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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

March 5, 2003

Dr. Inés Triay, Manager
Carlsbad Field Office
Department of Energy
P.O. Box 3090
Carlsbad, New Mexico 88221-3090

Dr. Steven Warren, President
Washington TRU Solutions, LLC
P.O. Box 2078
Carlsbad, New Mexico 88221-5608

RE: NOTICE OF DEFICIENCY (NOD), CLASS 3 PERMIT MODIFICATION REQUEST FOR REMOTE HANDLED WASTE
WIPP HAZARDOUS WASTE FACILITY PERMIT
EPA I.D. NUMBER NM4890139088

Dear Dr. Triay and Dr. Warren:

The New Mexico Environment Department (**NMED**) has received the following document for consideration:

- Request for Class 3 Permit Modification (Remote Handled Waste), Letter Dated 6/27/02, Rec'd 6/28/02

NMED had previously determined on July 22, 2002 that this permit modification request is administratively complete. This Class 3 permit modification request is currently being processed by NMED in accordance with the requirements specified in 20.4.1.900 NMAC (incorporating 40 CFR §270.42(c)). This permit modification request was initially subject to a public comment period from July 3 until October 31, 2002, based upon a request by the Permittees received June 21, 2002 seeking an extended public comment period of 120 days. At the close of the public comment period, NMED had received comments from 18 individuals and groups totaling approximately 78 pages, including a petition containing 181 signatures urging NMED to deny the permit modification request.

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After reviewing the permit modification request, NMED has found it to be technically deficient. The attached Notice of Deficiency (**NOD**) comments list the requested information necessary for NMED to consider preparation of a draft permit. The NOD comments contain requests for specific information from most of the sections and supplements provided in the permit modification request.

NMED commends the Permittees for taking a fresh look at waste characterization requirements in developing a program suitable for the particular complexities posed by remote handled (**RH**) waste. However, the RH waste characterization program proposed in the permit modification request is too vague and incomplete to be enforceable and is not based on a reasoned departure from the contact handled (**CH**) waste characterization process, the current legal standard. The data quality objectives established specifically for the RH program are overly generalized, being based upon very high-level programmatic goals and not amenable to appropriate confirmation. Unlike the current permit for CH waste that uses acceptable knowledge (**AK**) as the foundation of the waste characterization program, the proposed RH approach introduces a new method called "characterization at the time of packaging" (**CTP**) that appears to supplant AK for all characterization needs other than assignment of hazardous waste codes. NMED believes this approach is unnecessary and confusing, and recommends retaining AK as the central element of the RH characterization program while identifying and clarifying the role of all other methods in collecting additional or confirming existing AK information. NMED also questions the wisdom of creating yet another method (i.e., CTP) for what is already understood to be visual examination/ visual verification.

Other concerns identified in the attached NOD comments include lack of adequate waste stream identification criteria; poorly justified changes in storage/disposal volumes; confusion over the addition of panels and the wastes (CH vs. RH) authorized for disposal; and lack of details regarding certain aspects of facility operation and closure, among other things.

Please submit a full response to the deficiencies identified in the attachment and a revised permit modification request to NMED within sixty (60) days of receipt of this NOD. We understand that a response to some of the comments listed in this NOD may require more than 60 days to develop. For this reason, NMED will consider a petition to extend the deadline for portions of the required information if you provide a written justification and expected submittal date for each portion.

If you have any questions regarding this matter, please contact Steve Zappe of my staff at (505) 428-2517.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

JPB:soz

Attachments – NMED Notice of Deficiency Comments
NMED 1999 Direct Testimony Regarding RH TRU Mixed Waste Prohibition

cc: John Kieling, NMED HWB
Steve Zappe, NMED HWB
Charles Lundstrom, NMED WWMD
Tracy Hughes, NMED OGC
Chuck Noble, NMED OGC
Laurie King, EPA Region 6
Betsy Forinash, EPA ORIA
Connie Walker, Trinity Engineering
File: Red WIPP '03

Attachment 1

NMED Notice of Deficiency Comments

Remote Handled Waste at WIPP

NMED NOTICE OF DEFICIENCY COMMENTS
ON
CLASS 3 PERMIT MODIFICATION REQUEST
FOR
REMOTE HANDLED WASTE AT WIPP

INTRODUCTION

The New Mexico Environment Department (**NMED**) has reviewed the request for a Class 3 permit modification to the Waste Isolation Pilot Plant (**WIPP**) Hazardous Waste Facility Permit (**Permit**), Number NM4890139088-TSDF submitted by the Department of Energy (**DOE**) and Washington TRU Solutions LLC (collectively known as **the Permittees**) on June 28, 2002. The Permit Modification Request (**PMR**) is submitted to allow the Permittees to store, manage, and dispose of remote handled[1] (**RH**) transuranic[2] (**TRU**) waste. The comments below reflect NMED's careful analysis of the RH PMR and comparison of the proposed changes with the requirements specified in the New Mexico Hazardous Waste Management Regulations (20.4.1 NMAC) and with the administrative record for WIPP Hazardous Waste Facility Permit established during the 1999 public hearing. This analysis has led NMED to conclude that many of the changes proposed in the RH PMR have not been fully developed and some of them appear to reflect conflicting approaches to addressing the issues regarding characterization of RH TRU waste.

NMED has provided feedback to the Permittees, both directly and indirectly since August 2000, on expectations for any permit modification regarding RH TRU waste. NMED has consistently reiterated the basis for the initial prohibition of RH TRU waste in the WIPP Permit as presented in technical testimony presented at the 1999 public hearing (see Attachment 2). At numerous public presentations on RH TRU waste since October 2000, NMED staff has stated the following conclusions:

- Permittees will have to overcome the evidence currently in the 1999 WIPP Permit Public Hearing Record which forms the basis for the existing RH prohibition.
- Any request to modify the permit to accept RH waste will most likely entail a public hearing.
- Reliance upon process knowledge with no confirmatory process will be a substantial challenge for the Permittees to justify.
- Lack of sampling and analysis to satisfy 40 CFR §264.13 must be supported by technical, not regulatory, arguments.

In light of this information, NMED provides both general and specific comments below.

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[1] Remote handled (**RH**) waste is defined as radioactive waste with a dose equivalent rate, measured at the surface of the container, of 200 millirem per hour (mrem/hr) or more. Waste with dose equivalent rate less than 200 mrem/hr are defined as contact handled (**CH**) waste.

[2] Transuranic waste is defined as waste with a radioactivity concentration of 100 nanocuries per gram (nCi/g) of waste from alpha-emitting radionuclides with atomic numbers greater than 92 and half-lives greater than 20 years.

GENERAL COMMENTS

General-1. NMED has thoroughly examined the RH PMR and has determined that several major issues must be addressed prior to modification of the Permit. Therefore, detailed, section and line-specific comments were not provided in all instances except in the context of providing overall commentary, primarily because NMED believes the Permittees will significantly revise the RH PMR.

General-2. The PMR includes requests for changes that are not entirely justified and are not clearly required for RH waste management. Specifically, the PMR includes changes in storage volumes and the addition of Panels that are inadequately justified. While the changes are not necessarily unreasonable, the Permittees must ensure that all proposed changes, especially those as significant as those included in this PMR, are clearly identified, well justified, and thoroughly and appropriately addressed. Refer to Specific Comments 2-3, 3-1, and 4-1.

General-3. The PMR includes statements, conclusions, and revisions that are not adequately justified and require additional information. Specifically, information pertaining to changes in the Waste Characterization Program (Section 5) and related RH waste assumptions (Supplements) require additional clarification and explanation. In addition, the PMR does not adequately address several aspects of facility operation and closure, including Site Security (Section 6), General Inspection Requirements (Section 7), and Training (Section 11). Refer to detailed commentary on these sections for additional information.

General-4. NMED's primary evaluation criterion for any RH PMR is whether the PMR meets the requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264). NMED recognizes that if the current contact handled (**CH**) waste characterization program was implemented for RH waste characterization, worker safety at the generator sites could be compromised; therefore, additional safeguards (e.g., working remotely in hot cells, etc.) would be warranted. With respect to waste characterization at generator sites, NMED believes that the Permittees are technically capable of ensuring low worker exposure when characterizing RH waste using the current CH program *if* the appropriate (and possibly extreme) safeguards are taken, but it is probably extremely costly to implement the current CH program for RH waste. Therefore, NMED understands that cost is a primary motivating factor for the Permittees in proposing an alternative waste characterization program. The Permittees could certainly develop a protective program for RH waste similar to the CH program but the expense of implementing such a program might be prohibitively high.

That being said, the Permittees must still propose an RH waste characterization program that complies with all storage and disposal requirements in 40 CFR §264. Because the current CH waste characterization program is compliant with the Resource Conservation Recovery Act (**RCRA**), was developed with the unique circumstances of WIPP taken into consideration, and has been accepted through the hearing and public comment process, NMED's position is that the

CH program should be the basis for the proposed RH waste characterization program, with the motivation for reasonable departures from this program explained and the resulting proposed RH program still compliant with all regulatory requirements. The Permittees may believe they have presented an approach to waste characterization that is RCRA compliant, but NMED has questions and concerns regarding the viability of the RH program the Permittees have proposed. NMED also has serious doubts as to whether the current CH approach of waste characterization verification should be completely abandoned (see Comments 5-2 and 5-5, below). The Permittees should revise the RH PMR to address specific NMED concerns and subsequently "rethink" the approach to the proposed program.

General-5. The RH Waste Characterization Program in the PMR appears to propose an approach based on the use of "Characterization at the Time of Packaging" (**CTP**) with elements of the approved CH program (i.e., acceptable knowledge (**AK**), visual examination (**VE**), radiography, headspace gas sampling (**HSG**), and solid sampling) used only as needed – or not at all. However, NMED has serious concerns regarding the proposed approach (see Comments 5-2 and 5-11, below). In short, the proposed RH waste characterization program requires serious revision. Specifically:

1) The RH program should be developed based on the accepted CH program with deviations from the CH program based on operational and safety concerns and technically justified. The resulting RH program must be compliant with the management, storage and disposal requirements specified in 40 CFR §264.13.

2) The foundation of the RH program should be based upon an AK program that has been augmented and strengthened to ensure adequate data assembly, compilation, and assessment. RH waste should be defined by waste stream, just as CH waste is presently defined.

3) The RH program may use CTP as a form of visual verification to verify the physical attributes obtained by AK. CTP may also be used as an opportunity to obtain other supplemental AK information (i.e., swipe samples, etc). It is unclear what value CTP would have when "confirming" AK-defined hazardous waste determinations except in cases where the physical attributes are representative of hazardous waste codes (i.e., leaded gloves), unless the Permittees perform as yet unspecified sampling of some sort to provide a "fingerprint" that could be linked or tied to the AK record.

4) The Permittees must propose a confirmation process for verifying AK-derived hazardous waste determinations and AK-derived waste matrix codes. This process need not be identical to the CH program but should require that some quantity of

analytical data be obtained to adequately confirm AK. The amount and type of information could be commensurate with the adequacy of the AK record.

5) Use of modeling to justify limited or no characterization may be used to augment arguments, but cannot be used as a wholesale substitute for actual waste analysis.

SPECIFIC COMMENTS

Section 1.0 – Introduction

Comment 1-1. Section 1.1, RH TRU WASTE, page 1-2, lines 20-22. Disposal of RH TRU in the WIPP is limited by the Land Withdrawal Act (**LWA**) to waste with a maximum surface [equivalent] dose rate of up to 1,000 rem/hr, not 100 rem/hr as suggested in the PMR. The Act also limits the amount of RH TRU having a dose reading greater than 100 rem/hr to only 5% by volume of the total RH TRU waste. The PMR should be revised to indicate that RH TRU waste includes waste with surface dose rates up to 1,000 rem/hr (unless, of course, the Permittees want to self-limit the maximum dose reading to 100 rem/hr).

Comment 1-2. Section 1.2, RH TRU Waste Inventory, pages 1-2 and 1-3, paragraph 1. In this section and in Supplement 1, the expected RH disposal volume is listed as 2,000 m^3. However, in Supplement 2, the assumed waste volume is listed as 7,080 m^3 (Supplement 2, Section 2.0, page 6, paragraph 2). These differences are confusing and the reasons for these different values should be explained in Section 1.2 or elsewhere in Section 1.0 (Introduction).

