YUCCA MOUNTAIN—A BAD BET FOR AMERICA

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I. INTRODUCTION

It has been suggested that the Yucca Mountain project is the ultimate Not In My Backyard issue. The truth is, the NIMBY theory does not come close to explaining the real reasons underlying Nevada's long standing opposition to this ill-conceived, multi-billion dollar project. While the majority of Nevadans do in fact oppose the proposed high-level nuclear waste repository at Yucca Mountain, it is not simply because it is in our backyard, a scant 90 miles from Las Vegas. Yucca Mountain, America's only site being considered for development as the world's first underground high level nuclear waste repository, is not a good deal for anyone. If authorized, the proposed nuclear waste dump would represent one of the biggest public works debacles in history. Not only does the $58 billion and rising project present an incalculable liability for U.S. taxpayers, but it will not work. Proponents often say that Yucca Mountain is the most studied piece of real estate around. These same individuals neglect to add, however, that the U.S. Department of Energy's (DOE's) own studies and those conducted by other scientists unequivocally show that the Yucca Mountain site is fatally flawed and incapable of providing the geologic isolation necessary to contain mankind's most lethal by-product.

The seminal 1982 Nuclear Waste Policy Act (NWPA) was originally intended to guide the nation in identifying and developing regional repositories for tons of spent nuclear fuel and high level nuclear waste accumulating at commercial nuclear power plants and nuclear weapons testing facilities scattered around the nation. Unfortunately, in 1987, Congress succumbed to political pressure and selected Yucca Mountain to be the only site for consideration as a nuclear waste repository. Not only is Yucca Mountain dangerously incapable of isolating the world's most toxic, long-lived waste, but the DOE is an unfit entity incapable of meeting the demands of a project of this magnitude. The Yucca Mountain project simply cannot be nor do what Congress intended.

In its most recent desperate maneuver designed to distract public attention away from the project's insurmountable problems, DOE filed its Yucca Mountain license application with the U.S. Nuclear Regulatory Commission (NRC). Notwithstanding the lack of a final U.S. Environmental Protection Agency (EPA) radiation standard and a repository design, DOE nevertheless filed its license application on June 3, 2008. Still, even with the filing, Nevada is nevertheless convinced that the proposed high-level nuclear waste repository will *never* be developed. This belief is based upon the fact that:

a. The site is overwhelmingly unsuitable and cannot provide the geologic isolation mandated by Congress in the Nuclear Waste Policy Act of 1982 as amended. The site is too seismically active, porous, and corrosive to meet statutory requirements, much less afford protection of the public and the environment.

b. DOE has repeatedly demonstrated its unfitness as an NRC licensee. The project is mired in scientific and institutional chaos unlikely to ever be resolved.

c. DOE has not completed a final design of the repository much less provided it to other parties in the prospective NRC licensing proceeding.

d. Even project proponents have publicly de-linked the Yucca Mountain repository from the widely discussed "nuclear renaissance." The project is no longer needed due to the development and use of economical, on-site interim dry cask storage facilities.

f. The EPA has yet to finalize a radiation protection standard for the proposed nuclear dump. Likewise, NRC has not promulgated a new licensing rule in the aftermath of Nevada's 2004 victory in *Nuclear Energy Institute v. U.S. Environmental Protection Agency (EPA).*

II. BACKGROUND

In 1982, Congress passed the Nuclear Waste Policy Act (NWPA).[1] The NWPA recognized the instrumental role of the host state (or Indian tribe) and the need to convince that entity of the proposed site's suitability and safety. The NWPA went to some lengths to establish a credible, scientifically sound site selection process. The basic prerequisite is that a site's geology must be capable of isolating radioactive waste from the human and natural environment for hundreds of thousands of years and that manmade barriers cannot substitute for geologic deficiencies.[2]

In late 1987, despite mounting evidence that Yucca Mountain cannot geologically isolate nuclear waste, Congress amended the NWPA and selected Yucca Mountain to be the only site to be studied for a potential high-level nuclear waste repository.[3] In order to assure the safety of an underground repository,

[1] The NWPA consists of the Act of Jan. 7, 1983 (Public Law 97-425, 96 Stat. 2201) as amended by P.L. 100-203 (December 22, 1987) and P.L. 102-486 (The Energy Policy Act of 1992, October 24, 1992) 42 U.S.C. 10101, et seq.

[2] *See*, NWPA §§ 111, 112, 113 ; 42 U.S.C. 10131, 10132, 10133.

