

SPECIAL PRESENTATION

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Nuclear Waste: A New Approach

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NUCLEAR WASTE: A NEW APPROACH

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ABSTRACT

There has been so much talk about nuclear waste being a political, social, psychological, and every other kind of problem that we have lost sight of the simple truth that, at bottom, this is a physical problem to which we have a relatively simple solution. I am talking about monitored retrievable storage, for which the technology is well in hand.

I suggest we take advantage of this easier option as we proceed carefully toward a permanent repository. Such a two-track approach will commit us to longer surveillance over the high-level waste, but that can be an advantage: it allows us to correct any mistakes.

This shift in emphasis in the waste program, together with a change in organization, may be the key to effective action on safe and secure storage for nuclear waste.

A British historian once said that "the condition of effective action in a complex society is cooperation. The condition of cooperation is agreement...", not only on goals, but also on the criteria by which we judge success.

Translated into the terms of the nuclear waste program -- for which the observation is particularly apt -- this means that even if we agree on the goal of a permanent repository, we still face procedural gridlock if we cannot get broad agreement on how the goal is to be met. And it isn't something that can be forced. The key factor is public confidence that the Federal Government is applying sufficiently high safety and environmental standards. I know from my own experience at the Nuclear Regulatory Commission that a lack of such confidence translates itself, through criticism in the press and the Congress, into irresolution and procrastination at the Commission.

Signs of Slowdown

Let me mention a couple of items that make me wonder how we are going to reach our goal. Consider the difficulty the Commissioners had in telling the Court of Appeals whether they personally thought the high-level waste problem was under control. (This issue got tagged with the label "Waste Confidence".) You would have thought the Commissioners would answer promptly, especially as the Court tied the waste question to the validity of power reactor licenses. Instead, the Commission launched a long and complicated proceeding. Four years later, after a record two-feet thick had been accumulated, three out of five Commissioners told the Court that a high-level waste repository was likely in about 20 years. My own view was that there were too many uncertainties for us to make this prediction, and that it was not required by the Court's question. The point I would emphasize here is that if a group like the Commission, which is habitually inclined to favor official views, had so much trouble in expressing confidence in the waste program generally, how will it manage to deal with a specific underground site in the face of determined opposition?

A second experience that seemed a sign of trouble ahead was a meeting NRC held in January on the Department of Energy's siting guidelines for a waste repository. As you know, under the Nuclear Waste Policy Act, NRC must concur in these guidelines before they become effective. We gave DOE and the States and the Indian Tribes a chance to air their views. What impressed me was the extent and intensity of disagreement, both on technical issues and on whether DOE was giving fair consideration to other viewpoints. The States appeared to assume the Federal Government had no intention of listening to their concerns, while the Federal side seemed to think that each State would oppose siting a repository within its borders, no matter what.

The NRC has since decided to require some rewriting of the DOE guidelines. These changes will not, however, deal with the full range of State concerns. The NRC is simply not in a position to resolve disagreement on this scale between DOE and the States; the disagreement will have to be worked out in some other way. Whether it will or not, is unclear.

Procedural Shortcuts Won't Work

It should be clear, however, that the waste program contemplated under the Act cannot succeed against a background of hostility, charges and countercharges, with each side putting the worst interpretation on the motives of the other.

The Act provides a frame work for obtaining agreement. But, by giving each State a near-veto over sites within its boundaries, it also leaves the ground so well laid out for guerrilla warfare, that the only way to success is through close cooperation between the States and the Federal government.

Yet what I sense happening is that Federal officials, perhaps out of frustration with slow progress, are thinking of procedural shortcuts to make up lost time. Cutting corners will invite public distrust, which will lead to procedural wrangles, and more delay. This will increase Federal frustration, and start the cycle all over again.

If it comes to that, there is simply no choice but to place agreement and cooperation ahead of deadlines. We might just as well accept that fact in setting schedules for both DOE and NRC. This hasn't yet been done. For example, DOE is planning to apply to NRC for a construction authorization in 1991, which is four years after the date specified in the Act. To make up lost time, DOE expects NRC to issue a Limited Work Authorization six months after receipt of this application. (There is, by the way, no provision in the Act for a Limited Work Authorization.) DOE hopes, by this means, to complete the final repository design, the final waste package design, and to construct Test and Evaluation Facilities, while the NRC is still reviewing the construction application. By the time the NRC decides, DOE will have been building the facility for three years. On paper, this is a way of allowing DOE to meet the Act's 1998 deadline. In practice, it is a recipe for trouble.

It would get us into the same problems that we have had in constructing nuclear power plants: an incomplete design is submitted to the NRC, and construction proceeds as the design is being completed. When problems arise as a result of NRC's review, the builders resist any changes because of the disruption and costs this would entail. At that point the NRC has the choice of going along with an unsatisfactory state-of-affairs, or of being accused of holding up a vital and expensive project. And no matter what the decision, public confidence is a casualty. We should not even consider heading down this road with a first-of-a-kind permanent waste facility.

Why Are We Having So Much Trouble Agreeing on a Repository?

Having said that, I have to acknowledge that forcing DOE to do the job "by the numbers", so to speak, is not entirely satisfactory, either. Making sure that every procedural "i" is dotted and every "t" is crossed in a strongly contested case will inevitably involve working at a frustratingly slow pace. The frustration breeds a siege mentality, which isn't healthy, either. As I said, there are signs of it already.

