

RECEIVED

EIS001562

JAN 28 2000

1... EDWARD FRITZ: Hi. My name is Edward Fritz. I'm a chemical engineer and I've studied uniformly, on my own, the nuclear waste disposal problem since 1970, that goes 30 years now. I would like to endorse and support the Yucca Flats project. The United States and the world needs a viable method for storage and permanent disposal of high-level nuclear waste. However, I cannot endorse this project for reasons that I will get to in a moment.

2 First let me say that I have gotten into arguments with other anti-nuclear people about my position on this matter. They say what do you propose to do with the waste? What alternative do you have? My answer is that I do not have any alternative, except that we should stop producing the waste. This means, of course, a total and immediate worldwide ban on nuclear power generation.

...1 The concept of underground storage presumes that high-level waste generate relatively small amount of heat that can be dissipated into the bed rock. On the contrary, heat generation is sufficiently large and prolonged, that heat must be continuously transferred to the environment in order to keep the waste immobile.

Assume that spent fuel is allowed to decay in storage pools for 30 years after removal from the reactor. By this time 98 percent of the remaining radioactive decay and heat generation is accounted for by two isotopes, strontium-90 and cesium-137. It can be calculated that the heat generation from 15,000 metric tons of spent fuel, the present U.S. inventory in 1988, by the way, is approximately -- can be calculated that the heat generation from 15,000 metric tons is approximately 19,000 kilowatts. 170 years later, which is 200 years after removal from the reactor, the waste will generate 300 kilowatts of heat. These heat generation rates can be compared with a normal heat flow from the earth of approximately .2 kilowatts per acre. This heat is transferred to the surface of the earth with a temperature gradient of about nine degrees per thousand feet.

Assume that the waste canisters are distributed under 1,000 acres of the Yucca Mountain repository. This gives an initial heat flow of 19 kilowatts per acre, which is 90 times normal heat flow. In theory, the waste containing strata will rise in temperature until long term equilibrium is reached and heat generation equals heat flow to the surface.

In practice, the waste will soon reach melting and volatilization temperatures and begin to migrate from the repository depth. Ground water that comes into contact with the molten waste will form steam which will speed up waste migration. These calculations, which I made from information in published government and nuclear industry sources, help explain why repeated attempts to plan and build underground high-level radioactive waste repositories have come to naught. I predict Yucca Mountain will be another exercise in futility and the ever increasing waste inventory will continue to burden our future. Thank you.