[3] At the time of the 1987 passage of the Nuclear Waste Policy Amendments Act, it was clear that there was no scientific basis for selection of the Yucca Mountain site as the single site to be studied for potential development of a repository, notwithstanding assurances to the Senate Energy and Natural Resources Committee by the then DOE Yucca Mountain Project Manager

the NWPA requires that the prospective repository must be capable of meeting both site criteria contained in the NWPA and all applicable public health and safety standards. To that end, EPA is mandated to promulgate the fundamental public health and safety standard for protection of the general environment from offsite releases from radioactive material placed in the planned repository. The NRC is also required to promulgate a licensing rule consistent with the applicable EPA radiation standard to be used in that agency's consideration of a repository license application. Both the EPA and NRC rules are the statutory benchmarks for protection of the public health and safety. [4]

In spite of the NWPA's requirement that the Secretary of Energy shall terminate all site characterization activities at Yucca Mountain if the Secretary determines the site to be unsuitable for development,[5] the Secretary instead recommended the site. On February 14, 2002, Secretary of Energy Spencer Abraham recommended the Yucca Mountain repository to the President. Less than 24 hours later, on February 15, 2002, President George W. Bush recommended the repository to Congress. On April 8, 2002, pursuant to the NWPA, Governor Kenny Guinn submitted Nevada's official Notice of Disapproval of the proposed Yucca Mountain repository to Congress, thereby vetoing the site selection decision of the President. Pursuant to the NWPA, Congress passed a joint resolution overriding the Notice of Disapproval.[6] The President signed the Yucca Mountain Development Act (YMDA) on July 23, 2002. With enactment of the YMDA, DOE was required by statute to submit a license application to the NRC within 90 days.[7] The 90 day statutory deadline has come and gone.

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that it was inconceivable to him that the site could not meet the EPA standard by a margin of multiple orders of magnitude. By 1992 it was equally clear that the Project Manager had been wrong. Studies of Yucca Mountain directed at air flow through the unsaturated zone above the water table, where the waste potentially would be emplaced, resulted in calculations indicating that airborne releases of radioactive carbon-14 would exceed the EPA standard's radionuclide release limit by a factor of 6 to 8. DOE's attempts to have EPA revise the standard to allow for the expected carbon-14 release did not succeed in light of scientific scrutiny by a special panel of experts convened by EPA. DOE's efforts to have the National Academy of Sciences National Research Council Board on Radioactive Waste Management endorse a relaxation of the EPA standard also were unsuccessful after the Board examined the technical issues.

[4] NWPA §121, 42 U.S.C. 10141.
[5] NWPA § 113; 42 U.S.C. 10133.
[6] NWPA § 115, 42 U.S.C. 10135.
[7] NWPA §114(b), 42 U.S.C. 10134(b).

III. NEVADA'S CHALLENGES TO EPA AND NRC RULES

In June, 2001, EPA promulgated Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada (40 C.F.R. Part 197). The EPA standard established 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 established for the 10,000 year regulatory period, with dose and radionuclide concentration limits consistent with Safe Drinking Water Act standards that apply to all the nation's public drinking water supplies. The EPA rule acknowledged that expected peak 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 (EIS) as an indicator of long-term disposal system performance.

In July, 2001, Nevada and others including the Nuclear Energy Institute and the Natural Resources Defense Council challenged the EPA standard in lawsuits filed in the U.S. Court of Appeals for the District of Columbia Circuit (DC Circuit). Among other issues, Nevada challenged the 10,000 year regulatory period for inconsistency with the findings and recommendations of the National Academy of Sciences as required by the Energy Policy Act of 1992 (EnPA). In *Nuclear Energy Institute, Inc. v. EPA,* 373 F.3d 1251 (D.C. Cir. 2004) (*NEI v. EPA*), the DC Circuit vacated both the EPA radiation protection standard and the corresponding NRC licensing rule. The court found that these rules, which terminated their compliance periods after 10,000 years, (a) were not "based upon and consistent with" recommendations of the National Academy of Sciences as Congress required in the EnPA; and (b) do not protect the public or the environment during the anticipated peak radiation risks that are expected after man-made waste packages fail.

On August 22, 2005, EPA published a new draft radiation standard,[8] purporting to comply with the DC Circuit's decision. The current draft rule contains an unprecedented two-tiered standard which bifurcates the radiation exposure limits for the first 10,000 years after disposal, and the period from 10,000 to one million years. The draft standard is also unprecedented in its application of a dose limit up to 10,000 years that is based on conventional risk apportionment, while applying, for the first time ever in U.S. or international regulation, a contrived and arbitrary background-based dose limit for the remaining time period. The proposed 350 millirem per year individual dose limit after 10,000 years is 23 times higher than the 15 millirem per year mean (or average) dose standard applied up to 10,000 years, and 87.5 times higher than the groundwater protection standard which EPA improperly proposes to truncate at 10,000 years.

