

MINUTES OF THE  
BLUE RIBBON COMMISSION ON AMERICA'S  
NUCLEAR FUTURE  
MEETING OF  
DECEMBER 2, 2011 AT THE  
J.W. MARRIOTT HOTEL  
1331 PENNSYLVANIA AVENUE NW, WASHINGTON, DC

MEMBERS PRESENT:

LEE HAMILTON, Chair  
BRENT SCOWCROFT, Chair  
MARK H. AYERS  
VICKY A. BAILEY  
ALBERT CARNESALE  
PETE V. DOMENICI  
SUSAN EISENHOWER  
CHUCK HAGEL  
JONATHAN LASH  
ALLISON MACFARLANE  
RICHARD A. MESERVE  
ERNIE MONIZ  
PER PETERSON  
PHIL SHARP

ALSO PRESENT:

TIM FRAZIER, Designated Federal Official

PUBLIC COMMENTERS PRESENT:

GARY HOLLIS  
BOB HALSTEAD  
DAN BROWN  
KARA COLTON  
LINDA LEWISTON  
ARJUN MAKHIJANI  
RON JOHNSON  
JUDY TREICHEL  
ALEX PAVLAK  
NORMAN MEADOW  
KAREN MEADOW  
EARL POTTER  
KEVIN KAMPS  
MICHAEL GLAAB  
KATHERINE FUCHS  
DOMINIQUE FRENCH  
GEOFF FETTUS

**Tim Frazier** convened the meeting at 9:31 a.m. He thanked those assembled for having come, saying it was an important day for the Commission. The Commission's Subcommittees would review comments on the Subcommittee reports that they had received from the public, which will be rolled into the final report of the Commission.

**Chair Hamilton** thanked those assembled for having come. The meeting had two purposes: to discuss comments received with respect to the recommendations of the Subcommittees, and to receive the recommendations of the ad hoc Committee on commingling defense and commercial waste. Presentation materials may be found at [brc.gov](http://brc.gov). The Commission would entertain any member of the public who wished to speak, at the conclusion of the Commission's business. Commenters were given until 1:30 p.m. to sign up to speak. Time allotted to each speaker would depend on the number of people who wished to comment, not to exceed five minutes. He thanked all the individuals and organizations who provided comment on the Commission's draft report.

Two of the most commonly heard messages in the comments fall outside the Commission's review. The first was that the Commission should recommend Yucca Mountain as a permanent repository for nuclear waste. Per direction from the Secretary of Energy, the Commission has not rendered an opinion as to Yucca Mountain's suitability nor to the appropriateness of withdrawal of the License Application for that site. The second message was that the Commission should urge the shutdown of all US nuclear plants until a solution to the waste issue be at hand. The Commission will not offer any judgment about the appropriate role of nuclear power in the nation's future energy supply mix.

He opened the floor to statements or comments from any Commission member.

**Member Peterson** echoed the Chair's appreciation for the input received for the betterment of the Commission's report. The Commission held several meetings around the country to receive comments on the draft report, of which the Member was able to attend two in person, and the other two telephonically. He complimented the Commission's staff for their efforts to review comments, relaying them to Commissioners and integrating the comments into themes that would be presented during the meeting.

**Member Carnesale** said that, not only did the Commission not consider the suitability of Yucca Mountain for a nuclear repository, it did not do so for any site. The Commission was not charged with site selection.

**Member Domenici** said the most important part of the report, and the part that is of greatest concern, was that pertaining to roles of local, state, federal governments. The Commission has laid out a consensual process for site selection. Municipalities and states would volunteer to host waste sites. Rights and responsibilities at each level of government ought be clearly defined.

**Chair Hamilton** proceeded to reports of the Subcommittee Co-Chairmen vis-a-vis comments the Commission had received pertaining to their various recommendations. The Chairmen would brief the Commission on major comments received and their

proposed responses.

The report of the Transportation and Storage Subcommittee, chaired by **Members Meserve and Sharp**, was provided by **Member Meserve**. **Member Sharp** was absent due to a health problem within his family. The Subcommittee issued its report on May 31, 2011 and received comments from “the full spectrum of stakeholders.” The Subcommittee’s conclusions from their report were embodied in the report of the full Commission of July 29, 2011, to which the public provided comment. Comments were also received through a variety of public meetings. The preponderance of the comments seem supportive of the Subcommittee’s conclusions, though some comments suggested various changes to the report, and some of those changes were made.

