BRC Staff Draft

Date: November 17, 2011
To: Members of the Ad Hoc Subcommittee on Commingling of Defense and Commercial Waste
Cc.: Disposal Subcommittee Co-Chairmen Hagel and Lash
BRC Co-Chairmen Hamilton and Scowcroft
From: BRC staff
Re: Background Paper on Commingling of Defense and Commercial Waste

Summary:

Since a 1985 decision by President Reagan that a separate permanent repository for disposal of defense high level waste was not required[1], DOE has planned for disposal of all high-level waste and spent fuel from national defense activities and DOE's own research activities in a repository for commercial waste developed under the Nuclear Waste Policy Act (NWPA). The Commission has heard recommendations from some commenters[2] that this decision be revisited, or even reversed, in light of developments that have occurred since the original assessment and decision were made. Other commenters have urged that the decision not be revisited.[3]

At the May 13, 2011 meeting of the Commission, the Co-Chairmen directed the Disposal Subcommittee to investigate whether the United States should consider reversing the 1985 decision to commingle defense and civilian waste for disposal and provide its views for consideration by the full BRC in late 2011. The Co-Chairmen more recently decided, because of interest in and expertise on this issue by Commissioners not on the Disposal Subcommittee, to create an ad hoc subcommittee to specifically focus on this issue. The ad hoc subcommittee is chaired by Dr. Allison Macfarlane; its members include Mr. Mark Ayers, Senator Pete Domenici, Dr. Richard Meserve, Dr. Ernie Moniz, Dr. Per Peterson and Dr. Phil Sharp. After consultation with the co-chairs of the Disposal Subcommittee, the ad hoc subcommittee will present its views and recommendation to the full Commission at the December 2nd public meeting.

A response to this direction requires consideration of the facts and factors that have changed since the 1985 evaluation that would influence a BRC recommendation that the Presidential decision be reconsidered. The detailed analysis in the body of this memorandum demonstrates that in the subsequent 26 years several factors have changed substantially, while several others have remained largely the same. Among the most important factors that are different now are:

[1] Based on an evaluation conducted by DOE pursuant to the NWPA. *An Evaluation of Commercial Repository Capacity for the Disposal of Defense High-Level Waste*. DOE/DP/0020/1. Washington DC: U.S. Department of Energy, 1985.
[2] Including the Yakama Nation and the State of Idaho/INL Oversight Program
[3] Including the Snake River Alliance (an Idaho-based NGO), the National Association of Regulatory Utility Commissioners and the Nuclear Energy Institute

- The sharp shift in focus at DOE from production of materials for nuclear weapons to cleanup and disposal of the legacy of wastes from the Cold War.
- The establishment of legally-binding site clean-up commitments that require DOE to remove defense wastes from some sites where they are currently stored by 2035.
- The current lack of statutory authority to develop a repository other than Yucca Mountain under the Nuclear Waste Policy Act.
- Successful development and operation of a geologic repository (WIPP), with a mission explicitly limited to disposal of only transuranic waste from defense nuclear activities.
- The possible establishment (if a key BRC recommendation is acted on) of a new organization outside of DOE to develop and operate repositories under an amended NWPA.

Four options and associated implications are presented at the end of this paper for the Ad Hoc Subcommittee's consideration:

1. Recommend that the 1985 decision not be reconsidered

2. Recommend that the decision be reconsidered and then reaffirmed or (if warranted by the analysis) reversed by the President.

3. Recommend that the Administration reassess the options for commingled or separate disposal paths and present the results (and a recommendation) to Congress to inform the debate about amendments to the NWPA to implement the BRC recommendations.

4. Leave any review and re-decision to the new waste management organization.

Background

The NWPA of 1982 directed that "the Secretary [of Energy] shall proceed promptly with arrangement for the use of one or more of the repositories to be developed under [this Act]" for the disposal of defense high-level waste[4], unless the President explicitly determined (following an evaluation that took into account issues of cost efficiency, health and safety, regulation, transportation, public acceptability, and national security) that a separate repository for defense high-level waste was required[5]. If such a repository were to be developed under other statutory authority[6], the Act exempted it from the detailed siting requirements and process it established for a commercial waste repository, but made it clear that such a defense-only repository would be subject to full Nuclear Regulatory Commission (NRC) licensing requirements and to all the

[4] This provision explicitly applies **only** to defense high-level waste, and does not mention spent fuel from national defense activities. However, other provisions concerning which parts of the Act would apply to "defense only" repositories **not** developed under the authority of this Act refer more broadly to repositories "for the disposal of high level radioactive waste or spent nuclear fuel resulting exclusively from atomic energy defense activities, research and development activities of the Secretary, or both." The relevant provisions are found in Attachment 1.
[5] Note that the Act says "required" and not "desirable" or some other term.
[6] The 1985 evaluation report listed the following statutes (in addition to the NWPA) affecting the management of defense high-level waste: the Atomic Energy Act 1954 (as amended), the Energy Reorganization Act of 1974, the department of Energy Organization Act of 1977, and the Federal Land Policy and Management Act of 1976.

state/local/tribal participation, consultation, and financial assistance provisions that the Act required for a commercial repository.

These provisions resolved four years of vigorous debates on two specific issues: (1) whether defense waste should be included in the repository program to be established for commercial spent nuclear fuel (SNF) by the comprehensive nuclear waste legislation then under development (the answer was yes), and (2) whether repositories developed exclusively for defense wastes under other legislative authority should be subject to the same state veto/congressional override provisions that were being considered for repositories for commercial SNF (the answer was also yes). While the principal impetus for comprehensive nuclear waste legislation in 1982 was the desire to provide a solution for the growing inventory of commercial spent fuel that had no place to go, there were also concerns that a solution that dealt with only part of the national nuclear waste problem would generally reduce public confidence in federal efforts and also that permanent disposal of the defense wastes might continue to be deferred for a long time and/or done in a way that was perceived as less rigorous than required for disposal of commercial wastes. At the same time, there were also major concerns that the state veto provision being considered for inclusion in the legislation on repositories for commercial spent fuel and high level waste might compromise federal authority to site facilities for defense waste disposal, and thus set an inappropriate precedent for siting other categories of national defense facilities. In fact, disagreement about whether the same procedures for state involvement in siting commercial repositories should apply to defense repositories was a key factor contributing to the failure to pass nuclear waste legislation in 1980.[7]

After the NWPA became law, DOE (acting for the President) evaluated the use of a civilian repository for defense high-level waste disposal and in 1985 concluded that this option would save on the order of $1.5 billion, compared to developing separate repositories for civilian and defense waste. Except for this cost difference, DOE found no other factors that distinguished significantly between disposing of the defense high level waste in a dedicated repository compared to co-disposing of it in a repository for commercial waste.[8] President Reagan accepted DOE's conclusions that same year and determined that a defense waste-only repository was not required; since then, DOE's plans have provided for the disposal of defense wastes (including spent fuel) with commercial spent fuel in repositories developed under the NWPA.[9]

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[7] Both Houses agreed that the host State's objection would be sustained with regard to a repository for commercial high-level waste if either the House of Representatives or the Senate affirmatively concurred, but they were unable to agree to a procedure for dealing with a State's objection to a repository for defense high-level waste.

[8] DOE, *An Evaluation of Commercial Repository Capacity for the Disposal of Defense High-Level Waste,,.* . op. cit.

[9] It is worth noting that the Act does not require that defense waste and commercial waste be commingled in the same repository even if the President determined (as he did in 1985) that there is no need for a defense-only repository sited outside of the context of the Act. While the Act does require that DOE use "one or more repositories developed under the Act" for the defense waste in that event, DOE would have been free to use one of the two repositories required by the 1982 Act only for the defense wastes and the other only for the commercial wastes. However, DOE's 1985 evaluation assumed that all of the projected defense HLW – about 20,000 canisters – would be placed in one of the two repositories developed under the Act along with 70,000 MTU of commercial fuel, with the remainder of the commercial fuel going to the second repository. DOE subsequently made a policy judgment to allocate 10% of the first 70,000 MTU capacity of the first repository to defense waste, (which covered nearly all of the 2,500 MTU of DOE spent fuel (including all the Navy spent fuel) and about half of the projected number of high level waste glass canisters..

Consideration of the Issue by the BRC

At the May 13, 2011 BRC meeting Commissioner Moniz asked DOE whether "it makes sense for the United States to re-evaluate its policy for managing high-level radioactive waste by separating the disposal solutions for defense and civilian waste." On May 24 Glenn Podonsky, DOE's Chief Health, Safety, and Security Officer, replied as follows:

> "Given that it has been over twenty-five years since the Presidential determination that a defense only repository was not required, it makes sense to re-evaluate that determination in light of current conditions. Among other things, the Department has successfully disposed of other types of defense waste over the past two decades and this experience may provide additional insights on the disposition of defense HLW. Accordingly, the Department will give serious consideration to a Commission Recommendation concerning separate disposal solutions for defense and civilian waste. The Department will evaluate such a recommendation within the relevant legal context, including Section 8 of the Nuclear Waste Policy Act, and take into consideration factors relating to cost efficiency, health and safety, regulation, transportation, public acceptability, and national security."[10]

At the same meeting, the BRC co-chairs directed the Disposal Subcommittee to investigate whether the United States should consider reversing the decision made in 1985 to commingle defense and civilian waste for disposal. *Note that the question put by the co-chairs is **not** whether the United States government should actually reverse the decision, only whether it should consider whether that decision should be revisited (and, after detailed analysis, reversed or re-affirmed).*

The Disposal Subcommittee draft report reflected this as follows:

> "Given the circumstances involving Yucca Mountain and the current lack of a "civilian" repository, and uncertainty regarding the economic value of reprocessing commercial spent fuel, some witnesses have suggested that it may now be more efficient to expedite permanent disposal of defense high-level waste in a defense-only geologic repository. Other witnesses believe waste disposal should be driven by the characteristics of the waste and not by the source. As directed by the Commission Co-Chairmen, the subcommittee will investigate this issue over the coming months and will provide its views to the full Commission in late 2011." (p.6)
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> "As discussed earlier in this report, current plans for commingling defense and commercial waste are based on a 1985 evaluation that showed a $1.5 billion cost advantage to that approach and no significant offsetting disadvantages. However, a number of developments in the 25 years since that analysis could conceivably alter the assumptions used to arrive at that conclusion. Examples might include the shutdown of all activities that used to produce defense high-level waste (which had the effect of making defense waste disposal a well-defined and bounded task), the successful licensing and operation of the WIPP facility, the establishment of site clean-up commitments that

[10] These are precisely the factors the NWPA specifies must be considered in such an evaluation.

