

STATEMENT OF ROBERT R. LOUX
EXECUTIVE DIRECTOR
NEVADA AGENCY FOR NUCLEAR PROJECTS
BEFORE THE UNITED STATES SENATE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
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Thank you for the opportunity to appear before you today. I am Robert Loux, Executive Director of the Nevada Agency for Nuclear Projects, which is a branch of the Office of the Governor of the State of Nevada. The Agency was established by the Nevada Legislature in 1985, to carry out the State's oversight duties under the Nuclear Waste Policy Act. I have served as the Agency director since it was established. Our Agency also serves as staff for the Nevada Commission on Nuclear Projects.

The current status of the Yucca Mountain high-level nuclear waste repository project can be described in a single word: unknown – not even uncertain, but unknown. You have heard from the Department of Energy's Office of Civilian Radioactive Waste Management that it cannot provide a schedule for submittal of a Yucca Mountain repository license application to the Nuclear Regulatory Commission (NRC) for its review. But, Department representatives have said that it will not take place in FY 07. You also have watched the progression of potential repository opening dates go from the statutory 1998 date to a more recent estimate of 2010, and now to maybe 2015 to 2020. Multiple episodes of "redirection" of the program, both from within the Department of Energy and from the Congress, define the past twenty years of the Yucca Mountain project history. The current status of the Yucca Mountain project, within the Office of Civilian Radioactive Waste Management, is a product of fundamental, persistent and unresolved problems, with both the site and the project execution, overlain by layers of redirection that wrongly assume the problems have been, or will be resolved.

Site Recommendation and Technical Basis for License Application

At the time of the Secretary of Energy's Site Recommendation for development of a Yucca Mountain repository on February 14, 2002, it was stated that a license application would be submitted to NRC in late 2004. This plan was announced despite the Nuclear Waste Policy Act requirement that a license application be submitted not later than 90 days after the site designation becomes effective by an act of Congress, which occurred in July 2002. In November 2004, it was announced that the license application would not be submitted during the following month, and it was not known when it would be submitted.

This failure to submit the license application in 2004 came as no surprise, since a regulatory prerequisite for license application submittal had not been met. The Nuclear Regulatory Commission Licensing Support Network Rule requires that DOE certify it has made all documentary material in its possession on the proposed Yucca Mountain high-level waste repository publicly available, in a prescribed manner, at least six months prior to submission of a license application. The intent of this is to expedite the discovery phase of the licensing hearing to meet the tight statutory schedule for a licensing decision by the NRC. On August 31, 2004, the NRC Atomic Safety and Licensing Board ruled that the DOE's June 30, 2004 certification was based on incomplete documentation, and the manner in which DOE made the material publicly available on its own internet web site failed to satisfy the regulations. Nevada's July 12, 2004 motion to strike the certification was granted. This all transpired two years after the Yucca Mountain site designation became effective. DOE has not tendered a new certification, and in its monthly status reports to the Atomic Safety and Licensing Board, as late as this month, stated that it does not have a schedule for resumption of the process.

At the time of the Site Recommendation, DOE announced its priorities for FY 03 were to:

- a) "continue vigorous scientific investigation of repository system behavior;
- b) develop a repository license application; and
- c) accelerate the transportation program."

This confirms that, contrary to statements by then Secretary Abraham and President Bush, the repository program managers were not prepared to move forward with the licensing process, since by law, site characterization, i.e. scientific work, is complete at the time of Site Recommendation with respect to the sufficiency of information for a license application. President Bush, in a February 15, 2002 letter to the President of the Senate and the Speaker of the House, said, "This recommendation...will permit commencement of the next rigorous stage of scientific review of the repository program through formal licensing proceedings before the Nuclear Regulatory Commission." (emphasis added).

Even the Nuclear Regulatory Commission understood that at the time of Site Recommendation, the information for a license application was insufficient because, in its statutorily required statement to the President of its view on whether the "at depth site characterization and waste form proposal seem to be sufficient for inclusion" in the license application, its response was a forecast, not a finding. The Commission indicated confidence that the information would be sufficient at the time of license application, but still pending with the Commission was the resolution of 293 Key Technical Issues that DOE had agreed with the NRC staff to have resolved prior to submission of a license application.