Comment 1-3. Section 1.3, RH TRU Waste Analysis Plan, page 1-4, line 11. The Permittees should change "operation" to "operator."

Section 2. 0 – Regulatory Requirements

Comment 2-1. Section 2, all sections. NMED has provided comments on the entire RH PMR, presented below, and in addressing these comments the Permittees will be required to revise Section 2 and primarily Sections 2.1 and 2.4. The Permittees should revise all applicable discussions in Section 2 to address the concerns presented in NMED comments set forth below.

Comment 2-2. Section 2.1.1.6, Waste Characterization Requirements, page 2-4, lines 34-35, page 2-5, lines 1-15. While the NMED is cognizant of the ALARA issues, the information provided is insufficient for NMED to develop a draft permit based on ALARA principles. Moreover, NMED does not necessarily agree with the Permittees assertions in this paragraph that ALARA principles apply. The paragraph should be removed.

Comment 2-3. Section 2.4.2.12, Compliance with 40 CFR §270.23: Miscellaneous Units, page 2-16, line 25. In this section, it is stated that RH TRU waste will be placed in Panels 2 through 5. However, in other portions of the application (e.g., Supplement 3, page 1, paragraph 5) the presence of eight panels is discussed. Although other portions of the application (e.g., M2-2a(3) Subsurface Structures Underground Ventilation System Description, page 16-53, paragraph 3) indicate that future permits may allow disposal of RH TRU waste in Panels 6, 7, and 8, this should be more clearly explained in Section 1.0 (Introduction). This explanation should also include a statement that RH waste will not be placed in Panel 1 and why this will not occur.

Comment 2-4. Section 2, Table 2-2, RH Facility Permit Modification: Justifications for Modifications, page 2-30, Table IV.D.1 entries. The term "a room full of RH TRU waste canisters" is imprecise. This phrase should indicate the maximum number of canisters that may be placed in a room. Also, the following should be addressed:

- Table 2-2, page 2-31, Section A-4, line 4 indicates an increase of square footage but does not provide sufficient justification for an increase of 11,318 square feet in the Waste Handling Building **(WHB)** other than to state that the square footage is to create "additional locations for RH TRU waste." Provide adequate justification for the increase in the volume of waste specified in the permit. The Permittees should also be aware that an increase in the volume of waste constitutes a major modification, one which was not adequately emphasized in this PMR addressing RH wastes and which should be better presented, justified, and explained.

- Table 2-2, page 2-31, Section A-4, line 6 revises the number of shipping containers which can be stored in the parking lot area from 12 to 29 but adequate justification for the increase in permitted volume was not provided. The Permittees should be aware that increase in the volume of waste constitutes a major modification in and of itself. This major modification was not adequately justified in this PMR used to address RH waste.

- Table 2-2, page 2-31,Section A-4, lines 7-8 increases the number of waste panels from 3 in the existing permit to 5 panels. The increase in the number of panels also constitutes a major modification in and of itself and was not sufficiently identified or justified in the PMR.

- Table 2-2, page 2-35, Section E-1b, line 9. The justification provided for this modification indicates that it "clarifies a run-on sentence." However, the modification to this section is much more substantial than just clarification of a run-on sentence as several additional container types which manage RH waste

have been added to the sentence. The Permittees should justify this modification in its entirety.

- Table 2-2, page 2-38, Section F-1, line 9 indicates that the Parking Area Container storage unit capacity has been increased to 2,121 ft^3 from 1,591 ft^3. Adequate justification for an increase in the permitted volume is needed. The Permittees should be aware that an increase in the volume of waste handled constitutes a major modification. As stated before, the Permittees should provide justification for this modification.

Section 3.0 – Permit Conditions

Comment 3-1. Section 3.4.2, Proposed Text Changes to Module IV, Table IV.A.1 – Underground HWDUs, page 3-17, Panel 4 and Panel 5. Footnote C indicates that these panels are to be authorized for RH TRU waste disposal only but the table also lists the amount of CH TRU waste that could be placed in these panels. This inconsistency should be addressed and if necessary, the total number of CH drums in the table should be modified.

Comment 3-2. Section 3.4.2, Proposed Text Changes to Module IV, Table IV.D.1 – VOC Room-Based Limits, pages 3-17 and 3-18. Although the "VOC Room-Based Concentration Limit" listed in this table will remain unchanged in the modified permit, the "VOC Room-Based Emission Rate Limit" will decrease. In the modified permit, the VOC Room-Based Emission Rate Limit will apply only to VOC emissions from CH waste. This should be made clear in the proposed modifications to this table.

Section 4.0 – General Facility Description

Comment 4-1. Section 4.1.2, Proposed Text Changes to Attachment A, General Facility Description and Process Information, Section A-4, Facility Type, page 4-2, lines 29-31. This section of the PMR increases the number of panels from a total of three panels to five panels but the PMR does not clearly articulate the fact that this modification will require an increase in waste volume capacity. In addition, the justification for the PMR provided in Section 2.0 also does not adequately address the increase in waste volume for the WIPP site. The Permittees should clarify this issue.

Section 5.0 – Waste Analysis

Comment 5-1. Section 5.1.2, Proposed Text Changes to Attachment B, page 5-3, lines 10-13. This section modifies the permit to require only CH-TRU waste to report VOC values and also exempts RH TRU from undergoing either radiography or VE unless explicitly needed, and then only at a limited percentage. In addition, the PMR apparently relies on a new characterization element (i.e., CTP) to obtain necessary information that can potentially exclude collection of information typically collected under the CH program (with the exception of hazardous waste determinations). The PMR must address all issues presented in Comments 5-5, 5-11, and R-20, below, pertaining to the proposed program and should better describe and justify all elements of the proposed RH TRU program, including but not limited to the CTP and exclusion of radiography/VE, as well as any replacement requirement for VOC reporting.

Comment 5-2. Section 5.8.1, Technical Justification, page 5-14 to 5-23. The Permittees did not establish the RH waste characterization process based on reasoned departure from the CH waste characterization process. Instead, the Permittees stated that they determined RH data quality objectives (**DQOs**) and established the RH program based on these DQOs. The DQOs for the RH program are not based upon characterization methodology goals but are instead based upon the "highest level" of general programmatic goals of identifying hazardous waste codes (which is a common goal of the CH program) and determining only a physical description of the waste on a Summary Waste Category Group level (which is also a common an element of the CH program).

However, these DQOs are too generalized. The DQOs suggest sites assign codes and determine if they are managing debris, soil or sludges; however, this is insufficiently vague and does not provide more specific DQOs similar to those presented in the CH Waste Analysis Plan (**WAP**) that help guide and direct characterization activities. The DQOs established for CH waste ensure that the "reasons" for using specific characterization processes are justified and documented. CH Waste DQOs are:

- Headspace-Gas Sampling and Analysis
  - To identify VOCs and quantify the concentrations of VOC constituents in the total waste inventory to ensure compliance with the environmental performance standards of 20.4.1.500 NMAC (incorporating 40 CFR, §264.601(c)) and to confirm hazardous waste identification by acceptable knowledge.

- Homogeneous Waste Sampling and Analysis

  - To compare the upper 90 percent confidence limit (**UCL_{90}**) values for the mean measured contaminant concentrations in a waste stream with specified toxicity characteristic levels in 20.4.1.200 NMAC (incorporating 40 CFR §261) to determine if the waste is hazardous, and to confirm hazardous waste identification by acceptable knowledge.

  - To report the average concentration of hazardous constituents in a waste stream as specified in 20.2.1.200 NMAC (incorporating 40 CFR §261), Appendix VIII with a 90 percent confidence interval, with all averages greater than the program required quantitation limit (**PRQL**) considered a detection and subsequent assignment of the waste (if an adequate explanation for the constituent cannot be determined) as a hazardous waste, and to confirm hazardous waste identification by acceptable knowledge.

- Radiography

  - To verify the TRU mixed waste streams by Waste Matrix Code for purposes of physical waste form identification and determination of sampling and analytical requirements, to identify prohibited items, and to confirm the waste stream delineation by acceptable knowledge.

- Visual Examination

  - To verify the TRU mixed waste streams by Waste Matrix Code for purposes of physical waste form identification, determination of sampling and analytical requirements, and to identify prohibited items.

  - To provide a process check on a sample basis by verifying the information determined by radiography, and to confirm the waste stream delineation by acceptable knowledge.

The current RH WAP allows a host of characterization methodologies to be used to reach the broadest of DQOs, with no methodology related goals to help guide the characterization processes that still must be developed on a site-specific basis. Additionally, the CH DQOs are verification based (and should have included AK DQOs); presumably this is one reason the Permittees elected not to include these types of requirements. However, NMED has determined that while flexibility in characterization methodologies may be reasonable, the proposed characterization process is too vague and incomplete to be enforceable. Also, the RH program must include AK as the foundation for characterization activities, and must include some

measure of AK verification (see Comments 5-9 and R-22). Therefore, methodology-related DQOs should be developed or be required for development under the RH program. The current overall DQO of obtaining the appropriate hazardous waste code may be retained but it must be placed in the context of the characterization processes used to acquire that information, in particular AK.

As indicated above, the RH PMR shows that the Permittees wish the flexibility of using various characterization elements as the waste generator sites best see fit. While NMED agrees that a prescriptive approach may not be best for RH waste because the wide range of surface dose rates could affect the appropriate characterization technique, the Permittees should either propose characterization method-specific DQOs that capture their use for the different applications, or at least provide a mandatory method for determining these DQOs on a site or waste-specific basis. See Comment 5-9 below for additional guidance.

Further, the proposed RH program must be based on the currently approved CH program, with reasonable explanation for departures and subsequent demonstration that the proposed program meets all RCRA requirements. This approach should have been the process used for the development of the RH program and subsequent revision of CH DQOs to be applicable to the RH program. The Permittees should revise the Technical Justification Section to establish why the RH program cannot be achieved by implementing the existing CH program based upon adverse worker exposure and technical inability to implement the CH program for RH waste. The Permittees must demonstrate that any proposed RH characterization program that differs from the current approved CH program still meets all of the necessary regulatory characterization requirements pertinent to storage and disposal units. NMED believes the current CH program complies with regulatory requirements and should have been the basis from which the RH program was developed with reasonable departures from the CH program explained and compliance of the resulting RH program with RCRA demonstrated. The Permittees should also address why they believe RH DQOs differ from CH DQOs with respect to hazardous waste identification.

> The technical justification implies that CTP can be a primary characterization process, augmented only as necessary by AK and other characterization methodologies. However, it is impossible to obtain all necessary information through CTP alone, and it is therefore inappropriate to imply that CTP can serve this purpose. CTP is apparently intended to be a variation of the current VE/verification process, although the opportunity might present itself during CTP to collect supplemental or missing information that could augment the AK record. Therefore, the characterization process must, as with CH waste, begin with AK characterization that is verified through other processes. It is appropriate to use the CTP process to obtain information that would verify the physical form (waste matrix code) identified through AK and to determine very basic hazardous code

supporting information (i.e., the presence of lead gloves, etc.). It is also appropriate to use this opportunity to collect hazardous waste-related information perhaps not performed during CH VE to provide supplemental AK information or to augment the AK record. However, using the CTP program as a "starting point" instead of AK is inappropriate. Perhaps the Permittees intended the program to actually perform as described above, and the CTP aspect is simply poorly described. Regardless, the Permittees must revisit the proposed process recognizing that: 1) AK should be an initial characterization starting point; 2) CTP can be used to collect supplemental AK information; 3) verification of AK derived information must be performed to some degree, possibly commensurate with the nature of AK information available.

