PSR® Physicians for Social Responsibility

United States Affiliate of International Physicians for the Prevention of Nuclear War

October 5, 2011

Re: Blue Ribbon Commission's July 29, 2011 Draft Report

The following are PSR's comments on the Blue Ribbon Commission's Draft Report dated July 29, 2011.

PSR supports the BRC's draft recommendations to develop one or more permanent deep geologic repositories using an "adaptive, staged, and consent-based" approach. We believe, however, that the draft report's recommendation to consolidate spent fuel at one or more "interim" storage sites will result in the failure of the entire waste management program. We strongly urge the BRC to recommend hardened on-site storage, and not to punt it to the Nuclear Regulatory Commission (NRC), which has already made it clear that it has no intention of implementing this sensible policy.

Geologic Repositories

PSR supports the draft report's recommendation to "develop one or more permanent deep geologic facilities" for spent fuel and high-level nuclear waste. We urge the BRC to remove the word "promptly" in its recommendation (p. 30), because the word is vague and could undermine the BRC's recommendation to use an "adaptive, staged, and consent-based" approach.

PRS supports IEER's recommendation to "initiate a decade of scientific research on various combinations of the three elements of geologic isolation prior to any siting process directed at specific sites."[1] The three elements are geology, engineered barriers and the sealing system. As experience at the Yucca Mountain site showed, not enough is known about the interaction of these three elements to start a successful site selection process immediately.

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[1]Arjun Makhijani, Institute for Energy and Environmental Research, *Managing Spent Fuel and High-Level Waste: Interim and Long-Term Considerations*, Presentation to the Blue Ribbon Commission on America's Nuclear Future, http://brc.gov/sites/default/files/meetings/presentations/managing_spent_fuel_brc_presentation_for_25_may_2010_final.pdf, page 10-11, March 25, 2010.

The BRC's recommendations (p. 63, 102, and 104) to develop a generic rather than a site-specific standard and supporting regulatory requirements and to do so before site selection are particularly important for building public confidence in a permanent waste repository program, provided that the generic standards and supporting regulations are protective of public health.

Consolidated "Interim" Storage Facilities

The draft report's recommendation that the "United States should proceed promptly to develop one or more consolidated interim storage facilities" ignores past failed efforts to develop such sites and fails to explain how such an effort will succeed *this* time. If there is, as the BRC states, "no unmanageable safety or security risks with the current interim storage arrangements" (p. 36), and if safety/security are paramount, then there is no overriding justification to move the spent fuel to an "interim" site.

Moreover, the reasons presented in the draft report for recommending off-site "interim" storage are flawed:

- **5.2.1 Stranded Fuel:** The Commission overemphasizes the scope of the spent fuel problem from so-called "orphaned" reactor sites, of which there are only ten in the country. These sites can be addressed relatively easily on a case-by-case basis – as compared to moving waste from more than 70 sites around the country. The BRC's basis for the total number of orphan sites in 2035 and 2050 and the cost savings apparently assumes that very few new reactors will be built in the US. Since nearly all proposed new reactors are at existing sites, the number of orphan sites will only increase dramatically if very few new reactors are built. This assumption should be stated explicitly. In the best-case scenario, one or more "interim" sites will take at least a decade to find and license and another couple of decades to package and transport the waste. This is not a small project and, as a result, will take attention and money away from the ultimate goal of developing a permanent geologic repository. It makes more sense to focus on the development of a geologic repository (and pay to move the spent fuel once) than to waste resources moving spent fuel to temporary sites.

- **5.2.2 Waste Acceptance Obligations:** The government failed to meet its contractual obligations to take spent fuel from reactor sites by 1998. Attempting to establish off-site "interim" storage will not relieve the US government of its full financial liability for decades, at best. On the other hand, no matter what decision is made about spent fuel management going forward, the US government will have to renegotiate its contracts with utilities. The Commission should recommend that the federal government "take title" to spent fuel at reactor sites, which along with contract

renegotiations could provide a faster, cheaper, and safer way to end taxpayer liability.[2] The federal court ruling that the Nuclear Waste Fund cannot be used to pay damages because onsite storage is not allowed under the Nuclear Waste Policy Act (NWPA) can be addressed by Congress in the legislation that will be necessary to implement most of the Commission's proposals.

