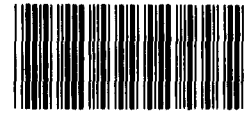


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Status of the Department of Energy's
Waste Isolation Pilot Plant

Statement of
Keith O. Fultz, Director, Energy Issues
Resources, Community, and Economic
Development Division

Before the Environment, Energy, and
Natural Resources Subcommittee
Committee on Government Operations
House of Representatives



Mr. Chairman and Members of the Subcommittee:

We are pleased to be here today to discuss the status of the Department of Energy's (DOE) Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico. WIPP is to be used for permanent disposal of transuranic (TRU) waste generated and stored at various facilities in DOE's defense complex.¹ Construction of surface facilities, shafts, and the first of eight planned waste storage areas is essentially complete. DOE is now proposing to store TRU waste in the facility during a 5-year test program. However, as I will discuss in my testimony, in our opinion, DOE has not yet satisfactorily addressed all key issues.

Before DOE can begin its test program, there are several matters that need to be completed, such as DOE's final report on the safety of WIPP facilities and operations and a supplemental environmental impact statement updating the October 1980 statement.

My testimony today focuses on an April draft of the plan that DOE is preparing to provide program guidance over the 5-year test

¹Transuranic waste is any material that is contaminated with man-made radioactive elements, such as plutonium, having atomic numbers greater than uranium. TRU waste exists in a variety of physical forms, ranging from unprocessed trash, such as absorbent papers and protective clothing, to decommissioned tools. Because these wastes are radioactive for a long period, they require isolation in a deep geologic repository.

period. According to the plan, during the test program DOE would fill from 3 to 7 percent of WIPP's capacity with TRU waste for two purposes. First, it would perform experiments to determine if WIPP complies with nuclear waste disposal standards established by the Environmental Protection Agency (EPA). These standards set limits on permissible releases of radioactivity to the accessible environment for a period of 10,000 years. They also set limits on exposure of individuals to radiation and radioactive contamination of groundwater for a period of 1,000 years. Second, DOE would demonstrate that waste handling, transportation, and storage activities can be performed safely and at near-capacity operating levels.

DOE's test plans are more clearly focused than when we last testified on this subject in September 1988.² At that time, DOE sought authorization to fill up to 15 percent of WIPP's capacity over a 5-year period, but it had not justified storing that much waste in advance of determining that the facility complies with EPA's standards. DOE's current storage plans are more modest, and they articulate why DOE believes it needs to store this amount of waste. Nevertheless, we have three basic concerns about the draft plan.

²Status of the Department of Energy's Waste Isolation Pilot Plant (GAO/T-RCED-88-63, Sept. 13, 1988).

-- Upon completion of the test program, DOE could conclude that WIPP does not comply with disposal standards that EPA expects to reissue in 1991. In such an event, DOE would either have to retrieve all stored wastes for additional processing or disposition, or develop modifications to the repository that would bring the facility into compliance. The plan, however, does not discuss such a contingency, how it might be carried out, and what the associated costs might be.

-- Most wastes would not be stored to help determine if WIPP complies with EPA's standards. Instead, they would be stored for operational purposes. To avoid the possibility that these wastes might have to be removed if the facility does not meet the standards, operational demonstration activities could be deferred. Such an option, however, is not discussed in the plan.

-- A total of about 7,000 drums of waste would be stored in WIPP for experiments related to compliance with EPA's standards. DOE's draft plan, however, does not contain sufficient information to support the proposed experiments and the quantities of waste DOE plans to store.

Let me begin by addressing the issue of waste retrieval and its relationship to EPA's standards.

NON-COMPLIANCE WITH STANDARDS COULD
REQUIRE RETRIEVAL OF WASTES

DOE's draft plan describes how DOE would demonstrate waste handling, transportation, and storage operations. Between late 1989 and September 1992, DOE would store waste in WIPP amounting to 3 percent of the facility's capacity. It would then suspend storage operations until it had issued a draft report on compliance with EPA's disposal standards. DOE would seek review and comment on the draft report by EPA, the National Academy of Sciences, and the state of New Mexico's Environmental Evaluation Group (EEG). If, on the basis of the draft compliance report, DOE is confident that it will be able to demonstrate compliance with the EPA standards, it would fill another approximately 4 percent of WIPP's capacity for both experimental and operational purposes over the remaining 2 years of the test program. At the completion of the 5-year program, DOE would issue a final report on compliance with EPA's standards. It would also issue a report on the safety and efficiency of waste storage operations. DOE would then formally decide whether to operate WIPP as a repository.

The wastes to be stored in WIPP during the test program would primarily come from DOE's Rocky Flats Plant in Colorado and its Idaho National Engineering Laboratory. According to DOE's plan, all wastes would be stored in a retrievable manner.