> required DOE to remove defense wastes from some sites where they are currently stored by 2035, the increasing unreliability of appropriations for the commercial share of waste disposal costs, disagreements about whether or when commercial SNF would be disposed of, and the need to start over again on a process of finding a repository site under the NWPA.
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> In view of these developments and in view of the potential complexities of requiring a new waste management corporation to balance the competing needs of commercial and national defense "customers," and to deal with two very different funding arrangements (mandatory fees and discretionary appropriations) while avoiding cross-subsidization, the conclusions reached in 1985 concerning the desirability of co-disposing defense and commercial wastes in the same repositories might warrant reexamination. Note: As directed by the Commission Co-chairman at the BRC meeting on May 13, 2011, the Subcommittee will investigate whether the US should consider reversing the decision made in 1980s to comingle defense and civilian wastes for disposal." (pp. 52-53)

Reflecting the essence of the subcommittee report, the July draft of the full BRC report simply noted that the Disposal Subcommittee would investigate whether the United States should consider reversing the 1985 commingling decision.

The issue was raised explicitly in public comments[11] at the February 2, 2011 meeting of the Commission. At the public comment meeting in Denver on September 13, 2011, a representative of the State of Idaho[12] called for complete separation of the defense and commercial spent fuel disposal programs, with DOE taking care of disposal of all defense spent fuel and the proposed new organization being responsible for the commercial spent fuel. During the public comment meeting in Denver, a representative of the Savannah River Site Community Re-use Organization also voiced support for reversing the commingling decision, as has the Yakama Nation[13]. At the public comment meeting in Washington, DC on October 20, 2011, a panel discussion of the co-mingling issue was held consisting of a retired former DOE Richland Operations Office manager and representatives from the Snake River Alliance (an Idaho-based NGO), the Nuclear Energy Institute and the National Association of Regulatory Utility Commissioners. While some of the panelists were open to the possibility of conducting a re-analysis of the 1985 decision, all four believed the 1985 decision should be upheld.[14]

Assessment

An investigation of whether the United States should consider reversing the 1985 decision to commingle defense and civilian waste for disposal requires an assessment of the facts and factors that have changed since the 1985 evaluation that might justify a reevaluation of the presidential

[11] By Steve Frishman, technical consultant to the Nuclear Waste Projects Office of the State of Nevada.
[12] Susan Burke, Idaho National Laboratory Oversight Coordinator for the State of Idaho.
[13] In comments prepared and submitted on their behalf by Dr. Arjun Makhijani.
[14] See Attachment 2 for the transcript of this discussion as well as excerpts related to this issue from the comments on the BRC draft report from the Yakama Nation and the states of Idaho, New Mexico, South Carolina, and Washington.

decision made that year. The following analysis discusses such factors, beginning with those identified in the draft report of the Disposal Subcommittee.

1. The shutdown of all activities that produced defense high-level waste.

When the Act was under development, the Cold War was still underway, and the primary mission of the facilities making up the DOE weapons complex was production of nuclear weapons; management of the resulting radioactive wastes was not a major focus of attention. With the end of the Cold War and the associated termination of production of nuclear weapons materials, the focus shifted dramatically towards environmental restoration and disposal of the legacy of defense radioactive wastes. In addition, the end of reprocessing of defense-related spent reactor fuel (both plutonium production reactor fuel and Navy reactor fuel) meant that both large-scale production of additional high-level waste would cease, and at the same time a significant inventory of spent fuel previously slated for reprocessing would now require disposal. As a result, the management (including disposal) of the defense wastes is now a relatively well-defined and bounded activity that has been a focus of a major environmental management program at the DOE headquarters level beginning in the late 1980s – **after** the 1985 commingling decision. Whether the integrated management of the overall DOE site cleanup program (which did not exist in 1985) would benefit from the dedicated development and operation of a repository for all of the defense high-level waste and spent fuel (analogous to the WIPP repository for the defense transuranic waste) has simply never been examined.[15] Such an analysis would have to consider many factors including the timeframes in which the defense wastes at different DOE facilities would be ready for disposal: much of the DOE spent fuel and the naval fuel are ready for disposal, about forty percent of the defense high-level wastes at Savannah River have been vitrified and are presumably ready for disposal, but the defense high-level wastes at Idaho and Hanford have not been put into a disposal-ready form and, particularly in the case of Hanford, will not be ready for disposal for several decades.

2. The establishment of legally-binding site clean-up commitments that require DOE to remove defense wastes from some sites where they are currently stored by 2035.

In contrast to the intense pressures for developing a permanent solution for commercial spent fuel in the early 1980s, there were no such drivers for defense waste when the Act was being passed and the 1985 decision was made. The only consequence of delayed disposal of defense wastes that was considered was the potential impact on weapons production operations, which DOE concluded could be readily avoided by on-site storage of the high-level waste glass logs until the repository was available.[16] (In fact, one motivation for the Act's provisions concerning inclusion of defense waste in the commercial repositories was a concern that otherwise disposal of the defense waste might continue to be deferred for a long time.) Now, DOE has entered into agreements with a number of host states concerning site cleanup, some of which include

[15] Comments at the September 19 meeting in Denver noted that the strong support for cleanup of the former weapons production sites could be a significant driver for development of a repository for the defense wastes.
[16] The 1985 report (footnote 1) considered only a two-year repository delay, with an additional storage cost of about $35 million.

milestones for removal of waste from the sites.[17] One, with Idaho, requires the removal of most Navy spent fuel from the site by 2035 and allows the state to shut down further shipments of Navy spent fuel to the INL site for inspection and storage if any key parts of the agreement are not kept. In a recent review of the impact of the shutdown of the Yucca Mountain on storage at DOE sites, GAO reported[18] that the Navy said that "their greater concern [compared to the financial penalties in the Idaho agreement] is that Idaho might suspend Navy shipments of spent nuclear fuel to the state until the Navy meets its agreement to remove spent nuclear fuel, a suspension that would interfere with the Navy's ability to refuel its nuclear warships."

3. Disagreements about whether or when commercial spent fuel would be disposed of.

As noted earlier, a principal driver for the repository program required by the NWPA was desire for timely provision of disposal for the ever-growing inventories of commercial spent fuel that were facing no prospect of reprocessing and had no place else to go. While the 1985 evaluation of commingling assumed that about half of the commercial spent fuel would be reprocessed and the rest disposed of directly, DOE's repository plans since the issuance of the 1985 Mission Plan[19] (at the same time as the defense waste commingling evaluation) have assumed that the entire inventory of spent fuel would be accepted and disposed of as quickly as practicable after a repository began operation, an assumption that was not challenged by the owners of the fuel.

As the BRC draft report says, "As a group we concluded that it is premature at this point for the United States to commit irreversibly to any particular fuel cycle as a matter of government policy. Rather, in the face of an uncertain future, there is a benefit to preserving and developing options so that the nuclear waste management program and the larger nuclear energy system can adapt effectively to changing conditions." From the perspective of retaining options, while disposal of some form of highly radioactive waste from commercial sources would be necessary eventually, operation of a repository to emplace all commercial SNF in the near term would not be a priority.[20] However, scenarios involving prompt disposal of the defense waste (which has

[17] "Five states have agreements with DOE, and in one case with the Navy, regarding the storage, treatment, or disposal of nuclear waste stored at DOE sites. Only agreements with Colorado and Idaho include deadlines, or milestones, for removing waste from sites that may be threatened by a termination of the Yucca Mountain repository program. Under the agreements, DOE and the Navy are expected to remove their spent nuclear fuel from Idaho, and DOE is to remove its fuel from Colorado, by January 1, 2035. If a repository is not available to accept the waste, however, DOE and the Navy could miss these milestones. As a result, the government could face significant penalties—$60,000 for each day the waste remains in Idaho and $15,000 for each day the waste remains in Colorado—after January 1, 2035. These penalties could total about $27.4 million annually. Navy officials told GAO, however, their greater concern is that Idaho might suspend Navy shipments of spent nuclear fuel to the state until the Navy meets its agreement to remove spent nuclear fuel, a suspension that would interfere with the Navy's ability to refuel its nuclear warships." United States Government Accountability Office (GAO). *DOE NUCLEAR WASTE: Better Information Needed on Waste Storage at DOE Sites as a Result of Yucca Mountain Shutdown*, GAO-11-230, March 2011.

[18] GAO, op. cit.

[19] DOE, *Mission Plan for the Civilian Radioactive Waste Management Program*, DOE/RW-0005, June 1985.

[20] For example, the Nuclear Energy Institute points out that "Under any used fuel management scenario, disposal of high-level radioactive byproducts in a permanent geologic repository is necessary." (http://www.nei.org/keyissues/nuclearwastedisposal/) At the same time, they note that disposal is a long-term proposition: "Under an integrated management approach, used nuclear fuel will remain stored at nuclear power plants in the near term. Eventually, the government will recycle it and place the unusable end product in a deep

no further use and is ready for disposal) and delayed disposal of some portion of the commercial spent fuel inventory, consistent with the adaptive staged approach to geologic disposal that the BRC draft report endorses, were not considered in 1985.

4. Successful siting and operation by DOE of a geologic repository for defense TRU waste (WIPP).

The only example of success in siting a geologic repository is WIPP, a repository exclusively for defense waste. All of the siting failures in the U.S. and abroad considered by the BRC related to facilities for storage or disposal of commercial spent fuel, while the success of WIPP has been attributed in part to the explicit exclusion of commercial waste from the repository.[21] The 1985 evaluation did not consider either the possibility that it might be easier to site a repository limited to defense waste or the related possibility that separating out the disposal of defense waste might make disposal of the commercial waste even more difficult.