Using the existing NWPA – and thus the DOE – to find (or even start the search for) an interim storage facility would be contrary to the Commission's assertion that new institutional leadership and a new approach are needed "from the outset" (p. 72). Section 142(b) of the NWPA authorizes Monitored Retrievable Storage (MRS), but it is subject to the siting process in Sections 143 through 149 that use the old top-down approach that has proven to be a failure. Under Section 145(b), the DOE Secretary cannot select a site before recommending to the President a permanent repository site. This means that the DOE would be piggybacking an MRS siting process on the Yucca Mountain project, which the Administration has terminated.

The Commission's assumption that finding an "interim" storage facility "should be less difficult, particularly if it is accompanied by attractive incentives" does not comport with the failure of the Nuclear Waste Negotiator and Private Fuel Storage (PFS) on the Skull Valley Goshute Indian Reservation in Utah. The description of PFS on pages 25-26 fails to examine the relevant political reasons for its failure or to explain why compensation did not make the process successful.

- **5.2.3 Fukushima Lessons:** Current intelligence indicates that ongoing problems at Fukushima do not come from the dry cask storage at the site, which reportedly survived the earthquake and tsunami intact. Rather, the Fukushima disaster illustrates very clearly that spent fuel pools are vulnerable. Therefore, it is unclear how the Commission came to the conclusion that a lesson of Fukushima is that US should move spent fuel off-site. Off-site storage will not obviate the need for spent fuel pools, because used rods must remain in pools for a minimum of five years before being transferred to dry casks. Packed spent fuel pools in the US need to be thinned out by removing older fuel and the pools need to be protected against natural disasters, station blackouts and terrorist attacks. Moving some waste offsite, as opposed to hardening the waste and the pools onsite, will not address this fundamental lesson of Fukushima.

- **5.2.4 Support Repository Program:** As the draft report finds, consolidated interim storage will takes "years to more than a decade" to open (p. 49). Rather than supporting a repository program, consolidated storage would be an enormous distraction that will take away resources (financial, human, and time) from an effort to find a permanent repository, as has been demonstrated by previous attempts to

[2] See for example, S. 784, Federal Accountability for Nuclear Waste Storage Act of 2007.

establish offsite storage. Moreover, any blunders in the siting of "interim" storage sites or having DOE start the process under the Nuclear Waste Policy Act will taint the permanent repository program. PSR believes that the most sensible and safest "redundancy" would be to secure the spent fuel at reactor sites.

- **5.2.5 Technical Opportunities:** It's difficult to see how "ongoing research" at consolidated storage sites would give any measure of public confidence. It is unlikely that these sites will be "interim" if there are hot cell facilities and a laboratory as well. Experience with storage, such as the handling and packaging of materials, can and should be developed at reactors – before moving the waste. Dry casks at reactor sites should be immediately fitted with instrumentation to measure gas pressure, release of radiation, and moisture – regardless of whether "interim" storage sites are sought.

- **5.2.6 Increased Flexibility and Efficiency:** It is unclear how the Commission came to the conclusion that offsite storage is "cost-effective," since it has not provided any of its cost analyses and assumptions comparing the cost of liabilities with the cost of offsite versus onsite storage. The Hamal *et al.* study prepared for the BRC on this issue only evaluated offsite storage. Dr. Frank von Hippel at Princeton has not been able to find a basis for DOE's claim that liabilities will increase to $500 million per year (page xi). While both onsite and offsite storage have construction and maintenance costs, offsite storage must also include costs of transportation ("very uncertain," according to Hamal *et al.*), "attractive incentives" for the host communities (not included in Hamal *et al.*) and potentially, security *in addition to* the existing security at reactor sites. Offsite "interim" storage will not reduce the need for spent fuel to be "extensively" handled at reactor sites in order to move it without exposing the public to large doses of radiation. As described above, waste at orphan sites can be addressed on a case-by-case basis and does not justify a program to move spent fuel from more than 70 sites.

- ***De facto* permanent facilities:** While it is appreciated that the Commission acknowledges the public's concern that "interim" storage facilities would become *de facto* permanent storage, the draft report fails to address this concern in its response. It presents no proposal for how to prevent these sites from becoming permanent parking lots (highly contaminated parking lots if there are hot cells and laboratories). Immediately thinning out the spent fuel pools and safeguarding the waste at reactor sites would go much farther to restore trust and confidence in the government's waste management program.