Comment 5-3. Section 5.8.1.1.1, RH TRU Waste Operations, page 5-15. Reliance on a Permittee-generated document, such as the Safety Analysis Report (**SAR**), to justify any characterization elements without NMED receipt, review, and approval of this document is inappropriate. The Permittees should provide applicable sections of the SAR referenced in this section. Also, the liquid prohibition is based upon RCRA secondary containment requirements that were part of CH waste characterization assumptions relative to gas generation, etc. The Permit allows a 1% liquid limit for secondary containment requirements that were based on the prohibition of liquids in the waste rather than the 10% liquid content normally used to calculate secondary containment requirements. Therefore, basing any assessment of the liquid prohibition solely on an internal document without addressing why it was implemented in the CH program is inappropriate and unjustified. The Permittees should revise Section 5.8.1.1.1 and other sections to justify conclusions based on the SAR as appropriate and to better address liquid prohibitions with respect to secondary containment.

Comment 5-4. Section 5.8.1.1.2, RH TRU Waste and Repository Integrity, page 5-15, paragraph 1. The discussion in this section is unclear with respect to how RH waste was included in the "bounding" calculations performed to support Subpart X requirements in the original permit application. The Permittees should revise the justification section to summarize relevant parameters and bounding assumptions, clearly demonstrating that the RH inventory was included and would be included in any calculations previously performed to demonstrate repository integrity. This is required to ensure that the Permittees have indeed considered all RH waste characteristics when assessing repository integrity (which, for CH waste, resulted in a determination that the air pathway was the only viable release pathway during the operational and 30-year post closure period). The Permittees should show that the RH inventory clearly fits within all previous assumptions, and no characteristics unique to RH waste would impact repository integrity in a way not applicable to CH waste.

Comment 5-5. Section 5.8.1.1.2.1, VOC Emissions Modeling, pages 5-15 through 5-16. The Permittees propose no HSG sampling and analysis based upon evaluation results presented in

Supplement 3, "Maximum VOC Emission Rates From RH Canisters." However, numerous issues are raised based on review of this supplement (see comments on Supplement 3). Further, while the Permittees recognize that determination of subsurface emissions is a key element of the current CH HSG program, an equally important reason for sampling and analyzing HSG is to verify or confirm AK hazardous waste determinations. The Permittees have proposed no substitute mechanism for assessing the viability of AK, nor have they taken measures to improve the AK program to require more detailed AK information that would justify modification or reduction in the current verification program. In fact, the proposed AK program does not appear as rigorous as that for CH, possibly because the Permittees erroneously intended to rely on CTP for characterization augmented only by AK "when necessary." The Permittees should revise this section to clearly recognize all reasons for HSG determination, why any deviation from the current CH program is justified based on all reasons for the current CH program, and how the proposed characterization program obtains information comparable if not equivalent to that obtained under the CH program with respect to verification of hazardous constituents identified by AK.

Comment 5-6. Section 5.8.1.1.2.2, Repository Modeling, pages 5-16 through 5-17. The Permittees assert that all modeling assumptions, parameters, and inputs used in the Permit Application used to meet Subpart X assessment requirements remain unchanged for RH waste and that the previous assessment included RH waste. However, the referenced Section D-9 makes no mention of RH waste. While it is agreed that the modeling results are applicable to the CH inventory, additional justification was required to demonstrate the stated applicability to the RH inventory. The Permittees apparently recognized this need and performed additional simulations but Supplement 2 which is to present the result of these modeling efforts contains serious flaws (see Supplement 2 comments, below). For example, this supplement states that the Performance Assessment Verification Test (**PAVT**) modeling showing that there is no incremental risk to workers justifies lesser waste characterization. This conclusion is erroneous—waste characterization is required to demonstrate that adequate information is known to manage and dispose of this waste properly, and waste characterization is performed to assess whether waste characterization information obtained from the generator is sufficient and accurate. While PAVT results are helpful in showing what the Permittees believe to be a demonstration that a modified RH program will not compromise human health, the Permittees must still comply with RCRA requirements to adequately characterize waste. Further, NMED did not perform a detailed evaluation of PAVT calculations as part of the RCRA permit application assessment, relying instead on the Environmental Protection Agency's (**EPA**) detailed evaluation of this modeling activity. EPA has indicated to NMED that PAVT modeling to justify reduction in characterization elements shall not be accepted by EPA; therefore, acceptance of these conclusions without detailed PAVT modeling analysis by NMED will not be considered.

Comment 5-7. Section 5.8.1.1.3, Waste Parameter Data, page 5-17. The Permittees state that based on PAVT modeling, there are no RH waste parameters that need to be measured to

maintain repository integrity or to protect human health and the environment. However, based on the above NMED comments on section 5.8.1.1.2.2 and Supplement 2, the Permittees must reconsider this conclusion.

Comment 5-8. Section 5.8.1.2, Establishing Data Quality Objectives, pages 5-17 through 5-18. The Permittees assert that application of the DQO process results in DQOs unique to RH waste. The Permittees must instead justify why DQOs for RH waste would differ from those for CH waste. As stated previously in Comment 5-2 above, the RH program should be based on the CH program with reasonable deviations from this program based upon technical and safety concerns but still maintaining compliance with RCRA. DQOs for the CH and RH program should be very similar if not identical with respect to hazardous waste determinations.

Comment 5-9. Section 5.8.1.2.1, DQO for Physical and Chemical Properties, page 5-18 through 5-19. The Permittees assert that only Summary Waste Category groups need be identified. This determination is based upon the fundamental error that AK information is an augment to the CTP process and is not the foundation upon which the characterization program is developed (as is the case for CH waste). The Permittees must evaluate the waste stream to understand the origin for hazardous waste determinations and this waste stream determination should be based upon knowledge of process. Therefore, the physical characteristics of the waste are important with respect to understanding the fundamental origin of waste and must not be limited to just whether the waste is a debris vs. a sludge, since not all debris and sludges are generated from the same origin or would have the same hazardous waste characteristics. Further, a DQO to identify "hazardous waste number" does not address the requirement to identify hazardous constituents normally identified and verified through sampling and analysis and that are tracked and monitored. A demonstration must be made that this simplified "identification of hazardous waste number" would satisfy the need to assign hazardous waste codes, identify tentatively identified compounds that could ultimately lead to the addition of hazardous waste codes or modification of VOC monitoring parameters, and identify hazardous constituents (the presence of which may not indicate the assignment of codes but whose concentration is monitored). Additionally, the Permittees propose no viable definition for waste streams comparable to the CH definitions in Attachment B (Introduction, page B-2, line 31+) and Attachment B4.

Further, the Permittees state that "measurement" of toxicity characteristic concentrations is not required because the source term is "bounded for liquid, dissolved, and gas phase releases and the RH waste is managed in such a way to eliminate direct worker contract." However, this statement is vague, unjustified, and inadequately linked to RCRA requirements. Apparently, the Permittees intended to show that little if any characterization of RH waste is required with respect to hazardous constituents because they have modeled away the need for characterization. However, as stated in the comments above (Comment 5-6), NMED has not and shall not evaluate PAVT modeling particularly since EPA intends not to do so. Instead, RH characterization

requirements should be based upon reasonable and justified deviation of the CH program based upon technical and safety concerns, with the resulting RH program still compliant with all RCRA requirements for storage and disposal facilities. Further, modeling is used to demonstrate compliance with 40 CFR §264.601 environmental performance standards. 40 CFR §264 Subpart X requires a demonstration that the unit will ensure prevention of any releases to air, surface water, groundwater and soil that would have adverse affects on human health and the environment *considering* elements such as waste characteristics, system design, site hydrologic conditions, etc. The Permittees have, however, used PAVT modeling as a surrogate to Subpart X modeling, using the modeling to assess the impact of an *input parameter* to the model, rather than to demonstrate no harm *based on the various inputs.* An analogous determination would be to "demonstrate" a hydrologic parameter based on modeling that should instead be based on measured values as input to the model. The entire section and all related sections of the PMR must be revised to identify DQOs for the entire WIPP characterization program and to justify any deviation from the characterization pathway established for CH waste based not on modeling, but instead on technical and safety concerns. Further, it is clear that much additional information concerning gas generation, brine inflow, room closure, and other elements has been obtained since the original permit application was provided to NMED and any modeling must be updated to assess all input parameters for continued applicability and viability.

Additionally, the justification makes reference to generator waste characterization requirements, implying that individual state characterization requirements for the storage of RH waste should suffice for WIPP characterization. However, NMED has the right to determine the extent of information necessary to dispose of waste at WIPP, which can certainly be augmented by generator determinations.

Comment 5-10. Section 5.8.1.2.2, DQO for Prohibited Items, page 5-19 through 5-20. The Permittees state that the only DQOs that need be identified are the presence of liquids and polychlorinated biphenyls (**PCBs**), since "all of the additional prohibited items" can be satisfied through the assignment of EPA hazardous waste numbers. However, this assertion is inadequately justified. The Permittees should revise the PMR to detail how non-radionuclide pyrophoric materials, incompatible chemicals, explosives, compressed gases, ignitable wastes, corrosive waste and/or reactive wastes shall be assessed by assignment of hazardous waste codes alone and also reference those sections of the PMR that might present this information (i.e., Table 5-1). Further, NMED notes that these exclusions could ultimately be used by the Permittees to justify similar changes to the CH program. Specifically the Permittees must address the following issues:

- The exclusion of non-mixed hazardous waste cannot be justified based on hazardous waste code assignment;

- Incompatibilities should be addressed with respect to RH waste, ensuring that new inventory or other information presented since original compatibility assessments performed years ago still apply to RH waste;

- Compressed gases are often not expressed as code assignments; and,

- Indicators for the presence of D001, D002, and D003 so that "lack" of code assignment truly indicates an assessment by the site that all indicators for ignitable, reactive, and corrosive wastes have been evaluated through AK.

Also, the PCB limit is listed as 50 ppm. The PMR does not appear to have any provision for measuring the PCB concentration in order to ensure that this requirement is met.

Comment 5-11. Section 5.8.1.3, Evaluating the RH TRU Mixed Waste Characterization Approach, pages 5-20 through 5-22. This section should be describing the CTP approach, what data it will develop, and by what method the Permittees intend to acquire that data. Both this section and the CTP discussion in the RH WAP (Attachment R, Sections R-3.2.4 and R-4.2.4) should remove vagaries concerning what the CTP process would entail. Also, the Permittees state, "waste characterization information needed for the safe management of RH TRU waste can be obtained using CTP, augmented *as needed* by the AK process, VE, and/or radiography." The use of CTP as a potential stand-alone characterization process is not justified, nor is CTP a recognized characterization process in RCRA regulation or guidance. As described by the Permittees, CTP is essentially VE, with the potential for collecting "other" supporting information (i.e., swipes, swatch samples, etc). The only analogous activity presented in a typical RCRA WAP is "fingerprinting" whereby a certain percentage of waste is examined and a limited chemical analysis or other indicator analysis performed to *verify the representative waste analysis* that the Permittees are required to obtain. While it is recognized that the Permittees expect to have the opportunity to physically examine almost all of the RH waste to some degree, this method cannot be used as a substitute to obtain the requisite detailed chemical and physical analysis to the exclusion of AK, etc. Therefore, the RH characterization process proposed by the Permittees is inappropriate and does not set forth an adequate methodology for ensuring that 40 CFR §264.13(a) characterization requirements are met. Additionally, the Permittees reference and provide an RH Inventory analysis (Supplement 1) but this analysis focuses on radionuclide and physical parameters important to EPA, apparently only restating RCRA information presented in the TRU Waste Baseline Inventory Report, which is over 7 years old. In addition, the Permittees propose no difference between retrievably stored and "newly generated" waste processes, yet their inventory is clearly demarked by retrievably stored waste that will not be repackaged (5%) and "newly generated" (or analogous) waste that will be packaged or repackaged. While the current definition of newly generated and retrievably stored waste may not be as applicable to RH waste as for CH waste, the Permittees must propose clear characterization pathways for each of these two categories.

In addition, the use of AK in the characterization process is somewhat confusing. The Permittees assert on one hand that CTP will be used to obtain all information but then state that AK is required to determine hazardous waste codes. Also, the Permittees propose no confirmation of AK following currently used practices of HSG and solid sampling because "there is so little RH TRU mixed waste that is in its final packaging configuration." However, it is precisely at this time (i.e., at repackaging or packaging) that solid sampling could, and should, take place. If the Permittees are referring to this lack of "final packaging configuration" as a justification for no HSG sampling, this should be clarified, keeping in mind that HSG sampling is required for newly generated CH waste, which would also have similar packaging considerations. It is also unclear how the operator will make the "necessary" waste characterization determination, how the 10% "verification" value was derived, and what this 10% verification would entail (i.e., VE, radiography, HSG, solid sampling, etc).

