

ADDITIONAL PERSPECTIVE ON THE CONTINUING WIPP EXPERIENCE

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Good morning, Co-Chairman Scowcroft and members of the Commission. Thank you for the invitation to speak.

I am Don Hancock, Director of the Nuclear Waste Safety Program at Southwest Research and Information Center (SRIC) in Albuquerque, NM, a nonprofit organization established in 1971. SRIC is a multi-cultural organization working to promote the health of people and communities, protect natural resources, ensure citizen participation, and secure environmental and social justice now and for future generations. I have been involved in public education, technical, legal, and regulatory aspects of WIPP for 35 years.

Previously, I testified on July 7, 2010 to the Disposal Subcommittee and submitted a more detailed statement regarding the Waste Isolation Pilot Plant (WIPP) experience, which is attached.

As I emphasized in my July 7 statement: WIPP is a continuing experience. What happens with WIPP over the next two decades is likely more important to having a technically, politically, and socially acceptable waste program than what has happened over the almost 40 years of WIPP’s history. That conclusion is because the success of WIPP’s mission can demonstrate whether the federal government and its contractors, at the cost of billions of dollars: (1) can safely operate WIPP to meet the “start clean, stay clean” standard for up to 175,564 cubic meters (m³) of transuranic (TRU) waste; (2) can safely transport TRU waste through more than 20 states without serious accidents or release of radioactive or hazardous contaminants; (3) can meet commitments to clean up TRU waste at about 20 Department of Energy (DOE) nuclear weapons sites; and (4) can safely close, decontaminate, and decommission the WIPP site, beginning in about 2030 or earlier.

What happens with WIPP also will demonstrate whether legal prohibitions on high-level waste and spent nuclear fuel,¹ and promises that such waste will never come to WIPP are reliable. If such guarantees are not enduring, any other state or tribe has no reason to believe in binding commitments related to any other nuclear waste facilities. Thus, I urge that the Commission’s recommendations include that the prohibition on high-level waste and spent nuclear fuel at WIPP and in New Mexico should continue to be the federal government’s policy.

This morning, I will focus primarily on some aspects of how DOE and its contractors are implementing WIPP’s mission. Although the WIPP experience began almost 40 years ago, there

¹ WIPP Land Withdrawal Act §12. Public Law 102-579. Signed into law on October 30, 1992.
<http://www.westgov.org/wga/initiatives/wipp/PIG-Web/Introduction/WIPP%20Land%20Withdrawal%20Act.pdf>

are significant unanswered questions about whether this well-studied, well-funded geologic disposal site will succeed in its mission. Such success involves, among other things, the repository design and use, the continuing uncertainties about the TRU waste inventory, and DOE and contractor performance. I urge the Commission to recommend that the operational and decommissioning phases are completed at WIPP before additional geologic disposal sites are chosen. If the WIPP mission is accomplished, it would demonstrate the capability of the federal government and its contractors and provide a basis for public confidence for other disposal sites. Without success of the first-of-its-kind facility, the prospects for public support for other sites are not promising.

Operational Performance – Repository design and use

There have been operational issues since before WIPP opened. The fact that salt creeps (and sometimes collapses) can help keep nuclear waste from migrating. But a salt mine, like other mines, can have stability problems in rooms and tunnels that pose risks to workers and the potential for releases. In the 1990s, SRIC, along with various scientists, questioned the stability of Panel 1, because it had been mined more than 10 years before waste was to be emplaced and some rooms were showing signs of significant deterioration. While DOE claimed that there were no stability issues, ultimately less than 59 percent of the panel's capacity was used.

DOE has mined subsequent panels closer to the time that waste emplacement is to begin. Nonetheless, except for Panel 2, other panels have not been filled to the permitted capacity (see table 1). In the first four panels, almost 14,000 m³ of contact-handled (CH) waste capacity was not used. DOE and its contractors have not yet demonstrated that there will be capacity in the planned ten panels to dispose of 168,485 m³ of CH waste. Forthcoming discussions with DOE and subsequent proposed modification requests to the WIPP Hazardous Waste Permit and changes to the Environmental Protection Agency (EPA) certification will consider that matter.

An even bigger discrepancy as a percentage of design capacity is the fact that DOE and its contractors have not publicly demonstrated that there is capacity for 7,079 m³ of remote-handled (RH) waste. No RH waste is in Panels 1, 2, and 3. Even though regulatory approval for RH waste disposal was given before Panel 4 waste emplacement began, less than 50 percent of that panel's RH capacity was used. Not all of the RH capacity of Panel 5 is being used. But even if all the RH capacity of panels 5-8 were used, the total amount then disposed would be 2,455 m³ of RH waste, or about 35 percent of the legal limit. Forthcoming discussions with DOE and subsequent proposed modifications regarding lead-shielded RH waste containers and panels 9 and 10 to the WIPP Hazardous Waste Permit and changes to the EPA certification will be public forums to discuss those and other issues.