In reviewing DOE's proposed test program, however, the possibility that WIPP might not comply with EPA's disposal standards must be considered. This issue is critical because, in that event, DOE might have to remove all TRU wastes stored in the facility for additional processing or make other arrangements for their disposition. It was largely for this reason that the Academy's Review Panel on WIPP recommended a year ago that DOE store no more wastes in the facility than necessary for experiments until it has significantly reduced technical uncertainties, such as generation of gases by waste materials.

The issue is further complicated by the fact that in July 1987 the U.S. Court of Appeals (First Circuit) vacated and remanded the disposal standards to EPA for revision. The Court found that EPA had failed to adequately consider requirements of the Safe Drinking Water Act by allowing, in the disposal standards, contamination of groundwater with radiation levels in excess of a provision of EPA's drinking water standards. The Court directed EPA to reconcile the differences between its disposal and drinking water standards. EPA estimates that it will reissue the disposal standards by the end of 1991. WIPP will have to comply with the future standards, but in the interim it has agreed with the state of New Mexico to address EPA's original standards.

An April 1989 draft supplemental environmental statement on WIPP notes that if the facility does not comply with EPA's

standards, DOE would have a number of technical options that might permit it to bring WIPP into compliance with the standards. These options generally include some type of additional waste treatment, such as compaction, or engineered barriers in the repository, such as materials added to absorb gases generated by the contents of waste drums. Neither the supplemental statement nor the test plan, however, addresses whether this would require waste retrieval or rehandling within the storage area. The environmental statement states only that additional environmental documentation would then be prepared. Finally, neither document discusses the potential disposition of the wastes in the event that DOE had to abandon WIPP because the facility did not comply with EPA's standards.

Now I will discuss DOE's plans for the operational demonstration program.

DEMONSTRATION OF WASTE SYSTEM OPERATIONS

Basically, DOE wants to show that it can operate the entire TRU waste system safely at levels representative of full-scale operations. DOE's draft test plan states that individual parts of the TRU waste system have been tested, but industrial practice suggests that it is prudent to test the entire system at increasing storage rates. The plan describes the operations that will be demonstrated at waste production and storage facilities, during transit, and at WIPP. For example, the Rocky Flats and Idaho

facilities would gain experience in certifying that TRU wastes meet WIPP waste acceptance criteria and that all packaging and shipping requirements are met. Similarly, waste shipments would demonstrate the safety of the transportation system. At WIPP, DOE would demonstrate and evaluate safety and productivity.

Throughout the demonstration, according to the plan, there are designated checkpoints for review as a part of a continuous analysis of operations. The purpose of the checkpoints is to provide DOE with a basis for determining whether to proceed as planned or to modify plans on the basis of experience gained. As part of its final evaluation of the 5-year test program, DOE would determine if WIPP can be operated at full scale in compliance with relevant DOE operational requirements. If not, additional safety analysis would be performed and appropriate modifications to operations made.

The operational demonstration activities are not related to determining compliance with EPA's standards. Further, they are not essential to determining if WIPP can be operated safely. DOE states in the plan, for example, that it could base a decision to operate WIPP as a disposal facility upon demonstrations and appraisals that it has already completed without the use of radioactive materials.

In support of the proposed operational demonstration activities, DOE's plan states that lack of operations with TRU waste could be an impediment to full public confidence in the decision-making process. We have two concerns about DOE's position.

First, DOE would be shipping significant quantities of TRU waste to WIPP for storage in advance of determining the facility's suitability for disposal of the wastes. It is possible, therefore, that DOE will be perceived as moving too fast, or of once again putting defense complex operational needs ahead of environmental and safety concerns.

Second, if DOE stores a significant amount of waste in WIPP and then finds that the facility does not meet EPA's standards, the credibility of its entire waste management program could suffer irreparable harm. Looked at in this light, public confidence in WIPP could be achieved best by a more deliberate approach of determining WIPP's suitability for disposal of TRU waste before shipping large quantities of waste to the facility.

Finally, in discussing DOE's operations demonstration plan, we believe it is also important to consider the effects of both early and deferred operations on DOE's facilities that generate and store TRU waste. As discussed earlier, the principal facilities are DOE's Rocky Flats Plant and Idaho laboratory. Rocky Flats

generates about one-half of DOE's TRU waste; however, because of that facility's limited storage space, DOE has for many years shipped wastes generated at that facility to Idaho. Continuation of this arrangement is not constrained by limitations on potential storage space at the Idaho laboratory. In October of last year, however, the Governor of Idaho closed the state to further waste shipments for several months because of what he stated were too many unmet DOE promises to remove nuclear waste from the Idaho location. In September 1989, he again plans to prevent shipments of TRU waste into Idaho.

