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*H. P. Stephens*

from H. P. Stephens - 5338

*Melton*  
*Res-14*  
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*Prog. Mgmt*

subject Summary of NTS Terminal Waste Storage Technical Program Officers' Review Meeting, DOE/NV, April 19-20, 1978

An executive committee meeting for the NTS Terminal Waste Storage Program was held at DOE/NV on April 19-20, 1978. The purpose of the meeting was to review the program status with particular emphasis on the suitability of the Eleana formation of the Syncline Ridge area and programmatic consequences of this recommendation. The minutes of the meeting are given in the following highlights and topical summaries. A list of attendees is appended to these minutes.

HIGHLIGHTS

- ① The results of studies of ground motion due to weapon tests were reviewed. Data analyzed to date indicate that the Eleana formation of the Syncline Ridge area is marginally compatible with ground motion from weapon test areas.
- ① The geophysical studies of the Eleana formation of the Syncline Ridge area were summarized. It is concluded from these studies that the structure of the central block of the Eleana formation is complex, and that the area of an intact portion is at most 6 km<sup>2</sup>, instead of the 18 km<sup>2</sup> originally anticipated. The northern block of the formation appears to be more homogeneous than the central block, and to have an area of about 10 km<sup>2</sup>.
- ① Because of the structural complexity of the central block of Eleana and its apparently small intact mass, a recommendation was made to suspend geologic characterization of this block. No drilling or new geophysical effort would be initiated in the central block unless needed to assist characterization of another area.
- ① A redirected program was formulated to concentrate on the geologic characterization of alternate areas of NTS. These include the northern block of the Syncline Ridge Eleana formation, Calico Hills, Yucca Mountain, Jackass Flats, Climax Stock, and Twinridge Hill.

*40 km<sup>2</sup> of Eleana is still there. Dudley was in*

- A letter was drafted to inform DMA of 1) the status of ground motion studies; 2) the decision to suspend investigation of the central block of the Syncline Ridge Eleana formation; and 3) other NTS areas of interest for further geologic studies.

#### TOPICAL SUMMARIES

##### Review of Ground Motion Compatibility (R. C. Lincoln)

The compatibility of the Eleana block of the Syncline Ridge with the ground motion from weapons tests was analyzed by looking at interference areas defined by the overlap of circles given by the ERC equation ( $1 g$ ,  $2 \sigma$ , full spectrum) radii for various test yields. Although testing boundaries have been set for Yucca Flats and Buckboard Mesa, possible weapon testing areas in Yucca Flats are limited by the depth to the Paleozoic layer. The area of the subset formed by this limit is smaller than that set by the testing boundaries. It was found that there were small areas of interference between the Central and Northern blocks of the Syncline Ridge and the Paleozoic depth-limited subsets of Yucca Flats for two yields considered (5 and 50 KT). Conclusions reached from the compatibility study are:

- 1) Based on ground-motion considerations alone, the Central and Northern blocks of Syncline Ridge are marginally compatible with weapon testing.
- 2) The small areas of interference may require negotiation with the weapon testing program.
- 3) If a repository were sited in this area, an administrative policy must be developed to coordinate repository operations with the weapon testing programs.

##### Syncline Ridge Geophysics and Technical Suitability (D. B. Hoover and W. W. Dudley)

The structural integrity and available mass of argillite within the Eleana formation of the Syncline Ridge area have been examined by aeromagnetic, gravity, electrical resistivity, and seismic measurements. The Eleana formation of this area consists of two blocks, called the Central and Northern blocks, which are separated by a major fault. The geophysical studies show that the structure of the Central block of Eleana argillite is exceedingly complex. However, a limited quantity of data suggest that the Northern block is somewhat more homogeneous. Conclusions reached from the data available at this time are:

- 1) New geological, geophysics, and drilling efforts on the Central block should be discontinued, and data documentation and reports shall be prepared to wrap up investigations of this block.
- 2) The Northern block appears homogeneous enough to warrant further investigation. However, it is not known whether it is large enough for a repository site. Additional studies such as detailed gravity mapping and Schlumberger soundings are needed to detail the Northern block boundaries.

Alternate NTS Site Investigation (Open Discussion)

A list was made of other areas within NTS for which geologic efforts during the remainder of FY 78 and early FY 79 could be concentrated, and a cut was taken at grossly assessing their acceptability with respect to weapons compatibility, tectonics, media, geology and hydrology. The result of this exercise is summarized in the following table:

Location/Media	Weapon testing comrat.	Tectonics			Media	Geology/ Hydrology
		Seis- mic	Fault- ing	Vol- canic		
Calico Hills granite	A	A	UD	A-	UD	UD
argillite	A	A	UD	A-	MA	UD
Yucca Mountain tuff	MA	A	CE	MA-	UM	UD
Twinridge Hill granite	MA	UD	CE	A-	MA	UD
Dome Mountain tuff	MA	A	CE	MA	UM	UD
Skull Mountain tuff	A	NF	CE	A-	UM	UD
Jackass Flats tuff	A	NF	CE	A-	UM	UD
Syncline Ridge-Northern Block argillite	MA	A	MA	A	MA	MA
Climax Stock granite	MA	NF	CE	A	MA	MA
Timber Mountain tuff	?	A	A	A-	UM	MA
Wahmonie Flat granite	A*	NF	CE	A-	UA	UD

\*Except with Frenchman Flat.

