

Carlsbad Mayor's Nuclear Task Force

Comments attached

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Comments on March 29, 2024 Permit Modification Request

These comments are submitted to the New Mexico Environmental Department (NMED) Hazardous Waste Bureau (HWB) in support of the permittees request. The Mayor's Nuclear Task Force is an ad hoc committee of informed private citizens and elected officials in Carlsbad. Task Force members voted, unanimously, to endorse the following comments during a May 21, 2024, meeting. Representatives of the Department of Energy's Carlsbad Field Office, its contractors (including SIMCO) and its national laboratory advisors (Sandia, Los Alamos) were represented at the meeting, but abstained from this vote, as did New Mexico Environment Department representatives in attendance.

NMED regulates the Waste Isolation Pilot Plant (WIPP), which is managed by the Department of Energy (DOE) and operated by its contractor (SIMCO). On March 29th, the DOE and its Contractor (permittees) submitted a Class 2 Permit Modification Request (PMR) to authorize disposal of Mixed Transuranic Waste (MTRU) using 4 new waste packages that employ shielding to reduce the container surface dose rate to less than 200 millirem (mr), thereby making container handling during transport, receipt, unloading, and final emplacement similar to the packaged waste form known as "Contact Handled" (CH TRU). In addition, the permittees requested a reduction in the audit and certification frequency for small quantity generator sites that infrequently ship waste to WIPP.

In summary, the Task Force believes the proposed changes will:

1. Improve operations,
2. Enhance worker safety at WIPP and generator sites,
3. Give more flexibility for generator sites to package and ship waste,
4. Increase the number and variety of waste streams that can be accepted, thereby enhancing successful completion of the waste disposal mission, and
5. Save taxpayer dollars, while not reducing confidence that waste treatment and packaging at generator sites meet permittees' waste acceptance criteria.

Context and History Relevant to Permittees Request for Approval of New Shielded Containers

Almost 12 years ago, on November 1, 2012, NMED approved a Class 2 PMR that authorized the use of a similar shielded container for management of Remote Handled TRU mixed waste as CH TRU mixed waste at WIPP. That shielded container was added to Permit Part 3, Section 3.3.1, as an acceptable storage container and Permit Part 4, Section 4.3.1, as an acceptable disposal container, known as SC-30G1. NMED's approval of SC-30G1 was based primarily on the fact that prior RH waste shipment, handling, and especially disposal underground turned out to be significantly more problematic than DOE had anticipated when the design basis for WIPP was

established. NMED also found that RH waste emplacement using shielded containers would protect the environment and improve health and safety for WIPP operations.

That original design basis, established in the early 1980's, assumed that all RH waste would need shielding up to 1000 times (or more) than the CH waste. CH waste would be placed in the disposal rooms, only after RH waste had been placed in horizontal boreholes in the walls of each room and shielded with a concrete and steel plug. Thus it was assumed that the RH waste receipt rate would be adequate to fill all available horizontal borehole locations before the CH waste destined for each room of a disposal unit had been safely emplaced. That assumption was naïve, as was the assumption that all RH waste would require such onerous shielding for disposal operations worker safety.

Once WIPP was operational (1999), it quickly became obvious that generator sites storing RH MTRU waste in hot cells could not safely and/or efficiently remove their smaller waste containers from their hot cells and package them into the shipping containers and casks that DOE had developed for their transport to WIPP. Meanwhile packaging, transport and disposal of CH containers began immediately. CH waste operations dominated WIPP disposal and filled the first three disposal units (panels) without a single RH canister being emplaced in a horizontal borehole.

Eventually, even given the difficulty of packaging RH waste into RH canisters, generator sites were able to begin shipping RH waste to WIPP in 2007. By that time, panel 3 was almost full with CH waste, but panel 4 had been mined and permitted by NMED to accept both CH and RH waste. RH waste began emplacement in Room 7 of Panel 4 while CH waste was still being emplaced in Panel 3. The empty panel 4 rooms allowed horizontal boreholes to be drilled before CH waste disposal operations overtook RH waste emplacement. DOE and the generator sites attempted to certify, package and ship RH waste for panel 4 emplacement to stay ahead of CH waste receipt, but to no avail. The following figure shows the final panel 4 RH waste emplacement status.

