Question 4: Separate process for storage facility siting – General streamlining for storage only
Submitter’s Name/Affiliation: Kevin Kamps/Beyond Nuclear

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To what extent should the siting and consensus approval process for spent fuel storage facilities differ from that for the repository? Should the Administrator be required to conduct sufficient site-specific research (referred to as “characterization” in the bill) on candidate storage sites to determine if they are suitable for storing nuclear waste or only on candidate repository sites to determine if they are suitable for geologic disposal of nuclear waste? Should the Administrator be required to hold public hearings both before and after site characterization (as required by current law in the case of the Yucca Mountain site) or only before site characterization?

BEYOND NUCLEAR’S RESPONSE:

In short, the siting and consensus approval process for spent fuel storage facilities should not differ from that for the repository. For the reasons cited in my response to your Question #2, cut and pasted in below for your convenience, the Administrator should absolutely be required to conduct sufficient site-specific research (referred to as “characterization” in the bill) on candidate storage sites to determine if they are suitable for storing nuclear waste. This should not only be the case for candidate repository sites to determine if they are suitable for geologic disposal of nuclear waste. The reason for this is the very real risk of so-called centralized “interim” storage sites turning into de facto permanent surface parking lot dumps, due to yet another derailment of the repository site search. For these very same reasons, the Administrator absolutely should be required to hold public hearings both before and after site characterization (as required by current law in the case of the Yucca Mountain site), not only before site characterization. How could any even rudimentary notion of “consent” be attained otherwise?, I have to ask.

The flippant attitude behind such shortcuts on safety, health, and environmental protection, so evident behind this line of questioning from the Committee, is very troubling. The very real, and very high, risks of de facto permanent storage call for an absolute rejection of the shortcuts this line of questioning threatens.

What’s the alternative to de facto parking lot dumps, once established, if the permanent repository derails, yet again? The Private Fuel Storage, LLC (PFS) centralized interim storage ISFSI (independent spent fuel storage installation) targeted at the Skull Valley Goshutes Indian Reservation in Utah is a cautionary tale. It was proposed, and even licensed by NRC, with no binding legal linkage between centralized interim storage and permanent repository disposal.

Even though the PFS plan called for transfer of the 40,000 metric tons of commercial irradiated nuclear fuel stored in 4,000 dry casks to the proposed Yucca Mountain repository in next door Nevada after an “interim” period of 20 to 40 years, this was not legally binding.

Ultimately, of course, the Yucca dump was wisely canceled in 2009. What, then, was “Plan B” for the ultimate disposition of the 40,000 metric tons of high-level radioactive waste parked on the Skull Valley Goshute Indian Reservation? “Plan B” was “Return to Sender,” incredibly enough.
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Maine Yankee was a member of the PFS, LLC consortium. “Return to Sender” would have meant a 2,000 mile east to west journey for more than 50 dry casks full of high-level radioactive waste from Maine to Utah. Only to be followed, some 20 or 40 or more years later, by a 2,000 mile “Return to Sender” journey for those very same waste containers to Maine. All for naught, accomplishing absolutely nothing. Other than exposing countless millions of Americans to the senseless risks of transporting high-level radioactive wastes through their communities, for no good reason.

These risks include the Mobile Chernobyl, Floating Fukushima, and Dirty Bomb on Wheels risks of accidents or attacks involving high-level radioactive waste shipments. A severe accident – a high-speed crash into an unyielding surface; a plunge from a high height, such as off a bridge or cliff edge; a long-duration, high-temperature fire; or a prolonged underwater submersion – could breach the waste shipping container, unleashing disastrous amounts of hazardous high-level radioactive waste into densely populated metropolitan areas, or other vulnerable places, such as next to or directly into major drinking water supplies, the agricultural heartland, and elsewhere.

Security risks are all too real, as even an NAS panel concluded several years ago. Waste shipping containers, as with dry cask storage itself, are not even designed to withstand terrorist attacks, as with anti-tank missiles. A June 1998 test at Aberdeen Proving Ground, deploying a TOW anti-tank missile (frighteningly all too available on the international black market) against a German CASTOR transport cask, showed how much of a Dirty Bomb on Wheels risk high-level radioactive waste transportation is. The missile blew a hole as big as a grapefruit through the entire 15-inch thick die cast iron wall of the CASTOR transport cask. Typical U.S. transport casks are just as vulnerable, if not more so.

