February 23, 1995

Mr. Ronald Milner, Director
Office of Program Management
and Integration
U.S. Department of Energy
1000 Independence Avenue SW
Washington, DC 20585

SUBJECT: SUMMARY OF THE JANUARY 26, 1995, TECHNICAL EXCHANGE/VIDEO CONFERENCE ON SEISMIC HAZARD ASSESSMENT AND SEISMIC DESIGN

Dear Mr. Milner:

The purpose of this letter is to transmit the summary for the January 26, 1995, U.S. Nuclear Regulatory Commission/U.S. Department of Energy (DOE) Technical-Exchange/Video-Conference on Seismic Hazard Analyses and Seismic Design Methodology topics. The video conference was held jointly at two DOE facilities--the Forrestal Building in Washington, D.C., and the Bank of America Building in Las Vegas, Nevada. The purpose of the technical exchange was to discuss NRC's response to DOE's letter of November 9, 1994, on Seismic Hazard Assessment Methodology Topical Report (TR#1), and to discuss NRC's concerns on Annotated Outline for Seismic Design Methodology Topical Report (TR#2). A brief summary of the technical exchange is enclosed. The technical exchange ended with one action item--DOE would respond to NRC's letter of January 12, 1995, on TR#1. The discussions during the technical exchange were useful to all the attendees.

If you have any questions regarding this letter or the technical exchange summary, please contact Banad Jagannath of my staff at (301) 415-6653.

Sincerely,

/s/

Michael J. Bell, Chief
Engineering and Geosciences Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: As stated

cc: Attached list

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DOE Distribution List for letter to R. Milner dated: March 23, 1995

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SUMMARY OF THE U.S. NUCLEAR REGULATORY COMMISSION AND
THE U.S. DEPARTMENT OF ENERGY TECHNICAL EXCHANGE/VIDEO CONFERENCE ON
SEISMIC HAZARD ANALYSES AND SEISMIC DESIGN METHODOLOGY

On January 26, 1995, representatives of the U.S. Nuclear Regulatory Commission, U.S. Department of Energy (DOE), and other interested parties participated in a technical exchange/video-conference on the Seismic Hazard Assessment Methodology Topical Report (TR#1) and on the Annotated Outline for Seismic Design Methodology Topical Report (TR#2). Attachment 1 presents the agenda for this technical exchange. Attachment 2 is the list of attendees, which also includes the other interested parties participating in the exchange. Copies of DOE handouts are included as Attachment 3.

A. Ibrahim of the NRC started the exchange by summarizing NRC's January 12, 1995, letter from M. Bell to R. Milner. Based on the information submitted by DOE and the conference calls with DOE, Dr. Ibrahim summarized the staff's understanding of what to expect from DOE in TR#1 on seismic hazard analyses. The DOE responded by explaining its approach to the seismic hazard analyses. There was no clear understanding that the DOE approach to evaluating seismic hazard deterministically as a part of the third seismic topical report would be sufficient for the NRC purposes. DOE requested NRC to initiate the review of TR#1. NRC stated that it would not begin the review of TR#1 until DOE responded in writing to the January 12, 1995, NRC letter by confirming or clarifying the NRC understandings.

NRC and DOE discussed the NRC concerns with the original annotated outline for TR#2, as transmitted to the NRC by letter of August 22, 1994. DOE had revised the original annotated outline to address the NRC concerns and to reflect changes in the organization of the report. The draft revised annotated outline was discussed, and NRC stated that the revision appeared to address the NRC concerns. NRC will respond to the formal DOE submission of the revised annotated outline (transmitted by letter of January 26, 1995), and NRC expects to find the subject and scope of the report to be acceptable for a TR.

One area of *discussion* in TR#2 was on the design to accommodate seismic hazards in the postclosure time frame. NRC is concerned that postclosure seismic hazards should be addressed in the TR. DOE stated that postclosure seismic issues are primarily performance-related, not design-related, and that they will be addressed in other parts of the program, including performance assessment. NRC maintained that the design and performance issues are linked, and, therefore, should be considered together to the extent that the preclosure design impacts on postclosure performance issues. NRC referred to the issues of seal design, EBS design, and thermal load considerations as examples which necessitate an iterative design approach that includes the postclosure performance considerations. DOE stated that TR#2 will expand on the rationale for handling preclosure and postclosure seismic design separately. DOE noted that TR#2 will indicate how postclosure seismic design considerations are addressed within the overall repository design program.

