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RE: Comments to the Department of Energy's "Yucca Mountain Preliminary Site Suitability Evaluation" as requested in the Federal Register (66 FR 43850) on Aug. 21, 2001

While the "Yucca Mountain Preliminary Site Suitability Evaluation" (PSSE) is generally a botched attempt to force something through against any laws of nature or societies with little regard for environmental and health impacts as well as public participation, there are some points that I would like to highlight:

- Violation of a Treaty and environmental racism
- Flawed transportation plans and equipment in the shadows of terrorism
- Making nature fit the politics: Unsuitable geological characteristics of the site and technological shortcomings of the repository are ignored
- Consideration for health and environmental impacts is alarmingly lacking
- A pattern of disregard and manipulation of data and avoidance of public participation make the entire sitting process reek of a scandal

**Violation of a treaty and environmental racism**

The foundation of the United States of America and how it is governed is one of democracy and justice. However, the Yucca Mountain Project and its PSSE is one of those sad examples where government actions do not echo those values. Based on the Ruby Valley Treaty of 1863, the designated site of the proposed nuclear repository belongs to the Western Shoshone Nation. The DOE and other federal agencies have consistently turned their back on these Native Americans and the treaty signed by the US Government. The PSSE ignores this fact and maintains this consistency of injustice and environmental racism as well as it ignores the fact that poor and minority communities will be disproportionately impacted by the thousands of nuclear waste shipments. In the aftermath of the Terrorist Attacks on the World Trade Center and the Pentagon on September 11, there is a lot of talk about America uniting to fight for freedom and justice. But what freedom and justice is there to talk about when native citizens and laws are trampled on by its own government with a deadly material.

**Flawed transportation plans and equipment in the shadows of terrorism**

With the violent images of the World Trade Center bursting into flames and crumbling to the ground after terrorist attacks forever edged into our minds recently, one cannot ignore the possibilities of terrorist attacks on the thousands of high-level radioactive waste shipments throughout the country and the catastrophic consequences, but the PSSE does. The PSSE does not address the possibilities of terrorist attacks, the preparation for terrorist attacks, and the possible health and environmental consequences of a violent terrorist attack that ruptures a nuclear transportation cask. Since there may be multiple shipments on the way to Yucca Mountain on any given day, there could be multiple attacks on various shipments simultaneously. Again, the PSSE does not consider this. How will the security of multiple shipments be guaranteed and how will this affect traffic on the roads and rails and the communities on those routes? How will the communities along the routes be prepared?

While accidents and terrorist attacks may be relatively uncommon, chances are they will happen and the harsh conditions that they will put the casks under are not so uncommon. In other words,

the design requirements of the nuclear transportation casks do not reflect the physical abuse the casks are likely to go through in an accident or terrorist attack. For example, the casks are designed to withstand a crash into an immovable object at 30 miles per hour. Considering the speeds at which trains and trucks move normally and the heights of some of the bridges that the shipments would cross, the design limit of the cask could easily be exceeded from the impact of a crash or a fall. The shipping casks are also designed to withstand a half an hour fire at a temperature of 1475 F. However, the reality is that diesel (the fuel used by most locomotives and trucks) burns at 1850 F and that rail fires have been known to burn for days. In addition, the temperatures of the inferno inside the Twin Towers after the large airliners full with fuel crashed into them were estimated to have been over 2000 F before they came down.

Design requirements aside, the designs and the integrity of the casks during an accident or terrorist attack is highly questionable as well based on the tests done by the Department of Energy (DOE) at Sandia National Laboratory. First and foremost, the casks have not been fully physically tested, nor are they required to be. Physical tests have only been performed on scale models designed in the 1960s and '70s while later tests were performed with computer models. What manufacturer of transportation equipment does not depend on real physical tests on their full-scale product? According to Bob Luna of Sandia Labs, the casks were breached with conventional vehicles and weapons in a number of physical tests.

The DOE is willing to put thousands of insufficiently designed and tested casks on the nations roads and rails each carrying at least 200 times the radioactivity released by the Hiroshima bomb based on anything but current, reliable data. The DOE's Environmental Impact Statement (EIS) fails to examine the modes of transportation and the site specific risks and potential impacts for all the shipments. DOE's conclusions of no significant environmental impact from transport accidents with radioactive waste casks are based on the outdated and incomplete 1987 Modal Study performed by the Lawrence Livermore Labs for the Nuclear Regulatory Commission. The NRC is now working with Sandia Labs to redo the study by 2003, two years after the scheduled final decision on whether to develop the Yucca Mountain repository. As a further insult to the public or the DOE, however you want to look at it, the DOE was able to find "no significant impact" in its early study of a severe shipping accident by averaging the health damage across the whole US population.

All said and done, it should be no surprise that the PSSE fails to address the fact that most communities along the shipping routes do not have adequately trained emergency response personnel and equipment to cope with a radiological disaster. States and municipalities are provided only limited federal funding for emergency response with no support in training and equipment or guidance for emergency response.

