

Part 4: The Yucca Mountain Project
Final

America, we have a problem. The United States has over 90,000 metric tons of nuclear waste that requires disposal, and no permanent location to store it. For the most part, this waste resides where it was generated – at 80 sites in 35 states. (GAO: [“Disposal of High Level Nuclear Waste”](#)) A single permanent repository location for all of this waste, plus future-generated waste, was identified in 1987 when “Congress amended the Nuclear Waste Policy Act of 1982, directing the Department of Energy (DOE) to investigate only Yucca Mountain [Nevada] for a national repository.” (GAO) Research and construction ensued, and “in 2008, DOE submitted a license application to the Nuclear Regulatory Commission (NRC) for authorization to construct a permanent geological repository at Yucca Mountain.” (GAO) In 2010, DOE, under the auspices of the Obama administration, pulled the application, halting over 30 years of research, investigation, discovery, and funding. The suspension of the Yucca Mountain Project was framed by political maneuvering, not by safety concerns, a lack of scientific investigation, or funding limitations, however the stage for that suspension was set many years earlier when DOE, and other accompanying agencies, failed to understand the sensitivities of the host state and to conduct a vigorous public relations campaign to help mitigate those objections.

Background:

According to the U.S. Energy Information Administration, “as of October 31, 2019, there are 58 commercially operating nuclear power plants with 96 nuclear reactors in 29

U.S. states. Of these nuclear power plants, 32 have two reactors and 3 plants have three reactors.” (EIA* Web site: <https://www.eia.gov/tools/faqs/faq.php?id=207&t=3>)

These power plants provide about 20% of our annual power needs across the U.S.

(EIA**: <https://www.eia.gov/tools/faqs/faq.php?id=427&t=3>) The challenge is that these power plants, and other sources of nuclear generation such as U.S. Navy vessels and our nuclear weapons programs, generate nuclear waste as a by-product of their endeavors. This waste is generally labeled as Spent Nuclear Fuel (SNF) or High Level Waste (HLW), and all of it is highly radioactive.

While interim storage of this waste above ground in well-insulated containment structures is a sound temporary solution, deep geologic storage is the best scientifically recognized solution. In fact, President Obama’s [“Blue Ribbon Commission on America’s Nuclear Future”](#) (2012) noted, “while several options for disposing of spent fuel and high-level nuclear waste have been considered in the United States and elsewhere, international scientific consensus clearly endorses the conclusion that deep geological disposal is the most promising and accepted method currently available for safely isolating spent fuel and high-level radioactive wastes from the environment for very long periods of time.” (BRC, 4.3, p.29) Yucca Mountain is just such a site.

Yucca Mountain “was one of nine sites initially studied for the first repository [of two] under the Nuclear Waste Policy Act (NWPA).” Furthermore, “the science supporting the understanding of Yucca Mountain has been developed over more than 30 years by world-recognized experts and has been internationally reviewed.” (“[The Safety of a Repository at Yucca Mountain](#)”, p.3) So Yucca Mountain was selected as the best

location based on geology, safety, and security, as part of a federally controlled desert land mass.

Analysis:

So, we have a problem – nuclear waste that needs a permanent storage location, with what appears to be a viable solution – the Yucca Mountain Project. Tunneling, testing, experimentation, and on-going assessment was the rule of the day (as captured in [this video](#): “Yucca Mountain: The Making of an Underground Laboratory”). Funding issues were being addressed and the long-awaited license application was finally submitted. If all stayed on track – given the four-year license approval process and anticipated follow-on construction – Yucca Mountain should have been accepting its first shipments of waste this year. What happened?