The Nuclear Waste Policy Act also required that a Final Environmental Impact Statement (FEIS) for a Yucca Mountain repository accompany the Site Recommendation by the Secretary to the President. The FEIS is the primary document that explains and

describes the Proposed Action and the analyses of the impacts of that action. It included some (although far from complete) analysis of the plans to transport the waste to Yucca Mountain from sites in 35 states where the waste is currently generated and stored. However, a Record of Decision, the mandatory document which records a federal decision based upon the FEIS process, did not accompany the Site Recommendation, as it must have if DOE was ready to proceed with the licensing and development phase of the repository project. It was not until April 2004 that DOE issued a Record of Decision that adopted the preferred alternative of mostly rail transportation to Yucca Mountain and selected the 319 mile-long Caliente Corridor as the Nevada rail construction route to Yucca Mountain – the most costly and difficult of the five alternatives reviewed in the FEIS. Since then DOE has been in the process of preparing a Draft EIS for the alignment and construction of that rail line, which is now estimated to cost, not the originally estimated just under \$1 billion, but \$2 billion.

In February 2004, the Yucca Mountain project, after at least three drafts of a license application had been developed, began a comprehensive evaluation of the key building blocks of the license application, referred to as Analysis Model Reports (AMRs) that are intended to cover all safety and performance aspects of the post-closure repository. This was followed by a critical review of a few selected AMRs by NRC staff, the results of which forecast to observers a difficult and uncertain license application review if both substantive and procedural (including Quality Assurance) remediation was not undertaken. The Project's Regulatory Integration Team (RIT), consisting of 150 scientists and regulatory experts, was created to address problems of traceability and transparency in the documents to ensure they met NRC requirements and expectations. The RIT identified 3,733 Action Items in its review of 117 AMRs (which were later consolidated into 89 AMRs). The large majority of items in need of revision were in the area of insufficient or unclear justification of scientific conclusions (73%). Technical issues made up 7 percent, and procedural inadequacies were the remaining 20 percent. The result was that 89 documents were in need of either significant updating or total revision. The RIT completed its work in an 8-month period, at a cost of about \$20 million. After completion, other AMRs not in the original scope of review were found to need similar scrutiny. The Total System Performance Assessment, the composite model that projects safety compliance of the repository, was undergoing subsequent revision in 2005 and will continue to be revised, based on new developments in late 2005 that will be discussed below.

Quality Assurance

An acceptable Quality Assurance program and requirements, procedures, and the demonstration of its effective implementation are integral and indispensable elements of a license application. The Yucca Mountain project has been plagued by Quality Assurance deficiencies since its inception. Even before the 1987 Nuclear Waste Policy Amendments Act, DOE was aware of Quality Assurance problems and the long-term implications of not correcting them and assuring that an acceptable Quality Assurance program was persistent and enduring. In its June 1987 *OCRWM Mission Plan Amendment (DOE/RW-0128)*, DOE wrote:

“As a result of quality-assurance audits performed by the DOE, “stop-work” orders were issued to contractors working on the Hanford and the Yucca Mountain projects. The DOE found that the technical and management controls for work performed before site characterization were not adequate for site characterization activities. A general upgrading of procedures and controls is being implemented to satisfy NRC requirements for establishing a licensing basis and DOE requirements for a major system acquisition. Personnel associated with the stopped work were immediately assigned to develop the required procedures and controls and were given intensified training in quality assurance. The “stop-work” orders were gradually being lifted on certain activities at both sites as the DOE receives evidence that the quality assurance requirements are satisfied.” (Page 5).

Since 1988, the General Accounting Office, now the Government Accountability Office, has identified Quality Assurance problems in the Yucca Mountain project in at least 8 reports, some devoted solely to the issue of Quality Assurance (QA). In 1988, GAO warned that the project should not proceed until it had an adequate QA program in place. GAO found, in 1990, that the project did not comply with NRC QA requirements. In 1992, GAO again pointed out the need for an adequate QA program. Reports in 2003 and 2004 spoke to the persistent QA problems. In testimony just last month, on April 25, 2006, to the House of Representatives Committee on Government Reform, Subcommittee on the Federal Workforce and Agency Organization, the GAO Director for Natural Resources and the Environment concluded, based on GAO’s most recent report, the following:

“DOE has a long history of trying to resolve quality assurance problems in its Yucca Mountain project. Now, after more than 20 years of work, DOE once again faces serious quality assurance and other challenges while seeking a new path forward to a fully defensible license application. Even as DOE faces new quality assurance challenges, it cannot be certain that it has resolved past problems. It is clear that DOE has not been well served by management tools that have not effectively identified and tracked progress on significant and recurring problems. As a result, DOE has not had a strong basis to assess progress in addressing management weaknesses or to direct management attention to significant and recurrent problems as needed. Unless these quality assurance problems are addressed, further delays on the project are likely.”