Key -

A - Acceptable

MA - Marginally acceptable

NF - Near fault with > .7 g possible

UD - Undefined impact

CE - Could exclude

UM - Unauthorized media

As can be seen by the table, there are many gaps in the knowledge about these areas, and these assessments reflect unquantified judgments. With this in mind, an attempt was made to order rank the acceptability of each area without regard for weapon testing compatibility. Disregarding Timber Mountain, the order of decreasing acceptability of areas for each media would appear to be as follows:

argillite

Northern block - Syncline Ridge  
Calico Hills

granite

Calico Hills  
Twinridge  
Climax Stock  
Wahmonie

tuff

Yucca Mountain  
Dome Mountain  
Skull Mountain  
Jackass Flats

Status of Off-Site Investigations (G. L. Dixon)

The status of the literature research reports on the distribution of granites and shales within Nevada was discussed. The granite report is to be ready for distribution by May 15 and the shale report by June 1, 1978. Field work is tentatively scheduled to be started after publication of the reports. Briefings are to be scheduled for NV (~ May 10-12), the state of Nevada (~ May 17-19) before further investigations and field trips are set up. An action item is the need to determine the boundaries of the field studies.

Redirected Program Plan and Budget for FY 78 (R. W. Lynch)

The discussion of the redirected Program Plan and Budget for FY 78 is summarized in a memo from A. E. Stephenson to distribution, dated April 25, 1978 and is not included here.

Quality Assurance Plan (A. Roberts and M. Kunich)

The preparation of quality assurance plans by contracting laboratories was discussed. Formal request of quality assurance plans was made by a memo dated April 19, 1978, from R. W. Taft to W. W. Dudley, USGS; D. C. Hoffman, LASL; L. D. Ramspot, LLL; and L. D. Tyler, SLA. A suggested outline of the QA plan was attached to this memo. The schedule for completion of the QA plan follows:

May 1978 - A. Roberts and M. Kunich visit technical program officers' laboratories to discuss implementation of QA plans.

June 15, 1978 - Draft of QA plan received by NV.

June 15 - July 31, 1978 - Review of QA documents.

September 29, 1978 - Final QA document prepared.

Climax Test Facility (A. Roberts and L. Ramspott)

Preliminary plans for the Climax Test Facility for demonstration of storage of spent fuel in granite were described. The purpose of the facility is to study the coupled effects of thermal and radiation fields on granite, and to test rock mechanics codes for verification of conceptual configurations of the repository. A \$12 million budget over seven years is anticipated for the program and about \$1.4 million is possible for FY '78. The steps to implement this test include:

- 1) Heater test No. 2 - for which data is taken from two heaters spaced far enough apart to prevent communication between them.
- 2) Heater test No. 3 - in which many heaters are used to test the media to failure.
- 3) The spent fuel test - A test of a linear array of 11 canisters, 3 meters apart, containing spent fuel which is 4 to 14 years out of core. The spent fuel canisters may be supplemented by electrical heaters in order to simulate thermal effects during the ten year test, and the 63°C temperature rise which would occur in ~ 65 years for a very large array.

The conceptual design for spent fuel cask loading, transporting and emplacement equipment was described. Several ramifications of the test were discussed:

- 1) The dilution of effort on the NTS Terminal Waste Storage Program due to staffing the test.
- 2) Caution about claims of technical results which the spent fuel test can provide.
- 3) Reaction of the weapons testing community to the spent fuel test.
- 4) Action items which include:
  - a) A letter of intent from NV to DOE/HQ;
  - b) An environmental impact statement letter; and
  - c) Presentation of the conceptual design of the test to DOE/HQ.

Miscellaneous Business and Public Affairs Plan (Open Discussion)

Several points were discussed with respect to the public affairs plan:

- 1) The plan itself must be approved at the DOE Assistant Secretary level. Therefore, the formal document will not be available in the near future.
- 2) Presentations dealing with policy must be approved at the DOE/HQ level.
- 3) Another draft of the public affairs plan is being prepared at NV. The plan will provide for public reading rooms at several locations within Nevada. Since the monthly reports will be distributed to these reading rooms, careful attention needs to be paid to the accuracy of their preparation. TPO's are to review and comment on internally distributed reports prior to making a wider distribution.
- 4) A distribution list for the monthly reports should be provided by NV.
- 5) Questions from the general public regarding the NTS Terminal Waste Storage Program should be referred to Dave Jackson, NV. Response to inquiries will require NV Program Manager Coordination and possibly coordination with TPO's.

HPS:5338:ef

Distribution:

A. J. Roberts - NV  
M. Kunich - NV  
D. G. Jackson - NV  
D. C. Hoffman - LASL  
L. D. Ramspott - LLL  
W. W. Dudley - USGS  
5330 R. W. Lynch  
5337 L. D. Tyler  
5338 R. C. Lincoln  
5338 H. P. Stephens  
5338/NV A. E. Stephenson

ATTENDEES

<u>NAME</u>	<u>ORGANIZATION</u>
R. W. Lynch	Sandia 475-3763
W. W. Dudley	USGS 234-2115
L. D. Tyler	Sandia 475-8174
H. P. Stephens	Sandia 475-9178
G. C. Doty	USGS 546-9484
C. P. Bromley	DOE/NV 986-9854
P. Orkild	USGS 234-2391
J. E. Weir, Jr.	USGS 234-5959
G. L. Dixon	USGS 234-2391
W. S. Twenhofel	USGS 237-0780
Darleane Hoffman	LASL 843-4559
W. J. Carr	USGS 234-2365
Don Hoover	USGS 234-2950
R. C. Lincoln	Sandia 475-3191
George A. Dinwiddie	USGS 234-5959
A. E. Stephenson	SL/NV 598-3463
A. J. Roberts	DOE/NV 598-3171
Jim Cotter	DOE/NV 598-3251
Larry Ramspott	LLL 532-3914
D. E. Hoover	USGS 234-2391
H. L. Melancon	DOE/NV 598-3424
Mitch Kunich	DOE/NV 598-3424
R. W. Taft	DOE/NV 598-3201