Once breached, if combined with an incendiary, such an attack could volatilize disastrous amounts of such radioactive poisons as Cesium-137, to escape with the smoke, and blow away on the wind.

A NIRS backgrounder on the 1998 Aberdeen Proving Ground test is available online at: http://www.nirs.org/factsheets/nirsfctshdrycaskvulnerable.pdf

How bad could such releases be, whether due to attack or accident? A 2001 study by Radioactive Waste Management Associates, commissioned by the State of Nevada, is instructive. The Nevada study is posted online, as it has been since 2001, at: http://www.state.nv.us/nucwaste/news2001/nn11459.pdf

It was inspired by a July 2001 train tunnel fire which took place under downtown Baltimore. The real world accident prompted the question, what if high-level radioactive waste had been aboard that ill-fated train? After all, that very route had been targeted by DOE for Yucca-bound shipments, as documented in DOE’s DEIS for Yucca, published years earlier.

The answer was most sobering. Assuming a Holtec transport container (and Holtecs are not only deployed at 33 U.S. reactor sites, but were the cask to be used by PFS, LLC at Skull Valley Goshutes, UT), the study found that the cask would have failed in the long duration, high
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temperature train tunnel fire. So much radioactivity would have escaped in the smoke that downtown Baltimore would have been blanketed with contamination. Scores of persons exposed would have eventually succumbed to latent cancer fatalities, just from their initial, unavoidable exposures in the first hours of the disaster.

But if residents continued living amidst such contamination for a year, around 1,500 latent cancer fatalities would result over time. And if residents continued living in such contamination for 50 years, over 13,000 latent cancer fatalities would result.

Surely the contamination would be cleaned up to prevent such casualties?, most people would ask. Well, the study estimated that such a clean up would cost $13.7 billion. This amount would now translate to $17.8 billion, when adjusted for inflation.

Such clean up costs indicate why it is not far-fetched to fear that the U.S. federal government would be willing to “relax” (weaken) public health and safety and environmental protections against radioactive contamination hazards, in order to save money. In fact, as we speak, both the National Council on Radiation Protection (NCRP) and even the U.S. EPA itself are considering rollbacks on radiological “event” clean up standards, which would allow persons living in contaminated areas to suffer whopping 2 Rem annual doses, a 20-fold increase over current regulations. In fact, this exact thing has happened in Japan in the aftermath of the Fukushima Daiichi nuclear catastrophe, so apparently that outrageous action by the Japanese national government is being looked to as a model by U.S. federal decision makers. Such a large “allowable” dose to members of the public would result in a 1 in 6 cancer incidence rate, over a lifetime of exposure (70 years), in the exposed population. About half of those cases of cancer would result in death. These figures, ghastly as they are, are but averages. Certain demographics are significantly more vulnerable to harm from radioactivity than is “Reference Man,” assumed to be a 20-something, healthy white male, an assumption of patriarchal convenience most convenient and helpful for the nuclear industry which dates back to the 1950s. Women, children, the elderly, those with suppressed immune systems, and pregnant women and the fetus in their womb, are significantly more vulnerable to radiation than is “Reference Man.” Casualty rates among such vulnerable segments of our society would be even worse.

These are the reasons that high-level radioactive waste transportation should not be rushed into, for no good reason. The current bill would create a radioactive waste shell game on the roads, rails, and waterways, if de-linked from permanent repository disposal, for no good reason other than doing the nuclear power industry the favor of transferring title and liability for the wastes it has created, and profited from, onto the backs of the American taxpayer. The Alexander-Feinstein alternative legislative language would de-link storage and disposal even worse than the proposed current bill would, and would rush our country into unprecedented numbers of high-level radioactive waste shipments all that much faster. For that reason, it should be rejected.