Two points on this matter are important to note. First, according to DOE's draft plan, beginning sometime in 1990, a waste compaction facility at Rocky Flats will reduce the volume of TRU waste produced at that facility by up to a factor of five. Thus, the physical dimensions of the temporary storage issue will change sharply. Second, at this Subcommittee's request, we reviewed the legal basis for the Governor of Idaho's actions in refusing to allow DOE to ship the TRU wastes to its facility in Idaho.³ We concluded that there is no legal basis for the Governor's actions and that these actions are in violation of the supremacy clause of the U.S. Constitution.

Now I will turn to DOE's planned experiments using TRU waste in WIPP.

³B-221801.3, June 1, 1989.

CONCERNS ABOUT TRU WASTE TESTS

To determine compliance with EPA's disposal standards, DOE will have to make predictions about WIPP's performance as a repository for a period of up to 10,000 years. DOE will identify and analyze processes and events that could affect the repository's long-term performance. DOE's plan states, for example, that human intrusion (such as minerals exploration) is a potential event that is important to WIPP's performance. The plan also states that gas generated in waste drums is one of four ways that TRU waste could reach the accessible environment in the event of future human intrusion. Data collected on this factor will feed into the models DOE is developing to predict the consequences of such an event, in terms of releases of radioactive materials and potential doses of radiation to individuals.

Because of the importance of gas generation, DOE proposes to conduct two types of experiments using TRU waste in WIPP--bin tests and room tests. Among other things, bin tests are to provide data, such as types and rates of gas generation, for computer modeling and performance assessment calculations. Room tests are to confirm laboratory and bin test results, provide confidence in performance assessment calculations, and validate modeling assumptions. Altogether, these tests would use the equivalent of about 7,100 drums of TRU waste, or less than 1 percent of WIPP's design capacity.

For the bin tests, DOE would fill each of about 100 leak-tight metal bins with the equivalent of 6 drums of TRU waste at Rocky Flats and ship them to WIPP for underground storage. The first 32 bins would contain either waste only or waste and materials, such as crushed salt rock, to be used to backfill open spaces in storage rooms after wastes have been emplaced. These bins are intended to incorporate tests applicable to WIPP's 25-year operating life. The other 68 bins, containing TRU waste and backfill materials, would also contain "getters"--materials that absorb and retain gases and radioactive materials--and brine (saltwater) added at WIPP. Test data from these bins would address long-term waste storage conditions.

For the room tests, DOE would store the equivalent of about 6,500 drums of TRU waste in 5 special rooms. Each room would be about one-fourth the size of a regular waste storage room. After waste emplacement, DOE would seal each room with an inflatable seal. DOE would first put about 1,100 drums of waste (without any special preparation) into 1 small room. Data collected from this room would be representative of WIPP's 25-year operating life. By the end of 1990, DOE plans to store the equivalent of 2,700 drums of specially prepared wastes in 2 other small rooms. DOE would add drum metal, backfill and getter materials, and brine to the drums. Finally, after October 1992 DOE would store another 2,700 drums of specially-prepared waste in the remaining 2 small rooms. In this case, DOE would put backfill and

getter materials around the external surfaces of the drums as well as inside them. DOE's draft plan states that there is no credible alternative to room-scale tests for supporting performance assessment data needs.

We did not review the technical basis for DOE's proposed experiments. Such reviews are, however, being done by the Academy's WIPP Panel and New Mexico's EEG. We focused our work on determining if the plan provides sufficient data, either within the plan or incorporated by reference, to support storage of TRU wastes in WIPP in the quantity proposed by DOE for gas generation experiments. On the basis of this audit of DOE's plans, we have several concerns.

First, the draft plan does not provide support for the number of drums of TRU waste required for the proposed bin and room tests or for other technical details of the tests. For example, the plan does not discuss why 6,500 drums would be used in the 5 small rooms. It states that these details will be contained in individual test plans that are being prepared.

Second, the plan does not explain why bin tests are to be conducted underground in WIPP. Because the bins are intended to provide a sealed internal atmosphere, storage in the facility is not important for test purposes. DOE acknowledged this fact in its recent draft supplementary environmental statement on WIPP. In

that document, DOE estimated that it would cost about \$3.5 million to build and operate a bin-preparation facility at the Idaho laboratory as an alternative to bin storage in WIPP. DOE plans to prepare the bins at Rocky Flats and ship them to WIPP. A more meaningful analysis, therefore, would be to compare the current plans with the alternative of preparing bins at Rocky Flats and storing them at that facility or the Idaho laboratory.