The GAO Director was testifying in the hearing as part of an ongoing House Subcommittee investigation of possible data and Quality Assurance documentation falsification by a few United States Geological Survey scientists modeling groundwater infiltration for the Yucca Mountain project. Groundwater infiltration is key to the repository safety projection in that it affects first the corrosion and failure rate of the metal waste containers, and then the rate of release of radionuclides to the environment. The investigation stemmed from the revelation of e-mails exchanged among the scientists between 1998 and 2000, but only first discovered by DOE contractor reviewers in late

2004 and revealed to DOE in March 2005. Inspectors General of both the Department of Energy and the Department of Interior investigated the case extensively, looking at e-mail records from the identified time period and later. The reports of the field investigations were forwarded to the United States Attorney's Office for the District of Nevada, which, on April 24, 2006, declined to pursue criminal prosecution in the matter.

After closing his investigation, in an unusual move, the DOE Inspector General wrote to the Secretary of Energy of his findings and concerns because, during the course of the investigation, "certain internal control deficiencies were identified which were pertinent to the core allegations we were pursuing." The concerns were over three specific matters: 1) "The nearly six-year delay in surfacing and appropriately dealing with the controversial e-mails was inconsistent with sound quality assurance protocols" (this was the subject of a November 9, 2005 Inspector General Report, *Quality Assurance Weaknesses in the Review of Yucca Mountain Electronic Mail for Relevancy to the Licensing Process*, DOE/IG-0708); 2) "Compromise of scientific notebook requirements" (which, in this case were waived to resolve the fact that, contrary to requirements, no scientific notebook had been initiated or kept for the infiltration model work); and 3) "Critical control files relating to the *Simulation of Net Infiltration for Modern and Potential Future Climates*" AMR were not maintained in accordance with data management system requirements." The Inspector General concluded:

"The discovery of the e-mails that prompted the Office of Inspector General Criminal Investigation understandably raised concerns over the Yucca Mountain Project's quality assurance process. The Department has announced that, in order to address these concerns, it has initiated steps to remediate or replace certain work of the Geological Survey and that the quality of the results of this effort will be reviewed by a body of scientists independent of the Yucca Mountain Project. We concluded that these steps are essential in the Yucca Mountain Project is to overcome historical and current quality assurance concerns."

That the e-mail situation was not an isolated problem seems to have been accepted even by Energy Secretary Bodman, who said, on April 12, that the culture of the Yucca Mountain organization was "reflected in" the U.S.G.S. e-mail affair. This would suggest the question of whether the scientific underpinnings of the entire Yucca Mountain project merit confidence. For example, the GAO Director's testimony also described a February 2006 stop-work order on Yucca Mountain work at the Lawrence Livermore National Laboratory:

"We believe this incident is an example of how the project's management tools have not been effective in bringing quality assurance problems to top management's attention. After observing a DOE quality assurance audit at the Lawrence Livermore National Laboratory in August 2005, NRC expressed concern that humidity gauges used in scientific experiments at the project were not properly calibrated – an apparent violation of quality assurance requirements. According to an NRC official, NRC communicated these findings to BSC [Bechtel-SAIC] and DOE project officials on six occasions between August and

December 2005, and issued a formal report and letter to DOE on January 9, 2006. However, despite these communications and the potentially serious quality assurance problems involved, the project's acting director did not become aware of the issue until January 2006, *after reading about it in a news article.*" (emphasis added).

The deficient calibration of the gauges, and other experiment execution problems with Quality Assurance connections and sound science implications, discovered in the audit relate to work that is key to the safety assessment for the repository, because it leads to the engineered barrier corrosion rate data that are included in the Yucca Mountain Total System Performance Assessment.

The "Path Forward"

A few of the issues currently confronting the Yucca Mountain project were mentioned in the March 21, 2006 Quarterly Management Meeting between DOE and NRC:

Spent fuel handling, transport, storage, and disposal:

A key element of the Energy Secretary's new "simpler, safer" approach is the major redesign of the waste handling facilities, based on a changed operational concept for receipt and handling of waste at the Yucca Mountain site. The concept for receiving commercial spent nuclear fuel and packaging it for underground emplacement has changed significantly through the past 15 years, and just recently has taken yet another turn.

