

4900 Lakeside
 Reno, NV 89509
 Dec. 2, 1999

U.S. Department of Energy
 101 Convention Center Dr.
 Las Vegas, NV 89109

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Dear Sirs:

I did not have my prepared statement ready to submit last night at the DOE-EIS meeting in Carson City, so I submit it at this time. This is taken from a letter to the Director of the U. S. Geological Survey.

In summary, the western part of the nation (west of the Wasatch, perhaps excepting the Colorado plateau) has a relatively thin crust (much geothermal energy, block fault mountain ranges, extensive volcanism) and it is an area of frequent and strong earthquakes. A great many catastrophic geologic events have occurred in this region, especially in late Tertiary and younger geologic time.

Long-term burial requires a stable crust. This region of the nation is anything but stable. The requirement in the law exempting granite areas is pure politics (instigated because the northeastern part of the country has much granite); but in Scandinavia, burial is in granite, because that is stable. This has been verified by the DOE.

The recently published Survey Circular 1184 analyzes the efforts of the DOE toward burial; I'm sure they did a much better job than I would have. They point out problems of monitoring if enclosed in concrete, a major shortcoming of the DOE plans.

The DOE were given a task by Congress, and the funds to do it. I think they have made a valiant effort as far as they could go. If ground water seepage were the worst of the problems, their program might serve the needs.

But this is earthquake country. Within 100 miles west northwest of Yucca Mountain, at Mammoth Hot Springs, CA, **20 to 500** earthquakes occur almost every week. One east of San Bernardino, CA, a few years ago (Lander) was on a fault that extended north to the Test Site in Nevada and knocked out the Test Site controls (what a message!, but this was not advertised or even mentioned by the Government). Consider also the San Francisco 1906 quake, the Loma Prieta (S F Bay) quake, and the San Fernando (Northridge) quake for examples of recent activity.

This is also volcanic country (active volcanoes in the Cascades and northern California; tremendous explosions at Mt. Mazama (Crater Lake), and Yellowstone only a few thousand years ago). In late middle Cenozoic, explosions in Nevada east of Yucca Mountain left ignimbrite deposits several thousands of feet thick. I have been on the deposits in the Monitor Range, and many others, for they are widespread. In the Madison Range, Montana, 65+ miles from the corner of Yellowstone Lake, I mapped welded tuff obsidian from the Yellowstone explosion. The Mount St. Helens explosion was the most recent major one.

1 People who do not understand geology, and who believe one state is like another, as long as it is land, are likely to seize upon Circular 1184 as indication that Yucca Mountain would be feasible for radioactive waste burial. But the one thing the DOE, nor any other organization, could not possibly prepare against is a catastrophic event. Such cannot be predicted or prepared for, and when the time came it would be too late. This is catastrophic event country.

This is the wrong kind of an environment for such burial. The likelihood of catastrophic events is too great for such a major risk. I believe the Survey needs to point out the risks to the people of this country. And the millions of dollars already spent at Yucca Mountain has largely been a waste of funds. That site is one of the worst decisions ever made by Congress, for it does not consider geology.

Sincerely,



Roger W. Swanson