The statement that "CTP is a formalization of the process currently required for repackaging newly generated CH waste" is completely misleading. Repackaging and packaging procedures are essentially VE activities whereby those physical attributes of the waste are examined and *used to confirm* AK. The CTP is a "stand alone" process exclusive of AK and is apparently used to *acquire* unique information. Therefore, CTP would be an AK confirmation activity for physical attributes only, although the packaging process could certainly be used as an opportunity to obtain *supplemental AK information* that might be mandated by gaps or data needs identified as part of the AK program.

Comment 5-12. Section 5.8.1.4, Differences From the CH TRU Mixed Waste Characterization Program, pages 5-22 through 5-23. The Permittees state that the RH and CH programs differ primarily in the areas of intrusive sampling, the determination of waste material parameter weights, and confirmation of AK based on VE and HSG (i.e., 100%). While some elements of the discussion concerning essential program differences may be correct, the *justification* for said revisions cannot be accepted in its current form. Specifically, the Permittees state that intrusive sampling would result in questionable data quality but do not justify this assertion. The Permittees also state that certain characterization is not required because of a demonstration of "no impact" but this assertion is incompletely and inadequately addressed. Further, the Permittees make broad statements regarding the results of HSG sampling that are wholly unsupported and inaccurate. For example, sites generally segregate drums with "troublesome" HSG data for *future* disposition so the "current status" is biased; also, the statement that "only one change" has been made based on 16,000 HSG measurements is unclear (one change in what? one container? one hazardous waste stream assignment for a number of containers?). Also, NMED is well aware that the current CH program has characterized those wastes with exceptionally well-documented AK; forthcoming CH characterization activities for wastes with lesser or poorer quality AK could certainly result in more HSG and solid sampling – required code changes to waste. The Permittees should reconsider the arguments and information

presented in this section in light of NMED concerns regarding adequate justification for program modification and should present additional information for any conclusions or statements retained that would be used to justify proposed program changes.

Comment 5-13. Table 5-1, Prohibited Waste, pages 5-24 through 5-26. The Permittees rely on circular logic regarding the assignment of hazardous waste codes to ensure prohibited items (e.g., ignitable, reactive, corrosive wastes, etc.) are properly identified. That is, it is not clear how sites initially assign the relevant codes associated with prohibited items, nor is it obvious that a waste stream lacking an assigned "prohibited" code therefore satisfies the DQOs for determining characteristic hazardous constituents or the absence of prohibited items in the waste stream without further confirmation. Revise Table 5-1 in conjunction with Comment 5-10.

Attachment R

Comment R-1. General Comment, Attachment R, page 5-27+. Attachment R includes several examples of non-enforceable language included as justification. The Permittees should ensure that forthcoming revisions to Attachment R do not include language inappropriate for an enforceable document, including but not limited to inappropriate justifications for determinations and removal of terms such as "may", replacing these with more enforceable terms (i.e., "shall").

Comment R-2, Section R-1.0, Introduction, page 5-29, paragraph 2. The Permittees assert that Summary Waste Category groupings are analogous to waste streams. However, the definition of waste stream must be congruent with that for CH to ensure comparability of data and to ensure that generator sites adequately incorporate the need to include process information in the waste stream determinations. The Permittees should revise the PMR to include the CH waste stream definition. Alternatively, the Permittees should provide adequate and detailed justification why this waste stream definition is not appropriate for RH waste and provide an alternative definition which includes the requirement for process information assembly and assessment to ensure that the waste stream has adequately assigned process-related information. The Permittees should revise this section to address NMED concerns regarding the CTP process as presented in Comment 5-11.

Additionally, the Permittees should revise the required documentation to include preparation of an AK Summary, which is currently performed under the CH program and must be included as part of the RH program (also revised to recognize the appropriate role of AK in the characterization process).

Comment R-3, Section R-1.2, Characterization of Remote-Handled Transuranic Waste, page 5-30. The PMR states that AK, VE, radiography, and/or CTP shall be used for waste characterization. However, NMED has expressed concerns regarding use of the CTP process, and

has also requested a more detailed accounting of the characterization process that must be based on AK, with verification of AK being performed to some degree. Should the Permittees request flexibility regarding the type and amount of verification to be performed, the specific criteria or basis for determining certain characterization pathways must be clearly presented. The Permittees should revise this section and all appropriate sections and each applicable sentence (e.g., Section R-2.3, lines 15 and 16) of the PMR to better address the RH characterization process. Also, paragraph 2 states that RH TRU mixed waste is characterized on a waste stream basis but the specific checks for prohibited items such as liquids must be performed on a container basis. If the CTP process will be checking for these on a container basis then this section should be modified to reflect that fact.

Comment R-4. Section R-2.4, Regulatory Oversight, page 5-32. EPA ORIA also regulates WIPP under 40 CFR §194.

Comment R-5. Sections R-3.0, RH TRU Mixed Waste Analysis Parameters and Rational, R-3.1, RH TRU Mixed Waste Characterization Requirements, and R-3.1.1, Process and Design Considerations, pages 5-32 through 5-34. The PMR includes justification for the characterization approach proposed by the Permittees based upon SAR and modeling results. However, relevant sections of the SAR were not provided to NMED to support assertions being made (see Comment 5-3), and the Permittees make sweeping conclusions based upon SAR results that are therefore unsubstantiated. Further, it is assumed that repository modeling referred to is the modeling presented in Supplement 2 and NMED has expressed concern regarding use of the model to justify repository inventory assumptions. Also, the entirety of Section R-3.1.1, Process and Design Considerations, is apparently a justification for the proposed approach that should not have been included in the actual proposed RH Waste Analysis Plan because the contents are not enforceable. The Permittees should revise all applicable portions of the PMR to better justify the proposed RH Characterization Approach taking into account all NMED comments and remove Section R-3.1.1 because this section is not pertinent to implementation of the proposed RH WAP.

Comment R-6. Sections R-3.1.2, Data Quality Objectives, R-3.1.2.1, Physical and Chemical Description, and R-3.1.2.2, Prohibited Items, pages 5-34 through 5-36 . The Permittees have apparently developed DQOs for RH waste independent from those for CH waste, but as indicated in Comment 5-2, DQOs should be related to the characterization methodology in addition to the generalized determination of hazardous waste codes that have no "bar" or measure of adequacy. Further, it is unclear how such generalized DQOs would apply to the methods used to acquire the data as stated on page 5-34, lines 16-17. Also, the statement, "Generally, decisions that require data collection also require measures that assure the data are of sufficient quality to provide reliable decisions" is very vague and unenforceable. It is apparent that the Permittees wish to perform only those characterization methods deemed necessary to meet the very "low bar" of assigning hazardous waste codes, with no specific criteria or mandates. In short, the Permittees

propose a generalized DQO that is certainly applicable to the CH process (i.e., the hazardous waste code determination DQO) and quality assurance objectives (**QAOs**) for measures taken in whatever form or fashion determined necessary by the Permittees, but the "in between" criteria and decision making measures that should be reflected in characterization method specific DQOs are absent and should be specified. Alternatively, if these DQOs would change based upon the use of the characterization method, the PMR should include determination of DQOs on a site- or use-specific basis to ensure that the "reasons" for using characterization methodologies are justified and documented. Refer to Comment R-15 regarding proposed decrease in prohibited item identification and why confirmation of AK assumptions relative to prohibited item identification could *not* be accomplished. Also, determination of the waste physical form only to the Summary Waste Category Group level does not address requirements to assign the waste to a waste stream; the CH WAP requires identification to the waste matrix code level and a physical description of the waste against which AK verification/confirmation is made. Clearly, the DQOs must be re-thought with respect to development on a characterization methodology level to ensure that objectives for the characterization process that comprise the characterization system(s) are well documented.

Comment R-7. Section R-3.2, Waste Characterization Requirements, pages 5-37 through 5-38, all subsections. The waste characterization section indicates that any combination of AK, CTP, VE, and radiography shall be used to characterize wastes, with it being the Site Project Manager's (**SPM**) responsibility for determining whether the DQOs have been met. However, comments below will indicate that the criteria for said determinations are inadequate. See Comments R-11 and R-12.

Comment R-8. Section, R-3.3, RH TRU Mixed Waste Verification Process, pages 5-38 through 5-39, all subsections. The Permittees indicate that the Newly Generated and Repackaged Waste will be "characterized at the time of packaging", with verification taking place by having a second operator present during packaging operations to verify the Summary Waste Category group assignment, that hazardous constituent-related information was collected, and that there are no prohibited items. Currently packaged waste will be "evaluated" and if "deficiencies are found," additional characterization "may" be required; if this characterization involves "testing", this will be conducted on a minimum of 10% of the waste stream with verification by a second operator. The nature and extent of verification proposed, however, is inadequate. CTP is a variant of the VE process and could be used, in and of itself, as a verification procedure for physical parameters identified via AK. These physical parameters include waste matrix code, waste stream assignment, and prohibited items, and could possibly include visual verification of those limited "indicators" of hazardous waste that can be assessed visually (i.e., lead gloves, etc). CTP also offers the opportunity to collect supplemental AK (i.e., swipe sampling, etc) to augment the AK record. Verification of currently packaged waste must not be an option; this verification must occur, although the nature of verification can be site-specific. For example, it is NMED's understanding that Battelle Columbus has performed in-

depth visual examinations of all currently packaged waste and that these examinations were recorded on video/audio tape. In this case, the Permittees could propose a site-specific verification procedure that would not initially require package re-opening but instead could require some measure of video tape re-examination to confirm information. In other cases, such extensive and complete AK would not be available and mandatory VE and/or radiography verification of AK to some degree should likely occur. Further, NMED expects the Permittees to propose verification of hazardous waste code assignments through some type of chemical analyses. While NMED recognizes that different "levels" of verification could be satisfactory dependent upon the completeness of the AK record and nature of the waste (i.e., thermally treated vs. non-thermally treated for HSG), the Permittees must develop a verification approach and program that ensures hazardous waste code assignments made via AK are confirmed. That being said, however, NMED is willing to entertain deviations from the current CH program or the use of heretofore unspecified innovative approaches so long as compliance with RCRA specifications is demonstrated. Note that NMED does not understand the need for a separate CTP process, as activities performed under this are either variants of VE or AK data collection. Justification of the CTP process as a separate stand-alone process as described in the PMR is required.

Comment R-9. Section R-3.4, Waste Analysis Documentation and Data Flow, pages 5-39 through 5-45, all subsections. The Permittees propose a three-stage data validation/verification effort similar to that used for the CH program. However, the proposed process details differ, perhaps because the Permittees were anticipating yet-to-be-approved PMRs to allow the use of electronic quality assurance (**eQA**) for the CH program. Regardless, the Permittees must note and explain all discrepancies between the two programs including but not limited to:

- Reduction and modification of CH Data Generation Level Validation/Verification as presented in Section R-3.4.1 of the RH WAP when compared to Section B3-10(a), Attachment B3, of the CH WAP;

- Reduction and modification of Site Project Level Validation as presented in Section R-3.4.2 of the RH WAP when compared to Section B3-10(b), Attachment B3, of the CH WAP; and,

- Reduction and modification of Permittee Level Validation as presented in R-3.4.3 of the RH WAP when compared to Section B3-10(c), Attachment B3, of the CH WAP.

Comment R-10. Section R-3.4.1, Data Generation Level Validation of VE, Radiography, and CTP Data, page 5-40, lines 10-11. This paragraph states, "At a minimum, the independent technical review must be performed before any waste associated with nonconforming data is shipped to WIPP." This statement appears to allow containers with nonconforming data to be

sent to WIPP as long as the independent technical review was done. This statement should prohibit shipping waste containers with nonconforming data until such time as any non-conformance report has been closed out in a manner that removes or otherwise adequately addresses the nonconforming data.