At first the spent fuel assemblies were to have been packaged at the reactor in conventional transport containers, brought to the repository site where a few assemblies were to have been placed in a stainless steel container that then would be emplaced in vertical boreholes in the floor of the repository drifts.

The idea of the Multipurpose Container (MPC) then took hold, trying to capitalize on the idea of a large rail container that would increase the payload per container and have the advantage of bringing some uniformity to the cask designs, though the more it was studied, the less uniformity seemed possible because of the variability in fuel types. The MPC, certified for transport, storage, and disposal, would be loaded with spent fuel assemblies and welded closed at the reactor. The large containers then would be emplaced horizontally in drifts underground at Yucca Mountain. This concept was terminated in 1996 for policy reasons, but also for an important technical reason. Because of the provisions of the DOE's Standard Contract with utilities (10 CFR Part 961) requiring accepting "oldest fuel first" (which actually means only the oldest reactors were served first), DOE would have no control over the thermal output of the MPCs as they arrived at the repository for underground emplacement. Thermal output of individual assemblies varies as a function of original uranium enrichment percentage, burn-up time in the reactor, and age out-of-reactor. For technical reasons associated with Yucca

Mountain repository rock stability and waste form integrity, DOE had to be able to set limits on, and control the thermal characteristics of the stream of waste packages placed in a repository drift. The MPC represented an unsolvable logistics problem for repository loading and thermal management.

The next idea was to bring the spent fuel assemblies to the Yucca Mountain surface facility in newly designed high-payload shipping containers, offload the assemblies into a large, 5,000 metric ton capacity lag storage pool, and then select individual assemblies, based on their thermal characteristics, to be grouped into a disposal container for underground emplacement. In this way, the thermal output of individual containers and the emplacement stream into a disposal drift could be “tailored.”

But, concerns over the safety of the lag storage pool and other transfer pools at the Yucca Mountain surface facility led to a conceptual change in which hot cells would be used for fuel assembly transfers from transportation containers either directly to disposal containers or to storage containers for later assembly selection to maintain the flexibility for thermal “tailoring” of the individual containers and the stream of containers. This is operationally complex and requires rigid controls – but is not impossible.

Then, an analysis indicated the possibility of severe radionuclide contamination and worker safety problems from handling damaged fuel assemblies in the hot cells. Some existing spent fuel is known to be damaged and is a potential contamination source. Also, the expectation is that there is other damaged fuel, though its condition is unknown, and fuel could also be damaged from vibration during transport. This leaves the uncertainty of hot cell contamination and worker safety essentially unknowable for purposes of a safety analysis.

Attempts to resolve this contamination problem apparently were not satisfactory, because the most recent conceptual change, resulting in the current redesign effort, involves elimination of normal operation bare fuel assembly handling in hot cells at the repository surface facility. Instead, the plan is that commercial spent fuel will be loaded into canisters that are welded closed at the reactors, then placed in a transportation overpack for delivery to Yucca Mountain. In the so-called “clean” facility, the welded canisters would then be placed in disposal overpacks for direct emplacement or in storage overpacks for later selection for emplacement. This concept is called “TAD” (Transport, Aging, and Disposal). It has all the same logistical drawbacks as the MPC concept, but adds an “aging,” i.e. storage, facility of at least 21,000 metric ton capacity.

Once the current redesign is complete, it will have to meet the DOE’s administrative review requirements and process in order to be incorporated into the project baseline. It will have to be integrated into the project design and safety case, and its effect on the Total System Performance Assessment will need to be evaluated, because a change in the waste package would be a result of the conceptual change.

In effect, this concept not only revives the failed concept of the MPC program, but calls for the equivalent of a Monitored Retrievable Storage facility at Yucca Mountain, despite the fact that placement of such a facility in Nevada is prohibited by the Nuclear Waste Policy Act as Amended, as long as a repository site is under consideration in the State. Nevada, in the past, has rejected such an attempt by Congress, and the Presidential veto of the bill to develop Interim Storage at the Nevada Test Site, Yucca Mountain's front door, was sustained.

Uncertainty about the EPA standard:

Nearly nineteen years ago, on June 29, 1987, the DOE Project Manager for the Yucca Mountain site told this Committee:

“The process of doing the modeling and calculations that estimate the radioactive releases from the [Yucca Mountain] repository tells us that we may be five orders of magnitude below a very conservative EPA standard.” He added, “[I]t is not conceivable to me that we would discover something of a major nature that would cause us to change our mind about it [suitability of the site].”