As indicated earlier, the YMP, and the investigation leading up to its selection, covered a 30-plus year period. A lot happened during that time, but several missteps that led to Yucca Mountain’s demise have been identified by the BRC: (1) “DOE’s termination of the siting process for the second repository, combined with Congress’s subsequent action to short-circuit the site selection process established under the original NWPA and single out Yucca Mountain as the sole site for consideration, created a widespread perception that the repository location was being determined on the basis of primarily political, rather than technical and scientific, considerations;” (2) “neither the original site selection process established by the Act nor the subsequent legislative designation of Yucca Mountain as the sole site for consideration could be viewed as consent-based since the State of Nevada was not asked for, and did not provide, consent for the site to be selected for investigation. On the contrary, the state and a

majority of its citizens strongly opposed the selection of Yucca Mountain as a potential repository site, although the project did have some support from local constituencies;” and (3) “the practice of setting unrealistic and rigid deadlines” coupled with “relative inflexibility and prescriptiveness.” (BRC, 3.4.3, p.23) By way of note, and in defense of YMP bureaucrats, early on in the selection process “in 1992, seven communities (including five Indian tribes) had formally notified the government of their interest in being considered” as a site for the repository. Each of these communities stood to gain millions of dollars in grants. “In no case, however, was a host state supportive of having the process go forward.” (BRC, 3.4.2, pp.22-23)

While all of the above factors tend to merge together and interact with one another, my focus here is on the BRC’s number 2 regarding Nevada’s permission exclusion from the selection process and the perceived disregard of the state’s objections. As the YMP began its licensing process, Chuck Muth released a brief historical narrative, “[Yucca Mountain: A Brief History in Layman’s Terms](#),” (June 15, 2008) written by Bob McCracken, author and former resident of Tonopah, Nevada. McCracken was present as DOE held its first public meeting in Nevada on Yucca Mountain in early 1983. “I was at the meeting,” he said. “Don Veith, the Yucca Mountain project manager for the DOE, presided. After welcoming everyone, he presented an overview of the new legislation and suggested what we could expect to happen at Yucca Mountain. Then he opened the meeting to public comment.”

He continued, “The first speaker was then-Gov. Richard Bryan who, accompanied by an entourage, entered the large meeting hall with considerable pomp. He announced, in the most forceful and concrete terms, that he was ‘unalterably opposed’ to the storage

of 'nuclear waste' in Nevada. Following Bryan, a surrogate for then-Congressman Harry Reid announced the congressman's strong opposition to the storage of nuclear waste in Nevada. As I recall, most of the other speakers expressed an opinion amounting to, 'Interesting — perhaps there is something in it for us.'

As time went on, "the state, through the governor's office and the Nevada Agency for Nuclear Projects (created in 1985), adopted a highly negative perspective on Yucca Mountain. Under Director Bob Loux, the Yucca Mountain program has faced more than two decades of unrelenting criticism and obstruction, from the state, to any effort to move the repository forward. Such negativity continues with unabated vigor to this day." (Muth, p.3)

As the meetings continued, McCracken states, "from early 1983 on, DOE held periodic public information meetings in the communities in the Yucca Mountain impact area intended to keep citizens informed on what was happening with the program. The meetings were typically poorly attended. **No significant effort was ever made, either at the meetings or in other venues, to truly educate the public on why Yucca Mountain is needed and the huge amount of science that lay behind it. Never was there an attempt to sell the project and, in current marketing parlance, to 'brand' it.**" (Muth, p.4)

My last six months working on the YMP, I led the Tour Program. We would regularly transport several busloads of visitors – local business owners, community leaders, new DOE employees, and local, state and federal politicians – to the site. We'd drive them to the top of the mountain in four-wheel drive vans and provide briefings from geologists and scientists who'd been working on the project for many years, in some cases. They

would get a tour of the visitor's center with its displays and would often be treated to a trip inside of the main tunnel to see the exploratory tunnels with various science experiments and testing platforms at work.

On the bus trip to the site, I had the opportunity to speak with many of the visitors, and almost all of them had a negative impression of the project. After spending most of the day with us, essentially all of them – on every tour – expressed a newfound understanding of the project along with their enthusiastic support. This was testimony to the success of deliberate outreach, of educating people. Unfortunately, it was too little, too late.

McCracken continued, “in retrospect, what was, and still is, desperately needed is a community education and organizing program with boots on the ground, with face-to-face contact with citizens and local groups. But neither DOE nor the nuclear industry ever went to such lengths to educate Nevadans; such activities would have been seen as beyond their job descriptions.” (Muth, p.4)

The BRC, along with its three identified missteps, also provided a recommended strategy for moving forward that included eight key elements. The first element is a “new, consent-based approach to citing future nuclear waste management facilities.” (BRC, ES, p.vii) The implication here, and with McCracken's observations – as well as with my own experiences with the tour groups – is that the lack of consent from the State of Nevada, coupled with no aggressive education campaign, was a critical motivation toward not accepting the nuclear waste storage responsibility. Once the political toes of Nevada's leadership were stepped on, pride and stubbornness took over, above all reason and logic, to simply propel local leadership to say “NO.”