[8] 40 C.F.R. 197

The numerous legal, scientific and ethical flaws in EPA's draft radiation standard are discussed in Nevada's extensive comments.[9] How EPA intends to address the substantive objections to its draft rule remains unknown. At this writing, however, EPA has yet to issue the final Yucca Mountain radiation protection standard. Consequently, Nevada's prospective legal challenges to both the EPA radiation standards and the corresponding NRC licensing rule cannot be filed until the rules themselves are final. Suffice it to say at this juncture, without final EPA and NRC rules to guide NRC's consideration of the license application, DOE's proposed submission of its license application is premature and should be rejected.

IV. NRC LICENSING

Under the NWPA, NRC has the responsibility to regulate geologic disposal of high level radioactive waste consistent with its determination of acceptable health and environmental impacts over thousands of years. As part of its public health and safety analysis, NRC is responsible for reviewing DOE's license application for the proposed Yucca Mountain repository. Once a license application is deemed complete and docketed, NRC must issue a decision to authorize construction in three years, with a possible extension to four years.

Theoretically, to provide transparency and for efficient document sharing, NRC requires all participants in the Yucca Mountain proceeding to place their documents in electronic form on the NRC's electronic database known as the Licensing Support Network (LSN). The basic purpose of the LSN is to "[e]nabl[e] the comprehensive and early review of the millions of pages of relevant licensing material by the potential parties to the [licensing] proceeding, so as to permit the earlier submission of better focused contentions resulting in a substantial saving of time during the proceeding."[10] The idea is to ensure that potential parties have timely access to DOE's documentary material sufficiently in advance of the NRC's formal licensing proceeding to permit the submission of well focused and comprehensive contentions.[11] Needless to say, without an EPA radiation protection standard, it is inconceivable that NRC would permit DOE to go forward with the licensing proceeding.

Six months before submitting its license application, NRC regulations require DOE to certify that all documents it intends to rely on in licensing or documents that other parties might reasonably rely on must be electronically available so that other parties have adequate opportunity to develop meaningful and responsive contentions. In 2004, DOE first attempted to certify its LSN documents collection. Following a challenge by Nevada, that certification was overturned as grossly inadequate and incomplete. In October, 2007, DOE submitted its documents to the LSN. Because its LSN submittal was again

[9] Nevada's comments can be accessed at: www.state.nv.us/nucwaste/
[10] 54 Fed. Reg. 14,925, 14,926 (1989).
[11] *See* 10 C.F.R. § 2.1009(b).

seriously deficient, Nevada filed a motion to strike DOE's LSN certification. NRC's Pre-License Application Presiding Officer ("PAPO") Board found that "there is no dispute" that DOE has not produced a number of important documents still in development including the Total System Performance Analysis (TSPA) and PSA [Preclosure Safety Analysis], both of which appeared to PAPO to be "large, complex, and of critical importance to DOE's license application."[12] The PAPO Board also found there to be "no dispute that DOE has 'knowingly' certified without completing all of its documentary material." *Id.* Incredibly, however, the PAPO Board found itself constrained to find as a matter of law that the regulations prohibit DOE from taking this course. Nevada has appealed the PAPO Board's decision to the full NRC.

A. Construction Authorization Review

Now that DOE has submitted its license application, NRC is required to conduct a preliminary completeness review to formally accept for review, or "docket," the application. If the NRC dockets the application, it will publish a Federal Register notice announcing the docketing and notifying potential parties and interested governments of the opportunity to request permission to participate in the hearing. A notice of whether the NRC staff finds it practicable to adopt the DOE Final Environmental Impact Statement (FEIS) will also be published.

Interested parties have 30 days from the date of the Federal Register notice to request permission to participate in the licensing hearing, which will be a formal, trial-type process. In order to be accepted as a party to the hearing, an individual or group must demonstrate "standing," submit at least one litigable "contention," and show compliance with NRC document availability requirements. To have standing, a potential party would have to show the likelihood of harm or a stake in the outcome of the proceeding. A litigable contention would be a specific concern or issue that the potential party seeks to bring before the NRC in the proceeding.

