

House Energy & Commerce Committee
Subcommittee on Energy and Environment
Blue Ribbon Commission Hearing on February 1, 2012

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I welcome the opportunity to provide my views in this Hearing regarding the Final Report to the Secretary of Energy by the Blue Ribbon Commission on America's Nuclear Future (BRC). Thank you, Chairman Shimkus and Ranking Member Green.

I provide these comments as a private citizen concerned about America's nuclear future, based on my experience. I served from 1989 to 1994 on the Nuclear Waste Technical Review Board (NWTRB), and then for the NAS as a member of the Board on Radioactive Waste Management and as chair of the NAS committee that produced the 2001 report referenced in Endnotes 48 and 125 in the BRC Report, and as a member of the NAS committee that produced the 2008 report referenced in Endnote 136. I have a background in physics, but my career has been in decision analysis and risk analysis. I have served as president of the Society for Risk Analysis, and I am a national associate of the National Research Council. (This honor enables me to use the Members' Library in the National Academy of Sciences Building.)¹

I strongly endorse the BRC Final Report and its recommendations. The Commission and its staff have produced an excellent document, well researched and well-written, at a level appropriate for a broad audience.

The scope of the BRC report does not include discussion of any facilities at Yucca Mountain in America's nuclear future. Characterizing the Yucca Mountain site as the sole candidate for our nation's first geological repository has been the principal focus of the federal program over the past several decades. While I can accept language such as in the first paragraph of the Executive Summary, that national policy has "been troubled for decades and has now all but broken down." I would have preferred more clarity at the outset in this report as to where responsibility for this shortfall lies. I believe that the staff of the federal agencies (DOE, NRC, NWTRB), their contractors, and consultants have worked diligently to implement the Nuclear Waste Policy Act passed by Congress in 1982 and amended in 1987, and that their accomplishments have been commendable. I would have liked to see more explicit recognition of these technical achievements. The achievements are reflected in the many Endnotes in the BRC Report citing the work of these organizations. My reading of the full text of the Report is that the BRC recognizes that the shortfall in the nation's program lies with the law established by Congress, the deficiency and inconsistency in national leadership in implementing this law (for

¹ The complex structure of the National Academies is explained in Endnote 26 of the BRC Final Report. As in the BRC Report I shall use "NAS" instead of the names of the various organizations that constitute the National Academies.

example, the cancellation of the second repository), and the strong and ongoing opposition by state political leaders, especially those from Nevada.

A major finding in the 2001 NAS report, from a distinguished committee of international experts that I had had the honor to chair, was that “the biggest challenges . . . are societal” (meaning policy or political) and not technical. Our first principal recommendation was that national governments should provide the leadership and support for solving the problems. In the United States there has not been consistent Congressional and senior Administration leadership adequate to meet the challenges. As a result, there is now a situation badly in need of corrective action. The BRC has, within its scope, provided excellent guidance on this corrective action.

Much of this guidance is consistent with findings and recommendations of earlier reports. There are not any major breakthroughs in understanding or from the emergence of new technologies. The nation needs a program to move spent nuclear fuel and defense waste from where these materials are now located into geological disposal, where these dangerous materials will be safe over a “long-term” determined by the time for radioactivity to diminish, ten thousand to one million years. As the BRC report describes, there is general international consensus on how to accomplish this goal, and many nations are making good progress. In this country, we have taken 25 years since the law was last revised, spent over ten billion dollars, and we have a policy that BRC judges, “has all but broken down.” Our country has a liability of nearly \$50 billion dollars: \$30 billion in the Nuclear Waste Fund², money (including interest) the federal government has received from electricity ratepayers but not yet spent in providing disposal services, plus at least \$20 billion³ in legal penalties for failure to take possession of spent fuel beginning in 1998, as mandated under law and existing contracts. BRC states, in large type at the outset of Chapter 4, “The central flaw of the U.S. nuclear waste program to date has been its failure to develop permanent disposal capability.”

BRC’s first recommendation is a “new consent-based approach” to siting nuclear waste management facilities. This is not a new idea, but one that has been around for decades. It would be new as an approach for the U.S. federal government, replacing law that at first required a technical evaluation of candidate sites, and then designated only a single site to be characterized. The 2001 NAS report states on page 132, “When an agency seeks permission to investigate the technical feasibility of a proposed site, it is usually necessary first to obtain the assent of the local community and its various councils and representatives that the site has been selected fairly and the project is provisionally acceptable.” The context for this statement is a report dealing with this problem internationally. Many other countries have the need for disposal of nuclear waste. The word “usually” in the quote above indicates an exception. When our report was written the U.S. was proceeding with a program established by U.S. law, in which such “assent” from the state of Nevada had not been obtained in advance. There was a provision in the law for state disapproval, but such disapproval could be, and was, overridden by Congress.

