

NOTE TO: Joseph Holonich

FROM: Ken Kalman

SUBJECT: TRIP REPORT ON JUNE 1990 TECHNICAL EXCHANGE ON SIGNIFICANT FAULTS
AND SITE VISITS TO THE YUCCA MOUNTAIN VICINITY

On June 12 through 15, 1990 I attended the High-Level Waste Technical Exchange on Significant Faults and site visits to the Yucca Mountain vicinity. The purpose of this Exchange conducted by staff from the Division of High-Level Waste Management (HLWM) and the U.S. Department of Energy (DOE) was to discuss NRC's concept of tectonically significant faults, to address NRC comments concerning the study plan on the location and recency of faulting near prospective surface facilities, and to discuss the draft study plan on Quaternary faulting within the site area. Representatives of the State of Nevada, NRC and DOE contractors, the Advisory Committee on Nuclear Waste, and the Nuclear Waste Technical Review Board were also in attendance. During the site visits, geologists from DOE and the State of Nevada discussed their work in regards to the evidence of faulting and the structural control of faulting in the vicinity.

During the meeting, Keith McConnell gave a presentation on the NRC staff's concept of tectonically significant faults. The NRC staff believes that mutual understanding of this term is important for focusing DOE's site characterization activities. DOE raised approximately nine concerns relating to faulting and seismic hazard. Two of the concerns specifically related to the staff's concept. The first being whether the concept was consistent with the 10 CFR 100 Appendix A methodology for characterizing faults as referred to in the Seismic Hazard Investigations Technical Position. The second was that Criteria 3 of the staff's concept was overly stringent in defining which faults may be significant. The State of Nevada was generally in agreement with the staff's concept, but suggested it could go farther in its discussion of postclosure considerations, particularly in regard to the repository block.

As a result of this Exchange, the staff will address these concerns in a revised position that will be incorporated into the Seismic Hazard Investigations Technical Position which is tentatively scheduled for publication in September 1990.

Other topics covered during the Exchange included a U.S. Geologic Survey presentation on the relation of its two study plans to the overall tectonics program, DOE's response to our comments on the Midway Valley Study Plan, and a brief discussion of the draft study plan on Quaternary Faulting.

On June 13, 1990 DOE led the participants in the Technical Exchange on a site visit at the Yucca Mountain, Nevada site to examine evidence of faulting and to discuss its integrated approach for studying prospective surface faults at the site. One of the highlights was a visit to the proposed site of the Exploratory Shaft Facility to examine some of the work conducted by Sandia National Laboratory. At this site, the absence of breccia may indicate that there is no significant faulting at this location. We also saw evidence of faulting in other areas such as the visible fault scarp at Busted Butte.

On June 14-16, 1990, representatives of the State of Nevada led the group of geoscientists on a field trip to review the results of the State's investigation of Quaternary faulting, and the structural control of volcanism, in the vicinity of Yucca Mountain. Some of the more significant items addressed during this visit included; evidence for recent movement on the Paintbrush Canyon Fault, Holocene movement at Solitario Canyon; and the trend of volcanic activity, that when extended, passes through the proposed site of the repository. A University of Nevada geologist presented a reconstruction of the geology of Bear Mountain, and postulated that these same structures may underlie the tuff at Yucca Mountain. This may be of particular concern in regard to considerations for natural resources at the site. There are currently some gold and silver mines operating at this area. As a matter of fact, we even observed exploratory gold drilling underway in the area known as Steves Pass, which is southwest of the proposed repository site.

Overall, I found this trip to be very useful in my becoming more intimately involved with the layout of the area, the ongoing work and the concerns of the geoscientists who have been working the area. I was particularly impressed with the amount and quality of information being shared at the meetings and at the site visits. In some cases, it appeared that the participants were learning about the existence of geologic information (aerial photographs, seismic reports etc.) that they, up to that instance, had not yet been aware of. It was also evident that the conversations that took place between the participants during the site visits were of significant educational value in terms of explanation of geologic terms and concepts, suggestions for future research, and an inside look at how the other organizations operate.

In addition to these benefits to all parties in the information exchange, I also believe that the face-to-face contact afforded at such interactions greatly benefits the working relationships among the participants in the high-level waste program. I therefore strongly support and encourage the continuation of such informal interactions. However, I do have several suggestions concerning the site visits.

1. Although the leaders of the State's field trip were fairly knowledgeable of their subject and generally well prepared, I felt that some time was wasted on overview discussions prior to actually getting to the site and visits to sites that did not seem to add very much to advancing a particular position. I would suggest that for future field trips, the NRC staff should encourage all site visit leaders to hold a classroom session before the actual site visits. During the classroom session, the site visit leaders could discuss the sites the participants will visit in the field and the significance of the sites.

2. At times, some of the participants seemed to be somewhat confused as to where they were in relation to the other sites. I think it would be helpful to provide the participants with a map showing the geographic location of each of the sites that will be visited. I also think it would be helpful, prior to the site visit, to provide the participants with a handout that would show the geologic position of the formations that will be seen at each site visit and a brief description of why these sites are significant (i.e., what the leader is trying to demonstrate, what points are to be proved, etc.).

Ken Kalman

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