The earthquake and tsunami events took place in Japan on March 11, 2011. The Subcommittee has said that the lessons of those events must be fully learned, and has recommended the National Academy of Sciences “advise on the full suite of lessons that arose from Fukushima as some of the input on how the U.S. should respond.” Much of the concern about conditions at the Fukushima Daiichi Station were due to a lack of instrumentation in and knowledge of conditions in the spent fuel pool area. Prior to the events at Fukushima, the US NRC promulgated requirements that plants provide redundant and diverse methods for provision of makeup water to spent fuel pools, and those requirements may be strengthened as a result of events. Some issues remain, for instance as to whether fuel should be removed from pool storage and placed in dry arrangements. Fuel is more densely packed in American pools than in Japanese ones, resulting in greater heat loads and increased risk. It is not clear whether Fukushima will provide much insight on this issue. The Subcommittee concluded that NRC’s evaluation of spent fuel processes appear adequate. The Subcommittee’s report should be amended to reflect insights learned from Fukushima as those become available.

The Subcommittee received comments that it should provide more specific storage recommendations vis-a-vis capacity, period of performance, etc. The Subcommittee believes that flexibility in this area is essential. To be otherwise is inconsistent with the main theme of the Commission’s report, that the approach taken should be one of adaptation and learning.

The Subcommittee received comments urging the Subcommittee to recommend standardization of storage and transportation casks. The Subcommittee believes that it cannot make specific recommendations in this area for a variety of reasons, and that to do so might sacrifice adaptability in the future. The Subcommittee has “softened” the report to urge standardization on the part of the various stakeholders.

Some commenters seemed to believe that the Commission’s recommendation to promptly develop centralized storage locations might result in compromised safety. The Subcommittee concurs that safety must be the highest priority but does not feel the need to change the report.

The Subcommittee received comments on the case for hardened onsite storage (HOSS), some of which urged the addition of an additional physical layer of protection surrounding the storage sites. It is unclear whether this would actually decrease risk or,

in fact, increase it. The Subcommittee recognizes that the NRC is presently evaluating these systems, that the question should be raised as an issue, and that the evaluation process should be allowed to move forward.

The Subcommittee received comments about the treatment of transportation in the group's report. The concern is that the matter has not been given sufficient treatment. The Subcommittee agrees with the comment. The Commissioner pointed out that the National Academies of Science had completed the Going The Distance Report, and that the nation's record on transporting nuclear materials has, thus far, been excellent. The Commission's report should expand to give a more full treatment of the matter. The Subcommittee proposed that an eighth major recommendation be added to the Commission's report pertaining to transportation, since the report previously had no such recommendations.

The Subcommittee received comments on the advantages of co-locating recycling/reprocessing facilities at storage sites. The Subcommittee felt this matter was beyond its jurisdiction. Co-location is not essential for accomplishing the storage mission, and thus, the Subcommittee does not recommend a change in the report.

The Subcommittee received comments on the subject of new, high-burnup fuels to be used in reactors. The Subcommittee feels that the report should be modified to say that regulatory changes in this area are needed, a process the NRC has already undertaken.

The Subcommittee received comments to the effect that the burdens on stranded fuel sites have been overstated. One comment recommended that the US Department of Energy (DOE) take title to the fuel but keep it as it lies. The Subcommittee does not believe that stranded fuel is an urgent safety risk., though there are obvious burdens associated with it which will tend to grow over time. DOE taking title will not solve these problems.

The Subcommittee received comments that its discussion of cost for consolidated storage was unclear or incorrect. Stranded-fuel sites spend virtually all their money guarding the fuel, whereas operating power sites spend a much smaller fraction to do so. The Subcommittee's report lays out different scenario and cost models, though their argument did not turn on the cost issue. The Subcommittee will add some discussion to its report about costs associated with storage facilities but will not change the main thrust of its recommendations.