Just five years later, it was clear that the Yucca Mountain site could not meet the EPA standard with respect to atmospheric releases of radioactive carbon-14. After efforts to have EPA relax its standard failed, DOE appealed to Congress, which resulted in a mandate for a new EPA standard, specific to the Yucca Mountain site, as part of the Energy Policy Act of 1992. The direction to EPA is as follows:

“ [EPA] Administrator shall, based upon and consistent with the findings and recommendations of the National Academy of Sciences, promulgate, by rule, public health and safety standards for protection of the public from releases from radioactive materials stored or disposed of in the repository at the Yucca Mountain site. Such standards shall prescribe the maximum annual effective dose equivalent to individual members of the public from releases to the accessible environment from radioactive materials stored or disposed of in the repository.” Section 801(a).

As instructed, EPA contracted with the National Academy of Sciences (NAS) for a report of findings and recommendations to be titled *A Technical Bases for Yucca Mountain Standards*, which was published in 1995. Among other things, the report found that there is no scientific basis to limit the repository compliance period to 10,000 years as had been done in the original EPA standard; and, its recommendation: “We recommend calculation of the maximum risks of radiation releases whenever they occur as long as the geologic characteristics of the repository environment do not change significantly. The time scale for long-term geologic processes at Yucca Mountain is on the order of approximately one million years.” Page 71-72. The one million year period is referred to in the report as the period of geologic stability during which, the report concluded, it is feasible to make a compliance assessment. The report also noted that, “In the case of Yucca Mountain, at least, some potentially important exposures might not occur until after several hundred thousand years.” Page 55.

In June 2001, EPA promulgated its rule, Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada (40 CFR Part 197). The rule set a regulatory period of 10,000 years for compliance with EPA's maximum individual dose standard, which was set at 15 millirems per year. A separate groundwater protection standard was also set for the 10,000 year regulatory period, with dose and radionuclide concentration limits consistent with Safe Drinking Water Act standards that apply to all of the nation's public drinking water supplies. The rule did acknowledge that peak expected doses could occur after the 10,000 year regulatory period and required DOE to calculate the peak individual dose during the period of geologic stability after 10,000 years and include the results in the Yucca Mountain Environmental Impact Statement "as an indicator of long-term disposal system performance." But, the rule further states, "No regulatory standard applies to the results of this analysis." Sec. 197.35.

Nevada and others (Nuclear Energy Institute, Natural Resources Defense Council, and several other environmental and public interest organizations) challenged the EPA standard in lawsuits filed in the U.S. Court of Appeals for the District of Columbia Circuit in summer 2001. Among Nevada's and others' issues was that the setting of a 10,000 year regulatory period was not "based upon and consistent with" the findings and recommendations of the NAS, as required by the Energy Policy Act of 1992. The Court upheld this challenge and vacated that portion of the EPA standard that applied a 10,000 year regulatory period, as well as the portions of the NRC licensing rule (10 CFR Part 63) that adopted EPA's 10,000 year regulatory period. *Nuclear Energy Institute v. Environmental Protection Agency*, 373 F.3d 1251 (D.C. Cir. 2004).

The premise of the NAS Technical Bases report is simple and straightforward - humans must be protected from the maximum radiation risk from a nuclear waste repository, whenever that risk is projected to occur. If this protection cannot be reasonably assured at the outset, the problem is with the selected repository site and design, not with the premise. EPA's selection of a one million year regulatory period is a reflection of the NAS finding that compliance assessment is feasible through that time period for most physical and geologic aspects of a repository at Yucca Mountain, given our knowledge and understanding of the natural characteristics, features, and processes at Yucca Mountain and in the surrounding area. The wide range of possible assumptions about the longevity of the metal waste containers coupled with our current understanding of the physical and hydrologic characteristics of Yucca Mountain indicate it is very likely that the calculated peak individual dose will occur sometime during the million year period of geologic stability.

If there were no metal containers and shields protecting the waste from infiltrating water, DOE's calculations for time of peak dose (in the Site Recommendation performance assessment) put the average peak at about 2,000 years after repository closure. Using DOE's optimistic projections of the rate of container failure, the performance calculation shows the time of peak dose at between 200,000 and 300,000 years after closure. The magnitude of the calculated peak dose, in both cases, is approximately the same, and both far exceed 15 millirems per year. In the case with no

metal waste containers or shields, a 15 millirem per year standard would be exceeded within 500 years after closure of the repository.