5. The need to enact and implement a new process for finding another repository site under the NWPA.

As a result of the 1987 amendments to the NWPA that eliminated any siting process for a commercial repository other than Yucca Mountain and the recent termination of the Yucca Mountain effort, the NWPA will need to be amended again to authorize a new process for finding one or more repository sites. This has two important implications for any reexamination of the commingling decision:

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geologic repository." While repository licensing is listed as a medium term goal, operating the repository is a long-term goal. (http://www.nei.org/keyissues/nuclearwastedisposal/integratedusedfuelmanagement/)

[21] See Statement of Senator Jeff Bingaman to the Blue Ribbon Commission on America's Nuclear Future Albuquerque, NM January 28, 2011: "Public opinion and New Mexico's political leadership could have turned against WIPP as strongly and as decisively as Nevada turned against the Yucca Mountain repository. They nearly did in 1977, when the Department of Energy considered using WIPP to dispose of high-level military waste, and again in 1978, when the Department considered using WIPP to dispose of commercial spent fuel. In the end, though, Congress statutorily prohibited using WIPP for commercial spent fuel in 1979, and even more explicitly banned the emplacement or disposal of any high-level waste or spent fuel in WIPP in 1992. The ban on spent fuel and high-level waste was an essential element of the compromise that allowed WIPP to go forward."

See also Gary L. Downey, "Politics and Technology in Repository Siting: Military Versus Commercial Nuclear Wastes at WIPP 1972-1985," Technology *in Society*. Vol. 7, pp. 47-75 (1985) 0160-791X/85: "The evolution of intergovernmental conflict at WIPP demonstrates that siting decisions for military waste disposal and commercial waste disposal do not rely on the same political grounds for their legitimacy, for the prospect of bringing them together in one repository caused a boundary dispute between the realms of legitimate federal and state decision-making authority. .. [A]lthough existing law had assigned [DoE] a single role with exclusive authority over all disposal activities, DoE had in fact, according to long-accepted conditions of political legitimacy, two distinct roles. Dependent upon whether the wastes were military or commercial in origin, these roles collided in the scope change at WIPP. In making a military siting decision, it legitimately represented a national interest, but in a commercial siting decision it merely represented one side of a set of competing regional interests." Also, "[R]epresenting the local population that would bear the costs of disposal, the state government accepted as legitimate its initial role as an interested observer of a military project, but felt it deserved much-expanded authority in any commercial operation."

- It presents a very different picture for the schedule for availability of a repository developed under the NWPA than was considered at the time of the 1985 decision to use such repositories for the defense waste. At that time it was assumed there would be an aggressive and wide ranging effort for the timely siting of two repositories for commercial spent fuel and high-level waste, and that the relatively small amount of defense waste could piggyback easily on that program. While the 1985 evaluation looked at the impacts of delay in availability of a repository on defense waste storage requirements, it considered a delay of only two years. With termination of Yucca Mountain and no ability to develop a commercial repository at another site until a new siting process is established in law, the delays could be much longer and previously-unexamined issues concerning the storage of DOE high-level waste and spent fuel for extended periods could arise.[22]

  If the 1985 commingling decision were reversed, DOE could proceed to site a defense-only repository under other existing legislative authorities,[23] without waiting for all the issues associated with a new siting process for disposal of the commercial waste to be resolved.[24] The existing NWPA provisions concerning a defense-only repository would still apply, i.e. such a repository would be subject to NRC licensing and the state participation and veto provisions of the Act – a process that gives states participation rights similar to those provided to New Mexico with respect to WIPP but maintains ultimate federal supremacy through the process for congressional override of a state veto. If defense wastes continue to require disposal in a commercial repository developed under the Act, establishment of a new consent-based siting process for future repositories, as recommended by the BRC, may reopen old issues about the appropriate balance between federal and state authority in siting repositories for defense waste vs. commercial waste that derailed comprehensive nuclear waste legislation in 1980.[25] Citing the 1980 experience, GAO's recent report on the impacts of termination of Yucca Mountain on defense waste management[26] noted that "it may take time to reassess whether to use the same procedures in siting a repository for DOE and Navy materials and commercial spent nuclear fuel."

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[22] "Although EM officials told GAO that DOE can extend storage of nuclear waste on DOE sites for some time, additional information is needed to plan for longer storage. For instance, DOE does not know how long the lives of existing storage facilities can be extended beyond estimates in current site plans. In addition, although research is being planned for long-term storage of commercial spent nuclear fuel beyond 120 years, DOE has no plan for comparable research focusing on its unique long-term waste storage needs." GAO, op. cit., p.

[23] Specific legislative authorization for construction would ultimately be required.

[24] In explaining Idaho's recommendation that disposal of defense and commercial waste be separated, Susan Burke, Idaho National Laboratory Oversight Coordinator, said "But, for the DOE small amount of waste, to wait on the issues to be resolved with the commercial waste didn't make a lot of sense to us." Transcript of the Public Meeting to Solicit Feedback on the Draft Commission Report, Denver, CO, September 13, 2011, pp. 175-176, http://brc.gov/sites/default/files/meetings/transcripts/0913musc.pdf

[25] "In April 1981, the Committee on Radioactive Waste Management at the National Academy of Sciences/National Research Council invited several Congressional staff members to explain why Congress had, for several years, been unable to pass a law governing the disposal of high-level nuclear wastes. The key issue, the staff members agreed, was whether or not to bury military wastes from weapons production and commercial wastes from nuclear power plants together in the same repository. Disagreement on that question had killed the 1980 bill…Asked by one of the scientists to explain '[w]hat is supposed to be so different between military wastes and civilian wastes,' Senate staffer Ben Cooper asserted, 'It is a federal/state conflict.' Downey, op. cit.,

[26] GAO, op. cit.

- The need to establish a new consent-based siting process for future repositories developed under the NWPA also means that separating the approaches to siting repositories for the DOE and commercial wastes in the near term would not necessarily mean the development of two separate repositories in the long run. The NWPA of 1982 exempted a repository exclusively for defense waste from the complex siting process requirements imposed on repositories for commercial wastes. This meant that while DOE was free to select a site for a defense-only repository using some other siting process (subject to the state/tribal participation and consultation requirements of the Act), that repository could not subsequently be used for commercial wastes that were subject to the siting requirements of the NWPA. As noted above, however, those siting requirements were removed from the NWPA in 1987, and a new siting process must be established for sites other than Yucca Mountain. The amendments needed to create the consent-based siting process recommended by the Commission could allow the new waste management organization to make use of a repository originally developed for defense waste, provided that the host community and state are willing, that the NRC approves the expansion, and (possibly) that Congress also approves such dual-use as a provision of a negotiated agreement.[27]

6. <u>The potential complexities introduced by establishment of an independent waste management organization outside of DOE.</u>

The 1985 evaluation assumed that both the commercial and defense waste disposal programs would be managed by DOE, whether or not there was a separate defense-only repository.[28] Moving the responsibility for management of defense waste to a new organization outside of DOE, as recommended in the BRC draft report, could create complications that were not envisioned in the 1985 evaluation.[29] First, the "Close liaison between the defense and commercial waste disposal programs" that the 1985 evaluation said was "being maintained to assure technical and schedule compatibility" could be more difficult to accomplish if management responsibility for disposal of defense waste is moved outside of DOE.

Combining the disposal of defense and commercial waste could complicate life for a new waste management organization in several ways.[30] First, it would be placed in the position of having to

[27] This possibility was suggested at the Denver feedback meeting in September 2011 by the representative of the State of Idaho who proposed separating the programs for disposal of defense and commercial waste.. Transcript of the Public Meeting to Solicit Feedback on the Draft Commission Report, Denver, CO, p. 173.

[28] "Within DOE; the management of high-level waste resulting from atomic energy defense activities is the responsibility of the Assistant Secretary for Defense Programs. … Unless the President finds that a separate repository for defense high-level waste is required, the Office of Civilian Radioactive Waste Management will assume responsibility for permanent disposal of defense high-level waste at a commercial repository." DOE, *An Evaluation of Commercial Repository Capacity for the Disposal of Defense High-Level Waste*. Op. cit..

[29] While the original 1984 report on Alternative Means of Financing and Managing the waste program had recommended establishment of an independent federal corporation for that purpose, that possibility was not considered in the 1985 evaluation.

[30] A similar point was made by the Carlsbad Mayor's Nuclear Task Force: "Also, given the recommended changes in the BRC Draft Report regarding the funding mechanism and management for repository programs, it may be cleaner to separate the defense and civilian programs." Detailed Comments on the Draft Report of the Blue Ribbon Commission on America's Nuclear Future submitted by The Carlsbad Mayor's Nuclear Task Force Carlsbad, New

balance the needs of and obligations to two very different sets of "customers." Second, it would have to deal with financial uncertainties resulting from reliance on two very different funding sources – the nuclear waste fee and fund (which will provide a reliable source of funding for the commercial share if the BRC's draft recommendations in that regard are adopted) and annual appropriations for the defense share. Finally, it will have to ensure that there is no cross-subsidization between the two customers – taxpayers should not subsidize the disposal of the commercial waste, and utilities and their ratepayers should not subsidize disposal of defense waste.[31]

These factors suggest that a reevaluation of the relationship between defense and commercial waste disposal, if one is conducted, could consider the alternative of complete separation institutionally as well as physically – i.e., DOE would be responsible for all aspects of management of DOE-owned wastes, including developing and operating a repository for disposal of DOE wastes, while the new waste management organization would be responsible for management and disposal of commercial high-level waste and spent fuel. As noted earlier (see footnote 12), such an option was recommended by a representative of the State of Idaho at the September 13, 2011 meeting in Denver. The representative noted that the new entity and the funding mechanism for it recommended by the Commission's draft report appear more appropriate for commercial sector spent fuel then for DOE wastes, and that the states with DOE wastes already have an established relationship with DOE and each other that could be built on to resolve DOE waste issues and meet commitments to those states.[32]

7. Inclusion of DOE-owned wastes other than those specifically named in the NWPA as potential candidates for disposal in a repository not developed pursuant to the Act.