The loss of capacity is primarily the result of DOE and contractor decisions. The policy on putting CH waste into the repository as quickly as possible meant that some capacity was lost because more than 6,000 dunnage 55-gallon drums with no waste have been emplaced, taking up more than 1,260 m³ of space. Capacity is lost because containers are shipped randomly, not so that they can be most efficiently emplaced in panels. RH capacity continues to be lost because of the higher priority given to CH waste so that rooms are filled with CH waste before all the RH spaces are filled.

Regarding panels 9 and 10, at the WIPP Quarterly Meeting on January 20, 2011, DOE officials stated that the long-time design of panels 9 and 10 may be abandoned in favor of a new design of those panels. My organization and others are certainly willing to discuss such a re-design, but it does show that a significant aspect of a repository design that has been in place for decades may not be workable to fulfill the WIPP mission.

Operational Performance – TRU Waste Inventory

Perhaps the capacity limits will not provide a serious problem if those amounts of CH and RH TRU waste do not exist or need not come to WIPP. Despite the fact that WIPP's mission is primarily to dispose of TRU waste generated more than 30 years ago from nuclear weapons production, DOE and its contractors at the shipping sites still do not accurately know the amount of TRU waste that exists and its essential characteristics. Accurate records of what was in waste containers were not kept as the "trash cans" were filled decades ago. Thousands of containers were dumped into shallow pits and trenches, which resulted in damaged drums and soil being contaminated. The estimates of the amounts and components of waste streams continually change since much of the waste has yet to be characterized to see if it meets the WIPP Waste Acceptance Criteria (WAC). The current WIPP Inventory shows that amount of CH waste projected for WIPP is 140,800 m³ of CH waste and 5,420 m³ of RH waste.²

Those volumes are suspect, given that in recent years thousands of cubic meters of waste that have been managed as TRU waste for decades are being assayed and found to be low-level waste (LLW) that is not disposed at WIPP. There has been little or no public discussion about this matter, and, to my knowledge, DOE has still not publicly released specific information on the amounts of such LLW at each site. Table 2 shows my current estimates, based on information that DOE has released to me over the past few months. That table shows that in the two most recent fiscal years (2009 and 2010), almost 27 percent all of TRU waste dispositioned was not disposed at WIPP.

Operational Performance – Volatile Organic Compound Emissions

A surprising recent problem was the much higher levels of carbon tetrachloride than expected in underground air. That situation first became publicly known on July 24, 2009, when, pursuant to the Hazardous Waste Permit, DOE informed the New Mexico Environment Department (NMED) that carbon tetrachloride of 281 parts per billion volume (ppbv) was detected in July 1, 2009 sampling. Since it was issued in 1999, the Permit required notification if levels exceed 165 ppbv. Sampling errors were discovered on October 23, 2009 that resulted in recalculation of the levels so that the July 1 sample was changed to 393.65 ppbv. The recalculation also disclosed that there were "21 additional exceedances for carbon tetrachloride between December 22, 2008 and September 30, 2009."³ Thus, there were exceedances of carbon tetrachloride for more than six months before DOE and its contractors were even aware that they had occurred.

DOE and its contractors also originally mis-identified the specific wastes that were causing the rising levels. On November 17, 2009, they informed NMED that "[t]he main contribution of

² *Annual Transuranic Waste Inventory Report – 2010* (Data Cutoff Date 12/31/2009). DOE/TRU-10-3425, p. 33 of 671. http://www.wipp.energy.gov/library/TRUwaste/ATWIR_2010_DOE_TRU_10_3425_R0.pdf

³ December 4, 2009 Letter from James P. Bearzi (NMED) to David Moody and Farok Sharif, p. 1. <http://srcic.org/nuclear/docs/NMED12042009.pdf>

carbon tetrachloride appears to be from waste in filled panels (Panels 3 and 4).”⁴ By January 14, 2010, DOE had decided that the primary cause of the emissions was waste in Panel 4 and continuing emplacement of some waste streams in Panel 5.⁵ Yet, despite repeated requests from SRIC that shipments of such high carbon tetrachloride waste streams be suspended, DOE continued shipments of such wastes. Consequently, the running annual average (RAA) of carbon tetrachloride continued to rise. By late March 2010, DOE and its contractors expressed great concern about the problem because if the RAA exceeded 165 ppbv, the permit required that the then open room be closed, even if it were not filled. On March 29, 2010, they asked NMED to immediately grant a temporary authorization to raise the RAA limit by almost four times to 630 ppbv, which NMED granted on April 1. With the issuance of a renewed Hazardous Waste Permit, the allowed RAA for carbon tetrachloride is now 960 ppbv. Thousands of drums with significant amounts of carbon tetrachloride are still to be shipped to WIPP.