As mentioned above, for your convenience, here below is pasted in my response to your Question #2, which lays out my arguments against centralized interim storage de-linked from permanent disposal:
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In short, the bill absolutely should establish a very strong linkage between progress on development of a repository and progress on development of a storage facility. The linkage proposed in section 306 of the bill is currently much too loose, much too weak, and must be significantly strengthened and tightened. A very strong linkage is needed, and should not only be enshrined in federal legislation, but should also play a central role in the negotiations between the state(s) and federal government, as in the consent agreement(s) needed before a centralized interim storage site, or sites, or a repository, or repositories, are allowed to move forward.

Beyond Nuclear has endorsed a group sign on statement, which states, in part:

“Consolidated storage sites could become de facto permanent

The primary purpose of moving the waste to a temporary site is to satisfy the grave legislative blunder ratified by the Nuclear Waste Policy Act of 1982: that the federal government not only would take possession of commercial nuclear waste, but that it would begin accepting waste for disposal in 1998.

Because the federal government is 15 years late taking ownership of the waste, it is pushing a strategy that prioritizes the resolution of financial liabilities rather than ensuring safety and security. Moving irradiated nuclear fuel and other high level wastes to a consolidated site could de-incentivize and adversely impact progress of the nation’s efforts toward a viable permanent solution. The draft legislation’s overtures toward decoupling the relationship between storage and permanent disposal further exacerbate this issue.

Our view is simple: there must be no transportation of spent nuclear fuel or high level waste until it is heading to a permanent site. The discussion of consolidated storage without the linkage provided in the existing Nuclear Waste Policy Act is not credible as "temporary" and the provisions offered by the Committee do not rise to the level of that term.”

To add, the draft bill speaks of “substantial progress [towards a permanent repository]…as measured by the mission plan.”

The draft bill holds that, so long as “substantial progress” towards a permanent repository is being made, irradiated nuclear fuel will be allowed to roll into a consolidated or centralized interim storage facility, or facilities, with no limitation on the quantities involved.

But who gets to determine that “substantial progress” towards a repository is being made? First and foremost, the draft bill would put that power in the hands of the Nuclear Waste Administrator.

Of course, the Administrator would write the mission plan. We are concerned that “substantial progress,” as defined by the mission plan, could be too loose a term, allowing too much wiggle room for high-level radioactive wastes to flow into a centralized interim storage site, even though real progress towards permanent disposal was not happening.
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Why would the Administrator ever readily and willingly admit lack of “substantial progress” toward a repository? This would be admitting that he or she had failed in his or her mission work. It is not likely that such an admission would easily be forthcoming, but rather would have to be extracted most grudgingly, like pulling teeth.

So, how much waste would get stuck in *de facto* permanent surface storage at one or more parking lot dumps before it was realized, before the Administrator was forced to admit, that the repository was stalled, or even derailed, yet again?

In a sense, it is worse than Senator Bingaman’s bill last year. He gave away the first 10,000 metric tons of “pilot” centralized interim storage, with no linkage to a permanent repository. (It should be noted that 10,000 tons is way more irradiated nuclear fuel than is currently “orphaned” or “stranded” at permanently closed, and even dismantled, nuclear power plants in the U.S.) That was an unacceptable political compromise. An unacceptable risk-taking of *de facto* permanent surface storage.

How long would such a delay in admitting the truth go on, before grudgingly admitting that the permanent repository was derailed, yet again? Would even more than 10,000 tons of irradiated nuclear fuel have already been delivered to centralized interim storage, before the Administrator or Nuclear Waste Oversight Board grudgingly admitted that the repository was yet again derailed?

This does not make sense. It is very risky. It risks *de facto* permanent centralized interim surface storage.

Both proposed repositories that advanced the furthest in the U.S. thus far – that is, advance to nowhere – can be pointed to as cautionary tales.

As documented in the 1986 book *Forevermore: Nuclear Waste in America*, by Barlett and Steele, the U.S. Atomic Energy Commission (AEC), in the late 1960s and early 1970s, was very gung ho about burying high-level radioactive wastes in a salt formation at Lyons, Kansas. The AEC was so confident about the site, despite having done very little site suitability study, that it held a press conference announcing the imminent opening of the country’s, and the world’s, first deep geologic repository for high-level radioactive waste.