²Source: 2011 Financial Report of the United States Government, page 116.

³ BRC Report, Table 2, page 80.

Many U.S. state governments opposed a nuclear waste disposal facility in their state. Nevada established under state law an organization to oppose such a facility, the Nevada Nuclear Waste Project Office (NWPO) in 1985, when the Yucca Mountain site was under active consideration. This date preceded by two years the 1987 Amendments Act designating Yucca Mountain as the sole site to be characterized. As noted on page 22 of the BRC report, this 1987 legislation has been characterized as the “Screw Nevada” bill. The Nevada NWPO and the state’s elected leaders have for 27 years carried out a strong campaign opposing development of the Yucca Mountain site. I met with the NWPO Board, including former Nevada Governor Grant Sawyer, early in my service on the NWTRB. The Board expressed to me quite clearly that their mission was to oppose. I was equally clear that the NWTRB mission established in the 1987 Amendments Act was oversight to improve the technical aspects of the federal nuclear waste management program. Accessing the NWPO website as I write this testimony on January 29, I find the NWPO mission remains the same. It is not improved scientific understanding and support for wise decision making, but opposition. I note that the allegations of dangers posed by a Yucca Mountain disposal facility are on a web page first posted in 1998 and unchanged since. (Attachment A).

In contrast, local government entities near Yucca Mountain, such as Nye County, have cooperated with DOE and have carried out research in support of understanding better the safety of the site. Nye County’s Q&A webpage (Attachment B) provides a strong contrast to the NWPO page in attachment A. As noted in the BRC report, page 23, Nye and other local counties have expressed support for the facility, or at least, for allowing the license approval process to go forward.

Recommendations 3 and 6 in the BRC report describe other urgently needed remedial action to prepare for the time when waste management facilities become available, at Yucca Mountain or at another location. During my initial time on NWTRB more than 20 years ago, DOE had a program in place to develop the system planning for packaging and transporting spent fuel from its location at many reactor sites to either interim storage or a final disposal site. NWTRB reviewed and encouraged this planning. But Congress cut the appropriations, and DOE had to reduce its activities in this area. The limited funds made available to DOE were spent almost entirely on site characterization activities supporting the license application for Yucca Mountain, called for under the law. The other aspects were forced to be deferred. The BRC added recommendation 6, on preparing for transport, to the seven recommendations in its draft report, because the Commission heard from many parties on the need to do this planning and preparation. A lead time on the order of a decade is needed before waste transport begins. Shorting the needed appropriation of funds for this purpose, funds already being paid by ratepayers, was the result of decisions by Congress, and not a failure by DOE, by the technical community, or by state and local government. In contrast, for WIPP, timely and effective advance planning and preparation for the transport of waste was done by DOE and its contractors in cooperation with state and local agencies, as described in the BRC report.

Recommendations 4 and 5 have an important interaction with recommendation 1. The time scale to achieve success, which BRC defines as a legally binding agreement (Box, page 57) is essentially the time to reach what was described in the Republican Presidential candidates' debate in Las Vegas last October 18, as "a pretty good deal." (See Attachment C, my letter to the BRC of October 31, 2011). Other states - such as New Mexico, which negotiated a "pretty good deal" with the federal government on WIPP - might agree to a new facility or expansion of existing facilities (i.e., WIPP) to take additional nuclear waste. The "new approach" for the U.S. nuclear waste management program is negotiation to achieve consent, not overcoming the opposition based on a federate mandate in existing law.

Steve Frishman's statement to BRC is cited in Endnote 260. Steve has for more than two decades worked for the Nevada NWPO. He and I came to know each other well when I served on the NWTRB. I agree with his point that "the interested public has often been confused about the roles of the respective agencies, and the motivation, scope, and meaning of the regulation proposed ..." and I will add, the existing regulation. Performance assessment for these facilities can become mind-numbingly complex, even for those of us who are specialists. The goals and compliance process need to be explained in simple language to the interested and affected members of the public.

