

TESTIMONY OF DR. VICTOR GILINSKY
BEFORE THE U.S. SENATE
ENERGY AND NATURAL RESOURCES COMMITTEE

May 22, 2002

Mr. Chairman, Members of the Committee:

I am Victor Gilinsky. I am an energy consultant and have been engaged by the State of Nevada to assist on Yucca Mountain issues. I am here to present my views on the Senate Joint Resolution to approve Yucca Mountain as the site for a national high-level nuclear waste repository.

My involvement with nuclear power and nuclear waste issues is long-standing. I served two terms as a Commissioner with the U.S. Nuclear Regulatory Commission (NRC), having been appointed by President Ford and re-appointed by President Carter. Prior to the NRC, I was head of the Physical Sciences Department at the Rand Corporation in California. In the early 1970s, I was on the planning staff of the NRC's predecessor agency, the Atomic Energy Commission.

The issue is not nuclear power's future

At that time the government's plan for long-term storage of nuclear waste was what would now be called monitored retrievable storage. After the reorganization of nuclear agencies in 1975, the government abandoned this approach and adopted the permanent geologic repository concept. This was done not to protect public safety in the distant future, but to protect the licensing of nuclear plants against then-ongoing court challenges by environmental activists and other opponents. The supporters of nuclear power thought it was essential for the industry's

immediate future to be able to say the nuclear waste problem was solved permanently. In this way, without much consideration of its wisdom or thought to the difficulty of actually carrying it out, the government lashed itself to this concept and its long-term obligations. Because permanent, deep geologic disposal of nuclear waste carries with it the possibility of irretrievable and irremediable error, the subject quickly became enmeshed in controversy that continues to this day.

I mention this because the current effort to stampede the nation into adopting Yucca Mountain as the site for a deep geologic repository continues to be premised on the mistaken assumption that the immediate future of nuclear power in this country depends on bringing this project to fruition. This view was expressed by the Wall Street Journal's editorial page: "The real debate here," the Journal said, "is less about Yucca than it is about nuclear power," and has been echoed by several other major newspapers. The truth is that Yucca Mountain is not needed to continue, or even expand, nuclear power use. In fact, there is ample opportunity to expand existing, NRC-approved, on-site storage. In time, we should collect the spent fuel casks at locations dedicated to long-term spent fuel storage. But the important thing now is to recognize that there is no immediate crisis, that there is time to do this and to do a good and responsible job in terms of safety and security, and to do it at a much lower cost to ratepayers than Yucca Mountain represents.

Yucca Mountain is not likely to be a boon to nuclear power, as some industry people seem to think it will be. Indeed, Yucca Mountain is much more likely to become an unhelpful and continuing reminder of nuclear power's history of contentions - over safety, over the environment, over federal preemption, over licensing short-cuts, over transportation, and over expense.

The project has taken on a life of its own

The expense associated with Yucca Mountain is already huge, and continues to grow - approaching as much as \$100 billion. Like other projects that don't meet a pressing need or have a definite measure of performance, it has taken on a life of its own - it is propelled by public money, supported by interested lobbies, and protected by a shifting array of arguments. These arguments don't, however, stand up to serious examination. You should not accept them as a basis for approval.

Yucca Mountain is not the answer to current concerns over spent fuel security

The most egregious of the pro-Yucca arguments has to do with spent fuel security - egregious because it exploits public fears in the wake of September 11th. People have been given the idea that spent fuel from around the country will be moved quickly to Yucca Mountain where it will be placed deep underground. The mantra is "better one site than 131." But *even if Yucca Mountain opened on schedule*, according to the Department's projections, it would be several decades before the spent fuel could be shipped to Nevada, and probably decades more before the fuel actually went underground. And this scenario plays out even if we never license another nuclear plant. If we do license more nuclear power plants (which is in large part the point of opening a spent fuel repository), we will have lots of spent fuel in storage at reactor sites indefinitely. Because of the built-in delays involved, Yucca Mountain is not the answer to the current spent fuel security problem. The best thing we can do right now in this regard is to get the spent fuel at the reactor sites promptly moved into secure storage casks in a protected area at the reactor site. Such casks have already been licensed by the NRC and are in use at several sites.

Appeal to national security is quite a stretch

DOE also diverts attention from the important long-term Yucca Mountain issues with the claim that Yucca Mountain is important to our national security. The claim is that without Yucca Mountain our nuclear Navy operations could be constrained and U.S. nonproliferation policy could be undermined. First, let's face it; Naval operations are not going to be constrained no matter what happens at Yucca Mountain. That's a hollow argument. Second, DOE has the nonproliferation argument backwards. The proposed US-Russian plutonium-recycling program to which DOE refers – the waste from which DOE wants to put in Yucca Mountain - would in my view *raise* the risks of proliferation and nuclear terrorism by encouraging the commercial use of plutonium.

Aside from the deficiency of these DOE arguments, there is something basically worrisome about the lopsided appeal to national security interests in support of Yucca Mountain. Is the Department merely distracting attention from the problems of the site's geology? Or is it setting the predicate for future national security exemptions from safety and environmental requirements?