Although the NWPA section 8 requirement for a Presidential decision about the need for a separate repository for defense waste explicitly applies **only** to defense high-level radioactive waste, the other related provisions concerning which parts of the Act would or would not apply to "defense" repositories not developed under the Act refer more broadly to repositories "for the disposal of high level radioactive waste or spent nuclear fuel resulting exclusively from atomic energy defense activities, research and development activities of the Secretary, or both." However, consistent with the more limited language of section 8, the DOE analysis supporting the 1985 determination to commingle defense and commercial disposal considered only defense high-level waste, not defense spent fuel or waste from DOE research and development activities. Furthermore, there are several forms of high-level waste and spent fuel, as well as some other radioactive materials for which geological disposal might be appropriate, for which DOE is (or in the future might be) responsible that do not clearly fit within the letter of this broader

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Mexico, September 13, 2011, http://www.brc.gov/sites/default/files/comments/attachments/carlsbad_mayors_task_force_detailed_comments_on_draft_brc_report_rev_1.pdf

[31] The NWPA's requirement that the costs of disposal of defense waste in repositories developed under the Act be paid for by appropriated funds reflect the intent to avoid cross-subsidization. (See Congressional Record – Senate, April 29, 1982, p. S 4273) Concern about the possibility of such cross-subsidization was expressed at the BRC staff briefing to National Governors Association staff in August 2011.

[32] Comments of Susan Burke, Idaho National Laboratory Oversight Coordinator for the State of Idaho, in the transcript of the Public Meeting to Solicit Feedback on the Draft Commission Report, Denver, CO, September 13, 2011, pp. 123- 130, http://brc.gov/sites/default/files/meetings/transcripts/0913musc.pdf

description. A reassessment of the commingling decision should consider the full inventory of DOE-owned wastes that DOE owns or will be responsible for that require or otherwise could be suitable for disposal in a geological repository.[33] Specific cases to be considered are:

- West Valley HLW[34]

  There are 275 canisters of HLW glass stored in a former reprocessing facility at West Valley, New York, that processed 640 metric tons of spent fuel between 1966 and 1972.[35] This waste must be removed before the site can be decommissioned. Until recently, DOE planned to dispose of that waste at Yucca Mountain. The appropriate classification of this waste as "defense," "research," or "commercial" is unclear, since the spent fuel that was reprocessed came from all three types of activities, so that the resulting HLW is a blend of wastes from different sources.[36] Because the resulting HLW contains some waste from commercial power reactors, it might be excluded from a repository for national defense and other DOE wastes developed outside the context of the NWPA. However, if such a repository were developed, explicit inclusion of the West Valley HLW – whose primary source was defense and research activities of the AEC - could accelerate the cleanup and closure of the West Valley site.

- Research reactor fuel

  DOE accepts some SNF from non-DOE sources under the Foreign Research Reactor (FRR) and Domestic Research Reactor (DRR) programs. The quantities involved are very small relative to the inventories from other domestic sources of spent fuel.[37] In both cases, much of the fuel involved contains highly enriched uranium, so there are non-proliferation and other national security reasons for DOE to accept and dispose of it.

[33] At the Denver feedback meeting, both Susan Burke of the State of Idaho and John Heaton of the Carlsbad Mayor's Nuclear Task Force agreed that their recommendation for separate disposal of "defense" waste was meant to include such miscellaneous wastes as the West Valley HLW, TMI spent fuel at INL, and other government-owned wastes at the three main DOE sites as well as the DOE-generated wastes. Transcript of the Public Meeting to Solicit Feedback on the Draft Commission Report, Denver, CO, September 13, 2011, pp. pp. 172-173, http://brc.gov/sites/default/files/meetings/transcripts/0913musc.pdf

[34] Information taken from U.S. Department of Energy, *Plutonium Recovery from Spent Fuel Reprocessing by Nuclear Fuel Services at West Valley, New York from 1966 to 1972*, February 1996, https://www.osti.gov/opennet/document/purecov/nfsrepo.html#ZZ4

[35] The 1980 West Valley Demonstration Project Act gave DOE the responsibility for solidifying the liquid high-level radioactive waste at the decommissioned plant and transporting it to a Federal repository. However, the WVDPA did not authorize DOE to take title to the high level waste. According to DOE, " the Department has no obligation to dispose of this waste or authority to take title to this waste until after the State of New York enters into a disposal contract with the Department and pays the necessary disposal fees for deposit into the Nuclear Waste Fund." Department of Energy Office of the Assistant General Counsel for Civilian Nuclear Programs, Comments on August 31, 2010 (Revised November 12, 2010), Report on "Federal Commitments Regarding Used Fuel and High-Level Wastes."

[36] U.S. Department of Energy, Plutonium *Recovery from Spent Fuel Reprocessing by Nuclear Fuel Services at West Valley, New York from 1966 to 1972*, op. cit..

[37] The FRR program, which was established to support U.S. non-proliferation and nuclear security goals, accepts used fuel from research reactors in other countries.. So far, more than 9,000 used fuel assemblies have been accepted from 29 countries under the program, which is expected to run until 2019. The DRR program accepts used fuel from some 27 operating research reactors at U.S. universities and other government research reactors. .

These fuels were destined for disposal at Yucca Mountain, but it is unclear whether legally they would be eligible for a non-NWPA repository under the specific language of the current law even though such disposal would be consistent with the intent of the law.

- Any spent fuel from foreign commercial reactors that might be accepted for non-proliferation or other national security reasons.

  The BRC draft report contemplates the possibility that the US might in the long-term offer to take some foreign commercial spent fuel for disposal to meet national security objectives. If such a "take back" policy were adopted, it might be treated similarly to the research reactor fuel acceptance programs, with DOE taking ownership and responsibility for management and disposal of the fuel.[38] In that event, consideration might be given to disposal of such fuel in a "defense" repository even though the origin of the fuel is commercial power generation, since the objectives of acceptance and disposal of the fuel are important for national security. However, such consideration should take into account the possibility that inclusion of even a small quantity of commercial spent fuel in a "defense" repository might compromise the siting, performance, or other features of the repository.

- DOE wastes other than HLW and SNF that might be suitable for disposal in a separate defense repository.

  In comments on the BRC draft report, the Yakama Nation's first recommendation was "a dedicated repository for defense high-level waste as well as a number of other kinds of waste like GTCC [Greater-than-Class C] and GTCC-like waste, [39] reactor graphite blocks, and depleted uranium from enrichment plants that would cause severe environmental harm if disposed of in shallow land burial but that do not have a high thermal source term that is characteristic of spent nuclear fuel." They argue that "Such a

[38] Van Ness Feldman has concluded " that the DOE has authority under the AEA to accept spent fuel from foreign commercial reactors, as long as the procedures and criteria set forth in Section 131 of the AEA are met, including requirements to comply with other provisions of the AEA and other Federal statutes." Van Ness Feldman, P.C., *Legal Analysis of Commission Recommendations for Near-Term Actions*, July 29, 2011 REVISED October 4, 2011, http://www.brc.gov/sites/default/files/documents/vnf_legal_authorities_memo_10-04-11.pdf

[39] GTCC waste must be disposed in geologic repository unless alternate method proposed by DOE and approved by NRC. DOE is currently conducting an environmental evaluation of alternatives for disposal of GTCC waste and has issued a Draft GTCC EIS that evaluates a range of disposal methods: geologic repository; intermediate depth borehole; enhanced near surface trench, and above-grade vault. "The Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA) specifies that the GTCC LLRW that is designated a federal responsibility under Section 3(b)(1)(D) is to be disposed of in a facility that is adequate to protect public health and safety and is licensed by the NRC. DOE owns and generates both LLRW and non-defense- generated TRU waste, which have characteristics similar to those of GTCC LLRW and for which there may be no path for disposal. DOE is referring to these wastes as GTCC-like wastes… Although GTCC-like waste is not subject to the requirements in the LLRWPAA, DOE also intends to determine a path to disposal that is similarly protective of public health and safety." (Draft Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste (DOE/EIS-0375-D))

repository would likely save money and be less complicated and difficult to site than a co-mingled repository."[40]

Options and associated implications for consideration by the Ad Hoc Subcommittee

1. Recommend that the 1985 decision not be reconsidered

   - Reduces the number of issues to be considered in developing and enacting new legislation.
   - Likely to be perceived as a conclusion that the 1985 decision remains valid, i.e. that detailed consideration of the factors discussed above would not be likely to change the determination.
   - Leaves the timing of disposal of defense wastes dependent on the schedule for setting up a new waste management organization and enacting and implementing a siting process for a commercial repository.

2. Recommend that the decision be reconsidered and then reaffirmed or (if warranted by the analysis) reversed by the President.

   - Does not require or imply a judgment by the BRC itself about what the outcome of the reassessment will be.
   - Opens the possibility for more rapid progress on a defense waste-only repository decoupled from the issues associated with disposal of commercial waste.
   - Might face legal challenge to the authority of the President to reverse the decision, since the NWPA only explicitly provides for one evaluation process followed by a decision.[41]
   - Might be perceived as an effort to "cut corners" for defense wastes.

3. Recommend that the Administration reassess the options for commingled or separate disposal paths and present the results (and a recommendation) to Congress to inform the debate about amendments to the NWPA to implement the BRC recommendations.

   - Allows Congress to decide on the recommendation and make any needed legislative changes, avoiding possible legal challenges.
   - Allows legislation defining the functions and structure of the new independent waste management organization to be based on the reexamination and resulting decision (if any changes are made to the original decision).[42]

[40] Comments on the July 29, 2011, Draft Report to the Secretary of Energy, of the Blue Ribbon Commission on America's Nuclear Future (BRC), Prepared by the Institute for Energy and Environmental Research (IEER) on behalf of the Yakama Nation, 30 September 2011

[41] Legal analysis performed for the Commission concluded that that it is likely that the 1985 decision related to disposal of defense high-level waste may be reconsidered by the President, taking into account the list of considerations that applied to the original determination, and that in view of the absence of a reference to "spent nuclear fuel" in Sections 8(b)(1)-(2) and in the 1985 determination, the President may determine that a repository for defense-only spent nuclear fuel is "required.."