Nevada, as the host state, and Nye County, as the host county, automatically have standing, but must each submit at least one litigable contention in order to be parties in the proceeding. In spite of the adversarial nature of the pre-licensing process and DOE's unwillingness to reveal its documents, Nevada is proceeding to develop a number of litigable contentions, which include the site's geologic unsuitability and the inevitable and frightening breakdown of manmade waste containers in the highly corrosive waters flowing through Yucca Mountain.

[12] Memorandum of January 4, 2008 U.S. Dep't of Energy (High Level Waste Repository: Pre-Application Matters)("Slip Op."), LBP-08-01, Slip Op. at 11 (PAPO Board, Jan. 4, 2008)

B. NRC Safety Review

If the application is docketed, the NRC technical staff will begin a detailed, technical review.[13] The NRC staff is required to issue a Safety Evaluation Report containing its findings on the application and whether the proposed disposal facility will meet NRC regulations and protect public health and safety.

C. Hearing

The proceedings before the NRC will include full discovery and formal "on the record" adjudicatory hearings with cross-examination likely to last for many years. While the NWPA provides for a period of up to 4 years for the NRC to determine whether the repository should be granted a construction authorization,[14] the NWPA has no penalty or other regulatory consequence for failure to meet this statutory deadline. Indeed, a similar NWPA deadline, the requirement that DOE submit its license application ninety days after the President's recommendation of the Yucca site takes, elapsed over five years ago without any consequence.[15]

With a team of eminent technical experts from around the globe, Nevada intends to file numerous contentions relating to various procedural and substantive aspects of the license application. Those challenges may lawfully include virtually all aspects of DOE's environmental impact statement for the project.[16] Nevada's contentions will certainly address the site's seismicity, volcanism, rapid groundwater infiltration and the inability of DOE's proposed containers to withstand the highly corrosive Yucca Mountain environment. If a construction authorization is actually granted for the repository and it survives appeal to the full Commission and other likely court challenges, DOE must still obtain a second authorization from NRC to actually emplace high-level waste and spent nuclear fuel in the repository.[17] This proceeding, too, will be subject to legal challenge.

A major concern for Nevada is assuring that the NRC licensing proceeding is fair and objective. There has been a troubling history of inappropriate contacts by NRC staff and DOE in the pre-licensing phase of the project. Early in the program, NRC adopted the view that it has a responsibility to assist DOE and assure that DOE is able to produce an acceptable license application for Yucca Mountain. Over the years, DOE and NRC have interacted repeatedly to facilitate DOE's increasingly problem-plagued repository program. Representatives of the State of Nevada and affected units of local government have been regularly

[13] 10 C.F.R. 63
[14] NWPA § 114; 42 U.S.C. 10134.
[15] *Id.*
[16] *See NEI v. EPA,* 373 F.3d at 265-67.
[17] 10 C.F.R. § 63.46.

excluded from key meetings between DOE and NRC staff where DOE's license application, support documents and key technical issues have been discussed. Even on the eve of the June, 2008 filing date, NRC staff continued to have private communications with DOE concerning DOE's schedule and other issues more appropriately addressed with all the parties present. Moreover, in the actual NRC licensing proceeding, NRC staff assume the role of a license advocate rather than providing neutral advice to the Commission. This, among a host of other equity concerns, may unduly compromise NRC's ability to render impartial decisions.

V. Water Litigation

In July 1997, DOE filed five applications with the Office of the Nevada State Engineer under provisions of state water law to permanently appropriate 430 acre-feet of groundwater in anticipation of a congressional decision authorizing DOE to seek NRC approval to construct and operate a proposed high-level nuclear waste repository at Yucca Mountain. The State Engineer denied DOE's applications for permanent use because he determined that the purposes intended for the water, namely for construction and operation of the proposed Yucca Mountain high-level nuclear waste repository, threaten to prove detrimental to the public interest and therefore violate state water law. Following issuance of the State Engineer's denial, the United States filed a legal challenge in United States District Court in Las Vegas. Without belaboring the procedural details of this on-going dispute over water, consideration of the merits of DOE's claims is stayed pending events in other forums including the finalization of the EPA standard and whether or not NRC grants DOE a license to construct the facility.

VI. Conclusion

In light of the serious flaws and uncertainties inherent in the Yucca Mountain program and in NRC's ability to legally and procedurally assure fairness in its licensing proceeding, the State of Nevada is preparing both for the NRC proceeding and for the inevitable litigation which will follow. After over two decades of opposition, Nevada continues to believe that the Yucca Mountain project will eventually be abandoned. In the meantime, all efforts are being pursued to expose the project's failings.