But there are at least three important lessons from the carbon tetrachloride situation. First, the fact that volatile organic compound monitoring in the underground mine that had been in place for a decade provided erroneous results for months demonstrates a significant operational problem. Second, the fact that a known contaminant (carbon tetrachloride) in a significant amount of waste was not addressed before it became an issue that altered WIPP’s operations shows management and operational failures. Third, the necessity of independent regulation was demonstrated, since without the requirements of the Hazardous Waste Permit the problem would not have been detected and without state and public involvement the remedial measures might not have been implemented.

Cost and Schedule

My organization has long been interested in the reliability of cost estimates for WIPP. Nuclear facilities have a long history of being behind schedule and over budget. WIPP is no exception.

In its third WIPP environmental impact statement (EIS) in 1997, DOE calculated the lifecycle costs for 35 years of WIPP transportation and operations and a 10-year decommissioning period at \$6.89 billion in 1994 dollars.⁶ The approximately \$2.5 billion spent before disposal operations started are excluded from the EIS cost estimate.

In 2002, DOE began its “Accelerated Cleanup” program with the goal of cleaning up sites 30 years sooner and saving about \$37 billion. As part of that program, *the WIPP Performance Management Plan* (PMP)⁷ provided that most CH waste would be disposed at WIPP by the end of FY 2012 and all CH waste would be disposed by the end of FY 2015. Such acceleration was to save about \$3.6 billion (\$180 million per year for 20 years) plus other savings from using the TRUPACT-III shipping container and reducing regulatory requirements. From FY 2003-2010, WIPP received almost 106 percent of its budget requests, but nonetheless disposed of only

⁴ November 17, 2009 Letter from David Moody and M.F. Sharif to James Bearzi, p. 2.

<http://srcic.org/nuclear/docs/DOE11172009.pdf>

⁵ January 14, 2010 Letter from David Moody to Don Hancock (SRIC).

<http://www.srcic.org/nuclear/docs/VOC%20CBFO%20response10-0903-1.pdf>

⁶ *Waste Isolation Pilot Plant Disposal Phase: Final Supplemental Environmental Impact Statement*. DOE/EIS-0026-S-2, p. 5-10. <http://nepa.energy.gov/finalEIS-0026S2.htm>

⁷ <http://srcic.org/nuclear/docs/WIPPPMP-Aug2002.pdf>. SRIC and other groups analyzed the PMP in 2005.

http://srcic.org/nuclear/docs/wipp_cleanup.pdf

71.3% of the amount of waste included in the PMP for that period (see table 3). The PMP goal of having all 10,034 m³ of legacy LANL CH waste disposed by September 30, 2010 was not met; less than 4,700 m³ was disposed, and LANL is about four years behind the PMP schedule. The PMP goal of having most CH waste disposed by September 30, 2012 will not be met. Nonetheless, some millions of dollars of the acceleration funds have been provided to the City of Carlsbad to prepare for the earlier closing of the site.

In 2009, with the American Recovery and Reinvestment Act (ARRA), WIPP received \$172.375 million as part of \$6 billion provided to the DOE Environmental Management Program. That amount was in addition to the annual “base” program funding. The ARRA funds, like the “Accelerated Cleanup” funds, were to increase the number of waste shipments and amount of waste disposed between 2009 and September 30, 2011. The amount of CH waste to be dispositioned with ARRA funds is 6,476 m³ according to WIPP officials or 8,031 m³ according to the Fiscal Year 2011 Budget Request to Congress, along with 431 m³ of RH waste according to WIPP officials or 487 m³ according to the Budget Request to Congress.⁸ For FY 2009 and 2010, DOE reports that 1,652 m³ of CH waste and 55 m³ of RH waste were dispositioned. The targets during those years were 1,592 m³ of CH waste (3,147 m³ according to the Budget Request) and 57 m³ of RH waste (113 m³ according to the Budget Request).

Among the lessons from this brief summary of the costs:

- Waste disposal costs more than the estimates of DOE and its contractors;
- Waste disposal takes longer than planned, even with extra funds for “acceleration” and “recovery;”
- Capacity space can be lost by trying to meet schedules rather than optimizing shipments for the most efficient waste emplacement.

Expansion of WIPP’s mission for longer periods of time

While exactly how much legacy TRU waste meets the WIPP WAC requirements for disposal is unknowable at this time, WIPP was created to handle that waste. The facility was not created to be a perpetual repository. There are many reasons that such an expansion should not occur. The WIPP Land Withdrawal Act and agreements with the state limit the amount of waste disposed at WIPP and the time period that it operates; thus such an expansion would break the guarantees provided to the state and public. Expanding the repository footprint brings waste closer to oil and gas production wells that surround the 16-square-mile Land Withdrawal Area. The salt creep and collapse would require even more difficult and expensive measures to address than those that necessitate the current annual two-month-long maintenance outage. Such an expansion of WIPP’s lifetime would be opposed by many New Mexicans, likely involving political and legal actions.