- Defers initiation of any effort to site a defense-only repository (should that be authorized) until congressional action. Depending on the result of that action, however, siting of a defense repository might not have to await establishment of a new waste management organization and repository siting process.

4. Leave any review and re-decision to the new waste management organization.

    - Consistent with BRC recommendation for establishment of an independent waste management organization.
    - Presupposes a prior answer to the question of whether there should be separate institutional approaches to defense (DOE) and commercial wastes, which would have to be determined in the absence of a detailed review of the commingling issue.
    - Puts establishment of the new organization and resolution of issues concerning disposal of commercial waste on the critical path for disposal of defense waste.
    - Commingling decision involves policy issues that may go beyond the competence of the new organization.

If the Ad Hoc Subcommittee recommends any of the above options involving reconsideration of the 1985 decision, the Subcommittee may wish to add some or all of the following caveats to the recommendation:

- The reexamination should be done independent of DOE, e.g. by the National Academies if the subcommittee believes the reexamination should be conducted prior to forming a new nuclear waste management organization (options 2 or 3), or by the new nuclear waste management organization (option 4). In either case, opportunities for public input should be provided.

- The review should be broad in scope, including at a minimum the issues and factors identified above (e.g., disposal of DOE wastes beyond just the defense spent fuel and high level waste, and the implications of establishment of an independent waste management organization) in addition to those specified in section 8 of the NWPA.

- The review should identify any changes to the current statutory provisions concerning disposal of defense or other DOE wastes that are warranted by the reexamination.

- The review should assume that in any case, the BRC recommendations concerning development of updated site-independent disposal regulations (which would apply to a defense-only repository as well as a commercial waste repository) would be implemented expeditiously, to avoid any perceptions that the defense-only repository approach might involve cutting of regulatory corners.

[42] For example,. the membership of the board of directors of the new organization and various stakeholder bodies would depend on whether the organization is going to handle both classes of waste or only commercial waste. Similarly, the funding and financial oversight arrangements would depend on whether or not the organization will be handling wastes having two very different funding sources

- If a decision is made to reverse the 1985 decision and pursue a separate repository for the defense wastes, the organization ultimately responsible for disposal of the defense wastes should seek to use the principles of a consent-based siting approach as recommended by the BRC to the maximum extent possible consistent with legitimate national security concerns and existing law.

Attachment 1

NWPA Provisions concerning defense waste disposal

Sec. 2. For purposes of this Act [42 U.S.C. 10 10 1 et seq.]:

(3) The term "atomic energy defense activity" means any activity of the Secretary performed in whole or in part in carrying out any of the following functions:

(A) naval reactors development;
(B) weapons activities including defense inertial confinement fusion;
(C) verification and control technology;
(D) defense nuclear materials production;
(E) defense nuclear waste and materials by-products management;
(F) defense nuclear materials security and safeguards and security investigations; and
(G) defense research and development.

APPLICABILITY
Sec. 8. (a) Atomic energy defense activities. Subject to the provisions of subsection (c), the provisions of this Act shall not apply with respect to any atomic energy defense activity or to any facility used in connection with any such activity.

(b) Evaluation by President.

(1) Not later than 2 years after the date of the enactment of this Act [enacted Jan. 7, 1983], the President shall evaluate the use of disposal capacity at one or more repositories to be developed under subtitle A of title I [42 U.S.C. 10131 et seq.] for the disposal of high-level radioactive waste resulting from atomic energy defense activities. Such evaluation shall take into consideration factors relating to cost efficiency, health and safety, regulation, transportation, public acceptability, and national security.

(2) Unless the President finds, after conducting the evaluation required in paragraph (1), that the development of a repository for the disposal of high-level radioactive waste resulting from atomic energy defense activities only is required, taking into account all of the factors described in such subsection, the Secretary shall proceed promptly with arrangement for the use of one or more of the repositories to be developed under subtitle A of title 1for the disposal of such waste. Such arrangements shall include the allocation of costs of developing, constructing, and operating this repository or repositories. The costs resulting from permanent disposal of high-level radioactive waste from atomic energy defense activities shall be paid by the Federal Government, into the special account established under section 302.

(3) Any repository for the disposal of high-level radioactive waste resulting from atomic energy defense activities only shall (A) be subject to licensing under

section 202 of the Energy Reorganization Act of 1973 and (B) comply with all requirements of the Commission for the siting, development, construction, and operation of a repository.

(c) Applicability to certain repositories. The provisions of this Act shall apply with respect to any repository not used exclusively for the disposal of high-level radioactive waste or spent nuclear fuel resulting from atomic energy defense activities, research and development activities of the Secretary, or both.

Sec. 101. (a) Notification to States and affected Indian tribes. Notwithstanding the provisions of section 8, upon any decision by the Secretary or the President to develop a repository for the disposal of high-level radioactive waste or spent nuclear fuel resulting exclusively from atomic energy defense activities, research and development activities of the Secretary, or both, and before proceeding with any site-specific investigations with respect to such repository, the Secretary shall notify the Governor and legislature of the State in which such repository is proposed to be located, or the governing body of the affected Indian tribe on whose reservation such repository is proposed to be located, as the case may be, of such decision.3

(b) Participation of States and affected Indian tribes. Following the receipt of any notification under subsection (a), the State or Indian tribe involved shall be entitled, with respect to the proposed repository involved, to rights of participation and consultation identical to those provided in sections 115 through 118, except that any financial assistance authorized to be provided to such State or affected Indian tribe under section 116(c) or 118(b) shall be made from amounts appropriated to the Secretary for purposes of carrying out this section.

Attachment 2

Commingling Issue – Comment Extracts

New Mexico Environment Department

1. The BRC recommends the establishment of a new independent waste management organization and suggests that the appropriate Congressional committee begin hearings on this matter as soon as practicable. Considering the successful operation of WIPP under DOE oversight and funding, we do not believe that a new layer of bureaucracy outside DOE is necessary or in the best interest of WIPP or the state. A new organization could potentially be disruptive to WIPP's ongoing operation and may not receive appropriate funding. In addition, lengthy congressional hearings could delay the proposed expansion of the mission of WIPP to receive waste other than just defense-related transuranic (TRU) waste. Should the recommendation for a new independent waste management organization remain in the final report, we suggest that the BRC include language cautioning that such an organization attempt to seamlessly integrate DOE's existing successful operations such as WIPP.

4. We suggest that the BRC add an eighth key recommendation that the current NRC 10 CFR 61 waste classification system be revised and made "risk-based", the differentiation between "defense" and "non-defense waste" be eliminated, and that commingling of the two types be allowed. The BRC goes into detail about the current classification system, which "creates obstacles to managing low-concentration high level waste as TRU waste or low level waste." This is because nuclear waste is currently classified based upon origin rather than risk. While the BRC encourages the NRC to "risk-inform" and reevaluate the 10 CFR 61 waste classification system, it stops short of making this a key recommendation of the report. Making this a key recommendation would facilitate the expansion of WIPP's mission.

Washington State Department of Ecology

6. Regarding Recommendation 2, which proposes a single-purpose organization to manage the transportation, storage and disposal of nuclear wastes, we suggest a change to the Recommendation stating that the United States Department of Energy HLW and spent fuel waste should be considered separately. This would allow this legacy defense waste to be dispositioned sooner, reduce risk to human health and the environment associated with those storage sites, and save tax dollars by reducing the long-term burden.

South Carolina Department of Health and Environmental Control

3. The Draft Report recommends formation of a new organization to manage civilian and defense spent fuel and high-level nuclear waste. DHEC believes that breaking the waste into two categories (commercial spent fuel and DOE managed spent fuel/high level waste), while

retaining DOE as the managing organization for its waste, is a more practical option for several reasons. First, the DOE waste is different from commercial spent fuel in several ways: smaller volumes, different characteristics, and differing relative priorities. For example, the Draft Report asserts that spent fuel from shutdown commercial reactor sites should have first priority in disposal; however, states that have borne the risk of housing millions of gallons of highly radioactive and toxic liquid wastes in aging tanks for over fifty years may disagree with this priority. The equity and risk considerations for commercial spent fuel versus DOE waste are different. The DOE waste also has the advantage of an existing DOE based infrastructure that could be employed. In addition, states hosting DOE sites already have an established relationship with DOE and with each other. In short, there are many factors that would potentially make the DOE waste easier to dispose, if managed by DOE and considered separately from commercial spent fuel. DHEC experience in managing radioactive legacy waste has generally been that early, small scope success in managing the easiest portion of the legacy volume leads to accelerated momentum for disposition of the remainder. Where it is possible to break down the complexity into smaller, more manageable pieces, DHEC encourages this option. Retaining DOE as the managing organization for its own spent fuel and high level waste is a practical option that may yield lessons learned for the larger, more complex system needed for commercial spent fuel disposal.

Governor of Idaho's comments

Separating DOE Fuel from Commercial Fuel

As the Commission is aware, Idaho has an enforceable legal agreement with the Department of Energy (DOE) and the Naval Nuclear Propulsion Program (Navy) to remove spent nuclear fuel and high level waste (DOE inventory) from the state. Although Idaho believes the Commission's draft report contains a number of well-reasoned recommendations, it fails to provide a clear path for DOE and the Navy to meet their obligations to Idaho. Idaho believes those obligations can be best achieved by managing the DOE inventory separately from commercial spent fuel. Idaho agrees with the Commission's proposed recommendation that a new entity be created to implement a waste management program as to commercial spent fuel. However, Idaho believes the Commission should recommend that DOE retain responsibility for the DOE inventory and take expeditious actions to permanently dispose of such materials in a deep geologic disposal facility.

A number of factors suggest that DOE should retain responsibility for management of the DOE inventory and provide for its timely disposal:

- Much of the DOE inventory has been managed and placed into a condition suitable for ultimate disposal a deep geologic disposal facility. For instance, the Navy is placing its spent nuclear fuel in Idaho in containers built to Yucca Mountain specifications and ready for final disposal. The next step for DOE spent nuclear fuel and high level waste should be permanent disposal, not interim storage.