However, the Kansas State Geological Society involved itself. It pointed out that the locality was riven like Swiss cheese with drilling operations, mines extracting fossil fuels and minerals. In fact, large quantities of water used in such mining operations had simply disappeared into the ground, to points unknown. Thus, there was a very real risk that unknown pathways for corrosive brine already existed, or could come into being, that would serve to quickly corrode the high-level radioactive waste burial containers at the proposed Lyons, Kansas dumpsite. In addition, given the natural resources in the surrounding locality, the risk of inadvertent human intrusion busting open the dump to the environment would be too great. The absurdly over-confident AEC was forced to beat a hasty retreat, and the Lyons, Kansas dumpsite entered the dust bin of history. So much for “substantial progress” towards a repository that time!
Yucca Mountain, too, was assured to be making “substantial progress,” after all. Energy Secretary Spence Abraham declared Yucca “suitable” for a repository on Valentine’s Day, 2002, despite ample evidence since the early 1980s that the site’s geology was unsuitable. George W. Bush rubberstamped Yucca’s “suitability” three short days later. Even Congress saw fit to override Nevada’s veto a few short months later. All for naught, as Yucca’s “politics over science” karma, and its geologic and hydrologic unsuitability (not to mention the fact that it belongs to the Western Shoshone Indian Nation by treaty right, and they don’t want the waste there) finally caught up to it. The Obama administration wisely cancelled the proposed Yucca Mountain dump beginning in 2009.

Our point is, despite assurances that persist for years, or even decades (Yucca was under consideration as the only site in the country to be further studied as a potential high-level radioactive waste repository from 1987 to 2010, nearly a quarter-century), “substantial progress” towards a repository could be little more than a feel-good “illusion of a solution.” But under this draft bill, such a mirage in the desert would be justification enough to roll unlimited amounts of high-level radioactive waste by road, rail, and waterway across our country, into a centralized interim storage site, or sites, which would then be stuck there indefinitely, even though the Administrator could be forced to finally admit someday that “substantial progress” towards a repository had yet again derailed.

So long as the Administrator stands by “substantial progress” being made towards a repository, under the draft bill this would allow centralized interim storage to fill up, no matter how far behind permanent disposal actually lags, unless and until the Administrator is forced to admit “lack of substantial progress,” something that would come only grudgingly, if at all.

The draft bill does allow for suspension of shipments to centralized interim storage, but under section 306(f), allows shipments already delivered there to simply remain in storage. But how was that mistake made then in the first place? How were shipments allowed to roll into centralized interim storage, when obviously, “substantial progress” towards a repository was, in reality, later admitted to have been lacking all along? The draft bill would allow for waste already delivered to now be indefinitely stuck in centralized interim storage, the very definition of de facto permanent surface storage. In other words, a parking lot dump.

For this reason, iron-clad linkage must exist between a permanent repository and centralized interim storage from the get-go, in order to guard against the danger of de facto permanent parking lot dumps.

The risk of de facto permanent, or at least indefinitely long, “interim” storage is all too well established in the U.S. Just look at the General Electric-Morris ISFSI (Independent Spent Fuel Storage Installation, as NRC and industry call it) in Illinois, located immediately adjacent to the Dresden nuclear power plant. Fortunately, the proposed reprocessing facility never operated, due to a major design flaw. If it had operated, radioactive emissions to the environment would have been nightmarish. But even though it thankfully never operated, the GE-Morris storage pool has held 772 tons of irradiated fuel, from multiple reactors in various states, for four decades now, with no end in sight. “Temporary” or “interim” seems to have taken on a new,
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Orwellian definition in the Atomic Age, at least in regards to forever deadly high-level radioactive waste.

Likewise, nuclear power plants themselves make the point. “Host” communities were assured the irradiated nuclear fuel would be stored on-site for an “interim” period – five years or so in the indoor wet pools to allow for radioactive decay and thermal cooling – and then it would be shipped away somewhere else. Of course, this has turned out to be another false assurance. Oyster Creek, NJ, a 44-year-old reactor, still stores irradiated nuclear fuel in a pool packed to ultimate physical capacity (never mind the radiological risks of that). Big Rock Point, MI, which began operations in 1962, still stores high-level radioactive waste in dry casks on-site, even though the rest of the power plant has been completely dismantled and carted off to so-called “low” level radioactive waste dumps (although radioactive contamination of the soil, groundwater, Lake Michigan sediments, flora and fauna will linger on-site long into the future).