Let me illustrate such risk communication by putting the summary of U.S. disposal facility regulations, a box on Page 91 of the BRC report, into terms more readily understood. Members of the Subcommittee who represent States far from Washington, D.C. travel often by plane, as I have done from my home in California to this Hearing. Modern commercial jet aircraft fly above much of the atmosphere, so radiation we receive from cosmic rays is not attenuated as it is when we are at ground level. Figure 7 on page 15 of the BRC report lists 40 microSieverts of radiation exposure for a one-way flight from New York to Los Angeles, roughly the same distance as my flight from San Francisco to Washington-Dulles. Two round trips is $4 \times 40 = 160$ microSieverts, slightly above 150 microSieverts, listed on page 91 in the Box as the limit for the first 10,000 years. The goal set forth in the regulation is that there should be a reasonable expectation that no members of the public will receive more than this dose of radiation annually: two cross-country round trip flights worth. The standard for ten thousand to one million years is less stringent. It corresponds to about one round tip flight across our country per month. (For many years I flew this much, one round trip across the country per month. I expect many Members of the Subcommittee fly even more.) Most members of the public do not understand what microSieverts and rems signify. But if they come to understand that the requirement for nuclear waste disposal facilities is for limiting radiation exposure to all members of the public to such low levels, comparable to exposures most of us accept without concern, they might come to understand that the regulations should assure acceptable safety, now and far into the distant future.

Implementation of these regulations to assure a reasonable expectation of compliance, across an extremely long time period with all its attendant uncertainties, is, indeed, complex. But if we focus on sharing our understanding in good-faith negotiation, I am

confident success on public acceptance can be achieved, as has been done at WIPP and in the nuclear waste management programs of many other countries.

I hope the BRC Report and this Hearing will motivate Members of this Subcommittee and more generally, both the House and the Senate, to proceed quickly toward bipartisan consensus to implement the recommendations in the BRC Report. Enhanced national leadership was recommendation #1 in the 2001 NAS report. It did not happen then; I hope it can happen now. Our country has a liability of \$50 billion. We need to take the steps to deliver on our commitments and work this number down, not let it grow as we have done over the past decade.

Yucca Mountain remains in my judgment a viable siting option. The BRC Report stresses not precluding options, but engaging in adaptive management. The 2001 NAS report and its successor, the "One Step at a Time" NAS report of 2003, are cited as references on adaptive management. As urged in a letter (Attachment D) to BRC of September 29, signed by me and five other distinguished scientists, two of whom played key leadership roles in the success for WIPP, the NRC evaluation of the license application for a disposal facility at Yucca Mountain should be completed. The public should have full access to the expert evaluation by NRC professional staff, of allegations by the Nevada opposition and the plans and analysis submitted by the DOE staff and its contractors.

Release of a positive evaluation by NRC of the license application for a Yucca Mountain waste repository does not commit the nation to go forward with construction of this facility at Yucca Mountain. Congress must first appropriate the money, and that will require a positive vote by the Senate. Five years might pass before that could happen. But it will take 15-20 years, perhaps longer, before a disposal facility for commercial spent nuclear fuel at another site can be brought to the point of approval on a construction license application, even when consent has been achieved. The type of site characterization and technical analysis carried out at Yucca Mountain takes time and resources; no other nation has been able to do it more quickly than on the order of 20 years. Our nation needs two sites for disposal facilities, as were called for 30 years ago in the 1982 Nuclear Waste Policy Act. If there may be a 15-20 year wait before the first disposal site is ready for facility construction, the nation will need an interim consolidated storage facility, strong motivation for BRC recommendation 5. It will take the order of ten years to do the negotiating, planning, design, licensing, training and other preparation for transport and storage of the waste materials. This transportation planning and preparation should be funded and restarted, via BRC recommendations 3 and 6. In about 20 years, even more serious penalties may occur if the federal government remains unable to accept spent fuel. For example, the U.S. Navy may be unable, under existing agreements, to continue to ship the spent fuel from its nuclear-powered ships to Idaho (BRC Report, page 28).

The steps listed in chapter 13, *Near-Term Actions*, should be undertaken by DOE and the current Administration. Congress should move quickly to enact new legislation to enable the BRC recommendations. To support discussion and debate on these changes, the DOE should designate a senior official, as BRC has recommended at the beginning of its

chapter 13. The BRC has ended its work and has no further budget. This senior official should be supported by staff and consultants at the same level of excellence as the staff and consultants who participated in the preparation of the BRC Final Report.

Thank you for this opportunity to present my views.

Attachments:

A: <http://www.state.nv.us/nucwaste/yucca/state01.htm>

B: http://www.nyecounty.com/YMIC/YMIC_QandA.pdf

C: http://brc.gov/sites/default/files/comments/attachments/comments_to_brc_by_dwn_10-31-2011.pdf

D: http://www.sustainablefuelcycle.com/resources/SFCTF_Science_Panel_Ltr_to_BRC_9-29-11.pdf