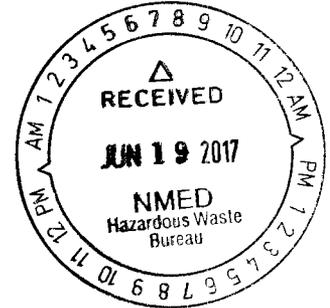




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

 **ENTERED**

JUN 19 2017



OFFICE OF  
AIR AND RADIATION

Mr. J. R. Stroble  
Manager, NTP Compliance Division  
Carlsbad Field Office  
U.S. Department of Energy  
P.O. Box 3090  
Carlsbad, New Mexico 88221-3090

Dear Mr. Stroble:

On May 3, 2017 the U.S. Department of Energy (DOE), Carlsbad Field Office requested the U.S. Environmental Protection Agency's approval of a Tier 1 change to allow the assembly of contact-handled transuranic (TRU) waste payloads at the Oak Ridge National Laboratory (ORNL) to include some containers where the radionuclide contents cannot be directly measured for technical reasons. The EPA has analyzed the submitted information and concludes that ORNL-CCP (Central Characterization Program) can proceed to implement its plan as described in the enclosure to the request referenced above under its currently approved program. The Agency agrees that the DOE's approach provides an effective upper bounding value of the TRU radionuclide content of difficult-to-measure waste containers. The enclosed discussion provides the EPA's analysis of the request.

If you have any questions regarding this approval, please contact Ed Felcorn at (202) 343-9422 or Rajani Joglekar at (202) 343-9462.

Sincerely,

*for* Tom Peake, Director  
Center for Waste Management and Regulations

Enclosure

cc: Electronic Distribution  
Alton Harris, DOE HQ EM  
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## **Rationale for EPA Approval of the Tier 1 Change Request for Product Drum Assembly**

The Oak Ridge National Laboratory-Central Characterization Program (ORNL-CCP) requested that the EPA approve the disposal of waste with MDA (Minimum Detectable Activity) values in excess of the 100 nCi/g criterion for transuranic (TRU) waste. ORNL-CCP has stated that these wastes are TRU because their radionuclide contents are similar to other containers in the same TRU waste stream that ORNL-CCP has successfully characterized for disposal at the Waste Isolation Pilot Plant (WIPP). ORNL-CCP cannot confirm via direct measurement on their EPA-approved non-destructive assay (NDA) systems that the containers with elevated MDAs are in fact TRU. The elevated MDAs are typically caused by radionuclide interferences within the measured container. The interference renders them essentially unmeasurable for radionuclide content.

These unmeasurable containers would be combined with other containers that have been assayed successfully, i.e., have TRU radionuclide assay values above the 100 nCi/g criterion within a single Standard Waste Box (SWB). ORNL-CCP plans to assemble SWBs such that they contain a combination of containers with elevated MDAs and successfully assayed containers. This approach was approved by the EPA for implementation at the Advanced Mixed Waste Treatment Project on May 13, 2015.

This is similar to but differs from what is referred to as Load Management<sup>1</sup> that is currently prohibited at ORNL and some other EPA-approved TRU sites. Note that in addition to Load Management, containers may be overpacked for reasons of container integrity or surface contamination.

The EPA concludes that this T1 change request is within the ORNL-CCP approved program (see EPA Air Docket # A-98-49; II-A4-103) for the following reasons:

- All waste containers with MDA > 100 nCi/g covered by this request belong to a waste stream from an approved Summary Group Category and will not be intermingled with containers belonging to different waste streams.
- Each container has an associated statistically-derived MDA for each radionuclide to be measured. For high MDA containers the sum of the MDA values for TRU radionuclides is greater than 100 nCi/g and often significantly higher.
- Waste containers disposed of at WIPP typically include many individual items; some of these items meet the definition of TRU according to acceptable knowledge and confirmed by a measurement assay, while other items do not. However, on the whole all containers must be TRU waste. In the same way, the individual drums represent individual items of waste within a container, some assaying as TRU, others from a TRU waste stream but not directly measurable as TRU. The SWB container configuration described above would provide that disposal pathway for containers that are difficult to measure due to interference from other radionuclides.
- The high MDA containers would be from an approved waste stream and would become part of a TRU certified container, the overpack. The shipped container would have an overall measured

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<sup>1</sup> Load management is the overpacking of containers all of which measure at least one TRU radionuclide but are below the 100 nCi/g threshold required to be shipped on their own. Containers suitable for load management have at least one measured TRU radionuclide above the measurement system's detection limit.

TRU concentration of greater than 100 nCi/g, accounting for the mass of the unmeasurable containers but taking no credit for the possible TRU activity content (a conservative approach).

- The Waste Data System (WDS) inventory record, however, would account for the possibility of all TRU radionuclides at the MDA (also a conservative approach), since the MDA value would be used for the WDS record. In effect, the reported (MDA) value for each radionuclide represents what is effectively an upper bound of the activity for those radionuclides. The WDS record for all containers subjected to this process would also include both the container's zero contribution to the TRU determination of the SWB and the MDA value for inventory/Performance Assessment purposes.