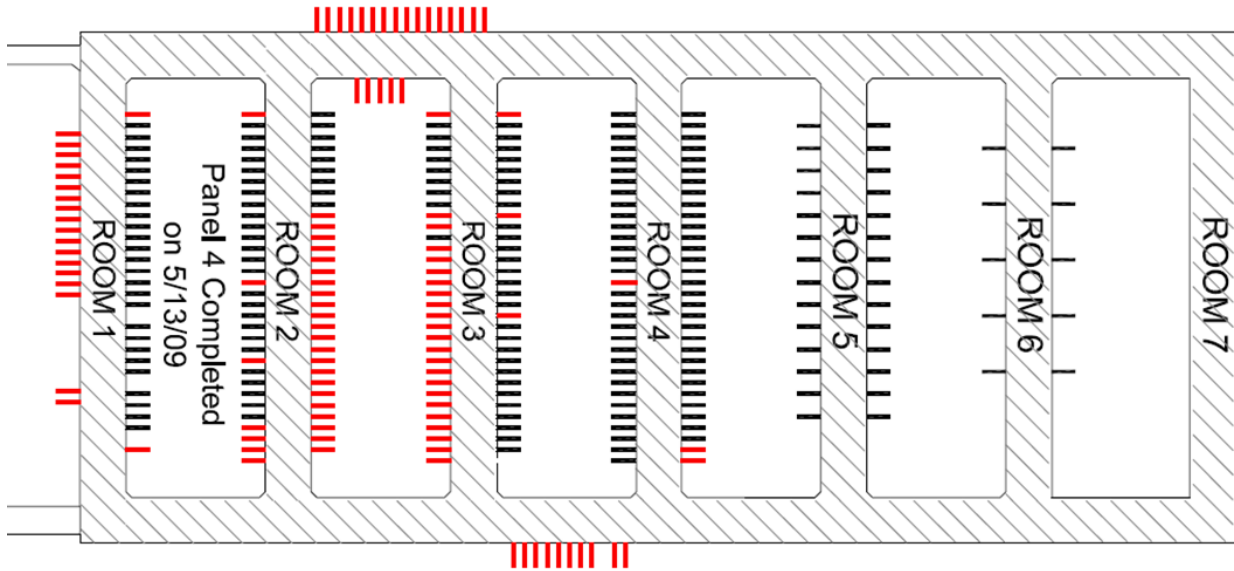


Figure 1 - Panel 4 Final RH Waste Configuration.

Each black line represents a filled RH borehole and each red line represents a borehole that was drilled in anticipation of being used for an RH canister, but was passed by due to the rate of CH waste emplacement operations. In total only 198 RH canisters were emplaced in Panel 4.

A similar story unfolded for disposal operations in Panel 5. By this time DOE and generator sites were acutely aware of the difficulty in packaging RH waste out of hot cells and into the permitted WIPP shipping casks for horizontal borehole emplacement. The resulting RH emplacement was somewhat more efficient, with a total of 264 canisters emplaced, as shown in the following figure showing the final RH waste emplacement configuration.