In his final observations, McCracken offers one more glimpse into the determination of Nevada's leadership to prevent the YMP from coming to fruition:

“Several multi-billion-dollar offers were informally made to Nevada by the U.S.

Department of Energy or the nuclear industry in exchange for the state's acceptance of the repository. Though the offers were never made public, they were impressive.

For example, at one point the Reagan administration offered Nevada a multi-billion dollar nuclear medicine and nuclear science research facility to be associated with UNLV and situated on the Nevada Test Site in exchange for the state dropping its opposition to the repository. That offer was rejected out of hand.

On another occasion, Nevada was offered a super-train between Las Vegas and Los Angeles and the multi-billion-dollar super-collider as well as other large unspecified gifts in exchange for support. Like the research facility, these offers were dead on arrival.” (Muth, p. 4)

With regard to politics, a May 10, 2011, New York Times article by Hannah Northey of *Greenwire*, entitled “[GAO: Death of Yucca Mountain Caused by Political Maneuvering](#),” proposes that the demise of the Yucca Mountain Project was based on political wrangling, not issues of safety, cost, or approach. “The Obama administration did not provide a technical or scientific basis for shutting down the site and failed to plan or identify risks associated with its hasty closure, which could hinder the Energy Department if the Nuclear Regulatory Commission or lawsuits prompt the agency to revive the project, [the \(GAO\) report](#) said,” according to the author.

In fact, the GAO report draws two conclusions: “First, social and political opposition to a permanent repository, not technical issues, is the key obstacle. Important tools for

overcoming such opposition include transparency, economic incentives, and education. Second, it is important that a waste management strategy have consistent policy, funding, and leadership, especially since the process will likely take decades. Some federal and other stakeholders suggested that a more predictable funding mechanism and an independent organization may be better suited than DOE to overseeing nuclear waste management.” (GAO: “[Effects of a Termination of the Yucca Mountain Repository Program and Lessons Learned](#)”, *What GAO Found*)

Finally, after no real discussions of a viable nuclear waste repository since the BRC’s conclusions in 2012, the results of a three-year study by Stanford University were released October 15, 2018: “[Reset of America’s Nuclear Waste Management, Strategy and Policy](#).” Much like the BRC recommendation, this study proposes, “the adoption of a consent-based siting process that (1) establishes strong bonds of trust between localities, tribes, and states on the one hand and the implementer and that (2) fairly reallocates power among the parties.” (p. 6) “More importantly,” the study says, “the United States has taken its ‘eyes off the prize’ — *the prize being disposal of highly radioactive nuclear waste in a deep-mined geologic repository.*” (p. 4)

Conclusion:

As the NY Times article suggests, based on the GAO study – as well as President Obama’s campaign pledge to close Yucca Mountain – the decision to suspend the YMP was based on political motives. If I were a conspiracy theorist, I might go as far as to suggest that these motives were founded on a deal between then Senate Majority Leader Harry Reid and presidential candidate Barack Obama. Reid agreed to support

Obama, wielding his considerable clout in the Senate, if Obama would once and for all trash the YMP...as the theory might go.

But regardless of the reasons for the cancellation of the project, the stage for Yucca Mountain to fail as a nuclear waste repository was set long before any political deals were struck. The number one recommendation of the Blue Ribbon Commission to adopt “a new, consent-based approach to siting future nuclear waste management facilities” certainly supports the notion that failing to achieve public approval in advance, and throughout the siting process, led to the ultimate discontinuation of the Yucca Mountain Project. My brief, but informative experience with the project, and other sources such as Bob McCracken and the Stanford report, seem to back up this assertion as well. The people of Nevada didn’t know what they didn’t know, the truth, and the DOE failed to articulate their side of the story while the naysayers withheld the facts from the citizenry. In the end, Nevadans were the real losers, and the Nation as a whole is still saddled with the problem of nuclear waste disposal with no long-term solution in sight.

Sources

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