**Making nature fit the politics: Unsuitable geological characteristics of the site and technological shortcomings of the repository are ignored**

While the geologic characteristics of the Yucca Mountain area should have disqualified the site long ago, the DOE has managed to twist, stretch, and ignore data in order to make the shoe fit. There being at least 32 known, active faults within 20 miles of the site, the area is the third most seismically active area in the United States. Within the past 25 years alone, more than 600 earthquakes of 2.5 or greater on the Richter scale have rattled within 50 miles of the proposed repository site. In June 1992, DOE buildings used to study the possibilities of earthquakes in the area sustained \$1 million worth of damage from a 5.6 shaker just 12 miles from the site. Just last fall, an earthquake derailed a train on a proposed repository transport route. The area is also volcanic as is clearly noticeable from the lava cones seen from atop Yucca Mountain. Global positioning satellite studies (published in *Science* magazine '98) have shown that the crust at Yucca Mountain is expanding westward.

The shaking and baking are not the only geologic realities at Yucca Mountain that the DOE ignores. For many years, DOE would have the public believe that Yucca Mountain in southern Nevada will provide a dry, rocky repository ideal for long-term geologic isolation of the waste. But

nothing seems to be further from the truth as more recent studies have shown that water enters the repository from the top and the bottom. The volcanic tuff that forms the ridge has become fractured and permeable to gases and rainwater. In addition, recently researchers found an abundance of gas trapped in crystals inside Yucca Mountain that were formed by hot groundwater boiling up from the contact of magma below. Hot water flooding the repository would result in a rapid deterioration of the waste casks and could lead to an explosion or a nuclear reaction releasing a catastrophic amount of radiation. Researchers Davies and Archambeau warn that a large earthquake could raise the groundwater table 250 meters thus flooding the repository leading to an early breach of the waste casks and a huge release of radioactivity into the environment. Therefore, whether the high-level radioactive waste will be baked, shaken, or poached, a repository at Yucca Mountain is sure to offer a Grand Slam of a radiation release into the environment.

In light of these serious geological problems with the site, the DOE's reactions have been an incomprehensible disregard for human life, the environment, and future generations. While the DOE admits some of these problems and possible consequences, it does not address them. With findings of water entering the repository in various ways, a repository based on the long-term geologic isolation concept as first intended is no longer realistic. However, the DOE is hastily scrambling to botch together some type of engineered repository concept. Repeated problems of deteriorating dry casks and even leaking casks at many power plants in less than 10 years cast a tremendous amount of doubt that a permanent, irretrievable repository will contain the waste for the hazardous life of the waste. Despite the evidence against the site and no exact repository design determined, the DOE is arrogantly pushing ahead with the PSSE at Yucca Mountain.

#### **Consideration for health and environmental impacts is alarmingly lacking**

In the very likely event that there is a release of radiation into the environment or the ground water due to the geologic and technical factors mentioned, the DOE fails to address the health impacts from those releases. The DOE only focuses on cancer fatalities while the public deserves to know about countless other health affects radiation may cause. The DOE does not consider the difference in health impacts from radiation exposures among various groups such as the elderly, children, pregnant women, etc. As for the people living and working along the shipping routes, the DOE does not consider how and how much they will be exposed to the radiation from the passing casks.

#### **A pattern of disregard and manipulation of data and avoidance of public participation make the entire siting process reek of a scandal**

The DOE's dodging of sound science and public participation during the PSSE of Yucca Mountain while not offering nor considering any alternatives really raises the question DOE's motive and accountability. The DOE also omits the fact that the repository will not provide enough space for the waste produced so far. Where will the next repository be? The DOE does not make it clear to the public that the waste will be extremely hazardous for tens of thousands of years during which point it will constantly need to be contained and monitored. This burden will be the responsibility of the Federal Government, hence the tax-payers, from the point that the waste leaves the point of production. One cannot begin to imagine what that cost will be to hundreds of generations of tax-payers. Why does the DOE not explain this to the public?

The Secretary of the Department of Energy should not proceed with a recommendation to develop a repository at Yucca Mountain and nor should the President conclude that the Yucca Mountain site is qualified for the preparation and submission of a construction license application to the Nuclear Regulatory Commission for the following reasons as fore mentioned:

- Yucca Mountain Nuclear Waste Repository would violate the Ruby Valley Treaty of 1863 and the right of the Western Shoshone Nation to that land.
- The PSSE fails to recognize the fact that disproportionate shipments will travel through poor and minority communities and therefore violates an executive order that prohibits environmental racism.

- The PSSE is severely lacking in determining the shipment routes, the modes of transportation, site specific risks, public exposure to radiation, emergency preparedness.
- The PSSE fails to address risk and consequences of terrorist attacks as well as guaranteeing security of multiple shipments and the affects that will have on traffic and the communities en route.
- The design requirements of the transportation casks do not reflect the realistic physical abuse that the casks would have to endure in most accidents and terrorist attacks.
- The casks have not been and do not have to be fully physically tested on full scale units.
- In the wake of the Sept. 11 Terrorist Attacks, it is not comforting to know that the casks were breached with conventional vehicles and weapons during tests at Sandia Labs.
- Numerous geologic characteristics of Yucca Mountain such seismic activity and groundwater flow make the site unacceptable many times over under the siting criteria, but DOE manages to ignore, twist, and manipulate the data to shove this square siting process through a whole.
- The PSSE is not forthcoming about the amount of radiation exposure, who it will affect, how it will affect them, and the various health consequences it can afflict on them.

As mentioned in the beginning, my comments only highlight a few of the many problems of the Yucca Mountain site and the sitting process. However, they provide sufficient reason for not developing nuclear waste repository at Yucca Mountain and abort the sitting process there. My comments also should suggest that the entire nuclear waste and energy policies should be completely review by an independent Congressional panel.

Thank you,



Marcel Buob