Comment R-11. Section R-3.5, Reconciliation with Data Quality Objectives, pages 5-41 through 5-43, all subsections. The Permittees propose that reconciliation with DQOs occur primarily at the SPM level. NMED, however, has expressed concerns regarding the limitation of DQOs to only higher level programmatic elements, excluding DQOs similar to those presented in the CH WAC that express objectives on the characterization element level. The Permittees should revise all DQO reconciliation discussions to address NMED concerns as appropriate. Also, the Permittees must explain any discrepancies between the DQO processes presented in Section R-3.5 of the RH WAP and Section B3-11, Attachment B3, of the CH WAP.

Comment R-12. Section R-3.6, Data Reporting Requirements, pages 5-43 through 5-45, all subsections. The CH WAP presents detailed information regarding the contents of the Waste Stream Profile Form, Characterization Information Summary, Waste Stream Characterization Summary, and WIPP Waste Information System (**WWIS**) reporting requirements. The Permittees propose no RH verification comparable to that performed for CH waste that could account for some of the differences but NMED believes that verification must be performed (albeit not necessarily identical to that performed for CH waste). Similarly, the RH PMR does not address how the WWIS would be addressed which is a critical aspect of any WIPP characterization program because it is from this information that room based limits for VOCs are assessed, etc. The Permittees should revise the data reporting section to reflect NMED concerns regarding verification and subsequent reporting requirements and to include resulting applicable CH reporting elements or provide information justifying any deviations from CH reporting requirements.

Also, it appears that the Permittees are requesting flexibility with regard to how waste will be characterized, stating that CTP and/or AK and/or VE and/or radiography may be performed. However, Section R-3.6 indicates that the Permittees make no commitment to document or record the decision pathway associated with the determination. The Permittees must consider preparation of a Reconciliation Report that documents the SPM determination of the verification process, and which presents/establishes related DQOs. It is understood that the Permittees intend to require sites to prepare an RH Quality Assurance Project Plan (**QAPjP**) but Appendix R2 does not specify that this document will serve as the document that "brings together" the site specific SPM determination of characterization process. It is NMED's experience that the QAPjPs simply mimic WAP requirements and the site standard operating procedures (**SOPs**) present how activities will be performed; however, neither of these will document specifically how the SPM determined activities are to be performed on a waste stream basis. That is, when program flexibility such as that requested by the Permittees is requested, the QAPjP and SOPs alone will

not be sufficient to glean an understanding of *exactly* what options the site has selected to meet WAP requirements; therefore, some sort of Reconciliation report is required to document this information. The Permittees should revise the PMR accordingly. Also note that the Permittees must provided all RH QAPjPs and revisions to NMED following approval, as are required for CH QAPjPs by Permit Attachment B5, Section B5-1.

Comment R-13. Section R-4.2, Characterization Methods, page 5-45. The Permittees indicate that it is the SPM's responsibility to determine the appropriate characterization pathway given the intended flexibility of the proposed RH WAP. However, as noted in Comment R-12, above, the SPM is apparently not required to document this determination in a formal report although the sites are required to include, for example, in the AK procedure a "decision making process" that identifies when AK does not meet DQOs. However, a single report documenting and tying together the chosen characterization pathway is required.

Comment R-14. Section R-4.2.1, Acceptable Knowledge Process and Section R-4.2.1.1, Required Procedure for the AK Process, pages 5-46 through 5-48. The Permittees propose to implement a "standardized" AK process that is more procedurally based than the CH WAP in that is does not require collection of mandatory information per se, but a collection of categories of information that could come from a variety of sources. To better support this approach, the Permittees must provide a comparison of the CH process to this "standardized" approach, demonstrating how the level of detail achieved through implementation of the CH approach is not diminished in the new RH approach.

Comment R-15. Section R-4.2.1.2, Compiling AK Information (Step 1), pages 5-49 through 5-50. By using a standardized, process-based approach to AK, implementation of the RH approach may compromise comparability with AK derived through the CH AK process unless it can be shown that the "same" type of information and level of detail is achieved using the RH approach. If this comparability is lost, then use of CH AK information to augment, bolster, or serve as surrogate data could be compromised. Also, the Permittees require each container to be "related" to a waste stream through waste packaging logs, etc., but this element should be bolstered to require mandatory assembly of drum-specific/container specific chemical and physical data, if available. This is necessary because the Permittees propose no verification of AK (which is unacceptable to NMED) so the AK information collected must be as detailed as possible. Also, the assembly of AK information specific to prohibited item information must take into account NMED concerns regarding prohibited item requirements (see Comments R-6 and R-8).

Further, the use of information from other sites that generate RH waste to achieve DQOs requires extensive documentation, explanation, and required correlation. Many RH sites generated waste through experimentation so it is highly *unlikely* that this approach could be used in these situations. Similar concerns are apparent with the use of surrogates. The Permittees should revise

the AK procedure to include specific acceptance criteria for the use of this non-site RH waste and surrogate information.

Comment R-16. Section R-4.2.1.3, Characterizing RH TRU Mixed Waste Streams Using the Standard AK Procedure (Step 2), page 5-51. The Permittees will require sites to implement an AK procedure, but the Permittees must ensure that these procedures include collection of information *beyond* the hazardous waste code(s) and supporting hazardous constituents. NMED has determined that AK will serve as the base information source that will be verified and augmented through other activities, so AK must assemble the spectrum of required information as available.

Comment R-17, Section R-4.2.1.4, Reconciling the AK Characterization with the DQOs, pages 5-51 through 5-53. The Permittees require AK reconciliation with DQOs, but NMED has expressed concern that the DQOs are both too general and are not based upon specific characterization activities as are the CH DQOs. It is apparent that the reconciliation process is the point at which the SPM would determine which verification activities should be performed and related DQOs. The Permittees should revise this section of the PMR to reflect the requirement that AK will be assembled for all wastes and that reconciliation is the point at which the SPM would determine the appropriate approach for verifying AK, noting that NMED expects some level of verification to be performed (although the verification method could be waste specific and dependent upon the quality of AK information obtained). This section must include or reference specific acceptance criteria for assembled AK data that the SPM would compare against the information obtained and that would guide the SPM to the appropriate verification activities. It is at this point that verification activity-specific DQOs would be developed; alternatively, the Permittees can propose those DQOs that would be related to specific verification approaches. For example, a site may have assembled data that suggests drums that require repackaging may contain leaded gloves. The SPM could then determine that VE of drum contents during repackaging should be used to confirm this assertion (the DQO for this repackaging activity would be the identification of lead-bearing wastes). Regardless, the path chosen by the SPM must be documented (e.g., in a Reconciliation Report). Note that while the PMR states that the SPM must document reconciliation as per Section R-3.5.1, this section only states that the SPM examine data and determine if a course of action is necessary, not that this information be documented in a detailed fashion.

Comment R-18. Section R-4.2.1.5, AK Process Auditing, pages 5-53 through 5-54. The Permittees shall evaluate information for a single waste stream or waste stream lot, but it is unclear whether the Permittees would then extend approval to only the Summary Waste Category group associated with the waste stream or whether approval would apply to the entire RH population. The Permittees should clarify this issue.

Comment R-19. Section R-4.2.1.7, Acceptable Knowledge Process Quality Assurance Objectives, page 5-55. The QAOs for RH waste AK differ from those for CH waste (Permit Attachment B3, Section B3-9), particularly in the areas of accuracy, comparability, and representativeness. The Permittees should revise the PMR to re-define these elements in light of the fact that AK will take the central characterization role and that NMED requires verification of AK.

Comment R-20. Section R-4.2.2, Visual Examination and R.4.2.3, Radiography, pages 5-56 through 5-62. Both the VE procedure and radiography sections are significantly different from comparable discussions in the CH WAP, particularly in the areas of required operations, measurements, testing, identification elements, QAOs, etc. While Supplement 4 provides an overview comparison of some requirements, the differences in system operations and detail are not adequately justified by the Permittees. The Permittees apparently wish to offer flexibility so that, for example, VE can be performed to "look for" one item at the discretion of the SPM. However, NMED has expressed concern regarding process DQOs and revision of these sections will be necessary to address NMED's concerns. The Permittees should revise the PMR to include a detailed discussion of RH and CH VE and radiography program similarities and differences. Of particular concern are mandatory identification requirements and QAOs that vary significantly from the CH program (e.g., precision determinations for radiography and VE).

Comment R-21. Section R-4.2.3.2, Radiography Training, pages 5-59 through 5-61. This section contains no content requirements for the radiography test drum. At a minimum, the drum contents should be indicative of the waste matrix being analyzed.

Comment R-22. Section R-4.2.4, Characterization at Time of Packaging, pages 5-62 through 5-68. The Permittees propose to use CTP to acquire characterization information. However, the process as described is actually a variant of VE and AK data acquisition, so it is unclear why these activities require a separate process. NMED has reviewed information provided by the Permittees and finds that the use of CTP as a stand-alone method that may be used in lieu of AK is confusing and unnecessary. CTP as a form of VE could be used to verify or augment AK through the acquisition of as yet unspecified information and, as a supporting process, DQOs related only to the function of CTP could be developed. Also, the CTP process is confusing and appears to have been developed as a "black box" characterization method exclusive of all other methods but sometimes relying on other characterization means to obtain information. For example, as written, CTP can obtain AK outside of the AK record/process that is incongruent with using the standard AK methodology. In short, the Permittees must rethink whether the CTP process really is a unique method and whether this unique characterization method can stand on its own in the absence of other methods such as AK (NMED believes it cannot because the method apparently calls for use of AK to augment its own DQO requirements). The current CH characterization process relies on AK as a foundation for obtaining the necessary waste information and this information is subsequently verified through

confirmatory HSG sampling, solid sampling, and radiography/VE. NMED views the RH process as a justified deviation from the CH characterization process whereby RH AK is assembled and verified, although the confirmation/verification methods and frequencies could vary from that established under the CH program. NMED expects the Permittees to present a verification program (Comment R-8) that could include CTP as a "check" on AK. Also, CTP could be used as a new "branch" of AK, whereby AK could be supplemented by information gained through CTP. The Permittees should revise this entire section of the PMR to reconsider the use of CTP, including but not limited to the ability of CTP to meet programmatic DQOs, CTP as a variation of VE and associated training and recordkeeping, and the actual viability of CTP auditing. NMED can envision RH waste initially characterized (i.e., hazardous wastes identified, waste streams determined, prohibited item presence assessed, etc.) by AK, with subsequent examination of subject waste performed to confirm the AK information or to augment the AK record when AK is not available or is of poor quality.

Comment R-23. Section R-5.1.1, Phase 1: RH TRU Mixed Waste Stream Screening and Verification, page 5-69. The Permittees perform Waste Stream Profile Form (**WSPF**) checks and additional data verification as part of the CH program that has been removed from the comparable Section of the RH program. The Permittees should specify where the information has been "moved to" in the RH program. If the information has been removed, the Permittees should revise the PMR to re-instate these requirements or provide a reasoned and detailed justification for the change in Phase 1 screening.

Comment R-24. Section R-5.1.1.1, WWIS RH TRU Mixed Waste Module Description, pages 5-69 through 5-71. The Permittees apparently attempted to streamline the WWIS description relative to language used in the CH WAP but the streamlining does bring to question why the language change was implemented and whether these changes imparted "hidden" modifications that subtly change a program intent or requirement. For example, edit-limit check discussions have been altered, titles to documents changed, etc. The Permittees should revise the PMR to discuss in detail (beyond that of Supplement 4) intended revisions to the WWIS input, reporting, and other WWIS processes and documents. Again, it appears that the Permittees may have been attempting to "jump ahead" by incorporating changes in forthcoming yet unapproved PMRs.

Comment R-25. Section R-5.1.1.2, Examination of the Waste Stream Profile Form and Container Data Checks, pages 5-71 through 5-72. The RH processes for examination of the WSPF differs from that used in the CH program; for example, the RH WSPF information check does not specify Waste Matrix Code identification as required under the CH program, etc. However, NMED believes that the DQOs associated with the RH program are too "high level" and do not reflect actual DQOs that should be implemented at a process or "lower" level comparable to the CH program. Also, the reduced data acquisition requirements derived from these RH DQOs significantly decreases the amount and type of information that must be

transmitted, reported, and subsequently reviewed by the Permittees. In light of all previous comments, the Permittees must examine this section and revise in conjunction with changes made to address NMED comments.