The compliance test for a repository is whether there is reasonable expectation that the statistical maximum dose (or risk) to humans from releases from the repository fall within a pre-established regulatory dose limit. It is of great importance that the complex performance calculation is scientifically credible because the compliance decision is to be made prior to waste emplacement. After the waste is disposed and the repository is sealed, the performance calculation has no relevance as to how the repository will actually perform and when the maximum dose to individuals will occur. It could appear in as little as a few thousand years. The wide range of uncertainty in projected repository performance is dominated by the great uncertainty in the failure rate of the metal waste containers, not the geology and hydrology. Once the waste containers begin failing by corrosion, the contamination of the groundwater will be relatively rapid, far reaching, and irreversible. Radionuclides from waste disposed at Yucca Mountain will eventually reach the land surface both through groundwater pumping and through natural playas and springs where groundwater that has traveled beneath Yucca Mountain reaches the land surface today.

EPA has indicated it would like to have its final Yucca Mountain standard in place before the end of this calendar year. But this does not alleviate DOE's uncertainty about the final rule, as it relates to the need for revisions in its Total System Performance Assessment. If the EPA standard were to become final in the form proposed, DOE would need to revisit the features, events, and processes that previously were excluded from consideration based on their possible effect on performance, or their likelihood of occurring during the 10,000 year compliance period. A credible climate representation also would need to be constructed for a 1 million year compliance period. And the great uncertainty is whether the final EPA rule will withstand legal challenge, should the numerous vastly unprecedented elements of the Proposed Rule be promulgated as the final standard.

Early in EPA's rulemaking process, Nevada proposed a straightforward approach to meeting the Court's ruling: simply extend the 10,000 year compliance period for the standard as written to the time of expected maximum dose (risk), whenever that occurs in DOE's Total System Performance Assessment. From the Court's perspective, this is what should have been done in the first place. Nevada's proposal was notably absent from the list of alternative approaches considered by EPA for its rulemaking, and EPA exacerbated the uncertainty about a final Yucca Mountain standard by introducing a two-tier, bifurcated compliance standard and time period.

Improve the “nuclear culture” of the Yucca Mountain Project:

In order to be considered for a license from NRC, DOE must demonstrate that it will be a fit and responsible licensee. This requires that protection of human health and safety, and the environment must consistently be held as the highest priority in decision-making. This attribute can only be judged on the decisions and actions of the entire

Yucca Mountain organization, as demonstrated in its pre-license application behavior. Given the high level of verbal importance applied to this matter by top DOE managers, along with the observations of the DOE Inspector General, and consistent 20-year history of GAO's finding of persistent managerial deficiencies in the project, it is clear that the goal is, at least, elusive for the Yucca Mountain project organization.

Conclusion

Energy Secretary Bodman recently said that the nation's high-level nuclear waste program is "broken." This invites some important questions. When did it break, and when was the break detected? What broke - was there a weak link, or a system failure? Can the break be patched or repaired, or is it beyond repair? If it is beyond repair, is there a need to replace it - and, if so, with what?

Assuming the answers to the above questions led to the crafting of plans for resuscitation, rehabilitation, and remediation of the Yucca Mountain project, a problem remains for which no resolution can exist. The site does not have the necessary geologic and hydrologic attributes to support a demonstration of the capability for safe, permanent disposal of the nation's high-level nuclear wastes - the goal of the Nuclear Waste Policy Act.

Three times in the past 15 years, Nevada Governors have advised Secretaries of Energy and finally the Congress that the site should be disqualified under DOE's original Site Recommendation Guidelines, because of its geologic and hydrologic deficiencies. Despite DOE's own analyses finally vindicating Nevada's basis for this claim, the DOE's response was to eliminate relevant disqualification factors through issuance of new guidelines just prior to its Yucca Mountain repository Site Recommendation to the President. The Yucca Mountain site model, upon which the Project Manager expressed such confidence to the Committee in 1987, was shown to be wrong, first in 1992, and again in 1996, both times through data collected at the site. The Yucca Mountain site so optimistically portrayed to Congress in 1987 is scientifically not the same site before you today. Yucca Mountain cannot meet any reasonable test for long-term safety.

You asked for testimony in this hearing on the status of the Yucca Mountain Repository Project within the Office of Civilian Radioactive Management at the Department of Energy. The request, in more practical terms is for information on how the Yucca Mountain project is doing in trying to make a convincing case for a safe repository at an unsafe site. The answer is, "Very poorly - because, even without all the problems described above, it is an impossible job."

Thank you for the opportunity to present our views before this Committee.

