

April 22, 2002

Dr. Stephan Brocoum, 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: STRUCTURAL DEFORMATION AND SEISMICITY KEY TECHNICAL ISSUE
AGREEMENT

Dear Dr. Brocoum:

During a Technical Exchange and Management Meeting held on October 11-12, 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 Structural Deformation and Seismicity (SDS) Key Technical Issue (KTI). By letter dated October 12, 2001, DOE provided information pertaining to SDS Agreement 3.04. The NRC staff has reviewed this information as it relates to the agreement and the results of the staff's review are enclosed.

In summary, the staff believes the DOE letter report fulfilled its purpose of documenting widespread observations of the existence and attributes of excavation-induced and -altered fractures and ancillary textures. The NRC will monitor the use of excavation-induced fracture and texture information when it reviews future DOE documents (such as for design of ground support systems, and results of Alcove 8 - Niche 3 seepage tests). The NRC believes this agreement does not need to remain open to track the future use of excavation-induced fracture and texture information, therefore, it is listed as "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

April 22, 2002

Dr. Stephan Brocoum, 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: STRUCTURAL DEFORMATION AND SEISMICITY KEY TECHNICAL ISSUE AGREEMENT

Dear Dr. Brocoum:

During a Technical Exchange and Management Meeting held on October 11-12, 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 Structural Deformation and Seismicity (SDS) Key Technical Issue (KTI). By letter dated October 12, 2001, DOE provided information pertaining to SDS Agreement 3.04. The NRC staff has reviewed this information as it relates to the agreement and the results of the staff's review are enclosed.

In summary, the staff believes the DOE letter report fulfilled its purpose of documenting widespread observations of the existence and attributes of excavation-induced and -altered fractures and ancillary textures. The NRC will monitor the use of excavation-induced fracture and texture information when it reviews future DOE documents (such as for design of ground support systems, and results of Alcove 8 - Niche 3 seepage tests). The NRC believes this agreement does not need to remain open to track the future use of excavation-induced fracture and texture information, therefore, it is listed as "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

DISTRIBUTION:

File Center DWM r/f HLWB r/f EPAB r/f LCampbell DHiggs
TAhn JBradbury NColeman PJustus BLeslie TMcCartin
MNataraja JPohle JTrapp NColeman SWastler
Center LSN PUBLIC

ACCESSION #:

DOCUMENT NAME: S\DWMLHWB\JWA\SDS AGREEMENT LETTER-4.WPD

OFC	HLWB		HLWB		HLWB		HLWB		HLWB	
NAME	JAndersen		PJustus		BLeslie		ACampbell		NKStablein	JSchlueter
DATE	04/ /02		04/ /02		04/ /02		04/ /02		04/ /02	

OFFICIAL RECORD COPY

ACNW: YES NO Delete file after distribution: Yes No
1) This document should be made available to the PUBLIC - 04/19/02 JWA
2) This document is related to the HLW program. It should be placed in the LSS - 04/19/02 JWA

Letter to S. Brocoum from J. Schlueter dated _____

cc:

R. Loux, State of Nevada	R. Massey, Lander County, NV
S. Frishman, State of Nevada	L. Stark, Lincoln County, NV
M. Chu, DOE/Washington, DC	M. Baughman, Lincoln County, NV
L. Barrett, DOE/Washington, DC	A. Funk, Mineral County, NV
C. Einberg, DOE/Washington, DC	J. Shankle, Mineral County, NV
S. Gomberg, DOE/Washington, DC	L. Bradshaw, Nye County, NV
N. Slater, DOE/Washington, DC	M. Murphy, Nye County, NV
A. Gil, YMPO	J. McKnight, Nye County, NV
R. Dyer, YMPO	D. Weigel, GAO
S. Brocoum, YMPO	W. Barnard, NWTRB
R. Murthy, YMPO	R. Holden, NCAI
S. Mellington, YMPO	A. Collins, NIEC
C. Hanlon, YMPO	R. Arnold, Pahrump Paiute Tribe
T. Gunter, YMPO	J. Larson, White Pine County
K. Hess, BSC	R. Clark, EPA
D. Krisha, BSC	F. Marcinowski, EPA
S. Cereghin, BSC	R. Anderson, NEI
N. Williams, BSC	R. McCullum, NEI
M. Voegele, BSC/SAIC	S. Kraft, NEI
D. Beckman, BSC/B&A	J. Kessler, EPRI
B. Price, Nevada Legislative Committee	D. Duncan, USGS
J. Meder, Nevada Legislative Counsel Bureau	R. Craig, USGS
I. Navis, Clark County, NV	W. Booth, Engineering Svcs, LTD
E. von Tiesenhausen, Clark County, NV	L. Lehman, T-REG, Inc
A. Kalt, Churchill County, NV	S. Echols
G. McCorkell, Esmeralda County, NV	N. Rice, NV Congressional Delegation
L. Fiorenzi, Eureka County, NV	T. Story, NV Congressional Delegation
A. Johnson, Eureka County, NV	J. Reynoldson, NV Congressional Delegation
A. Remus, Inyo County, CA	S. Joya, NV Congressional Delegation
M. Yarbro, Lander County, NV	J. Pegues, City of Las Vegas, NV
I. Zabarte, W.S.N.C.	R. Bahe, Benton Paiute Indian Tribe
C. Anderson, Las Vegas Paiute Tribe	C. Bradley, Kaibab Band of Southern Paiutes
J. Birchim, Yomba Shoshone Tribe	R. Joseph, Lone Pine Paiute-Shoshone Tribe