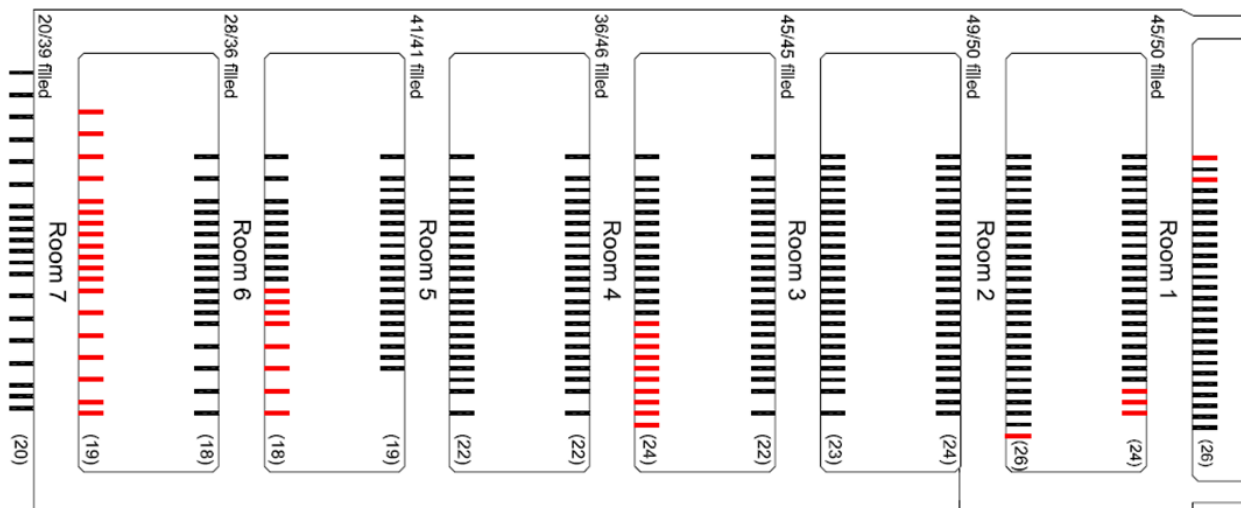


Figure 2 - Panel 5 Final RH waste emplacement configuration.

It is important to note that the original WIPP design basis was for a statutory limit of 250,000 cubic feet of RH TRU waste, an amount based on an arbitrary assumption (not even an

estimate) by the Atomic Energy Agency (DOE's Predecessor) in 1978. Even so, that volume limit was eventually codified in the 1992 Land Withdrawal Act, and also became a limit imposed by the Consultation and Cooperation Agreement entered into by the State of New Mexico and DOE in 1987.

By 2009, the permittees clearly saw the need for a more efficient way to package, ship and emplace RH waste, especially for RH waste forms not needing the overkill shielding inherent in the design basis. To reach the RH volume limit would require 800 RH boreholes per disposal panel, but best efforts to date could only achieve about 25%, and previously available wall space had been abandoned as well. So they developed the SC-30G1, and sought a license for its transport in a certified shipping cask, the HalfPACT, by the Nuclear Regulatory Commission (NRC). That process took more than a year, but upon certification by NRC, the permittees immediately submitted a Class 2 permit modification request to the NMED to allow its use.

1980's WIPP RH design basis:

- 250,000 ft³ = 7080 m³
- ~8,000 RH-72B canisters
- ~800 RH boreholes/panel (~115/room)

All of this background material was presented by the permittees to NMED and stakeholders over the course of the years 2009-2011 during multiple quarterly meetings held in Santa Fe, Albuquerque and Carlsbad. However, because the permittees did not specifically include this information as part of the 2012 Class 2 PMR for SC-30G1, or the PMR currently in process, the Carlsbad Task Force believes it should be incorporated into the record by including it this PMR comment process.

Specific Comments on New Shielded Containers

The Permittees now seek even more flexibility for the generator sites to package RH waste for disposal at WIPP. Importantly, the permittees remain committed to eventually employ RH MTRU disposal using the horizontal borehole concept for the very small fraction of RH waste that will require that much higher level of shielding.

This PMR primarily benefits the generator sites that must package RH MTRU out of hot cells into containers that may be shipped to WIPP and emplaced under the authority granted to the permittees by NMED and NRC. WIPP will benefit only by the indirect effect of helping DOE achieve its goals of complete disposal and geologic isolation of the Nation's defense TRU waste. In so doing, worker safety improvement and cost efficiency at generator sites should be obvious. This includes the Los Alamos Site which continues to store a fair amount of RH MTRU waste, which will eventually be shipped to WIPP in shielded containers.

Comment 1: Up-righting Lateral Shielded Containers Should Have Contingency Plans For Anomalies

Of the 4 new proposed shielded containers, SC-30G3 and SC-55G2 are configured as lateral units on a circular pallet surrounded and supported by upper and lower lateral dunnage

components, transported within the HalfPACT package. As part of HalfPACT unloading, permittees propose to “up-right” these lateral containers from horizontal to vertical orientation for placement on a facility pallet, and subsequent transport to the underground. There, they will be emplaced on the floor of disposal rooms like other CH waste. This “up-righting” process is new to CH waste operations, and should be carefully introduced.

The other two proposed shielded containers (SC-30G2 and SC-55G1) are configured on a circular pallet surrounded by radial and axial dunnage components, thereby requiring no up-righting for placement on the facility pallet. While SC-30G3 and SC-55G2 will be configured with lifting lugs for this up-righting operation, that action poses an inherently different handling procedure (in contrast to simple vertical lifts for SC-30G1, SC-30G2 and SC-55G1). The PMR does not procedurally describe how up-righting 3-ton containers onto a facility pallet will be performed. Will there be any controls to prevent accidents (e.g., would a SC-55G1 tipping over and rolling off the shipping pallet during up-righting be considered “reportable” under DOE rules?). The Carlsbad Task Force encourages DOE to develop such contingency plans for up-righting anomalies.