Comment R-26. Section R-5.1.2.3, Verification, page 5-74. The CH WAP required a determination of container defects as part of the verification process that is not included in the RH WAP. The Permittees should clarify why this requirement cannot be performed (i.e., design considerations, etc).

Comment R-27. Section R-5.2, Procedures for Non-Compliant Wastes, page 5-75. The Permittees must specify the time period by which written receipt of a "verbal discrepancy correction" is made. Additionally, documentation of any such verbal resolution must be made by the Permittees and placed in the operating record. Also, the Permittees must justify the addition of the term "significant" with respect to manifest discrepancy definitions and remove the term "may", replacing it with "will" or "shall" from the sentence: "If the manifest discrepancies have not been resolved within thirty (30) days of waste receipt or within 15 days of their discovery, the shipment *may* [emphasis added] be returned to the site."

Comment R-28. Appendix R1, Waste Stream Profile Form (Example), page 5-81. The Permittees propose the use of a WSPF specific to the reporting and characterization performed for RH waste. However, in light of NMED comments, the Permittees must revisit this form to determine whether deviations from the CH form are necessary (including Attachments A and B), and whether proposed changes are still valid.

Comment R-29. Appendix R3, Permittees Audit and Surveillance Program for RH TRU Waste, pages 5-93 through 5-139. The Permittees have proposed the use of the CH audit program for RH waste that is acceptable. NMED shall defer review and comment on the RH checklist pending the Permittees response to NMED comments on the PMR and subsequent PMR changes.

Comment R-30. Appendix R3, Permittees' Audit and Surveillance Program for RH TRU Waste, pages 5-93 through 5-98. This section should include a statement that the Permittees' organization performing the audit is independent of the organization performing the work being audited and that the auditors themselves are also independent of the employees whose work is being audited.

Section 7.0 – General Inspection Requirements

Comment 7-1. Section 7.1.3, Addendum DR, Section DR-1, Inspection Schedule, page 7-9, lines 17 to 21. The proposed language lists several pieces of RH TRU waste equipment that are

to be "logbook controlled" (i.e., inspection results are to be recorded in operator logbooks). This list is not inclusive of all equipment listed in Table DR-1. Revise the PMR to clarify the manner in which inspections will be documented for those facilities and equipment.

Comment 7-2. Section 7.1.3, Addendum DR, Section DR-1, Inspection Schedule, page 7-9, lines 21 to 24. The proposed language states "In addition to the inspections listed in Table DR-1, many pieces of equipment are subject to regular preventive maintenance. These preventive maintenance activities along with the inspections in Table DR-1 make mechanical failure of waste handling equipment unlikely." Information regarding the preventative maintenance schedule of applicable equipment is not included in Table DR-1. Revise the PMR to include this information.

Comment 7-3. Section 7.1.3, Addendum DR, Section DR-1b(1), Container Inspection, page 7-10, lines 25 to 27. The proposed language states "[t]he inventory and integrity of the shipping casks *and the spacing between trailers carrying the shipping casks* are inspected." No spacing requirement is stated. If the same spacing requirement utilized for CH-TRU shipping containers is to be applied to RH TRU containers, this needs to be more clearly stated in the proposed permit language. As it is written currently, the test infers that some other spacing requirement will be applied to RH TRU containers.

Comment 7-4. Section 7.1.3, Addendum DR, Section DR-1b(1), Container Inspection, page 7-11, lines 7 to 13. The proposed permit language states in part on line 10 "...the floor of the RH Complex is inspected visually or by using closed-circuit cameras on a weekly basis..." lines 12 to 13 further state "Inspections of RH TRU waste containers stored in the Hot Cell and Transfer Cell are conducted using remotely operated cameras." Given the reliance on these remote-viewing devices for both general area and container inspections, inspection criteria listed in Table DR-1 for these areas should be revised to include a periodic check of camera function and operability. Camera-specific preventive maintenance may also be considered for inclusion in the site preventive maintenance schedule.

Comment 7-5. Section 7.1.3, Addendum DR, Table DR-1, RH TRU Waste Inspection Schedule/Procedures, pages 7-15 to 7-16. The title of personnel performing the stated inspections for the following equipment and facilities needs to be identified in the column entitled "Inspection Frequency and Job Title of Personnel Normally Making Inspection":

- RH Bay Overhead Crane
- RH Bay Cask Lifting Yoke
- Cask Unloading Room Crane
- Horizontal Emplacement and Retrieval Equipment
- 41-ton Forklift
- RH Bay

Comment 7-6. Section 7.1.3, Addendum DR, Table DR-1, RH TRU Waste Inspection Schedule/Procedures, page 7-16, Footnote "C." The definition of "pre-operational" in this table is inconsistent with the definition given in Table D-1 of the CH-TRU permit. Table D-1 defines pre-operational inspection as "...inspections...required prior to the first use [of the equipment or facility] of a calendar day." Table DR-1 defines the term as "...inspections required...prior to the waste handling evolution." The term "waste handling evolution" is further defined as "...from the receipt of a shipping cask into the RH Bay through canister emplacement underground." One uniform inspection frequency should be determined and then applied to both CH- and RH TRU shipments. Revise the PMR to address this concern; as written, it appears that inspection could be performed immediately before emplacement that could complicate disposition of problems found during inspection.

Section 8.0 – Preparedness and Prevention

Comment 8-1. Section 8.1.2, Attachment E, Section E-2b, Runoff, page 8-3. The PMR states on page 8-3 that "containment in the WHB for RH TRU waste is described in Permit Addendum M1R." However, the only description provided in this addendum is on page 16-27, paragraph 4, which provides the capacity of the RH Bay, Hot Cell and Transfer Cell. There is no description of the secondary containment and no secondary containment calculations were provided to justify the volumes of 220-gallons, 11,400-gallons and 220-gallons, respectively. Revise the PMR to describe the secondary containment for the RH Bay, Hot Cell and Transfer Cell and provide the required secondary containment calculations. In addition, to determine the secondary containment for these areas, the PMR must provide container configuration diagrams that show the maximum amount of waste that can be managed in the rooms and cells. Once this information is provided, the PMR should address how the information demonstrates that runoff from the unit(s) do not constitute a problem. A connection between the secondary containment capacity provided and the runoff protection requirements was not made in the PMR. Revise the PMR to address these concerns.

Comment 8-2. Section 8.1.2, Attachment E, Section E-2d, Equipment and Power Failure, page 8-4. The PMR indicates, "The UPS features automatic switching without a loss of power from the primary power to alternate power to battery backup power." Revise the PMR to provide specific information regarding the RH Complex (Hot Cell, RH Bay, Transfer Cell, etc.) and the equipment in these areas that have backup power and/or battery backup. Provide more detailed information on the backup systems, how these systems will be deployed and if they are mobile systems, and where they are located.

Comment 8-3. Section 8.1.2, Attachment E, Section E-1a, Equipment Requirement, page 8-9 (and page 8-11 under ER-2b Runoff). The PMR does not indicate that additional internal

communication equipment and emergency equipment will be needed in the RH facilities. Section ER-1a of Addendum ER states that the WIPP facility is well equipped with internal communication systems, emergency equipment and communication equipment. The PMR must provide additional information that clearly describes this equipment. The modification should discuss the internal communication system that is to be in place at all the RH waste handling facilities including the RH Bay, the Cask Unloading Room, the Hot Cell, the Transfer Cell and the Facility Cask Loading Room. The Permittees must also provide diagrams that show the location of the equipment and the alarm systems in the rooms and cells. The alarm systems associated with the special handling equipment should be fully described. Internal communication equipment, remote-television or other systems used to ensure the safe handling of the RH waste must also be fully described. Also, while not stated in the PMR, it is assumed that some additional or specialized equipment must be utilized to manage RH waste emergencies. However, no additional equipment was provided in Addendum ER. Revise the PMR to address all of these concerns.

Comment 8-4. Section 8.1.3, Addendum ER, Section E-2d, Air Flow, page 8-11. The PMR Addendum ER provides only a brief description of the airflow pressure that prevents the spread of contamination during RH TRU waste handling. Additional detail is needed in this section including flow diagrams and/or process and instrumentation diagrams (**PID**). Revise the PMR to include a complete description of the airflow pressure system. If this information is provided in another part of the PMR or in the permit application, provide a specific reference to the information.

Section 9.0 – RCRA Contingency Plan

Comment 9-1. Section 9.1.3, Addendum FR, Section FR-2, General Comment, pages 9-9 through 9-11. Section FR-2 of Addendum FR only addresses the control of spills or leaking or punctured containers of RH TRU waste and does not address emergency procedures regarding RH waste with regards to a fire or an explosion. Modify Addendum FR to address other emergency procedures besides the control of leaks and spills.

Also, Section F-5 of Attachment F in the CH Permit provides a description of the emergency equipment used at the WIPP site to manage CH waste emergency. This section also references Table F-6 and F-7, as well as Figures F-5 and F-7. This section has not been modified in the PMR to include any additional equipment (i.e., emergency equipment, communication equipment, alarms, etc.) which would be needed, changed, or modified based on the fact the facility would be managing RH waste. This also appears to be the case for other tables and figures contained in the final permit. Modify Section F-5 and all other applicable sections of the PMR to address additional equipment needs with respect to RH waste and modify all impacted tables and figures. Diagrams for the Hot Cell, RH Bay, Transfer Cell, Cask Unloading Room,

Facility Cask Unloading Room and all other areas associated with RH waste, must be provided that indicates the location of emergency equipment, alarm boxes, and communication devices. Any additional equipment needs such as detectors, monitoring equipment, etc., should be added to Table F-6.

Comment 9-2. Section 9.0, RCRA Contingency Plan, Attachment F, Final Permit, Section F-6, General Comment. Section F-6 of the Final Permit Attachment F provides a brief narrative of the coordination agreement with the WIPP site that several agencies, emergency response agencies, local police departments, fire department, hospitals, and contractors have regarding their roles during an emergency at the WIPP site. This modification may impact these agreements, yet it does not appear that the WIPP site has notified these agencies, departments or contractor of the modification. The Permittees must also notify the agencies, hospitals, departments etc. listed in Section F-6 of the final permit and re-evaluate the respective agreements with regard to addition of RH waste. Modify the PMR as necessary to address these issues.

Section 10.0 – Traffic Patterns

Comment 10-1. Section 10.1.2, Attachment G, Section G-1, Traffic Information and Traffic Patterns, Facility Access and Traffic, page 10-2, lines 9 and 26 to 31. References to TRUPACT-II shipping containers have been removed from the proposed permit language, having been replaced by a generic statement referring to "NRC-certified shipping containers", which is inferred to apply to both CH- and RH TRU waste shipments. The PMR should clearly state the types of acceptable shipping containers for both RH and CH waste to ensure that appropriate traffic considerations are made.

Comment 10-2. Section 10.1.2, Attachment G, Section G-1, Traffic Information and Traffic Patterns, Facility Access and Traffic, page 10-2, lines 18 to 20. The proposed permit language states "An additional route for waste transport trucks is planned for the southwest side of the WIPP facility. This proposed route would be used exclusively for TRU waste transport trucks." This route should be included in Figure G-2, "WIPP Traffic Flow Diagram" and AASHTO specifications (and/or other appropriate engineering specifications and guidelines) applicable to its design and construction should be referenced. Revise the PMR to include this information.

Comment 10-3. Section 10.1.2, Attachment G, Section G-1, Traffic Information and Traffic Patterns, Facility Access and Traffic, page 10-2, lines 27 to 31. The PMR changes the following information that is included in the existing permit without explanation or substantiating data:

- The anticipated maximum load on on-site paved roads and access roads is increased from 80,000 pounds to 115,000 pounds (an increase of approximately 40%);

- The facility vehicle capacity is increased from "an average of five" truck trailers per day to "approximately eight"; and,

- The payload of each inbound truck trailer is increased from "three TRUPACT-II's" to "one or more NRC-certified" shipping containers."

