

SUMMARY OF NRC-DOE
GEOLOGY WORKSHOP
OCTOBER 4-6, 1983

The following points were made by NRC:

Observations

1. A substantial base of geologic and geophysical data have been acquired by the NNWSI. The meeting provided a valuable opportunity for review and discussion of the data at a broad level of detail. Having completed such a meeting, NRC now considers it appropriate to begin a series of meetings each of which focuses on a limited number of closely related issues so that the data can be reviewed and discussed at the greater level detail needed to further the process of prelicensing consultation.
2. While a substantial base of pertinent data has been acquired, these data have not yet been integrated into a tectonic framework for the region and the site. This is important because it is through the understanding provided by such a framework, that the release and transport scenarios involving tectonic deformation or volcanism can be identified and evaluated for the purpose of doing the assessments required by 10 CFR Part 60 and the EPA Standard.

In developing the requisite understanding of the regional and site tectonic framework, it is essential that all of the relevant data, i.e., geologic mapping, exploration geophysics data, seismicity, focal mechanism solutions, stress measurements, instances of Quarternary fault displacements and volcanism, paleomagnetic data, and others be integrated. The integration of data should give explicit consideration to alternative conceptual models that are consistent with the data and the range of uncertainties in the data.

3. There appears to be an inconsistency between the interpretations of geophysical data presented during this meeting which suggest no structural control of 40 Mile Wash and working assumptions concerning the same feature used by the hydrogeologists in presentations made during the recent hydrogeology meeting.

Topics for Further Discussion

1. Interpretations, completeness and relevance of the geophysical data.

2. Interpretations, completeness and relevance of the seismicity data.
3. Tectonic models for the region and the site.
4. Interpretations, completeness, and relevance of data from trenches across Quaternary faults (including field inspection).

Information Requested

1. Copies of the viewgraphs and slides used during the meeting.
2. Copies of all trench maps.

The following are the impressions of the meeting held by DOE:

Observations

1. It provided the DOE contractors (USGS and LANL) with a good understanding of questions important in a regulatory area.
2. It provided good insight into the logic of NRC personnel on how they will review geological data important to licensing.
3. The meeting was conducted in a professional and open manner which facilitated an effective exchange of information.

Items for Discussion at Further Meetings

1. The value of probabilistic approach to risk assessment considering the limited data base for establishing probabilities.
2. NRC logic in determining whether a hazard is acceptable or unacceptable.
3. Evidence required to establish an acceptable position that 40 Mile Wash is not a structurally controlled surface feature.
4. Basis for establishing that significant faults have been identified.
5. Definition of tectonically active and volcanically active areas.

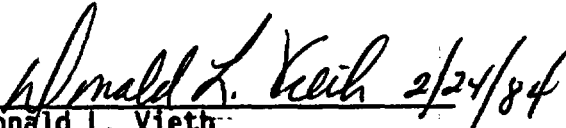
Information Requested


1. What is required to demonstrate that DOE/USGS has considered a featureless area such as Jackass Flats?
2. Examples of work on faults in alluvium to show that it is possible to trench along the strike of a fault to determine nature of faulting.
3. Position as to whether seismic reflection is a viable technique to obtain structure information at NTS/Yucca Mountain.
4. Position of how variation of Tuff physical properties will affect formations capability to isolate waste.

The following comments were made by Carl Johnson for the State of Nevada:

The State of Nevada appreciates the opportunity to participate in this workshop. The technical discussion has been most informative to our review. Some specific comments are:

- It is suggested in the future the geology workshop be held prior to the hydrogeology workshop. The geologic background will make the hydrogeologic discussion more meaningful.
- It is obvious from the workshop, the USGS has collected much information about the site. We would encourage USGS to begin synthesizing this data.
- We would uncourage the scheduling of a separate field trip to review the evidence for quaternary faulting in the site area.


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AGENDA FOR THE NRC/USGS GEOLOGY WORKSHOP

October 4-7, 1983

Colorado School of Mines

Metals Hall, Green Center Auditorium

Golden, Colorado

W. W. Dudley, 303-234-7277 or FTS 234-7277

TUESDAY, OCTOBER 4

- 8:30-9:00 Opening Remarks & Introductions
9:00-10:00 Regional geologic and tectonic setting - broad overview of geology and tectonics and implications or impact to Yucca Mountain - W. J. Carr
10:00-10:15 Break
10:15-10:45 Configuration of regional aquifer system - pre-Tertiary rocks - M. Carr
10:45-11:30 Regional gravity and magnetics - subsurface framework - H. Oliver
11:30-1:00 Lunch
1:00-2:00 Seismic reflection/refraction - status of seismic studies of Yucca Mountain area - W. Mooney/L. Pankratz/ T. McGovern
2:00-3:00 Seismology - regional and site seismic activity, relationship of seismic activity to active faults, and teleseismic p-wave delay - A. M. Rogers/W. S. Spence
3:00-3:15 Break
3:15-3:45 Geomorphology - Quaternary stratigraphy active processes, climate, mapping - D. L. Hoover
3:45-4:45 Neotectonics - Quaternary fault investigations - W. C. Swadley

WEDNESDAY, OCTOBER 5

- 8:30-10:00 Volcanism - rates, potential, and risk - B. M. Crowe
10:00-10:15 Break
10:15-11:30 Geologic setting of Yucca Mountain - distribution and continuity of volcanic rocks in the YM block - R. W. Spengler
11:30-1:00 Lunch
1:00-1:45 Borehole geophysics - Bulk physical properties and distribution of units - D. C. Muller
1:45-2:15 Paleomagnetic studies - magnetic properties of rocks to determine stratigraphic continuity - J. B. Rosenbaum
2:15-2:30 Break
2:30-3:30 Heat flow - Yucca Mountain and regional thermal gradients and anomalies - J. Sass
3:30-4:30 Open discussion

THURSDAY, OCTOBER 6

- 8:30-10:00 Structural geology - surface and subsurface distribution of faults and fractures at Yucca Mountain - R. B. Scott
10:00-10:15 Break
10:15-10:45 Aeromagnetics - status of survey at Yucca Mountain - G. D. Bath
10:45-11:45 In situ stress - Analysis of borehole hydrofrac measurements - J. Healy/C. Morrow
11:45-1:00 Lunch
1:00-1:30 Crustal deformation - newly established level lines and strain network - W. Carr/W. Prescott
1:30-2:00 Open discussion
2:00-3:00 Break and caucus
3:00-3:45 Closing session