• The current DOE inventory includes approximately 2,500 metric tons of spent nuclear fuel in comparison with the current, and ever expanding, commercial spent nuclear fuel inventory of some 65,000 metric tons. Decoupling management of the DOE inventory from commercial spent nuclear fuel will allow DOE to focus on disposal options suitable for its modest inventory. DOE success in managing and disposing of its inventory can serve as a practical demonstration that management and disposal of commercial spent fuel is feasible.

• The DOE spent nuclear fuel is not likely to be reprocessed. Delaying disposal of this material while the nation debates the merits of reprocessing commercial spent nuclear fuel is unnecessary and burdensome to the states storing DOE inventory. DOE spent nuclear fuel has been stored by this nation for too long and needs permanent disposal.

• DOE has an established relationship with states where the DOE inventory is currently located, including agreements providing milestones and deadlines for specific actions. These states have relationships built on their common interest in seeing that the DOE inventory is appropriately managed and disposed. These agreements and relationships can facilitate and motivate DOE to take available and timely actions to meet its responsibilities.

Idaho is hopeful that timely progress toward the permanent disposal of the DOE inventory can be made by separating management of the DOE inventory from commercial spent nuclear fuel.

Yakama Nation

It is important to note that present low-level waste standards consider only concentrations of waste in the classification system. This has led to some of the problems we face today. For instance, the problem of disposal of depleted uranium arises mainly because of the huge amounts involved. Were there only a few kilograms here and there, there would not be a big issue. At over half a million tons, it is a huge problem both because of the high alpha specific activity and the total number of curies. Practical waste classification and disposal standards should not only limit concentrations of long-lived radionuclides in waste streams to be disposed of in low-level waste facilities, they should also limit total amounts. Deep geologic disposal should be required if the total amounts or concentrations are above the limits. This will prevent dilution from being used as a wholesale approach to disposal of wastes in shallow land burial facilities at the lowest possible cost. This is now being contemplated by the NRC.

Moreover, it is not enough to consider classification of individual waste streams. The contamination of the soil, groundwater, and plant and animal resources at the specific sites where it will be disposed of needs to be considered in cases where the sites already bear a heavy burden of contamination. It is clear that there are many waste streams at Hanford, including buried transuranic wastes, graphite moderator blocks, and low activity glass that will be produced from high-level wastes that would result in violation of groundwater protection standards. These waste, like depleted uranium, need to be disposed of in a deep geologic

repository. It would be cheaper and faster for these kinds of wastes to have their own designated repository, where defense high-level waste can also be disposed of.

These facts clearly point to a conclusion that a separate repository process would be beneficial for defense high-level waste and a significant number of other waste streams that would greatly damage the environment if they were to be disposed of in shallow land facilities or simply left as buried wastes on DOE sites like Hanford. Such a repository would likely save money and be less complicated and difficult to site than a co-mingled repository. We are available to provide more details on waste streams that should be included in addition to the analysis in Attachment 3 of the Yakama Nation's comments on the Greater-than-Class-C Draft EIS published by the DOE.

We stress that a separate repository for defense high-level waste and certain other wastes would still have to meet the same siting rules and performance standards as a commercial spent fuel and high-level waste repository. But it would be less difficult to do so due to the lack of a large thermal source term and the far lower total amount of radioactivity. The main urgent problems of waste at the major defense sites are to stabilize wastes and to put them in forms suitable for repository disposal. This is the case, for instance, with high-level wastes in tanks at Hanford and the Savannah River Site. There is time to follow the process with integrity to set up a defense high-level and other waste deep geologic repository and to do it right.

Transcript from Panel Discussion of Commingling at the Public Comment Meeting in Washington, DC, on October 20, 2011

Witnesses: Mike Lawrence (former DOE), Brian O'Connell (NARUC), Beatrice Brailsford (Snake River Alliance), Steve Kraft (NEI)

MR. LAWRENCE: Thank you very much. My name is Mike Lawrence. Our panel will be discussing commingling, and just for clarification, at least I'm assuming that commingling means that both defense waste and commercial waste would be disposed of in the same facility. Might be at different locations, but the same facility. Our group was asked to address four issues, and I'll go through them quickly in the time I've got.

The first is what is the key factor in determining whether you should revisit the question of commingling? And to me, that key factor is does it improve the U.S. government's ability and responsibility to safely dispose of both commercial waste, whether it's in the form of spent fuel or vitrified waste from recycle and reprocessing, and the defense waste from our defense activities. Both are the government's responsibilities, and it really, this commingling decision should be based upon does it improve or hinder that ability. The second is what are the key factors that should be addressed in making that decision? And I've separated them into four. The first are what are the technical issues, what are the technical factors? And ultimately, in a practical sense, it's both defense and the high-level waste are the same ultimately, but there are differences, and here I think the advantage goes somewhat to the defense waste in terms of ease and ability. It is, generally, it's a smaller volume as we've already heard; it is in general more homogeneous in terms of the vitrified borosilicate glass, whereas the other is in many different spent fuel forms, and ultimately in oxide. The heat is lower in the defense waste; it is less long-lived in many major respects. Some of the long-lived fission products still are there. There is no residual value, so to speak, in the defense waste. You've already extracted the plutonium and enriched uranium for the military purposes and therefore, the retrievability would only be in case you found a mistake in the repository characterization that would require you to retrieve it; whereas in commercial some people have wanted to maintain the capability to pull it back out for its energy value, so that doesn't exist. And finally, in terms of points of origin, there are less points of origin with the defense waste, as we saw in the slide earlier, than there are of the commercial. So there I think the advantage goes slightly to defense. From an economic point of view, there we clearly, the nuclear waste fund, the utilities have already put into the waste fund for its disposal; whereas the defense, the 20% that John talked about this morning, that has to come from appropriated funds, and it doesn't take a lot of watching what's going on in Washington to recognize that's going to be much more of a challenge. So there I think the advantage goes to somewhat on the commercial side.

From an environmental perspective, again, it's pretty much like the technical issues, where the advantage is somewhat to the defense. The defense, most of the plutonium has been, if not all the plutonium has been removed; its lower heat, and the retrievability issue doesn't exist. And so the rock requirements for a geologic repository are less stringent, in my opinion, for defense

waste than they are for commercial. But it's not a major issue. There is the issue between if you don't commingle, you need more repositories. That means less transportation on the one hand, if you've got multiple repositories, but the multiple repositories in themselves create more of an environmental impact at those specific locations.

And the last issue, and obviously probably the most important are the political issues of it. And here, defense has the national security implications, and therefore more of a national benefit; everyone benefits from it and perhaps with that, there could be a greater acceptability for accepting a defense waste repository from one that takes both; I don't think that's very strong. But each siting effort will be excruciatingly painful, and if technically possible, I believe one or two at most is best. So ultimately from a political perspective, the fewer, the better. And whether it's one or it's two, because you don't want one site to take it all.

So those are the four factors that I think should be evaluated. The third question was when should it be evaluated, and in my mind, assuming that the government corporation, federal corporation, whatever you want to call to it, as recommended by the BRC, is implemented, I would leave that decision up to them. They are the ones faced with the responsibility for the disposing of the material, and ultimately, since they have that responsibility, they should have the authority and the ability to make that decision based upon the ultimate goal of what they have to do, which is dispose of both. If they feel they can do it better by putting them all in one, so be it; otherwise, separate.

Last question was how. The recommendation I believe should be based upon a business case made by that fed corp, and it should be as recommendation to the President and approved by the Congress. And I believe it should be in a phased approach, starting with the defense waste because it's easier, and as you get--but starting at a time after you have provided for the interim storage for all, and you've identified a site or multiple sites that you believe would be suitable for both in the long run, but then you build up, starting with defense waste. Much like the moonshot, where we didn't ultimately say we're going to go, and on the first shot, we're going to land on the moon; but we went into earth orbit, then around the moon, and eventually landed on the moon. Same thing with the repository program, building up experience, collecting data, over a stepwise process, starting with defense, but ultimately ending with all of it, and if at any time you find that's not going to work, you can then say we need to go to Plan B. But I do believe that commingling, in my opinion, is the right thing to do if it can be done, and if it makes sense from an environmental, economic and safety issues.

MR. O'CONNELL: Thank you. I'm Brian O'Connell with the National Association of Regulatory Utility Commissioners, NARUC. We are proponents for the interests of the rate payers, and I'm familiar with the Commission, and they've heard from us before.

When I was first asked if I would participate in a session of this nature, I said commingling? So the question I thought was settled in 1985, and I don't really have familiarity with Mike's wonderful rundown of the various issues. We simply see it in terms of will this move the waste

from where it is any sooner, or will it be more delays, and will it cost more, and will there be public support if we are separate or together. So I take as the null hypothesis that the status quo of planning for a joint facility is in order until something else persuasive comes along that makes it more attractive.

I do not have the background on the analysis that was done in 1985; couldn't find it in my extensive files on this project, but I think one of the elements that does apply is that there is currently a costs- sharing formulation that was settled between the Department of Energy, the various components of Department of Energy, such that I think the current figure is 19.6% of repository costs will go to the Defense Waste Fund, and the rest will be from the Nuclear Waste Fund that is of interest to our organization. I went to talk with our attorney about the Section 8 of the Nuclear Waste Policy Act, and he looked through it and he said well, I'm not so sure you can reverse course, because this report was made in accordance with the statute, submitted to Congress, and accepted. So it would seem that Congress would need to be involved in reversing the course. And as Mike indicated, it probably should be the President that ultimately weighs in on that issue as well.

As to the issues that Mike referred to, what are the key factors, well I thought certainly the design of the repository. I could imagine that if there's a retrievability part requirement for the commercial spent fuel, that that might be different than for the waste or the defense waste. Transportation requirements may be different; I know that the Navy is used to moving their fuel by train, and that is different than the commercial spent fuel, which could go either way, depending on earlier decision points on planning. And I guess we would all want to know if safety is improved or not in a joint or separate facility. Certainly there is economies of scale advantages to being combined, such as the licensing process, which took as long as it did and still hasn't been concluded from our point of view. You could imagine going with two separate licensing tracks at the same time. I had a silly example that if you had two separate facilities and only one tunnel-boring machine, you would have to move one tunnel-boring machine to where the other location is and that wouldn't be economic; whereas if you're doing a joint facility, you obviously both share the costs of the single, efficient method.