Enclosure

NRC participants stated that the technical exchange provided an opportunity to discuss DOE's approach to seismic design for the Yucca Mountain project. In closing, DOE thanked the participants for their input and discussion during the technical exchange.

Mysore Nataraja, Sr. Project Manager
The U.S. Nuclear Regulatory Commission
Engineering and Geosciences Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Christian Einberg
The U.S. Department of Energy
Regulatory Integration Division
Office of Civilian Radioactive
Waste Management

January 26, 1995

AGENDA

NRC/DOE TECHNICAL EXCHANGE
SEISMIC HAZARD ASSESSMENT AND SEISMIC DESIGN

TIME	TOPIC	LEAD
1:00pm EST	Welcome/Protocal/Opening Remarks	DOE, NRC, AULG
	NRC Response to DOE letter of November 9, 1994, on the Review of Seismic Topical Report I	NRC
	NRC Concerns with the Annotated Outline for Seismic Topical Report II	NRC
	Break	
	Annoated Outline for Seismic Topical Report II	DOE
	Closing Comments	DOE, NRC AULG
4:30p.m. EST	Adjourn	

Attachment 1

Seismic Hazard Assessment & Seismic Design Technical Exchange

January 26, 1995
(Las Vegas, NV & Washington, DC)

ATTENDANCE LIST

Name:	Organization:	Telephone No.:
Chris Einberg	DOE/HQ RW-36	202-586-8869
Bakr Ibrahim	NRC	301-415-6651
Leon Reiter	NWTRB	703-235-4473
MICHAEL BELL	NRC/DWM	301-415-7286
JOHN S. TRAPP	NRC	301-416-8063
John L. Russell	CNWRA	703/416-1129
HANK LANG	M&O/NEA	703-204-8866
Bob Gamble	MTO/PMO-LV	702-295-9663
HOMI MINWALLA	WESTON/JACOBS	202-646-6710
Dave Fenster	H2O/WCFS	(703) 204 8866
RAM B. MURTHY	DOE-RW 3.1	202-586-1239
BANAD JAGANNATH	NRC/DWM	301-415 6653
STAN ECHOLS	WINSTON & STRAWN	202 371-5777
Jake Philip	USNRC	(301) 415 6211
Sitt-Min Hsiung	CNWRA	(210) 522-5209
Asadul H. Chowdhury	CNWRA	(210) 522-5151
PHILIP S. JUSTUS	USNRC	301 415 6745 PSJ@NRC.GOV
Steve McDuffie	NRC	301-415-6684
MYSORE Nataraja	USNRC	301-415-6695
Ray Wallace	USGS	202 586-1244

Department of Energy - Nuclear Regulatory Commission Technical Exchange
Seismic Hazard Assessment and Seismic Design

January 26, 1995
Videoconference: Las Vegas, NV, and Washington, DC

Attendance List (Nevada)