L. Jackson, Timbisha Shoshone Tribe

C. Meyers, Moapa Paiute Indian Tribe

V. Miller, Fort Independence Indian Tribe

A. Bacock, Big Pine Paiute Tribe of
the Owens Valley

R. Quintero, Inter-Tribal Council of Nevada
(Chairman, Walker River Paiute Tribe)

M. Bengochia, Bishop Paiute Indian Tribe

J. Egan, Egan & Associates, PLLC

W. Briggs, Ross, Dixon & Bell

L. Tom, Paiute Indian Tribes of Utah

E. Smith, Chemehuevi Indian Tribe

J. Charles, Ely Shoshone Tribe

D. Crawford, Inter-Tribal Council of Nevada

H. Blackeye, Jr., Duckwater Shoshone Tribe

D. Eddy, Jr. Colorado River Indian Tribes

J. Leeds, Las Vegas Indian Center

**NRC Review of DOE Documents Pertaining to
Key Technical Issue Agreements**

The U.S. Nuclear Regulatory Commission (NRC) goal of issue resolution during the 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 prejudice what the NRC staff evaluation of that issue will be after its 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 Structural Deformation and Seismicity (SDS) Technical Exchange and Management Meeting (see NRC letter dated October 27, 2000, which summarized the meeting). By letter dated October 12, 2001, DOE submitted information to address SDS Agreement 3.04. The information submitted for this agreement is discussed below:

1) Structural Deformation and Seismicity Agreement 3.04

Wording of the Agreement: The NRC needs DOE to document the discussion of excavation-induced fractures. DOE responded that observations of excavation-induced fractures will be documented in a report or AMR by June 2001.

NRC Review: By letter dated October 12, 2001, DOE provided the following letter report as it pertains to this agreement, "Underground Observations of Excavation-Induced Fractures."

The report documented observations of excavation-induced fractures (newly formed), excavation-altered fractures (mechanically deformed pre-existing fractures), and excavation-textures (e.g., gouges, smears, plucked zones), produced by the three methods of excavation: tunnel-boring machines, roadheaders (Alpine Miners), and drill-and-blast. Excavation-induced and -altered fractures and wall-rock textures attributed to each method were observed in the Exploratory Studies Facility, the Enhanced Characterization of the Repository Block Cross Drift, alcoves and niches, and were documented. The excavation-induced features were discussed, based upon direct observation and some measurements. The report fulfilled its purpose of documenting widespread observations of the existence and attributes of excavation-induced and -altered fractures and ancillary textures.

Moreover, in addition to documentation of the excavation-induced features, the report contains conclusions about the consequences of such features for engineering rock-properties associated with future stability of the underground openings, i.e., the consequences were asserted to be minor or nil. However, when such conclusions are applied, DOE will need to provide appropriate technical bases. An analysis of the proposed conclusions was not conducted for this review. Also, the DOE discussed criteria for distinguishing excavation-induced from naturally-occurring fractures and suggested ways of detecting mechanical modifications of natural fractures. The report is an alert to modelers of fractures within half a tunnel diameter from drift-walls, that construction of drifts, test alcoves and niches modifies the existing mechanical and hydrological properties of the fractures. This review did not consider how the effects of excavation on the wall-rock fracture system might affect the results and conclusions of on-going or planned tests in the excavation-disturbed zone. The NRC will

Enclosure

monitor the use of excavation-induced fracture and texture information when it reviews future DOE documents (such as for design of ground support systems, and results of Alcove 8 - Niche 3 seepage tests). The NRC believes this agreement does not need to remain open to track the future use of excavation-induced fracture and texture information, therefore, it is listed as "Complete."

Additional Information Needed: None

Status of Agreement: SDS Agreement 3.04 is "Complete."