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ONE HUNDRED FOURTEENTH CONGRESS

Congress of the United States
House of Representatives

COMMITTEE ON ENERGY AND COMMERCE
2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-6115

Majority (202) 225-2927
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MEMORANDUM

September 29th, 2015

To: Democratic Members of the Subcommittee on Environment and the Economy

Fr: Democratic Staff of the Committee on Energy and Commerce

Re: Hearing on "Transporting Nuclear Materials: Design, Logistics, and Shipment"

The Subcommittee on Environment and the Economy will hold a hearing on Thursday, October 1, at 10:15 a.m. in room 2123 of the Rayburn House Office Building on the transportation of nuclear waste.

I. BACKGROUND

Nuclear power reactors in the United States generate an average of 2,200 metric tons of spent nuclear fuel every year. The inventory of spent nuclear fuel in the United States is now over 72,000 metric tons and is expected to grow to 139,000 metric tons by 2067.[1] Most of the current inventory is stored onsite where it was generated, in wet pools or dry casks.[2] Spent fuel is generally stored in pools for five years, then transferred to dry casks after it has cooled to within the heat limits of the casks.[3] However, in recent years, capacity for storage in wet pools has been exhausted, requiring more fuel to be transferred to dry casks. The Nuclear Regulatory Commission regulates the safety of spent fuel stored in dry storage onsite at nuclear power reactors.[4]

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[1] U.S. Government Accountability Office, "Outreach Needed to Help Gain Public Acceptance for Federal Activities that Address Liability" GAO-15-141 (Oct. 2014), at 11.

[2] *Id.* at 14.

[3] *Id.* at 7.

[4] *Id.* at 10.

In 1982, Congress passed the Nuclear Waste Policy Act (NWPA) directing the Department of Energy (DOE) to remove spent nuclear fuel from commercial nuclear power plants, in exchange for a fee, and transport it to a permanent geologic repository beginning no later than January 31, 1998.[5] The law also established an objective, scientifically-based process for selecting two repository sites. In the years that followed passage of the NWPA, however, DOE's efforts to identify potential sites were met with strong local opposition. In 1987, Congress amended the NWPA and designated Yucca Mountain, Nevada, as the sole site to be considered for a permanent geologic repository.[6] As discussed in previous subcommittee hearings, funding shortfalls, the State of Nevada's strong opposition, and other factors have prevented DOE from completing a nuclear waste repository at Yucca Mountain.

II. RECOMMENDATIONS FROM THE NATIONAL ACADEMIES

Consolidation of spent nuclear fuel at interim or permanent storage facilities will require transportation of large quantities of radioactive material. A 2006 report by the National Academies' National Research Council Committee on Transportation of Radioactive Waste identified serious risks from transportation of spent fuel and high level waste, including intentional malevolent acts and extreme accidents involving long duration fires.[7] In order to reduce these risks, the NAS made several recommendations including:

- DOE should continue to utilize rail shipping on dedicated trains as the primary means of transporting these wastes.[8]
- DOE should identify and publicize its preferred transportation routes as soon as practicable to allow for emergency planning.[9]
- Transportation should begin with a pilot program from closed reactors.
- DOE should develop policies to protect sensitive information about fuel shipments while maximizing transparency.[10]
- The Department of Energy and Congress should examine changes to the organization of DOE's program for transportation of spent fuel.[11]

III. RECOMMENDATIONS OF THE BLUE RIBBON COMMISSION (BRC)

The last of these recommendations was reiterated by the Blue Ribbon Commission (BRC) on America's Nuclear Future in their 2012 final report. The BRC was convened in 2010 to conduct a comprehensive review of policies for managing the back end of the nuclear fuel

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[5] Nuclear Waste Policy Act of 1982, codified at 42 U.S.C. 10101 et seq.

[6] P.L. 100-203.

[7] Nat'l. Academy of Science, "Going the Distance, The Sage Transport of Spent Nuclear Fuel and High-Level Radioactive Waste in the United States," Washington, DC (2006).

[8] *Id.* at 4-5.

[9] *Id*. at 5.

[10] *Id*. at 5.

[11] *Id*.

cycle, including all alternatives for the storage, processing, and disposal of civilian and defense spent nuclear fuel and high-level waste. Upon creating the Commission, former Energy Secretary Steven Chu indicated that the Commission would focus on alternatives to the Yucca Mountain nuclear waste repository in an effort to "move beyond the 25 year old stalemate," especially since "technology has advanced significantly during that time, giving us better options both in terms of science and public acceptance."[12]

The BRC made eight recommendations for managing and disposing of nuclear waste in the United States, including:

- Developing a new consent-based approach for siting future nuclear waste management facilities; [13]
- Reorganization of DOE's nuclear waste efforts into a new organization, potentially a federally chartered corporation with better authority to manage costs and schedules;[14]
- Developing one or more permanent deep geological facilities for the disposal of spent fuel and high level waste (though the suitability of Yucca Mountain was not evaluated); [15]
- Developing one or more consolidated interim storage facilities to reduce the costs of securing spent fuel at decommissioned sites, provide emergency back-up capacity, create flexibility;[16] and
- Coordinating with state, tribal, and local officials to plan for the eventual large scale transportation of nuclear waste and should begin to provide technical assistance to local and tribal governments.[17]