Additional clarification (which should include supporting data, formal traffic studies, etc.) is required to support these proposed changes. Specifically, engineering calculations to substantiate the adequacy of the existing roads to handle the increased truck traffic and additional gross weight of the trucks should be provided. In addition, an explanation of facility modifications necessary to accommodate the proposed increase in vehicle capacity should be included, as should a more accurate statement of the potential number of waste shipping containers in each shipment. Revise the PMR to include this information.

Section 11.0 – Training

Comment 11-1. Section 11.0, Training for Emergency Response, General Comment. The PMR does not address training requirements for emergency response to RH waste spills, leaks, incidents, fires or explosions. Permit Addendum FR (Contingency Plan) documents special procedures in Section FR-2 (Contingency Plan) that will be utilized to control a spill or leaking or punctured container of RH TRU waste. However, no training requirements were provided in Section 11.0 or the associated Addendum to indicate that training will be conducted on the procedures specified in the Contingency Plan to ensure that the actions proposed can be accomplished by WIPP personnel. Revise the PMR to include training documentation that demonstrates that the emergency response personnel will be trained appropriately to respond to RH waste incidences.

Comment 11-2. Section 11.1.2, Personnel Training, General Comment. Addendum M1R indicates that additional alarm systems, and communication systems have been added to the WIPP site to the various rooms and cells managing RH waste. Training programs provided in Attachment H-2 of the final permit must be modified to include the addition of any new alarms and communication procedures, etc., which may be instituted. In addition, Attachment H-2 should be modified to change the amount of training time(s) for the training course that could be impacted by this PMR. Revise the PMR to thoroughly address these training concerns.

Comment 11-3. Section 11.3.3, Addendum H2R, Training Course and Qualification Card Outline Remote – Handled TRU Waste, page 11-11, lines 10 to 13. This section states that "various classroom courses are utilized to provide operators the requisite training." However, no additional training course which addresses RH waste or procedures for handling RH waste have been included in this PMR. Considering the new areas proposed for operations (i.e., cask unloading room, Hot Cell, Transfer Cell, facility cask loading room, etc.) it would seem that additional training for these areas would be required. In addition, according to Addendum M1R there are several additional types of equipment which will be utilized for the RH waste operations, such as overhead bridge cranes, lifting yoke, cask transfer cars, ton-grappler hoist, manipulator(s), remote monitoring systems, etc. Yet, there is no indication that either formal or on-the-job training is conducted for these special types of equipment. Provide this information.

Section 12.0 – Closure Plan

Comment 12-1. Section 12.0, Closure Plan, General Comment. The PMR indicates in Addendum MR, Section 16.2.1 "Technical Justification", page 16-7, lines 18-19 that the RH Complex includes the RH Bay, Cask Unloading Room, Hot Cell, Transfer Cell, and Facility Cask Loading Room. The current closure plan in the final permit addresses only CH storage and disposal units at WIPP, among which are the container storage areas in the CH Bay portions of the WHB. However, the PMR now includes the RH Complex areas in the WHB, of which many of these areas were either not addressed or the actual function of the areas (i.e., Hot Cell) has significantly changed based on this modification. The closure plan modification as provided does not address specifically how the above-mentioned rooms, cells, and areas will be closed. Because of the nature of the wastes handled in these areas, it is expected that the closure plan procedures will be more complex, requiring a different sampling regimen and possibly a more detailed decontamination procedure. In addition, the up-front process for determining the level of contamination will need to be modified.

The modification must provide a specific closure plan for all areas, room, and cells associated with the RH Complex. The modification should provide a detailed description of how the units will be closed, including how the units will be closed in relationship to each other. The sequence of closure for these rooms, cells and areas are especially critical because some of them such as the shielded Material Transfer Drawer are associated with the transfer of swipe samples, which may be important during the closure process. In addition, the sequence of closure of the RH Complex in relationship to the rest of the WHB should be described.

The closure plan modification should provide, or reference, design and location drawing and/ or PIDs that can be used to determine the physical extent of the areas, rooms, and cells which must be closed. This was not provided in the modification. Revise the PMR to adequately address closure of the RH related facilities.

Comment 12-2. Section 12.0, Closure Plan, page 12-1, lines 10 & 11. The statement, "Final closure will occur when all waste disposal areas are filled or when the WIPP achieves its capacity of 6.2 million ft^2 of TRU waste" is ambiguous, particularly the phrase "all waste disposal areas are filled."

Comment 12-3. Section 12.0, Closure Plan, page 12-1, line 17. The phrase, "At the end of all hazardous waste activity" does not seem to be accurate as surface facility closure is yet to have occurred.

Comment 12-4. 12.1.2, Attachment I, Section I-1d(1), Schedule for Panel Closure, page 12-3, lines 6 and 7. The waste throughput assumptions are dated and are inconsistent with assumptions found elsewhere within this document (see section on Security) and should therefore be updated to reflect current operations and made consistent throughout the permit.

Comment 12-5. Section 12.0, Attachment I, Closure Plan, General Comment. Section I-1e(2)(b), Decontamination Activities, of the final permit addresses as a major topic the "Waste Handling Equipment." The PMR includes a great deal of new equipment associated with the RH Complex including; the shipping casks, RH bay overhead bridge crane, cask lifting yoke, cask transfer car, 6.25 ton-grapple hoist, facility cask, facility cask transfer car, "Hot Cell" bridge crane, various manipulators, the shielded material transfer drawer and the cask unloading room crane. The decontamination procedure for the RH Complex and associated equipment is not provided. In addition, there are several pieces of equipment for which the decontamination procedures may vary depending on the role of the equipment, the level of contamination in the room, the location of the equipment, and the actual or potential of release in the areas. The types of equipment, the procedures for decontamination, the procedures for sampling/and or determining the level and or decontamination must be addressed in the modification. Also, if the equipment is not expected to be decontaminated then the procedure for disposal should be discussed, including the location where the equipment will be disposed. If the equipment will be dismantled prior to disposal then this should also be addressed. In addition, if the equipment is expected to be disposed of in the WIPP underground, then this procedure should be described in detail. Revise the PMR to provide this information.

Comment 12-6. Section 12.0, Attachment I, Closure Plan, General Comment, Sampling Procedure. The closure plan modification does not address the number, type, or procedure for sampling the RH Complex during closure to determine the need or level of decontamination needed. A clear delineation of which rooms, cells or areas are to be decontaminated and those areas that will not undergo decontamination (if any) should be clearly detailed in the closure plan. In addition, the procedure for sampling, analyzing, and the level of cleanup used to determine if the area is to be clean closed should be provided. The number of samples to be

obtained in the RH areas, cells and rooms should be based on a scientific process such as a statistical random sampling procedure. In addition, any area subject to spills, leaks, etc., should be sampled during the closure process. Revise the PMR to include this information. If there is the potential that rooms, cells, or areas within the RH Complex can not be sufficiently decontaminated, then the site must address this issue by providing a contingent post-closure plan for these RH areas.

Comment 12-7. Section 12.1.3, Proposed Addendum to Attachment I, General Comment. Addendum IR contains no useful information - just a disclaimer as to the changes being only minor. RH TRU waste emplacement will require additional specialized equipment with additional hazards from the standpoint of potentially breaching a container and causing a spill or release. Additionally, these machines themselves may introduce new sources of hazardous waste in the form of lubricants, fuels, and other working fluids, and the PMR should briefly address disposition of these wastes.

Section 14.0 – Financial Assurance

Comment 14-1. Section 14.0 Financial Assurance, General Comment, page 14-1. The PMR does not address the liability requirements contained in 40 CFR §264.147. The wording provided in Section 14.0 only addresses financial assurance requirements. The PMR must address both the financial assurance requirements and the liability requirements of the regulations in 40 CFR §264 Subpart H.

Comment 14-2. Section 14.0 Financial Assurance, General Comment, page 14-1. Section 14.0 states that "WIPP is exempt from the regulatory requirement to provide financial assurance." This wording is insufficient in that it does not address both Permittees of the WIPP facility, DOE and Washington (the contractor). Indicate if one or both Permittees are exempt from the financial and liability requirements. If Washington is exempt, provide a citation to the appropriate federal statute that indicates such an exemption for the WIPP contractor exists.

Section 16.0 – Information for Specific Units

Comment 16-2. Section 16.2.3, Addendum MR1, Table M1R-1, page 16-31. What were the design standards (e.g., ASME B30.2) used to size and test this equipment? The inspection requirements listed in Section 7 of the PMR for this equipment (Table DR-1, pages 7-17 through 7-16) do not indicate any periodic non-destructive examinations or load tests for this equipment. Are these contained in site procedures? Table M1R-1 shows only a small difference between the weights of the shipping casks and the cask transfer car capacities (e.g., 7.5% between the empty weight of an RH 72B cask and the rated capacity of the RH 72B Cask Transfer Car). Also, the

maximum weight of the facility canister is only 80% of the grapple hoist capacity. These low margins bring to question whether associated equipment is appropriately designed and inspected. Revise the PMR to address these concerns.

Comment 16-3. Section 16.3, Requested Changes to Attachment M2, page 16-51, lines 4 and 5. The statement, "Minor changes are necessary to Attachment M2 to accommodate RH TRU waste." is in conflict with the statement in 16.3.1, page 16-51, lines 9 and 10 which state, "No changes are necessary to Attachment M2..." Clear statements should be made as to whether changes were made and, if so, to specify and/or reference those changes.

Comment 16-4. Section 16.3.2, Attachment M2, Section M2-1, Description of the Geologic Repository, page 16-52, lines 12-19. The PMR discusses several different sets of Hazardous Waste Disposal Units (**HWDUs**). It is not clear from the text what the current permitted set of HWDUs is, what the desired modification to the current permit is and what is described as a set of future HWDUs which may have a permit request submitted sometime in the future. These statements should be clarified and should be consistent with revisions made to Module IV (See Comment 3-1). Revise the PMR to clearly address the questioned HWDU information.

Comment 16-5. Section 16.3.2, Attachment M2, Section M2-2a(3), Subsurface Structures Underground Ventilation System Description, page 16-53, lines 11-13. This paragraph states that TRU mixed waste may be disposed of (under approval from a future permit) "in five additional panels." These panels are then listed as "Panels 6 through 8" which does not correspond to the described five panels. Clarify or correct as needed.

Comment 16-6. Section 16.3.3, Addendum M2R, Section M2R-2b, RH TRU Waste Emplacement, page 16-61, lines 1-3. The modification describes how the emplacement of RH TRU waste is limited by thermal considerations although no discussion is provided or referenced as to what the thermal limits are, how the waste thermal load is measured/calculated, or how the thermal load limits are not exceeded. Also, the PMR does not address how these RH-specific considerations would potentially impact waste containment, particularly with respect to any potential waste transport through the Salado and/or interbeds that would not have occurred for CH waste. Revise the appropriate sections of the PMR to better address the addition of RH waste with respect to ensuring that all applicable requirements of 40 CFR §264 Subpart X are addressed, including assurances that aspects of RH waste (e.g., increased heat load, etc.) do not impact the prevention of releases that have adverse effects on human health and the environment due to migration of wastes in the groundwater, subsurface environment, surface water, and air. This is important to clearly conclude that the addition of RH waste does not impact any aspect of compliance with Subpart X standards not already taken into account and

assessed as part of the CH waste Subpart X compliance demonstration included as part of the WIPP Permit Application(s).

Supplement 2

Comment S-1. Supplement 2, Section 1.1, Purpose, page 4, paragraph 1. The reference to Vaughn et al. (2001) is missing from the reference list on page 12. This citation should be included.

Comment S-2. Supplement 2, Section 1.1, Purpose, page 4, last bullet. This bullet indicates that changes to the codes were necessary to run the RH TRU waste inventory bounding cases. These changes should be itemized and explained.

Comment S-3. Supplement 2, Section 1.2.1, Identification of the RH TRU Inventory, page 5, paragraph 1. This section indicates the three non-radioactive components that have the potential to impact repository performance. More information should be provided regarding how this was assessed and the components besides radionuclides (if any) that were found unlikely to have an impact on repository performance.

Comment S-4. Supplement 2, Section 1.2.2, Calculation Design, page 5, paragraph 1, line 7. This sentence refers to the "waste disposal region," which is not clearly defined. The definition of the "waste disposal region" (also referred to as "waste region" in later portions of the document) should be provided. Consistent terminology should be used throughout the PMR.