DOE did not apply its own geologic site criteria

The site obviously has problems, the chief one being lots more water than anyone expected. (I was myself surprised to find water dripping on my head in the test cavity in the center of the Mountain.) Water promotes corrosion and movement of radioactive material and so its presence in a repository is a serious drawback. The current design concept now includes titanium drip shields - in effect, titanium umbrellas - over the waste packages to be placed in the

Yucca Mountain tunnels. But the water problems don't end there. The 15 years of geologic investigation and the several billions that DOE spent don't make this a good site. The bottom line is that the site didn't pass DOE's own geologic selection criteria -DOE never risked applying them. In fact, in December 2001, shortly before it forwarded the site recommendation to the president, DOE threw out the set of geologic criteria it had adopted as a formal rule in 1984. In its place, DOE then adopted a new rule that made site geology irrelevant if the metal container encasing the waste was good enough.

DOE site selection did not comply with the Act

This action was at odds with DOE's responsibilities under the Nuclear Waste Policy Act. The Act tells DOE to do two separate things—(1) select a suitable site, and (2) make sure it can be licensed by NRC for its intended purpose. First, DOE was to recommend or reject Yucca Mountain, with geologic considerations to be the *primary criteria*. DOE sloughed off this responsibility and decided all it had to do was satisfy NRC's licensing limit on potential radiation doses to the nearby human population. But NRC's licensing rule doesn't have any separate requirement for effectiveness of geologic barriers. In short, DOE avoided the Act's demand for an answer to the question of site suitability by "deferring" to NRC, but NRC will not answer the question either. This cannot be what Congress intended.

It now appears that DOE's waste bureaucracy has rationalized its failure to comply with the Act's tough geologic requirements on their view that Congress already selected Yucca Mountain back in 1987. Congress was *not*, however, lowering the geologic standards in selecting Yucca Mountain for *characterization*. Indeed, that was also DOE's reading of the 1987 Amendment to the Act up until about 1996. Since DOE has now abandoned its geologic criteria,

Congress is now being asked not merely to ratify a DOE site suitability decision, but instead to make one itself in view of DOE's default. Under this approach, a site suitability analysis and recommendation, as contemplated in the Act, will never be made. Congress should not allow this and should insist that DOE comply with the Act.

If DOE will rely mainly on its miracle metal container—why then Yucca Mountain?

As it is, DOE plans to get around Yucca Mountain's geologic deficiencies with its "miracle metal" container (to use the Nuclear Energy Institute's appellation), which is purported to meet NRC's licensing standards all by itself. If we are to suppose this is true, and therefore the repository site doesn't need favorable natural characteristics, why then should such a repository be in Nevada as opposed to anywhere else? Why not store the miracle containers at or near existing reactor sites and eliminate the risk of transporting high-level radioactive waste by truck, rail and barge thousands of miles across the country?

Congress should rely on NWTRB regarding "sound science" assurances

A phrase that appears over and over in documents in support of putting the waste in Yucca Mountain is "sound science." We are assured that the project is based on "sound science." Significantly, the Secretary of Energy has said he would not have recommended the site were he not convinced that it was based on "sound science." That says this body, the United States Senate, should not be approving the site if you are not similarly convinced.

So now consider what the real experts—the members of the U.S. Nuclear Waste Technical Review Board—have said. If there are any heroes in this struggle, they are the Board members and their Chairman. They have carried out their responsibilities competently and even-

handedly in difficult circumstances and have expressed themselves clearly and precisely. In the din of exaggeration on all sides it is possible to miss the vital importance of their message. You will hear from them directly tomorrow, but we should listen today to what they have already said.

Nuclear Waste Technical Review Board: technical basis is “weak to moderate”

The Board has termed the technical basis for DOE’s repository performance estimates as “weak to moderate” - not an encouraging evaluation. The Board has criticized the lack of critical corrosion data on the metal waste containers to support DOE’s basic design concept. That’s especially important as DOE relies almost entirely on the integrity of the metal waste containers to meet NRC’s licensing standard. As one of the Board members said, “We are betting the performance of the systems on the long term performance of these effectively new materials.”

Parenthetically, earlier this year a steel pressure vessel at an Ohio nuclear plant was found to be severely and dangerously corroded, to the point that a serious accident was barely averted. I mention this only because the metals involved and their environment were much better known than those planned for use in Yucca Mountain, and yet the corrosion came as a great surprise. In short, the lack of corrosion data the Board points to is a serious deficiency.

In March the Board wrote DOE expressing concern that important water flow processes around Yucca Mountain “remain poorly understood” and should be studied. DOE wrote back with the bureaucratic equivalent of “don’t call us, we’ll call you.” It wasn’t the response of an agency dedicated to assuring a firm project basis in sound science. In a more general comment, at last week’s meeting of the Technical Review Board, the Board chairman said very simply and clearly that technical work that should have been done before site selection has not been done.

The Board members are not only experts; they are your experts, your technical watchdogs. Congress created the Board in 1987 to “evaluate the technical and scientific validity of activities undertaken by the Secretary.” In this sea of controversy, they are the ones you appointed and can rely on for highly competent and impartial advice. If the Board doesn’t give this project its strong endorsement for “sound science,” how can Congress do so?

Time to stop to think

One thing is clear. DOE is not remotely ready to comply with the law’s requirement to file an NRC license application 90 days after Congressional approval. DOE is talking about applying to NRC for a license in 2004, and there are some suggestions that it will be even later. They say they are keeping all options open—that it may be a high temperature repository or it may be a low temperature repository. That’s another way of saying they don’t even have a design. The trouble is, one concept may require a much larger repository than the other, and so the cost is up in the air, too.

The project doesn’t make sense in terms of expense, security, or safety, or even in terms of the future of nuclear power. This is not the time to give the Department a green light. This is the time to rethink the present course.