Some comments expressed the concern that an interim storage site might become a de facto permanent disposal site. The Commission has weighed this concern very heavily in its discussions, emphasizing that storage and disposal are not alternatives to each other, and that establishing storage facilities is essential to proceeding with disposal.

Returning to the transportation issue, the Subcommittee recommended the following be added as an eighth major recommendation of the Commission: "prompt initiation of programs to prepare for future large-scale transport of spent nuclear fuel and high-level waste to consolidated storage and disposal facilities, including implementing transportation-related recommendations issued by the National Academies in 2006,

undertaking planning activities with potentially affected states and tribes, and providing funding and technical assistance for related activities.” **Chair Hamilton** proposed that the word “safe” be incorporated into the recommendation in some way.

**Member Domenici** asked who would pay for transportation, and **Member Meserve** replied that these matters are already accounted for in current statute and would carry over to any amendment to such. The waste-management organization, as laid out by the Commission, would have responsibility for safely transporting waste to storage/disposal sites.

**Member Peterson** said it is important that the new recommendation be integrated into those already made by the Commission. Prior to implementation of a large-scale transport program, a small-scale effort to remove waste shutdown sites should be undertaken, demonstrating safe operation and providing opportunity to learn from experience. Also, taking title to waste in situ would not satisfy DOE’s legal requirement to physically remove waste from sites in a timely manner.

**Member Bailey** voiced her support for the new recommendation, adding that providing ample lead time to states to prepare their highway and rail systems was key.

**Member Macfarlane** said the regional meetings were valuable to her as a Commissioner, and she applauded all those who took time to provide thoughtful comments. Reducing the density of fuel assemblies in spent fuel pools is a significant issue. She quoted a Royal Society report which recommends removing fuel from pools as early as is feasible. The Commissioner recommended expanding the report requested from the National Academies to include more analysis of de-densification and moving spent fuel more rapidly to interim storage. **Member Meserve** accepted the recommendation.

**Member Peterson** endorsed **Member Macfarlane**’s recommendation.

**Member Domenici** asked for clarification of the original recommendation’s use of the word prompt, whether it might create an obstacle to successful completion of the project. **Member Meserve** replied that was not the intent of word, but rather that it might help ensure success in being able to go forward.

The Commission unanimously adopted the Subcommittee’s proposal as an eighth recommendation in the Commission’s report.

**Chair Hamilton** recognized **Members Domenici and Peterson** to provide the report of the Reactor and Fuel Cycle Technology Subcommittee.

**Member Domenici** thanked all who took time to provide thoughtful comments to the Commission. The Subcommittee considered the comments very carefully. He noted broad support among the commenters for continued research in advanced nuclear technologies and fuel cycles. The Subcommittee’s main recommendation is that the US provide stable, long-term support for R&D efforts in order to maintain a US leadership role in nuclear technology.

**Member Peterson** said that the Subcommittee received comments expressing a very broad range of views on nuclear energy and the fuel cycle; there is no national consensus on these matters. It is important to take this range into account since these are

deeply and firmly held beliefs which are in disagreement. The Subcommittee's recommendations with respect to R&D constitute an appropriate middle ground for the country to take. A major fraction of comments were supportive of fuel cycle technology research. Some comments indicated the importance of taking fuel-cycle activities elsewhere in the world into account.

With respect to closing the fuel cycle versus maintaining a once-through model, the Subcommittee affirms that it is premature for the US to commit irreversibly to any particular fuel cycle as a matter of policy. There are benefits to preserving old options, as well as developing new ones. The report has been changed to reflect support for actions taken by the international community since the Fukushima accident.

Some commenters said we could stop producing spent fuel by stopping operations at reactors, either immediately or as their licenses expire. "The Commission has not offered judgment about the appropriate role of nuclear power in the nation or the world's future energy mix. Instead, we note that there is wide support for research and development of nuclear energy technologies."

The Subcommittee received comments that the US should reprocess fuel as some other countries do. The Subcommittee does not feel that reprocessing fundamentally changes the waste management challenge. Therefore, the major recommendations of the Commission have to do with transportation, storage and disposal of waste materials.