Furthermore, under section 306(e), the draft bill would allow for “emergency exceptions” to the suspension of shipments into a centralized interim storage site, or sites. This seems quite ripe for abuse as well. How are “emergency exceptions” to be defined?

If the nuclear power industry is to be listened to, on-site storage of irradiated nuclear fuel is safe, secure, and protective of public health and the environment. The U.S. Nuclear Regulatory Commission (NRC) parrots this industry line. So did the Blue Ribbon Commission on America’s Nuclear Future. Environmental watchdog groups have long challenged such false assurances that all is well with on-site storage, pointing out serious safety, security, and environmental risks of both pools and dry cask storage at reactors.

So what’s to stop abuse of this loophole, which is big enough to drive a radioactive waste truck (or train, or barge) through?! What’s to prevent the nuclear establishment (in industry, NRC, etc., including even members of congress, for that matter) from going from one extreme to the other? From claiming that all is well, to suddenly claiming that on-site storage everywhere represents a safety, security, and/or environmental emergency risk, just in order to rush their wastes off-site, into centralized interim storage, as soon as it is opened? After all, as soon as the irradiated nuclear fuel leaves their reactor sites, the title and liability transfers onto the backs of the American taxpayer, something the industry that generated these forever deadly wastes would like to see happen ASAP. Even though industry, likely for PR sake, deceptively insists that on-site storage is currently safe, secure, and protective of health and the environment – even though it is far from that, truth be told.

The Senate Committee’s one-page summary states that centralized interim storage can start immediately, and there are no limits on the amounts of waste that can go there; also, that once there, waste can stay, even if further shipments are suspended. This epitomizes a rush job, which could easily result in de facto permanent consolidated surface storage, if and when permanent repository disposal derails yet again.

Other concerns raise their ugly head, indications that a permanent repository will be most difficult to site, if not impossible.
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After watching the Yucca Mountain debacle unfold over the past generation, states are now on high alert that, once targeted for a national high-level radioactive waste dump, it becomes a 49-states-against-1 “game.” Whether targeted at a centralized interim storage site, or a permanent repository, all of a sudden, our country’s high-level radioactive waste problem could become a single U.S. congressional district’s problem. In that regard, at least in the U.S. House of Representatives, the “game” would then amount to 434-against-1. So much for “One Nation, Under God, Indivisible.” Not when it comes to high-level radioactive waste, it seems; then, it’s every state for itself. The 1987 “Screw Nevada” bill is a cautionary tale in this regard. Such a shameful, rotten history has created the dynamic that all future targeted states will simply resist, tooth and nail, with all their might, to avoid becoming the nation’s nuclear sacrifice area.

Along these lines, this draft bill’s lifting of the cap on 70,000 metric tons at the first repository, means that only one repository, if that, will ever open.

States across the country, which have carefully watched the Yucca Mountain debacle unfold over the past 25 years, will likely fight tooth and nail to NOT become a repository, THE repository, because it’s obvious they would get it all – not 70,000 metric tons of high-level radioactive waste, but the full national inventory, however big a mountain of radioactive waste that grows to be in the decades to come. Nevada, a state with no atomic reactors within its borders, and thus no in-state generated irradiated nuclear fuel or high-level radioactive waste, showed that such abuse by the federal government, and even by the other 49 states arrayed against it, can be successfully resisted. And states will likely resist, not desiring to become the nuclear sacrifice area for the rest of the country.

Thus, ironically enough, this draft bill’s own provisions have made opening a permanent repository all the more unlikely.

All this underscores the danger of opening centralized interim storage parking lot dumps with no real linkage to permanent disposal. A repository would be hard to impossible to open under the provisions of this draft bill. Thus, centralized interim storage would risk becoming a de facto permanent parking lot dump.