IV. CONCERNS RAISED BY THE GOVERNMENT ACCOUNTABILITY OFFICE

In a recent report, GAO identified both technical and societal challenges for transportation of spent nuclear fuel. Specifically, GAO noted risks associated with:

- Repackaging spent fuel from casks used for dry storage into casks for transportation, which may be a particular risk at decommissioned plants that no longer have cooling pools for use in the repackaging process;[18]

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[12] Letter from Dr. Steven Chu, Secretary of Energy, to Lee Hamilton and Brent Scowcroft, Co-Chairs, Blue Ribbon Commission on America's Nuclear Future (Feb. 11, 2011).

[13] Blue Ribbon Commission on America's Nuclear Future, Report to the Secretary of Energy, Jan. 2012, at viii (online at http://energy.gov/sites/prod/files/2013/04/f0/brc_finalreport_jan2012.pdf).

[14] *Id*. at x.

[15] *Id.* at xi.

[16] *Id*. at xii.

[17] *Id*. at xiii.

[18] U.S. Government Accountability Office, "Outreach Needed to Help Gain Public Acceptance for Federal Activities that Address Liability" GAO-15-141 (Oct. 2014) at 29.

- Transportation of high burn up fuel, which may degrade the cladding in storage canisters over time;[19]
- Sufficiency of current transportation infrastructure, including a lack of rail access to some nuclear power reactors;
- Readiness of spent fuel for transportation under the current regulations and guidance, because NRC regulations for spent fuel storage allow higher temperatures and radiation levels than current transportation guidelines;[20] and
- Achieving public acceptance of transportation routes and the overall waste management plan.[21]

V. DOE STRATEGY FOR MANAGEMENT & DISPOSAL OF NUCLEAR WASTE

In January 2013, DOE released a document titled *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*, which included a response to the Blue Ribbon Commission's (BRC) recommendations. This document also outlined a framework for meeting the government's obligation to dispose of nuclear waste.[22]

DOE's strategy serves as a statement of administration policy. It consists of three key elements: interim storage and permanent repository schedule, consent-based siting, and governance and funding.

A. Interim Storage and Permanent Repository Schedule

DOE agreed with the BRC that interim storage of spent nuclear fuel and high-level radioactive waste will be a critical element in any waste management system. To that end, DOE proposed developing a pilot interim storage facility with limited capacity and with an initial focus on serving shut-down reactor sites. DOE set a goal of commencing operations of the pilot project by 2021. DOE also expressed support for developing a larger, consolidated interim storage facility and set a goal of siting, designing, licensing, constructing, and operating the facility by 2025. Finally, DOE set a goal of siting a permanent geologic repository for the disposal of used nuclear fuel and high-level radioactive waste by 2026; designing and licensing the site by 2042; and commencing operations by 2048.

As part of the agency's effort to develop these storage facilities, DOE has begun the process of planning for the eventual transportation of the nuclear waste on the nation's roads and railways.

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[19] *Id*. at 25.

[20] *Id*. at 26.

[21] *Id*. at 31.

[22] U.S. Department of Energy, *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* (Jan. 2013).

B. Consent-Based Siting

DOE agreed with the BRC that a consent-based siting process would be critical to the successful implementation of the agency's waste management strategy. DOE's strategy "endorses the proposition that prospective host jurisdictions must be recognized as partners. Public trust and confidence is a prerequisite to the success of the overall effort."[23]

C. Governance and Funding

DOE also agreed with the Commission's recommendation for a new organization to execute the waste management implementation process. DOE noted that this organization is needed to "provide the stability, focus, and credibility to build public trust and confidence."[24]

DOE commissioned a RAND Corporation study of potential organizational alternatives.[25] The study concluded that a federal government corporation or an independent government agency are promising models. DOE has committed to work with Congress to enact the necessary legislation to create a new management and disposal organization and establish a stable funding structure for the organization.

VI. WITNESSES

Edward R. Hamberger
President and Chief Executive Officer
Association of American Railroads

Kelly Horn
Co-Chairman
Midwestern Radioactive Materials Transportation Committee

Christopher Kouts
Managing Partner
Kouts Consulting;

Robert Quinn
Chairman, Spent Fuel Transportation Task Force
U.S. Nuclear Infrastructure Council

Franklin Rusco
Director, Natural Resources and Environment
U.S. Government Accountability Office

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[23] *Id.* at 9.

[24] *Id.*

[25] RAND Corporation, *Choosing a New Organization for Management and Disposition of Commercial and Defense High-Level Radioactive Materials* (2012).

Kevin Kamps
Radioactive Waste Watchdog
Beyond Nuclear