

HISTORICAL SEISMICITY STUDY

- 1 -

MAY 14 1991

Mr. Dwight E. Shelor, Acting Associate Director
for Systems and Compliance
Office of Civilian Radioactive Waste Management
U. S. Department of Energy, RW 30
Washington, D.C. 20585

Dear Mr. Shelor:

SUBJECT: PHASE I REVIEW OF U.S. DEPARTMENT OF ENERGY (DOE) STUDY PLAN FOR
HISTORICAL AND CURRENT SEISMICITY

On October 22, 1990, the DOE transmitted the study plan entitled "Historical and Current Seismicity" (Study Plan for Study 8.3.1.17.4.1) to NRC for review and comment. The NRC has completed its Phase I Review of this document using the Review Plan for NRC Staff Review of DOE Study Plans, Revision 1 (December 6, 1990).

The material submitted in the study plan was considered substantively consistent with the agreement on content resulting from the NRC-DOE agreements made at the May 7-8, 1986 meeting on Level of Detail for Site Characterization Plans and Study Plans. In addition, the references for the study plan have, for the most part, been provided to NRC or are readily available in the public domain.

A major purpose of the Phase I Review is to identify concerns with studies, tests, or analyses that if started could cause significant and irreparable adverse effects on the site, the site characterization program, or the eventual usability of the data for licensing. Such concerns would constitute objections, as that term has been used in earlier NRC staff review of DOE's documents related to site characterization (Consultation Draft Site Characterization Plan and Site Characterization Plan [SCP] for the Yucca Mountain site). The Phase I Review of this study plan identified no objections with any of the activities proposed.

There are two technical matters related to the study plan that the NRC staff wishes to call to the attention of DOE. The first is the same concern that the NRC raised in Site Characterization Analysis (SCA) Comment 67, namely the arbitrary distinction between those parameters that are to be compiled for all recorded seismic events and those that are to be compiled for events having magnitudes 5.5 or greater. In the SCP, DOE proposes to compile only the time, hypocenter, and magnitude parameters for all the earthquakes studies and to reserve compilation of additional parameters, such as focal mechanism, seismic moment, and spectral amplitudes, to "important" earthquakes, i.e., those which have a magnitude of 5.5 or greater, or which may have had a substantial impact

9105230064 910514
PDR WASTE
WM-11 PDR

102.8
WM-11
NH16

HISTORICAL SEISMICITY STUDY

- 2 -

on the site. Such a distinction is unnecessary, especially if the data are collected in a digital format that readily enables the determination of those parameters reserved in the study plan for the "important" earthquakes." This concern is pertinent to the activities in the subject study plan, but the study plan does not address it. As was stated in SCA Comment 67, the NRC staff is concerned that the study may not obtain sufficient data to support an evaluation of the effects of local site geology on surface and subsurface motions.

The second technical matter is that the study may not consider all the data that should be included in this study because the area for this study plan is not centered on Yucca Mountain itself, but rather on the Nevada Test Site. This center is about twenty-five to thirty kilometers northeast of Yucca Mountain. As a result, some of the seismicity in the Owens Valley, California area is excluded from the study. In particular, the study may exclude the great Owens Valley earthquake of 1872, located about 150 kilometers west of Yucca Mountain.

After completion of the Phase I Review, selected study plans are to receive a second level of review, called a Detailed Technical Review, based on the relationship of a given study plan to key site-specific issues or NRC open items, or its reliance on unique, state-of-the-art test or analysis methods. We have decided not to proceed with a Detailed Technical Review of this study plan.

If you have any questions concerning this letter, please contact King Stablein (FTS/[301]-492-0446) of my staff.

Sincerely,

ORIGINAL SIGNED BY

for

John J. Linehan
John J. Linehan, Acting Director
Repository Licensing and Quality
Assurance Project Directorate
Division of High-Level Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: As Stated

cc: R. Loux, State of Nevada
C. Gertz, DOE/NV
S. Bradhurst, Nye County, NV
M. Baughman, Lincoln County, NV
D. Bechtel, Clark County, NV
D. Weigel, GAO
P. Niedzielski-Eichner, Nye County, NV

SEE DISTRIBUTION AND CONCURRENCE ON NEXT PAGE

HISTORICAL SEISMICITY STUDY

- 3 -

DISTRIBUTION

CNWRA	NMSS R/F	HLPD R/F	LSS
LPDR	ACNW	PDR	Central File
BJYoungblood, HLWM	JLinehan, HLWM	RBallard, HLEN	Chief, HLGP
On-Site Reps	KStablein, HLPD	Aibrahim, HLGP	PJustus, HLGP

OFC :HLPD	:HLGP	:HLGP	:HLGP	:HLGP	:
NAME: K. J. Sin	: Aibrahim	: PJustus	: RBallard	: JLinehan	:
Date: 05/09/91	: 05/9/91	: 05/09/91	: 05/9/91	: 05/13/91	: 5/13

OFFICIAL RECORD COPY