Third, 32 of the 100 bins and 1 of the 5 room tests are intended to address the generation of gases in WIPP over its 25-year operating life. It is not clear from DOE's plan how information related to this time period would be used in determining if WIPP complies with disposal standards covering a period of several thousand years.

Finally, DOE does not plan to store waste in the last two small rooms until after it has issued a draft report on compliance with EPA's disposal standards and, largely on the basis of that report, determined if it has sufficient confidence in its ability to demonstrate compliance with EPA's standards. We recognize that the purposes of DOE's room tests are to confirm smaller scale test data and validate modeling assumptions, rather than to provide primary data for input into the performance assessment. Nevertheless, the late timing of the room tests in relation to DOE's schedule for issuing the draft compliance report raises

questions about whether DOE will be able to use the test results to assess WIPP's overall performance as a repository.

Let me conclude my testimony with a few observations.

OBSERVATIONS

As you know, Mr. Chairman, we have completed a large body of work over the last several years addressing environmental, safety, and health problems at DOE's atomic energy defense complex. In our view, WIPP is a key part of any long-range environmental restoration plan for the complex. The facility may provide a safe place to permanently dispose of some of the nuclear wastes that have been generated or stored for many years on an interim basis at facilities such as Rocky Flats and DOE's Idaho laboratory. Nevertheless, as I just discussed, there is one major hurdle that WIPP must clear--compliance with EPA's disposal standards. Because of uncertainty over whether WIPP will comply with EPA's standards, caution is warranted in the initial storage of TRU wastes, despite WIPP's importance to management and disposal of DOE's large inventory of TRU wastes. Therefore, operation of WIPP at near-capacity levels for 5 years, as DOE proposed last year, was not justified.

To DOE's credit, it now proposes operations on a much-reduced scale, and with continued storage operations after the first 3

years only if it obtains sufficient confidence in eventual compliance with EPA's standards. In this regard, we find DOE's current test plans much more reasonable than its earlier plans. However, even under its current plans, most of the waste that DOE would store in WIPP before making a preliminary determination of compliance with EPA's standards is not essential for that purpose. Further, if DOE should find that WIPP does not meet the standards after it stores a significant amount of waste in the facility for operational purposes, the credibility of DOE's waste management programs could be undermined.

Thus, in addressing DOE's request for authority to begin storing TRU wastes in WIPP, the Congress will need to consider the merits of DOE's proposed 5-year test program, the importance of beginning the long task of removing TRU waste from DOE's defense facilities, and the risk that WIPP might not comply with EPA's disposal standards. The Congress will then have to decide if, on balance, DOE's current approach is an acceptable risk.

Before the Congress can make an informed decision, however, DOE needs to complete its plan for the proposed 5-year test program, including considering the comments of the Academy's WIPP Panel and New Mexico's EEG. In addition, to permit the Congress to weigh the risks, as well as the benefits, of proceeding with DOE's planned test program, DOE needs to provide the Congress with

specific information on alternative actions that might be required if WIPP does not meet EPA's standards.

Although I have been discussing congressional decisionmaking on WIPP, DOE is also seeking administrative authorization from the Department of the Interior to store TRU wastes in WIPP, in the event that the Congress does not act on its request for legislation. DOE has, however, expressed its preference for legislation, and the position of Interior has consistently been that such authority should come from the Congress. We agree for two reasons.

First, if WIPP is to be used for permanent disposal, legislative action would clearly be required because Interior's authority to withdraw lands from public use is limited to a 20-year, renewable period.

More importantly, storage of TRU waste in WIPP is a significant step in the nation's nuclear program and, in our view, the Congress is in the best position to review DOE's readiness to begin storage operations. As we suggested in our testimony before this Subcommittee last September, to facilitate continued congressional oversight of WIPP, the Congress may wish to make permanent land withdrawal contingent upon a positive finding by DOE that the facility complies with EPA's revised disposal standards.

Finally, Mr. Chairman, as you know, the Justice Department recently announced a broad criminal investigation into possible violations of federal law at Rocky Flats. The investigation centers on whether employees falsified documents showing compliance with clean air and water laws, concealed evidence of contamination, and discharged pollutants without a permit. Also involved is alleged illegal treatment, storage, and disposal of hazardous and radioactive waste. The investigation is expected to take up to a year to complete. We are not sure what implications it might have for the waste presently scheduled to go to WIPP. The implications could be serious, since one of the prerequisites to storing TRU waste in the facility is certification by facilities generating the waste that the contents of storage drums meet criteria for storage in WIPP.

Mr. Chairman, this concludes my testimony. I would be pleased to answer any questions that you and other Subcommittee members may have.

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