Spent Fuel Pools

PSR urges the Commission to take a stronger stance on reducing the amount of spent fuel currently stored in fuel pools. There have been more than sufficient studies, including by

the National Academies of Science (NAS), to show that this must be done urgently. The Commission's draft report needs to acknowledge that the NRC has failed to require all of the recommendations of the 2004 NAS report (page 52). Another NAS study, as the BRC recommends, is unnecessary and will only further delay the measures that have already been identified to protect public health and safety.

Hardened Onsite Storage (HOSS)

The BRC is required in its charter to consider "options for safe storage of used nuclear fuel while final disposition pathways are selected and deployed." The Commission's draft report acknowledges that "it will take years to more than a decade to open one or more" offsite storage facilities. Implicitly, the Commission is therefore only recommending longer-term storage options and is failing to address the current unsafe storage of spent fuel.

More than 170 national and local organizations from all 50 states agree that HOSS is the only sensible option for addressing the *immediate* safety and security threat posed by spent fuel storage at reactor sites. The benefits of the HOSS proposal include broad community support, low-cost, and maximum safety. The Commission should not point to NRC rulemaking resolve this issue. There is little public confidence in the NRC rulemaking process; the HOSS petition (PRM-72-6) has been pending since 2008.

The Commission concludes that "obviously, any hardened system could be implemented more cost effectively at a consolidated storage facility than at existing sites due to economies of scale" (p. 5). This conclusion – which is not obvious or necessarily accurate – misses the point of hardening the waste *at reactor sites* in order to address the immediate security threat. Waiting to harden this waste until after one or more off-site storage facility or facilities are identified, licensed, and accepting spent fuel would leaves the waste vulnerable for potentially more than a decade.

PSR asks the Commission in its final report to include a balanced presentation of HOSS. The draft report outlines the industry's arguments against HOSS, including that the storage/vault system could "collapse under attack and interfere with the cooling of the fuel" (p. 53). This claim is contrary to the point of HOSS and should not be presented as fact. HOSS is to be designed for "resistance to severe attacks, such as a direct hit by high-explosive or deeply penetrating weapons and munitions or a direct hit by a large aircraft loaded with fuel or a small aircraft loaded with fuel and/or explosives, without major releases."[3] *PSR also strongly urges the Commission to examine Germany's hardened storage of spent fuel.*

[3] Principles for Safeguarding Nuclear Waste at Reactors, http://www.psr.org/nuclear-bailout/resources/principles-for-safeguarding.pdf

Congressionally-Chartered Federal Corporation

PSR agrees that the US Department of Energy (DOE) has failed miserably to "inspire confidence or trust" (p. viii) in the US nuclear waste management program and should not be in charge of it any longer. We have serious reservations, however, about a "Congressionally-chartered federal corporation," given that some federal corporations such as TVA have little Congressional oversight, little public accountability, and serious debt.

If implemented, a federal radioactive waste corporation must not be exempted from the Government Corporation Control Act, which establishes mechanisms for congressional oversight of chartered corporations.[4] It must also have a sunset date that would require congressional reauthorization for the corporation to continue. PSR strongly agrees with the Commission that the new radioactive waste management entity should not have responsibilities related to development and implementation of reprocessing.

The draft report states that the "central task of the new organization would be to site, license, build and operate facilities" for the consolidated storage and final repository "within a reasonable timeframe" (page viii). This phrase is vague and appears to contradict the Commission's recommended new approach, which "may seem particularly slow and open-ended" (p. vii). PSR urges the Commission to remove this phrase in the final report in order to remain clear and consistent.

Advanced Reactor and Fuel Cycle

One of the most important findings of the Commission's draft report (p. 113) is that:

> No currently available or reasonably foreseeable reactor and fuel cycle technologies—including current or potential reprocess and recycle technologies—have the potential to fundamentally alter the waste management challenge this nation confronts….

This fundamental conclusion also needs to be stated in bolded italics in the Executive Summary.

PSR believes that a nuclear R&D program beyond safe storage of radioactive waste (e.g., materials, geology) and clean-up technologies is a waste of taxpayer money. Over $100 billion worldwide has already been spent on R&D for fast reactors and reprocessing and the cost, safety, and proliferation problems have not been resolved.[5]

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[4] http://www.fas.org/sgp/crs/misc/RS22230.pdf

[5] Arjun Makhijani, Institute for Energy and Environmental Research, *Plutonium End Game: Managing Global Stocks of Separated Weapons-Usable Commercial and Surplus Nuclear Weapons Plutonium*, page 7, January 22, 2001.

