to CLST Agreement 6.04 and the NRC's request for additional information dated December 21, 2001.

The NRC has completed its review of the Multiscale Thermohydrologic Model AMR and, in summary, the staff believes that the temperature distribution of the drip shield can be bounded by the peak temperature of the waste package for the no-backfill case. Therefore, the NRC staff considers CLST Agreement 6.04 "complete." If you have any questions regarding this letter, please contact Mr. James Andersen of my staff. He can be reached at (301) 415-5717.

Sincerely,
/RA/

Janet Schlueter, Chief
High-Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: As stated
cc: See attached distribution list

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Letter to J. Ziegler from J. Schlueter dated May 30, 2002

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NRC Review of DOE Documents Pertaining to
Key Technical Issue Agreements

The U.S. Nuclear Regulatory Commission (NRC) goal of issue resolution during this interim pre-licensing period is to assure that the U.S. Department of Energy (DOE) has assembled enough information on a given issue for NRC to accept a license application for review. Resolution by the NRC staff during pre-licensing does not prevent anyone from raising any issue for NRC consideration during the licensing proceedings. Also, and just as importantly, resolution by the NRC staff during pre-licensing does not prejudge what the NRC staff evaluation of that issue will be after it's licensing review. Issues are resolved by the NRC staff during pre-licensing when the staff has no further questions or comments about how DOE is addressing an issue. Pertinent new information could raise new questions or comments on a previously resolved issue.

This enclosure addresses one NRC/DOE agreement made during the September 12-13, 2000, Container Life and Source Term (CLST) Technical Exchange and Management Meeting (see NRC letter dated October 4, 2000, which summarized the meeting). By letter dated February 2, 2001, DOE provided information pertaining to CLST Agreement 6.04. By letter dated December 21, 2001, the NRC requested additional information for this agreement. Specifically, NRC requested that DOE provide the output files or plots of temperature as a function of time for the drip shield for the no-backfill case. By letter dated January 31, 2002, DOE provided the Multiscale Thermohydrologic Model Analysis and Model Report (AMR) in response to Thermal Effects on Flow Agreement 2.09. Subsequently, during a Technical Exchange and Management Meeting held on April 15-16, 2002 (see NRC letter dated April 25, 2002, which summarized the meeting), DOE requested that NRC review the AMR as it pertains to CLST Agreement 6.04 and the NRC's request for additional information dated December 21, 2001. The information submitted is discussed below:

1) Container Life and Source Term Agreement 6.04

Wording of the Agreement: Provide temperature distribution (complementary cumulative distribution function (CCDF)) of the drip shield as a function of time under the current engineered barrier system (EBS) design. DOE stated that the temperature distribution will be provided in the next revision of AMR, ANL-EBS-MD-000049, Rev. 00, ICN 01, which will be available in January 2001.

NRC Review: The NRC staff reviewed the Multiscale Thermohydrologic Model AMR (ANL-EBS-MD-0049.Rev 00. ICN 02) received from DOE on January 31, 2002. As discussed above, the AMR was submitted in response to TEF Agreement 2.09. By letter dated May 8, 2002, the NRC staff provided its review of the AMR as it pertained to TEF Agreement 2.09. The following is the NRC staff's review of the AMR as it pertains to CLST Agreement 6.04.

As discussed in the NRC letter dated December 21, 2001, the remaining information needed for CLST Agreement 6.04 was for DOE to provide the output files or plots of temperature as a function of time for the drip shield for the no-backfill case. This information was not provided in the AMR. However, assuming that the temperature of the waste package can be considered as an upper bound for the temperature of the drip shield, a CCDF of the waste package peak temperature provided in the AMR for the mean infiltration-flux, no backfill case (Figure 6-54) is acceptable, instead of the requested CCDF for the drip shield. The temperature in this CCDF plot varies between 130 and 180 degrees Centigrade and this information, together with that presented in plots showing the waste package temperature at various times (Figure 6-50), allows for assessment of the temperature variation that can be expected for the drip shield

across the repository over the performance period. The information provided is that required to evaluate the effect of temperature on the mechanical properties of the drip shield material, provided that no substantial modification by further variations in the repository designs (e.g. addition of backfill or other changes) occur.

Additional Information Needed: None.

Status of Agreement: CLST Agreement 6.04 is “Complete.”