As to who should be involved in any re-examination, I guess we're left with DOE as the most interested federal agency at the moment, and they have available to them the National Laboratories, with the expertise to do an objective study, if one were needed. And I always remember that the National Environmental Policy Act is involved in significant federal actions so that there would need to be a NEPA strategy, probably a programmatic EIS that would not be site- specific. Those are just some of my thoughts, but our preference is for a combined facility and let's move expeditiously and safely. Thank you.

MS. BRAILSFORD: Thank you. My name is Beatrice Brailsford, I am with the Snake River Alliance. The Snake River Alliance was founded in 1979 as the grassroots watchdog for the Idaho National Laboratory; we also work on clean energy issues in the state. We were among the first, and remain one of the most active advocates for the cleanup of the Idaho National Laboratory. I will

note that INL is one of those DOE sites; we shipped out a substantial amount of nuclear waste, primarily to the Waste Isolation Pilot Plant in New Mexico. We also receive significant amounts of spent fuel, primarily from research reactors, both domestic and foreign, and the nuclear Navy. So I will also address the questions that we were asked.

First of all, there is no indication that there was anything wrong with the decision as it was made in 1985, so I would say that that argues to an extent why reverse it now? In addition, a number of follow on decisions have reaffirmed that the initial one commingled repository. The Yucca Mountain licensing process itself, the WIPP Land Withdrawal Act reaffirmed that WIPP was only for defense transuranic waste. Congress has appropriated money every year since 1985 for a repository they assume will hold both commercial and defense waste, and then there have been actions at a number of DOE high- level--a number of actions at DOE's high-level waste sites. For instance, last week, I toured the Integrated Waste Treatment Unit at the Idaho National Laboratory; it's a half a billion dollars of pipes is what it looks like, but it has within it a very robust, substantial storage facility for the liquid waste that will be removed from the tanks and for the calcine high level waste that will eventually be treated there, too. And I think that's an acknowledgment that the waste is real. On the other hand, if we reverse the decision to commingle, it does not fix any problems. High level waste should still be removed from the tanks, stabilized, and stored safely, and it can be. Other waste streams, I know this has been raised, that other waste steams need to be disposed of in a deep geologic repository; the Snake River Alliance agrees with that assertion, but separating commercial and defense high level waste doesn't go anywhere down the road towards addressing what to do with greater-than-Class-C or depleted uranium. But reversing commingling would cause some additional problems; first of all, now we have one waste stream and all of a sudden we'd have two, and that--all the other problems that roll down the hill from that. And then I think we do have to look at the sort of public confidence that this whole program rests on. I think there is a little sense that if defense waste went to the front of the line, there would be a real effort to reverse the decision that WIPP would be used only for defense transuranic waste, and its mission would be expanded substantially. If that happens, if the government starts breaking its promises to people, I think sites like Idaho, which have agreed to continue to accept shipments of nuclear waste, suddenly we start re-evaluating our agreement as well. And certainly down the road, if we were asked to be a storage site for some kind of consolidated storage site, and we had already seen the goalpost being moved someplace else, we would be far less likely to agree to that.

So if the commingling decision is revisited, which I don't think it should be, all those past decisions and many more, and the other panelists had mentioned some that I hadn't even put up there, all those other decisions and actions have to be evaluated, re-evaluated as well. And I think then the Nuclear Waste Policy Act, the whole focus on public acceptability, I think it becomes much more of a sticky wicket; I think that becomes even more difficult to--it might become an insurmountable problem.

So, the other question, when should it happen, and who should do it? If we are going to have a new organization, then we have to stop the other decisions that we're planning to make until we make that decision and put it into place, and then that organization is the one who makes the recommendation to the President. And then how should re-examination be conducted? Well, the re-examination should not occur, and therefore should not occur, doesn't need to occur. I will say after the Denver meeting, there was a little talk about some Idahoans seemed a little eager to welcome spent fuel into our state. I think that enthusiasm has been nuanced some since then, but the big newspaper in the state, the Idaho Statesman, immediately wrote an editorial that said you know, we've had that debate; we've made that decision, and the same is true here. We don't have to revisit this decision, and therefore we shouldn't. Thank you. And by the way, the decision Idaho made was that we would not accept commercial spent fuel.

MR. KRAFT: Thanks. Good afternoon, appreciate the opportunity to be here. Currently, I am assigned to the NEI's post-Fukushima effort, and have not been following the work of the BRC as closely as I did during its first 12 or 14 months of existence, but doesn't mean I'm not interested and not familiar with it.

After being asked to speak on this topic, and got the question from Natalia, kind of brought me down memory lane a little bit, and I concluded that I was being asked to do this because I was the oldest person left standing at NEI who actually remembers the decision and why it was made, and I find myself listening to my three colleagues on the dais here, and I have one word. Yes. They didn't say anything I would disagree with; I particularly liked all of the analysis that they did; each one touched on different things, and Mike's was the most comprehensive because he was a fed and probably wrote half the document in 1985, which by the way, if you've never seen it, here it is. And I thought that Brian raising the question of cost is exactly what you would expect the defender of the rate payer would do. We also have that same interest obviously, and I thought Beatrice's discussion about the need for developing support and how that support is developed over the last 30-odd years we've been doing this was really right on point.

The question is why should we think about disaggregating this material? And it's not just because the decision was made in 1985, when I was a little boy; it's because we were--and we shouldn't change it; it's that I'm not sure what's different. The only thing that's different between 1985 and now is we've lost track of the repository. There's no place for anything to go right now. And when you look at the major message in the BRC draft report, is a loss in support and confidence for the program that we have. Now you can argue it's because someone didn't like the regulations, they didn't like the NRC process; regardless of what you think happened, and we certainly have our own views, it's a loss of support for that particular program which is why we're all here. So how do you then generate that support, and would you improve that support by separating these facilities?

And I think not, and I think the point that Beatrice was making is exactly right. Not. And I'll say it this simply. Rather than having one facility that the people who want to move fuel or move

waste support, you'll have two facilities, each being opposed as strongly as the other, with only half the support for both. So if you want to look at from strictly a support and how you generate that support, it doesn't seem to pass any test that I can think of. Now when this first came up as an issue, and I re- read the relevant sections of the 1985 report, where there was some writing about the nuclear utilities might think this, they might think that, I will tell you they were exactly wrong in every case. We did not think it was a bad idea to commingle because we saw defense waste as somehow mucking up the system and making it more difficult; we saw it as making it more easy. Why do we think it was making it more easy? Well, we'd share the cost, that was a very big piece of it, but also we saw the need to generate more support around the nation for the single facility. And I think there's several other statements in that report that I would take issue with, but at the time, it was certainly, we thought, the correct decision. So I would argue that for all the reasons my three colleagues have mentioned, I think this ought not be taken apart, but I do agree with Mike that it is down to the new organization, I think that's where it belongs, and I think it does require--you're going to have to write a new law--Milazzo's got to write the law anyway; you're good at doing that, and we'll have those battles going forward, but I really think that if what you're interested in is success in managing the back end of the fuel cycle program, I'll say it as broadly as possible, I don't see how that success is aided by undoing a commingling decision that has withstood the test of time, and has frankly never been an issue since the 1985 decision along the way. With that, thank you.

MODERATOR BRYAN: Okay, can you hear me in the back? How about now? All right. I have a set of questions here, but you all number one, the panelists answered those questions in their presentations. And two, it sounds as if there's some general--let me be clear that there is some general, the general sense here is that we don't need to disaggregate the waste streams for the reasons that each of you laid out. And Steven, I think you did a good job of coming back and saying is there a reason aside from well we haven't done it that way to consider why we would do it. Let me--in that case, I really want to turn to Allison MacFarlane here, who has a question, and she wants to get a little better understanding of some of the things that you've talked about. So Allison?

MEMBER MACFARLANE: Great, thank you. That was really very informative, and I really appreciate that. I took a lot of notes. Okay, so let me ask two questions. So first question to Mike. When you were discussing your technical factors, you said-- you were talking about defense waste in particular, you said there was a smaller body, you said it was more homogeneous. As far as I know, it's not more homogeneous than spent fuel, because there's a multiple variety of different spent fuels, as well as high-level waste glass, and that high-level waste glass is anything but homogeneous. I mean, it's really all over the map. So it seems like it's heterogeneous in comparison to the--and so I just wanted to understand what you were asking, and then I'll ask another question.

MR. LAWRENCE: You're absolutely right, that the defense waste is far less homogeneous, especially at Hanford where many different flow sheets were used. However, I think when you

get to the final borosilicate glass form, even though what might be held up in the borosilicate glass may be different, it's all borosilicate glass, and that's the primary constituent—

MEMBER MACFARLANE: No.

MR. LAWRENCE: --is the borosilicate glass. It's less—

MEMBER MACFARLANE: No; from a geologist's perspective, no. It's--no. Anyway, you've got all that spent fuel, that's on the defense side as well. So anyway, okay, that's just my two cents. All right. So next question. But thank you. So one of the issues that we've heard by proponents of not commingling is that well, you could just have the DOE handle the defense wastes, and they could just deal with that, like they're dealing with all the--EM is dealing with all the other wastes; they could just deal with that, and then you could have this new entity, whatever it might be, just handle the civilian waste, and wouldn't that be simpler? Now, I think you may have already dealt with this in your talks, but I wonder if you could deal with directly. All or any of you.

MR. LAWRENCE: So is what you're saying that DOE would maintain responsibility for siting, developing, licensing repository for defense waste, and a separate organization—

MEMBER MACFARLANE: Yes.

MR. LAWRENCE: --would have the responsibility for the commercial waste?

MEMBER MACFARLANE: Yes. Yes.

MR. LAWRENCE: Having had that responsibility once in my life for doing both, I would just think that that's a very bad idea.