I have had people tell me that a siting stalemate would continue until there was a crisis in the nuclear power program. When the public saw that a repository was essential to keeping power reactors running, local concerns would be overridden, and the Federal Government would get the approval it needed. I must say, I would not count on this as a way out.

We are kidding ourselves if we think only a small minority of the public wants to exercise its full procedural rights on the siting of a waste repository. I have found it interesting, and indeed ironic, that when it comes to siting waste repositories in their States, even the most pro-nuclear Congressmen and Senators extoll the virtues of an elaborate NRC proceeding.

In the face of this, we need to step back to ask ourselves why we are having so much difficulty meeting the goals of the waste program. After all, this is not a recent development -- we have been struggling with this problem for nearly thirty years.

It's pretty obvious that an important source of difficulty is the public's unease over a decision we will have to live with essentially forever. It is the fear that, in putting waste underground, for good, we

may make a mistake which we won't be able to correct. The public confidence was not increased by false starts some years ago in Kansas and in South Carolina, where the underground sites turned out to be less well understood than was thought at first. (A more recent example of this, whether strictly applicable or not, is the tunnel collapse at Rainier Mesa.) The effect on plans for a permanent geologic facility is a demand for extraordinary precautions, which is bound to lead to extreme difficulty in reaching agreement on a site. It makes me wonder whether we have not taken on too great a burden.

Do We Have the Right Goals?

It is worth recalling that about ten years ago the Atomic Energy Commission was concentrating its main efforts on a surface repository. In fact, the AEC announced in 1972 that it would have such a repository available in 1979. The advantage of this type of facility is that it is technically simpler, and any mistakes in packaging the waste can be easily corrected. It would certainly be nice if we had this facility today. The approach was abandoned in 1975 by the newly-formed Energy Research and Development Administration. The reason was not health and safety, but psychology.

The conventional view then, as now, was that anything but permanent underground storage left nuclear power vulnerable to the charge that there was no "solution" to the waste problem, and to the consequent demand that nuclear plants should be shut down until there is a "solution."

The critics saw this dilemma as the Achilles heel of nuclear power. The government accepted the challenge and shifted its goal to permanent underground storage, and since then all sides have been obsessed with burying the waste, or at least demonstrating that this can be done. Meanwhile, progress has been slowed by arguments over the near-perfect standards which must be met by a permanent geologic facility. I don't think these arguments will be resolved easily.

My own view is that health and safety reasons do not necessarily dictate waste disposal in a permanent underground repository. There are important health and safety advantages in a facility that allows inspection and maintenance of the waste form, whether above or below ground. The key word is maintenance. There is a lot to be said for having the spent fuel containers where we can get to them, and fix leaks, or repackage, if necessary.

Thinking Seriously About Monitored Retrievable Storage

That is basically what we are planning to do for the time being at reactor sites. It would be better, however, to get the spent fuel off the reactor sites and into a central facility. It would then be managed by a specialized organization, and at the same time the spent fuel would cease to be a distraction for utilities operating reactors. They have enough to worry about.

While the Act makes very little provision for central spent fuel storage, it does, as you know, make provision for something called Monitored Retrievable Storage. The Act requires DOE to submit a proposal to Congress for an MRS by June, 1985. Congress will then have to decide whether to authorize the construction. What I have been saying is that we need to think seriously about this alternative because we cannot be sure when we will have a geologic repository, and we need someplace to put spent fuel.

I know the argument against retrievable storage has been that the existence of an MRS program will slow down the government's efforts for a permanent geologic repository. That may be true. I am more worried, however, about putting all our eggs in one basket, and then failing to achieve any storage facility. It makes more sense to start with something we already know how to do.

We Also Need a Change in Organization

No matter how we proceed, we also need a change in organization. The DOE program has not had a permanent director. For a while it was not clear whether DOE itself would survive. Now the Administration has once again suggested changes in the management of DOE's Waste Program. There was talk of combining it with the enrichment program. DOE simply does not offer the kind of stability and continuity the waste repository program needs. This is another source of public unease.

The Act mandates an examination of alternative means of managing the Waste Program. The study was due last January, but, for some reason, the Study Panel was not appointed until December. The study is now due next September. I hope this issue will get careful examination.

I think that what we need for this job is an independent entity. This idea was originally proposed in 1976 by Mason Willrich, who outlined a plan for a self-financed, federally-chartered, independent corporation similar to COMSAT. The advantage of a separate entity is that it would have a less political cast, and would be fully dedicated to the problem of waste storage, without the distractions of other pressing issues.

Another alternative would be to set up a separate government agency. Last May, Senator Cochran proposed the establishment of an independent Nuclear Waste Management Authority. A similar agency was proposed by Senator Mathias in 1977. One way or another, we need a dedicated organization.

Shifting to a Two-Track Approach

In closing, let me say there has been so much talk about nuclear waste being a political, social, psychological, and every other kind of problem that we have lost sight of the simple truth that, at bottom, there is a physical problem to which we have a relatively simple solution. I am talking about monitored retrievable storage, for which the technology is well in hand.

What I am suggesting is that we should take advantage of this easier option as we proceed carefully toward a permanent repository. Such a two-track approach will commit us to longer surveillance over the high-level waste, but that can be an advantage: it allows us to correct any mistakes.

If I am right about what worries people in the current approach, then this shift in emphasis in the waste program, together with a change in organization, may be the key to effective action on safe and secure storage for nuclear waste.