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EIS 000655

24 NOV 09 1999 MR. DUNHAM: My name is Marshall Dunham and I'm
25 a bit rusty at public speaking and a little bit nervous. I

1 will direct my comments to sections on geology, volcanism and
2 hydrology in the DEIS.

3 AUDIENCE PARTICIPANT: We can't hear you.

4 MR. DUNHAM: I'm sorry.

5 I will direct my comments to sections on geology,
6 volcanism and hydrology of the DEIS.

7 I would like to quote from DEIS Section S.4.13 on
8 geology, quote: "Yucca Mountain is a product of volcanic
9 activity that occurred 11.4 million to 14 million years ago and
10 subsequent faulting. DOE would build the proposed repository
11 and place the waste packages in massive volcanic rock welded
12 tough.

13 "This formation was formed by volcanic ash flow
14 from calderas north of Yucca Mountain 12.8 million years ago.
15 The panel estimated that a chance of volcanic disruption at or
16 near the repository during the first 10,000 years of closure
17 would be 1 in 7,000.

18 "DOE chose the Topopah Springs formation as a
19 repository host rock because its location away from major
20 faults that could adversely affect the stability of underground
21 openings and could provide pathways for water flow eventually
22 leading to a radionuclide release and its location well above
23 present water table.

24 "Studies at Yucca Mountain indicate that
25 individual faults have very long recurrence intervals between

1 types have earthquakes that would be powerful enough to cause
2 surface displacement," end quote.

3 There are major areas in the above statement
4 based on new data as well as information not included in the
5 DEIS and facts boldly stated in the DEIS.

1... 6 The recent 7.1 magnitude Hector Mine earthquake
7 of 10-16-99 occurred on the Lavic Lake Fault, which was
8 previously mapped by Thomas Dibblee, Jr. of the USGS
9 approximately thirty years ago. At the time the fault was not
10 named.

11 Previous evaluations of the Lavic Lake Fault by
12 the California Division of Mines and Geology showed the fault
13 had not produced a larger earthquake within the last 10,000
14 years.

15 The Hector Mine quake created a rupture of forty
16 kilometers with maximum offset of 3.8 to 4.7 meters.

17 The Landers earthquake with a magnitude of 7.4
18 and the Joshua Tree earthquake that occurred seven years
19 previously to the Hector Mine quake.

20 These three faults are all included in the same
21 fault zone area and the California Division of Mines stated in
22 their report that this could not occur, but it did.

23 The current USGS view that these faults remain
24 inactive for thousands of years and then become active for
25 several hundreds of years before returning to quiescence. This
1 information was obtained from various USGS Websites.

2 Could this same pattern of activities occur in
3 the Yucca Mountain area?

4 The Skull Valley earthquake of June 1992 with a
5 magnitude 5.6 was triggered by the Landers quake. The
6 scenario -- this scenario will occur again. This information
7 is available on various USGS Websites and various publications.

2...

8 According to CalTech, since the Hector Mine quake
9 faults have been talking to one another. By this, they mean
10 since the Hector Mine stresses increased on some faults and
11 decreased on other faults and at this point it's impossible to
12 tell where the stress has increased.

13 Has it increased in the Yucca Mountain area?

14 This information was obtained from CNN interview and CalTech
15 seismo -- with a CalTech seismologist and USGS Websites.

16 According to the publication the State of Nevada
17 Nuclear Waste Project Office of Seismic Risk Map of the US -
18 Scientific and Technical Concerns, Yucca Mountain has been
19 designated a class 4 earthquake zone, the highest rating by the
20 USGS.

21 The above publication also notes there are
22 thirty-three known earthquake faults within the repository
23 study area. Two of these faults bisect the proposed repository
24 site.

3...

25 A recent study published in Science Magazine,

1 volume 279, March 27, 1998 authored by Brian Wernicke, et al.
2 demonstrates the crustal movement in the Yucca Mountain site is
3 ten times faster than previous studies have indicated.

4 One conclusion that Wernicke, et al. concluded
5 was that magma is moving under the repository site.

6 MR. LAWSON: About thirty seconds, please.

4...

7 MR. DUNHAM: Of further interest is the Long
8 Valley Caldera the Mammoth Lakes area. According to USGS
9 Websites, the Yucca Mountain facility in the path of ash flow
10 when the caldera erupts.

11 Also, it may not be known when an eruption could
12 occur. According to the USGS, there's an increased chance of
13 eruption occurring in the near future. A five centimeter ash
14 fall would occur at Yucca Mountain when an eruption occur at
15 the Long Valley Caldera.

16 Such an ash flow would turn day into night as
17 we've all witnessed after Mt. St. Helens erupted.

18 The ash itself is highly corrosive causing severe
19 damage to casks stored above ground as well as disrupting
20 transportation.

5

21 The most bold and ironic statement is that the
22 Yucca Mountain facility is placed in volcanic ash that came
23 from just north of the repository. When will the eruptions
24 occur again? One hundred years? A thousand years? It will
25 occur again.

3...

1 When the magma starts moving, it will intrude
2 into the repository as it has done in the past. When the
3 intrusion occurs, fractures in the rock would allow radioactive
4 material into the water table thereby polluting the Amargosa
5 Valley water supply.

6

6 One must also consider what a magnitude 7
7 earthquake would do to the Yucca Mountain area. It would
8 certainly disrupt road and rail lines as well as power and

9 communications. We've all seen this on television after past
10 quakes.

7 11 When the faults within the repository area
12 fracture, the storage casks would be breached and the
13 repository split open like a ripe melon, thereby releasing a
14 stream of continuous fallout until the repository can be
15 resealed.

16 MR. LAWSON: Do you have a long way to go, sir?

17 MR. DUNHAM: No, I do not.

...1 18 If the Lavic Lake and Landers faults are creating
19 more stress on the Yucca area faults, further and immediate
20 study is needed to determine the new risks and hazards. Just
21 based on Wernicke's work, the current DEIS is not sufficient
22 and requires further study.

...3 23 Magma is moving under Yucca Mountain and we all
24 have a problem and we need to know more about it before any
25 further work on the repository is done.

...4 1 The current DEIS is deficient because it's never
2 considered the Long Valley Caldera and its eventual eruption.

...2 3
4 Since the western Mojave Desert faults are now
5 talking to other faults, the public needs to know the
6 consequences and further study is needed in this area
7 immediately.

8 8 It is my opinion that the DEIS is a seriously
9 flawed document with regards to geology and hydrology and is
10 already out of date given the recent seismic activity and the
11 data gathered from it.

12 All work should stop until it is known thoroughly

13 that the Yucca site is safe or not. Currently it does not

14 appear safe nor can it be made safe.