MEMBER MACFARLANE: Why?

MR. LAWRENCE: The same skills are required, the same difficulties are required in terms of politics of siting, I just virtually cannot see of any reason why you would have two organizations with both having the responsibility to site and firmly dispose of material for tens of thousands, if not millions of years.

MODERATOR BRYAN: Others on the panel want to respond?

MR. KRAFT: Yes, let me give it a try. If you look at it from the thesis I presented, which is acceptability and support, and turn the problem that you posed, Allison, on its head and look at it, it would seem to me that from the standpoint of the people, the groups that you are looking for support from, that they would not necessarily see a difference. Waste is waste, repositories are repositories; and then add to that, when I hear the concept you described, what I keep thinking is someone's thinking for defense, they're going to skate out of the regulatory and the statutory requirements, and certainly the siting rubric that you're kind of talking about in the BRC report, and they'll just get it done. And if that's the intention, I don't think that's the BRC's

intention; I think the BRC's intention is siting goes forward in some, it may not be the same specific siting process, but it's got to have all those characteristics in the way it's described. So I don't see how by doing that, you actually accomplish what you're trying to accomplish, unless of course you do it in the dead of night, as a military operation, in the black, on the black budget, and no one sees it, I mean, it's not going to wash the way that kind of concept seems to be described all the time.

MODERATOR BRYAN: Brian, did you want to--

MR. O'CONNELL: Yes, I was--the organization that's being proposed by the Commission is--the adjective in the beginning of it is single purpose, which suggests that its only job is disposal and management of spent fuel and high-level waste. That organization can have two sets of customers, the commercial and the governmental, and that still allows it to be a single purpose, and we have all the advantages that were outlined in the draft report.

MODERATOR BRYAN: Thank you. We've got one question here; I think Jim Williams wants to ask a question. Are there other questions? Anyone else that wants to raise a hand? Yes.

MR. WILLIAMS: Hi. Yes, I'm Jim Williams from the Western Interstate Energy Board; I want to check with Steve and the rest of you that are for retaining commingling. Are you assuming one repository for everything that exists now, and in projection, high level and spent fuel? One repository and destination?

MR. KRAFT: You know, that question, Jim, brings to mind the old Charles Schultz Peanuts comic, where Charlie Brown and Linus were standing at the famous brick wall, and Linus says "You know, Charlie Brown, baseball's a lot like life; you win some, you lose some." And Charlie Brown says "That would be just great." I'd give up a body part to have one repository. So one, two, I mean, does it really matter? We've got to get to one—

MR. WILLIAMS: Well one of the things was you can't site to repositories.

MR. KRAFT: I think we're saying it adds such greater complications—

MR. WILLIAMS: --processes and so forth, I think you're implicitly assuming one repository. I'm just asking.

MR. LAWRENCE: As I said at the beginning, and then during the talk, I believe the fewer, the better; whether that's one repository or two, you've got to trade off--I mean, there is validity to the argument of saying well, if you had two, then no one site takes it all, and you can reduce the transportation. But since each siting, every effort is very, very difficult. You know, that has to be balanced out, and since the Commission has looked at what other countries are doing, I'm not aware of any other country that's looking at more than one. And so consequently, if you could get by with one, I think that would be preferable, and there are many rock formations that have certainly enough capacity to take it all, based upon what we know right now. Again, you have to weigh off the political impact of saying one community is going to take it all, but ultimately

sometimes that does happen. I remember when I was the manager of the Hanford site, they picked two sites for taking all of the reactor compartments from naval submarines, deactivated. Savannah River and Hanford. All of it ended up going to Hanford; none of it to Savannah River. So I mean ultimately, it still ended up that way where one site took them all, even though two were originally selected. So I think that just happens sometimes, but it's a decision where you have to make some tradeoffs. But again, the fewer, the better.

MODERATOR BRYAN: Do you want to go next, Beatrice? Do you want to respond?

MS. BRAILSFORD: Yes. I think--I'm glad you raised that point, but I think answering the question, the commingling question, does not get us out of considering the equity questions. As you know, we support hardened on-site storage, you know, you have to look at regional solutions, so the equity question of what to do with spent fuel still exists.

MODERATOR BRYAN: Before we go to our question in the audience, I know that--I think that Per Peterson, one of our Commissioners, is on the phone, and wants to ask a question. Per, you going to ask a question?

MEMBER PETERSON: My question is for Mike, and it relates to the question of defense waste versus civilian waste and the set of characteristics that are generally true, Mike, that you had listed in terms of the differences, but I think one of the critical problems is the fact that while they're generally true, they're not perfectly true, and I just wanted to raise a couple of waste materials that require disposal that just do not fit well with this division of separating things into defense versus civilian. One is the high level waste that's stored at West Valley, which is mainly civilian, but a little bit of defense waste commingled in glass, but it's got a civilian complement to it, so it wouldn't be considered to be exclusively defense. And then another material is the Three Mile Island fuel that is in storage at Idaho National Laboratory, which is civilian, but is also perhaps comparable to some of the DOE spent fuels. And I guess the nature of the question is, is it really a great idea to use source of origin in trying to categorize waste, or is it better to go straight to the list of characteristics that you mentioned, and use those as a basis for prioritizing where things would go, and then finally with respect to shipping distance, it's not clear to me that if you divide things into defense and civil, and have two repositories, that that results in a short shipping distance. If you actually categorize things by how close they are to the two different repositories and use that as a basis, then I think that might be a better way to get a shorter shipping distance. So could you comment a little bit?

MR. LAWRENCE: Yes, Per, and first of all, I agree with what you said, and I appreciate you pointing out that I did use the term generally, because there are distinctions and differences, and so I was only talking in general terms. And you're absolutely right; West Valley, most of the West Valley waste came from reprocessing and reactor fuel from Hanford. And even that one we called defense, that was actually not defense, that was for the breeder program, that end reactor was producing fuel-grade plutonium. So all of these things are generalities. Ultimately what I think should happen, or my recommendation would be that once the new corporation is

formed, they look at--here's the universe of things I have to dispose of, and start with the classification, this is what I feel most confident about, the easiest, least restrictive or has the less demands, and start that way. That's what I meant when I talked about a phased process of starting in general with defense waste, where there's less heat and the like, and building up as you go in order to build confidence and dispose of the waste in that manner. So--but ultimately, I think it is important that everyone understands and appreciates that even though we call it commercial, or we call it defense or government, the government, the federal government does have the responsibility under the Act or under the law too dispose of all of it, and it can't be said well that's a commercial responsibility and pass it back to the utilities. They pay, the law is set, and the government has to do it all, and they have to do it in a way that builds confidence and is both safe and economic. Did that answer your question, Per?

MEMBER PETERSON: Exactly what I wanted to hear. Thank you very much.

MODERATOR BRYAN: Thank you, Per. Yes?

MS. D'ARRIGO: Hi, I thought maybe Beatrice could expand a little on what the agreements are that Idaho has already made.

MS. BRAILSFORD: In 1995, Idaho signed a settlement agreement with the nuclear Navy and the Department of Energy. Idaho had successfully gummed up the Department of Energy's shipping schedule, with help from the people of Idaho and the Shoshone Bannock tribes. So the settlement agreement essentially says that--it originally said that all transuranic--it does say all transuranic waste would go to WIPP; that was a source of consternation since much of our transuranic waste was buried and is no longer retrievable in a real fundamental way. But a lot of the transuranic waste goes to WIPP; we do accept some spent fuel from foreign and domestic research reactors; we will continue to accept spent fuel from the nuclear Navy. What we do not accept is commercial fuel. And then at the end of the day--this is where it becomes a little problematic, and I will say that delay is different than an actual breaking of a promise, yet at the end of the day, our spent fuel has to be out by 2035, and our highlevel waste has to be road-ready by 2035.

MS. D'ARRIGO: You have Three Mile Island and West Valley waste there too, don't you?

MS. BRAILSFORD: Well, we've got Peachbottom. It's--we've got a lot of—

MS. D'ARRIGO: You have stuff that has to be out by 2035?

MS. BRAILSFORD: Everything has to be--all spent fuel has to be out by 2035, and all high level waste has to be ready to be shipped.

MODERATOR BRYAN: Okay.

MS. BRAILSFORD: And by--a lot of other agreements, but like by the end of next year, all our liquid waste will be out of buried tanks.

MODERATOR BRYAN: Are there other questions? Yes.

MR. MCLAY: We have a repository that's taking waste right now; it was talked about earlier. Is there a reason that that couldn't be expanded to take all the waste instead of the one in New Mexico? Oh, Michael McLay, MGM.

MR. LAWRENCE: Well, to start with, I mean, the reason it originally,talking about promises, it was said that was for defense transuranic waste. So legally, that would have to change. In actuality, I believe--and I'm not a geologist--but I believe the formation that WIPP is in was the same or similar to the Deaf Smith County salt deposits that were being looked at in Texas; the Salina Basin, I'm not sure if that's where it--put it all in there, so I think from a practical perspective, many have said you could; there is adjacent to it or similar, you could look to dispose of defense waste in the same facility. High level waste.

MS. BRAILSFORD: But didn't NRC make a determination sometime in the '90s that salt formations were not as suitable for high heat stuff?

MR. LAWRENCE: No.

MS. BRAILSFORD: No?

MR. LAWRENCE: The main issue with the salt is retrievability and maintaining retrievability, because the salt wants to come back in, but it does have the ability to attract the moisture, and there are a number of issues, but it--I don't believe anyone has said or concluded that salt is not an acceptable geologic formation for commercial or defense high level waste disposal

MR. KRAFT: Which is not to say that the local supporters of WIPP don't want to expand the mission of WIPP to do a lot of different things, including this. I have read an MOU between DOE NE and DOE EM, and part-- there's one paragraph that talks about EM conducting in situ studies to support NE's mission on waste disposal, and then there is a plan that the WIPP organization is promulgated on doing in situ testing; they're calling it the heater test, to determine whether that formation has--so there's interest; whether or not it should go forward or not is a policy call, but there is interest, and there is interest at least in doing the examinations for that.