The Subcommittee altered its report to reflect the importance of identifying game-changing fuel-cycle technologies. Also, the Subcommittee agrees with several comments that the nuclear industry and US government should collaborate vis-a-vis the nuclear power enterprise. The US should understand better the efforts of other countries as they attempt to implement advanced fuel cycles. "We recommend that the DOE should continue to leverage its existing and nearly-irreplaceable nuclear energy RD&D infrastructure and the human capital to the greatest extent possible."

**Member Carnesale** said it is unlikely that the Commission would receive comments opposing R&D on advanced fuel cycles and technologies. Therefore, comments should be assessed according to their merit, as opposed to their number. R&D budgets are likely to be constrained in the future. **Member Peterson** replied that, under current statute, Waste Fund Fees cannot be used for generic R&D that the Commission has recommended. The Subcommittee has endorsed President's Council of Advisors on Science and Technology (PCAST) recommendations relating to assurance of funding adequacy for energy R&D. **Member Domenici** said funding for domestic appropriations will not increase for the next decade. He believes the Commission has a responsibility to state that R&D are important. **Chair Hamilton** said it is important that the Commission's final report reflect the above comments.

**Member Eisenhower** said the Commission must make the case for funding R&D in a resource-constrained world. "R&D has to be playing to the longer game, which is addressing climate concerns ultimately." **Member Peterson** said there is objective evidence that R&D investments yield positive results, noting the advantages of passive safety systems designed and licensed in the US.

A recess was taken from 10:52 a.m. to 12:33 p.m.

**Tim Frazier** called the meeting back to order.

**Chair Scowcroft** recognized **Members Hagel** and **Lash**, Co-Chairs of the Disposal Subcommittee, who presented the Subcommittee's responses to comments received on their report.

**Member Hagel** thanked the Subcommittee and Commission staff for their time, effort and diligence. The received comments have been very helpful to the Subcommittee's efforts.

**Member Lash** thanked the members of the Subcommittee. Comments from the public have brought about significant changes in the report, improving its clarity and substance. "There was quite general and widespread acceptance of the fact that the United States will need at least one geologic repository for waste under almost any scenario that we can imagine." The comments broadly endorsed the creation of an independent spent-fuel-management entity, and the accepted the importance of assuring availability of waste fund fees.

The Subcommittee received comments that the Commission's use of the term consent-based needs to be clarified. What is the role of states? At what point can a state or locality opt out? At what point would their agreement be binding? What kind of incentives would the authority have to develop agreements with potential hosts?

With respect to Yucca Mountain, a number of commenters recommended the report reflect the support in Nye County, Nevada for the proposed repository project there. Some called for completion of the Yucca Mountain License Application. Some comments expressed doubt that the Nuclear Waste Fee collections will be adequate to site and develop a disposal facility.

Some comments urged the Commission to explain how public fears about radiation make facility-siting more difficult. Some commenters felt the word prompt should be removed from the report as it might denote undue haste, contrary to Commission intentions. Some commenters urged the development of a siting schedule.

The Subcommittee proposed addition of more criteria describing the siting process, wherein potential host states, tribes and communities would have the opportunity to become partners with the proposed waste management organization. At minimum, such localities should have court-enforceable agreements with the organization to assure commitments are upheld.

Some commenters suggested consent ought be measured by statewide referendum or ballot. On the other hand, WIPP was successfully sited when the federal government dealt directly with the New Mexico government. The Subcommittee decided the question of consent is best answered by the potential host state. Further, states should have the option of serving a regulatory role for the sites they host, including over radionuclides. The final opt-out point should also be negotiable. Some comments suggested a limit to how long a consent-based program should be allowed to continue. The Subcommittee believes 15 to 20 years should pass before deciding whether to move away from a consent-based approach.



The Subcommittee recommends that the Nuclear Waste Policy Act (NWPA) be amended to allow the proposed waste management organization to negotiate incentives with potential host communities, tribes, governments or other organizations.

The Subcommittee has not rendered an opinion on the appropriateness of the Yucca Mountain site, nor on whether that License Application review should be allowed to move forward. The Commissioner emphasized the notion that the Waste Fund Fees collected must be available for their intended purpose. The Subcommittee will not include a notional siting timeline, but will increase the specificity where appropriate in the report to help increase understanding.