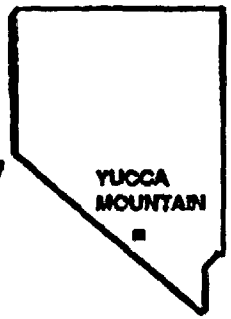
Name	Organization	Phone Number	Fax Number
RICHARD QUITTMEYER	M&O/LLEFS	702-794-1864	702-794-5378
Tim Sullivan	DOE	" 9-7915	
Stan Nisbit	M&O / Duke Engineering	702-794-1910	-1822
Earl Stepp	M&O / LLEFS	512-338-0681	795-9338
ALI HAGHI	M&O / Duke Engineering	702-794-5552	
Jerry L. King	M&O / SAIC	702-794-7844	702-794-1822
[illegible]	Univ Nevada, Reno	702 784 1382	[illegible]
JOHN BELL	UNR / NBMG	702 784-6691	702 784-1709
John Whitney	U.S. Geological Survey	303.236-0516	303.236-5046
Craig deRoche	NV. Bur. Mines & Geology	702 784-6691	702 784-1709
Jean Younker	M&O	702 794 7650	
E. v. TIESENHAUSEN	CLARK COUNTY	702 455-5125	702 455-5180
PHIL HAMMOND	M&O	702 794 5183	702 794 1822
Robert Kennedy	Struct. Mech. Consult.	714-777-2163	714-727-8299
Michael Hardy	Agapito Associates	303-242-4220	303-245-9234
Quazi A. Hoscain	LLNL	510-423-2289	510-424-2195
DAVID TILSON	NEVADA CONSULTANT	801-363-4093	801-363-4093
CARL JOHNSON	NUMARC	202 682-3744	202 682-5277
THOMAS STATTON	M&O		
APRIL GIL	YMP/DOE	(702)794-7622	-7707

Name	Organization	Phone Number	Fax Number
Thomas Dierstedt	Thom Dierstedt	202-794-7536	202-794-7707

Attachment 3

U.S. DEPARTMENT OF ENERGY

OCRWM



YUCCA MOUNTAIN
SITE CHARACTERIZATION
PROJECT

DOE-NRC TECHNICAL EXCHANGE ON
SEISMIC HAZARD ASSESSMENT AND SEISMIC DESIGN

RESPONSE TO NRC CONCERNS ON THE ANNOTATED OUTLINE FOR SEISMIC TOPICAL REPORT II

PRESENTED BY
DR. J. CARL STEPP

JANUARY 26, 1995

Background

- The DOE submitted the annotated outline (AO) for the topical report "Seismic Design Methodology for a Geologic Repository at Yucca Mountain" on August 22, 1994
- The NRC responded by letter of November 3, 1994
  - Four concerns expressed
  - Annotated outline "considered incomplete by the staff"
- DOE-NRC Management Meeting discussions on December 6, 1994
  - Level of detail in AO vs. topical report itself
  - Need to enhance communication
- DOE-NRC teleconference on January 5, 1995 to clarify how NRC concerns would be addressed

Revised Annotated Outline for Seismic Topical Report II

- Outgrowth of the development of the report
- Shows changes in the organization of the report
- Indicates where NRC concerns from November 3, 1994 letter will be addressed
- Provided to NRC in draft form on January 23, 1995

NRC Concern #1: Use of Performance Goal-Based Design

- **The proposed methodology is considered to be a natural, systematic extension of established seismic design practices**
- **Section 3.0 will describe the linkages between the performance goal-based design approach and accepted deterministic seismic design approaches for nuclear facilities**
- **New Appendix B will discuss the bases for risk reduction factors**
- **Section 6.0 and new Appendix C will discuss application of performance goal-based design to the seismic design of underground facilities**

NRC Concern #2: Post-Closure Performance Objectives

- Seismic safety performance goals apply to the design to accommodate seismic hazards during the preclosure period
- Postclosure issues are primarily related to performance, not design
- Section 1.0 will address the linkages between the seismic design methodology and post-closure performance

NRC Concern #3: Treatment of Fault Offsets

- Fault avoidance is the preferred approach, consistent with the NRC staff technical position NUREG-1494
- Design approaches and criteria will be developed to accommodate fault displacement when design is the appropriate mitigation action
- New Section 8.0 will provide a focused discussion of the treatment of fault displacement

NRC Concern #4: Repetitive Seismic Loading Episodes

- Underground facilities will be designed and maintained to accommodate repetitive seismic loads
- Section 6.0 and new Appendix C will address this NRC concern

Summary

- The DOE welcomes the technical input from the NRC
- It is not possible to resolve these NRC concerns with the annotated outline
- The NRC concerns will, as indicated, be addressed in the topical report
- The annotated outline has been revised to clarify where the NRC concerns will be addressed
- The DOE believes a continuing dialog on these and other technical issues is essential to an effective regulatory review process