Comment 2: A Cost Comparison for New Shielded Containers is Not Needed

During the pre-permit meeting on the proposed PMR April 17, 2024, many commenters opposed to the request, focused on why these new shielded containers were needed, and what was their cost savings basis. It should be obvious from the context section discussed above that there is a strong need. The context section also showed how cost was the least of the considerations the permittees had to take into account.

A formal and rigorous cost comparison between the two options for RH MTRU waste disposal is impossible. Packaging and shipping all RH waste in RH-72B casks and canisters, with horizontal placement into walls of the disposal panels is simply untenable. DOE made a mistake while planning and building WIPP by never questioning the original design basis. DOE did not realize the excessive shielding provided by the horizontal emplacement scheme until it had shipped many RH canisters this way. Only then did it realize and identify a more efficient and cost effective method. This 2024 Class 2 PMR simply expands the packaging and shipping possibilities for RH waste that does not need the very high shielding provided by the original design basis.

While a formal cost analysis can't be done, there are some qualitative arguments that can be made. Worker exposure while packaging small waste forms (e.g., 1 gallon buckets, activated metal parts, etc.) into the RH-72B canister, would be significantly greater than into small shielded containers. Remember, the canister is 12 feet long and 2 feet in diameter, and just can't be introduced into compactly designed hot cells without major modification. Modifying old hot cells, containing an eclectic variety of RH waste forms, so they could accommodate introducing RH canisters into a new hot cell volume for direct loading is laughable. The cost would be in the hundreds of millions of dollars for each hot cell so modified.

Another significant cost avoidance at the disposal facility is that of losing wall space as CH waste disposal consumes floor space in front of the pending horizontal boreholes for RH canisters (refer to Figures 1 and 2 again). Lost wall space for RH waste emplacement would require mining new disposal panels in order to fulfill the WIPP mission. Orphaned RH waste, managed for decades in hot cells across the DOE complex, will cost more than if it were packaged and shipped to WIPP. This cost is impossible to quantify, since it depends on unknown future regulatory environments, societal changes, and political winds.

Next, don't forget about the cost of making the boreholes in the first place. With hundreds of holes created, WIPP workers have honed their construction skills, completing one horizontal borehole every three days. One day is spent to move and properly set up the drilling machine. Another day is spent in drilling the borehole. The third day is clearing the waste and readying the drilling machine for transport to the next location. With a crew of 4-5, this labor cost and underground hazard exposure avoidance is significant. Then in addition, when RH MTRU waste is received, it takes 2-3 days of another crew to receive the shipment, unload the shipping cask, and place the canister into the facility cask for transport to the underground. In the meantime, yet another crew requires about 3 days to move the horizontal emplacement machine in front of a newly drilled borehole. There, it receives the facility cask and transfers it to the borehole, and inserts a shielding plug. All told, each horizontal RH canister requires about 45 labor days of waste handling. Contrast this with the 2-3 hours a crew of five spends unloading CH packages and transporting them for simple placement on the floor underground alongside other CH containers. For completeness, the costs of the RH canister and the shielded containers themselves typically offset, as do costs of transportation to WIPP.

In conclusion, a cost comparison for the new shielded containers is not needed.

Specific Comment on Changes to Audit and Certification at Inactive Generator Sites

The Carlsbad Mayor's Nuclear Task Force supports permittees request to reduce the frequency of certification audits at small quantity generator sites that rarely characterize, pack and ship waste to WIPP. Permittees are simply seeking NMED approval of using a graded approach to the quality processes that have been used for 25 years of operation.

The DOE will still perform an audit at least once every 2 years at each small quantity generator/storage site shipping MTRU waste to WIPP, and NMED will still participate and approve these audits just as before. NMED will still review and approve DOE's proposed audit schedule every year just as before. DOE will still perform surveillances as indicated in the Permit, on an as-needed basis. This reduced audit/certification frequency will only apply to the three sites identified in the PMR, while larger sites with active shipping campaigns will not be affected.

As DOE demonstrates in the PMR, this change will allow more resources to be directed towards these active sites where more attention is deserved. The Task Force recommends that NMED approve this change.