**Member Meserve** said he was concerned that state-regulation of radionuclides might lead to dual regulation of such. A change of administration could cause regulations to become inconsistent with each other. He suggested parties be allowed to set more stringent limits than are laid out by the federal regulator. **Members Lash** and **Peterson** said this was a good suggestion, **Peterson** adding that this point re-emphasized the importance of flexibility in negotiation, as it is more likely to lead to success.

**Member Carnesale** said the Commission should be careful in how it communicates the idea that fear about radiation makes the waste management problem more difficult. Some fears are warranted and some are not.

**Member Bailey** suggested the report be fleshed out with further description of the nature of state regulation, what advantages might be accorded, the role of regulatory stability, etc.

**Chair Scowcroft** recognized **Member Macfarlane**, Chair of the ad hoc Subcommittee, who briefed the Commission on the Subcommittee's work pertaining to commingling defense and commercial waste. The decision to commingle was made in 1985 by President Reagan. The Commission received opposing comments as to whether that decision should be revisited. Consequently, the Commission directed the Disposal Subcommittee to investigate whether the US should reconsider reversing the 1985 decision and report back to the Commission. Later, the Commission created an ad hoc Subcommittee to focus on the issue.

**Member Macfarlane** said the Subcommittee was established to consider whether defense and commercial waste should be decoupled. Numerous weighty comments have been made to the Commission on both sides of the issue. It is a complex issue, with numerous sub-issues.

Some changes have occurred since the 1985 decision. DOE has shifted from a production to a cleanup mode of operation. Several commitments have been chartered calling for cleanup at various sites. Yucca Mountain was deemed the site of the nation's repository, and the efforts there were stopped. WIPP was successfully sited only for defense wastes. The Commission itself has recommended creation of a new waste management organization. DOE has taken responsibility for greater-than-Class-C waste, waste glass forms, TMI spent fuel not covered under NWPA.

Some issues remain unresolved. For instance, should the definition of waste to be sent to a defense repository be broadened; if so, how? Would DOE waste become the

responsibility of the new organization? Can a defense repository take on commercial waste, from legislative and technical perspectives? Would siting a commercial repository be slowed down by the establishment of a defense repository? Should incentive packages change relative to defense and commercial waste site host communities?

The Subcommittee is still in the process of developing recommendations, though it does believe that this should not delay implementation of the other Commission recommendations.

**Chair Hamilton** thanked **Member Macfarlane** for taking on a difficult assignment “very late in the game.” The chair and members of this Subcommittee have done an excellent job thus far.

**Member Peterson** said it is very important that the other Commission recommendations move forward, even in absence of recommendations from the ad hoc Subcommittee. It may be possible to site a defense-waste-only repository under NWPA, but this may not be desirable. It would be better to amend NWPA to implement the Commission’s recommendations.

**Chair Scowcroft** reminded those assembled that the recommendations laid out by the various Subcommittee Chairs may or may not be incorporated into the Commission’s final reports.

A recess was taken from 1:15 p.m. to 1:31 p.m.

**Tim Frazier** called the meeting back to order.

**Chair Scowcroft** called for comments from members of the public, noting that speakers would be afforded up to four minutes.

Those interested will find a verbatim record of comments provided by speakers in the transcript of these proceedings, available at [brc.gov](http://brc.gov). Topics covered by commenters included, but were not limited to: the consent-based siting process, the state of knowledge of scientific and technical issues surrounding geological disposal at Yucca Mountain, reestablishment of DOE OCRWM, the legal status of Yucca Mountain, whether defense and commercial waste should be commingled, transportation issues, the role of Crown corporations of Canada as an example to the Commission, US leadership in solving energy challenges, the role of demonstration projects, an oversight role for local communities, funds to carry out research and oversight roles, reprocessing, regional centralized interim storage, HOSS, federal obligations, the role of engineering in process selection, public fear about exposure to radioactivity, health effects associated with exposure to radiation, risk associated with spent fuel pools, partnership between host states and the federal government, the importance of criticality safety, the possibility of international repositories, public oversight for the new waste management organization, the effect of reprocessing on waste storage requirements and EPA and state regulation of radioactivity, among others.

**Chair Scowcroft** adjourned the meeting at 2:41 p.m.