We are deeply concerned about the Commission's recommendation for "deployment." Given that the commission recognizes that these technologies are not ready for prime time, recommending deployment is likely to put the cart before the horse. This is what happened with the Bush Administration's reprocessing program, which went from a relatively small R&D program (Advanced Fuel Cycle Initiative) to the "vision" of the Global Nuclear Energy Partnership (GNEP), in which DOE was starting to site a reprocessing facility – without having a technology even out of early research stage. Moreover, nuclear demonstration projects have generally not panned out very well. As just one example, the Monju breeder reactor in Japan experienced a sodium fire in 1995 and it has been essentially shut down ever since. Japan may now be abandoning the reactor altogether.[6]

Defense Waste

The draft report fails to fully analyze the issue of defense waste. PSR questions the Commission's investigation of whether to reverse the 1980s decision to co-mingle defense and civilian waste for disposal, especially this late in the Commission's process (p. 93). Disposal of this waste should not be "expedited," as was suggested by some witnesses to the Disposal Subcommittee (p. 6). The Commission's recommendation of a new siting approach must be applied to defense waste as well as commercial waste, or risk the failure of the entire repository program. This means that the commitment made to New Mexico to prohibit high-level waste and spent fuel at WIPP and to close the site by 2030 must be kept in order to demonstrate to other states, tribes, and local communities that radioactive waste agreements are binding.

Miscellaneous

- We strongly disagree with the recommendation that the Nuclear Regulatory Commission (NRC) should "accelerate a regulatory framework and supporting research for novel components of advanced nuclear energy systems" (p. xvii). This Executive Summary recommendation is not in the body of the report and should be removed. Instead, the NRC should focus on determining and incorporating the lessons from Fukushima into its regulations before embarking on setting up the rules for new fuel cycle facilities or "advanced" reactors. Moreover, as PSR pointed out in its July 7, 2011 comments to NRC's "Draft Regulatory Basis for a Potential Rulemaking on Spent Nuclear Fuel Reprocessing Facilities," the NRC cannot proceed with reprocessing rules. As required by the National Environmental Policy Act (NEPA), the NRC must first prepare a Programmatic Environmental Impact Statement (PEIS), to analyze the overall impacts of reprocessing, as well as all of the associated facilities and processes,

[6] http://af.reuters.com/article/energyOilNews/idAFL3E7IF05B20110715

including implications for waste management, environmental impacts, past US and international experience, security impacts, and cost.[7]

- "An increased degree of confidence that new systems can be successfully licensed" (p. xvii) appears to be a recommendation for further streamlining NRC regulations and lowering safety regulations. The onus for successfully licensing "advanced nuclear" should be on the licensee, not the NRC. Given the recent revelations of NRC's failure to enforce its regulations for existing reactors and the fact that it contradicts the BRC's claim that it is not taking a position on "the appropriate role of nuclear power" (p. vi), PSR urges the BRC to remove this recommendation in the Executive Summary as it is beyond the scope of its mandate and not in the body of the report.

- Given that in the 1990s many Yucca Mountain workers and visitors were exposed to dangerous levels of toxic silica, which can cause the chronic and progressive lung disease silicosis, the draft report's conclusion that the occupational safe and health record for Yucca Mountain was "excellent" (p. 106) does not appear to be accurate.

- PSR agrees with the Commission's recommendation that the waste classification system needs to be revised (p. 108-111), but does not support making these changes through the lens of reprocessing, as the Commission appears to be doing (for example, the "most important shortcomings of the current framework are especially pertinent to the wastes that would be generated by fuel cycles that include the reprocessing and recycling of SNF," P. 108). As previously noted, the Commission concludes in Chapter 10 (p.113) that

  > No currently available or reasonably foreseeable reactor and fuel cycle technologies—including current or potential reprocess and recycle technologies—have the potential to fundamentally alter the waste management challenge this nation confronts….

  Therefore, the waste classification should be revised solely through the lens of protecting public health, not based on the idea that the US might reprocess someday and thus classification needs to make it easier to dispose of reprocessing waste.

Sincerely,

Michele Boyd
Director, Safe Energy Program

[7] See http://www.psr.org/resources/psr-comments-to-nrc-on.pdf for PSR's full comments to the NRC.