The limits on WIPP’s mission have always been predicated on either a termination of activities that create new TRU waste from nuclear weapons production or alternative storage and disposal sites. SRIC does not believe that additional nuclear weapons that generate more TRU waste are needed. But there are plans to create new facilities, including the Chemistry and Metallurgy

⁸ DOE numbers continue to vary between what Casey Gadbury of the Carlsbad Field office provides (used here) and the amounts on the DOE website <http://www.em.doe.gov/emrecovery/>. Budget Request is <http://www.cfo.doe.gov/budget/11budget/Content/Volume%205.pdf>, p. 17.

Research Replacement-Nuclear Facility (CMRR-NF) at Los Alamos, which could create TRU waste for decades after WIPP is scheduled to close. Government policymakers should include in any plans for the CMRR-NF or other waste generating facilities that long-term waste storage and disposal must be provided at locations other than WIPP.

Secrecy/Lack of information access

Although all of the TRU waste coming to WIPP is from nuclear weapons activities, there was not to be any classified information. DOE, along with EPA, NMED, and citizen groups have implemented programs that enhance public access to information and participation in regulatory decisionmaking. Such methods include a first-of-its-kind e-mail notification of specified WIPP actions and public meetings on draft Hazardous Waste permit modifications before they are submitted to NMED.

The first change to that open access to information was when DOE decided to bring to WIPP some of the in tact classified shapes from manufacturing plutonium pits at the Rocky Flats Plant in Colorado, rather than deforming them. More recently, however, SRIC has had concerns about information being withheld under “official use only” and similar designations. For example, the Comprehensive Inventory Database, which includes information on waste volumes, radionuclides, and waste materials, which is used for operational information and regulatory matters including EPA recertification, is not publicly available, even with password protection and read-only access. Some information regarding the new TRUPACT-III shipping container also is not being made publicly available. Lack of access to important information undermines the ability of the public to participate and their confidence in DOE and contractor actions and proposals.

Recommendations to the Commission

1. The prohibition on high-level waste and spent nuclear fuel at WIPP and in New Mexico should continue to be the federal government’s policy.
2. The WIPP operational and decommissioning phases should be completed before additional geologic disposal sites are chosen. Successful performance would demonstrate the capability of the federal government and its contractors and provide a basis for public confidence. Without success of the first-of-its-kind facility, the prospects for public support for other disposal sites are not promising.
3. If the federal government builds more nuclear weapons for decades into the future, the new TRU waste created should be handled in another facility. Expanding WIPP’s lifetime for such new wastes is not consistent with the law, promises to the state, and technical limitations of the site.

I would be glad to respond to your questions.

WIPP BUDGET REQUESTS, APPROPRIATIONS, PERFORMANCE MEASURES											Table 3
	<u>FY2003</u>	<u>FY2004</u>	<u>FY2005</u>	<u>FY2006</u>	<u>FY2007</u>	<u>FY2008</u>	<u>FY2009</u>	<u>FY2010</u>	<u>FY2011</u>	<u>Totals</u>	<u>2003-2010</u>
DOE REQUEST (in \$000)	\$193,228	\$214,207	\$231,612	\$212,629	\$213,278	\$219,739	\$211,524	\$220,340	\$220,245	\$1,936,802	\$1,716,557
APPROPRIATION (in \$000)	\$209,734	\$223,056	\$229,444	\$228,331	\$228,818	\$234,585	\$231,661	\$230,340			\$1,815,969
% of Request	108.5%	104.1%	99.1%	107.4%	107.3%	106.8%	109.5%	104.5%			105.8%
PERF. MEASURE* (cubic meters)	4,605	12,170	13,318	10,185	11,710	10,765	10,034	6,591	9,444	88,822	79,378
							RH-96		RH-277		
ACTUAL DISPOSAL** (cubic meters)	7,542	8,810	7,657	10,556	8,549	5,944	6,175	7,822			63,055
% of Perf. Measure	163.8%	72.4%	57.5%	103.6%	73.0%	55.2%	61.5%	118.7%			79.4%
WIPP PMP***	8,969	12,366	12,247	11,892	11,441	11,647	11,855	8,052	3,825	92,294	88,469
% of PMP	84.1%	71.2%	62.5%	88.8%	74.7%	51.0%	52.1%	97.1%			71.3%
Sources: *Presidential Requests to Congress, **WIPP WASTE INFORMATION SYSTEM											
*** WIPP Performance Management Plan, August 2002											
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