



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

AUG 05 1994

MEMORANDUM FOR: Joseph J. Holonich, Chief
High-Level Waste and Uranium Recovery Projects Branch
Division of Waste Management, NMSS

FROM: Michael J. Bell, Chief
Engineering and Geosciences Branch
Division of Waste Management, NMSS

SUBJECT: REVIEW OF DOE STUDY PLAN 8.3.1.15.1.1 - "LABORATORY THERMAL PROPERTIES"

This memorandum transmits the review results of DOE Study Plan (SP) 8.3.1.15.1.1, Revision 1. The review was conducted in accordance with the procedures in the "Review Plan for NRC Staff Review of DOE Study Plan, Revision 2, March 10, 1993". Based on this review, we have three questions on this study plan. The reasons for this conclusion are based on the findings for the five review criteria in Section 4.1 of the review plan, and the evaluations of the SP with respect to the objectives of the review given in Section 2.2 of the review plan.

1. The level-of detail of this SP is generally consistent with the NRC/DOE agreement of May 7-8, 1986.
2. The objectives of this SP are consistent with the objectives of the Laboratory Thermal Properties presented in the Site Characterization Plan (SCP). The objective of this SP is to provide all of the data on thermal properties required by repository design and performance assessment that can be obtained in a laboratory setting. This SP includes (1) the rationale for obtaining thermal-properties data, (2) the specific requirements for the data, and (3) the specific plans for experiments to obtain thermal properties (matrix porosity, grain density, bulk density, thermal conductivity, and heat capacity) for each thermal/mechanical unit. The experiments of this SP are designed to (1) determine the effects of variations in environmental parameters on thermal properties; (2) determine whether the thermal properties vary as a function of spatial location, and if so, to make quantitative estimates of the spatial variability. The mineralogic change due to elevated temperatures, changing saturations, and long periods of time will not be considered in this SP.
3. No field test is proposed in the current SP, nor are additional boreholes proposed. Therefore, no activities of this SP could affect repository performance and cause significant unmitigable impact on the waste isolation characteristics of the site.

9408180275 940805
NMSS SUBJ
102.8

GF L

~~HHH~~ 1/0
102.8
NHXT

- 4. The rock sampling activity of this study plan is expected to have minimal impact on other site characterization activities or construction of the Exploratory Studies Facility (ESF).
- 5. The study plan is developed under OCRWM approved and NRC accepted Quality Assurance (QA) program. QA aspects of this SP have been reviewed by High-Level Waste and Uranium Recovery Project Branch (HLUR).
- 6. The SP does not propose any use of radioactive materials in testing described in this investigation.
- 7. The staff did not identify any objections or comments, and it is likely that the SP enables DOE to obtain information for licensing. However, the staff notes that there is lack of integration among SPs, a concern similar to that observed in other SP reviews. For example, this SP states that some of the samples will be provided under SP 8.3.1.15.1.5 (Excavation Investigations), but there is no mention of that in the SP 8.3.1.15.1.5.
- 8. DOE has provided some information on SCA Comment 55 in its cover letter of this SP. However, DOE has not requested closure of this comment. Staff has evaluated the DOE's information and considered SCA Comment 55 open. The evaluation of SCA Comment 55 is included in the enclosure of this Memo.
- 9. The staff has identified three questions during the review of this SP. The detailed review comments are also listed in the enclosure.
- 10. No new items were identified for the OITS.

The enclosure presents the findings and questions generated by this review. The technical review was conducted by Dr. Shiann-Jang Chern, and Internal Quality Assurance (IQA) was performed by Dr. Mysore Nataraja. If you have any questions regarding this review, please contact Dr. Shiann-Jang Chern at 415-6613.

(ORIGINAL SIGNED BY:
Mysore Nataraja)

for: Michael J. Bell, Chief
Engineering and Geosciences Branch
Division of Waste Management, NMSS

Enclosure: As stated

cc: M. Lee, HLUR

DISTRIBUTION:*w/encl Central File DWM r/f* MBell JAustin
JSurmeier* JHolonich MFederline NMSS r/f ENGB r/f*
JThoma JGreeves

Mark Small Boxes in Concurrence Block to Define Distribution Copy Preference.
In small Box on "OFC:" line enter: C = Cover E = Cover & Enclosure N = No Copy

OFC	ENGB	E	ENGB	E	ENGB	E	ENGB	E
NAME	SChern <i>A.J.</i>		MNataraja <i>Raj</i>		for KMccomell <i>Raj</i>		for MBell <i>Raj</i>	
DATE	08/05/94		08/05/94		08/05/94		08/05/94	

s:\dwm\engb\sjc\sp83511.001

OFFICIAL RECORD COPY

In small Box on "DATE:" line enter: M = E-Mail Distribution Copy H = Hard Copy

PDR : YES ___ NO Category: Proprietary ___ or CF Only

ACNW: YES ___ NO

IG : YES ___ NO Delete file after distribution: Yes ___ No ___

C = COVER E = COVER & ENCLOSURE N = NO COPY