Comment S-5. Supplement 2, Section 2.0, Identification of Bounding RH TRU Inventory Components, page 6, paragraph 2, line 11. The text states that 1.1 moles of gas are produced by the biodegradation of 1 mole of rubber. NMED believes the correct number is 1.0 moles of gas per mole of rubber (Wang and Brush, 1996).

Comment S-6. Supplement 2, Section 2.0, Identification of Bounding RH TRU Inventory Components, page 6, paragraph 2. In the sentence "The maximum amount of plastic that can be placed in the RH canisters is assumed to be either 50% of the total RH canister internal volume (total RH waste volume = 7080 m^3, [Sanchez, 2000, Section 2] or the largest volume of plastic emplaced in any canister [BIR-2, 1996]." The portion of this sentence that reads "...(total RH waste volume = 7080 m^3" appears to be out of place, unless the intention is to consider 50% of the RH inventory, in which case the reference to "the largest volume of plastic emplaced in any canister" is problematic because it implies the contents of a single canister. In addition, this sentence indicates that either 50% of the total RH canister internal volume or the largest volume of plastic emplaced in any canister was used in the calculations, but which variable was used is not specified here in the text nor is the magnitude of either variable. Furthermore, the reference to BIR-2 (1996) is missing from the reference list on page 11. This information should be provided.

Comment S-7. Supplement 2, Section 2.0, Identification of Bounding RH TRU Inventory Components, Table 1, page 7. The last sentence of the entry for Computational Set 2 (Max RH TRU Plastics) states that "For CH waste everything is as specified in the PAVT baseline." The meaning of this sentence is unclear and this entry should be revised.

Comment S-8. Supplement 2, Section 2.0, Identification of Bounding RH TRU Inventory Components, Table 1, page 7. The entry for Computational Set 4 (Max RH TRU Steel) indicates that the mass of iron was calculated using the theoretical density of water. It seems more likely that the density of iron or steel was used in the calculation. This apparent discrepancy should be addressed.

Comment S-9. Supplement 2, Section 3.1.1, Selection of Input, page 8. The report states "The 300-year calculations use mean values for all data parameters..." These mean data parameter values should be documented, either within Supplement 2 or by reference.

Comment S-10. Supplement 2, Section 3.1.3, Impact/Results, page 9, paragraph 3, line 10. This paragraph refers to the "bounding cellulosics (set 2) run." For consistency with the rest of the report, "cellulosics" should be changed to "plastics."

Comment S-11. Supplement 2, Section 3.1.3, Impact/Results, page 10, Table 4. The column headings in this table are RHEPA_CEL and RHEPA_WATER, the meanings of which are not defined. Presumably, these headings should be changed to "Maximized Plastics" and "Maximized Water," respectively, to be consistent with Tables 2 and 3.

Comment S-12. Supplement 2, Section 3.1.3, Impact/Results, page 10, Table 4. Information for the "PAVT Baseline" case is not provided as is for Table 3. A column for this information should be inserted into Table 4 for the purposes of comparison.

Comment S-13. Supplement 2, General Comment. Supplement 2 was not included in the Adobe Acrobat Reader version of the PMR as provided on the CD-ROM.

Supplement 3

Comment S-14. Supplement 3, Section 1.0, Introduction, page 1, paragraph 5. This paragraph states that the disposal area within WIPP will contain eight panels, each with seven rooms. However, RH waste will not be placed in Panel 1, leaving only seven panels for RH disposal. The availability of only seven panels should be explained. In addition, the PMR only mentions Panels 1 through 5. The future addition of Panels 6, 7, and 8 should be mentioned.

Comment S-15. Supplement 3, Section 1.0, Introduction, page 1, paragraph 5. This paragraph indicates that disposal rooms will measure 33 ft wide and 300 feet long, giving a perimeter of each disposal room of 666 ft (neglecting the perimeter length intersected by the access drifts). If, as stated by this paragraph, the RH boreholes will be drilled 4 feet from the floor on 8-foot centers, the maximum number of boreholes that can be placed in a room should equal 83 (666 ft ÷ 8 ft). This number is inconsistent with the maximum number of boreholes (120 per room) listed in Section 2.2 of Supplement 3 (Number of RH Canisters in a Room, page 3). Revised the PMR to indicate how the number of boreholes per room and per panel was derived.

Comment S-16. Supplement 3, Section 2.0, Methodology, page 2, paragraph 3. This paragraph asserts "The shield plugs will restrict movement of mine ventilation and diffusion of VOCs from the borehole just as the ventilation barriers will restrict the movement of mine ventilation and diffusion from a filled room." However, no information is provided regarding how gas inside the borehole would be released to the room. Information on the expected pathway should be presented.

Comment S-17. Supplement 3, Section 2.2, Number of RH Canisters in a Room, page 3. This paragraph states that a "typical" panel will have 731 RH boreholes. However, in Table IV.A.1- Underground HWDUs, it is stated that the *maximum* capacities of Panels 2 through 5 are 731 canisters of RH TRU waste per panel. This inconsistency should be resolved.

Comment S-18. Supplement 3, Section 2.2, Number of RH Canisters in a Room, page 3, paragraph 1. This paragraph states that the maximum number of RH boreholes per room will be 120. However, earlier in Supplement 3 (Section 1.0, page 1, paragraph 5), the number of RH boreholes is estimated to be "approximately 7,955." Because RH waste will not be placed in Panel 1, only seven panels are available for RH waste placement. Thus, based on the number of RH boreholes cited on page 1, the *average* number would be 162 boreholes/room (7955

boreholes ÷ 7 panels ÷ 7 rooms/panel), and 120 boreholes/room is not a conservative number. This discrepancy should be addressed and if the maximum number of boreholes/room will be greater than 120, the calculations in this Supplement should be revised accordingly.

Comment S-19. Supplement 3, Section 2.3.1, Microbial Gas Generation, page 7, last paragraph. In this section, the assumed microbial gas generation rate is stated to be 0.01 mole/kg cellulosics/year. This value was used for the CH TRU waste in Appendix D of the WIPP RCRA Part B Permit Application (DOE, 1996a); however, because HSG concentrations will not be measured in the RH canisters as they are in CH waste containers, the assumed microbial gas generation rate becomes a much more important parameter under the PMR. The microbial gas generation rate of 0.01 mole/kg cellulosics/year may not be conservative: this value was originally developed by Wang and Brush (1996) who estimated a range of humid cellulosics biodegradation rates of 0.0 to 0.04 moles C/kg/year. This section should more fully explain the uncertainties associated with the microbial degradation rate, the basis for asserting that the selected microbial gas generation rate is conservative, and the possible effects of higher microbial gas generation rates. An additional report on WIPP biodegradation experiments (Francis et al. 1997) has become available since the preparation of the Wang and Brush (1996) memorandum, and these results (and any more recent results) should be considered in this section.

Comment S-20. Supplement 3, Section 2.3.2, Anoxic Corrosion, page 8, paragraph 2. In this paragraph, it is stated that carbon dioxide will be produced by microbial degradation, and that carbon dioxide could passivate the steels in the repository. Carbon dioxide produced by microbial degradation will be consumed by reaction with the magnesium oxide (**MgO**) backfill, which makes it relatively less likely to passivate the repository steel. This section should address the expected reaction of MgO with carbon dioxide.

Comment S-21. Supplement 3, Section 2.3.3, Radiolysis of Waste Materials; page 8, line 10. This section refers to preliminary data on gas generation of RH TRU waste canisters at the Los Alamos National Laboratory (LANL 1999). Information should be provided regarding whether additional data have become available over the last three years.

Comment S-22. Supplement 3, Section 2.3.4, Gas Displacement, page 8. It is stated in this paragraph, "The rate of gas displacement within the RH Canister borehole excavation is based on the data from the WIPP Part B Permit Application, Appendix D9 *Exposure Assessment for Protection of the Atmosphere* (DOE, 1996)." However, the cited reference does not provide information on the derivation of the percentage panel volume reduction rate but only cites another reference (Appendix I1) regarding the panel volume reduction rate. The actual source of the panel volume reduction rate data should be cited.

Comment S-23. Supplement 3, Section 2.3.4, Gas Displacement, page 8. This section states "...the percentage volume reduction rate of the borehole is conservatively assumed to be the same percentage as the reduction in panel volume." The conservatism of this volume reduction rate is unclear and this explanation should be expanded.

Comment S-24. Supplement 3, Section 2.3.4, Gas Displacement, page 8. The only source of gas displacement is assumed to be a constant percentage volume reduction. This analysis does not address the possibility of sudden failure of a borehole (similar to the roof collapse scenario addressed in Attachment 1, Appendix D9 of the original RCRA permit application). The possible effects of such a failure on the gas displacement calculations should be considered.

Comment S-25. Supplement 3, Section 2.4, Maximum RH Canister VOC Emission Rates, page 13. This section calculates the total VOC emission rate into a room based on the maximum number of RH canisters per room. The calculations in this section may need to be revised if the maximum number of RH canisters per room is greater than 120 (see Comment S-18 above).

Comment S-26. Supplement 3, Section 3.0, Results, page 14. The results presented in Table 4 indicate the relative amounts of VOCs from RH waste, expressed as a percentage of the maximum allowable room emission rate. This table will require revision if the maximum number of RH canisters per room is greater than 120 (see Comment S-18 above).

Comment S-27. Supplement 3, Section 4.0, Implementation, page 14. The results presented in Table 5 on page 15 indicate maximum VOC emission rates accounting for potential RH TRU waste emissions. This table may require revision if the maximum number of RH canisters per room is greater than 120 (see Comment S-18 above).

Comment S-28. Supplement 3, Section 5.0, Conclusion, page 14. This paragraph discusses the use of a conservative approach to calculate the potential VOC emissions from RH TRU waste. However, several factors that may not be conservative (i.e., the biodegradation rate, the number of canisters per room, and the volume reduction rate of the boreholes) were identified. The effects of these potentially non-conservative assumptions should be evaluated with respect to whether the calculations presented in this Supplement are truly conservative.

Supplement 4

Comment S-29. Supplement 4, General Comment. While the inclusion of the AK comparison table is useful, commentary on Section 4 information is withheld pending revision of the PMR to address comments pertaining to Section 5.

References

Francis, A.J., J.B. Gillow, and M.R. Giles. 1997. *Microbial Gas Generation Under Expected Waste Isolation Pilot Plant Repository Conditions.* Contractor Report SAND96-2582, Sandia National Laboratories, Albuquerque, New Mexico, March.

Wang, Y., and L. Brush. 1996. *Estimates of Gas-Generation Parameters for the Long-Term WIPP Performance Assessment.* Memorandum to Martin S. Tierney, Sandia National Laboratories, Albuquerque, New Mexico, January 26.

Attachment 2

NMED 1999 Direct Testimony Regarding RH TRU Mixed Waste Prohibition

RH WASTE PROHIBITION

In the revised draft permit, NMED determined to impose a permit condition prohibiting the disposal of remote handled (RH) waste at WIPP (Permit Condition No. II.C.3.h.). The Applicants failed to submit an approvable waste analysis plan describing the procedures for obtaining a detailed chemical and physical analysis of RH waste destined for disposal at WIPP. Moreover, there are substantial questions regarding the applicability of CH waste characterization techniques and the Applicants' capability to characterize RH waste. Even the Applicants acknowledge that they cannot provide technical procedures for RCRA-related RH waste characterization. Finally, although the Applicants have requested construction modifications to the RH waste bay area, such a request raises questions regarding the completeness of the permit application. In any event, NMED declines the request because the Applicants failed to provide the technical information required by RCRA.

I. REGULATORY STANDARD

20 NMAC 4.1.500 (incorporating 40 CFR §264.13) establishes the requirement for an approvable waste analysis plan:

> (a)(1) Before an owner treats, stores, or disposes of any hazardous wastes, or nonhazardous wastes if applicable under §264.113(d), he must obtain a detailed chemical and physical analysis of a representative sample of the wastes. At a minimum, the analysis must contain all the information which must be known to treat, store, or dispose of the waste in accordance with this Part and Part 268 of this chapter . . .
>
> (b) The owner and operator must develop and follow a written waste analysis plan which describes the procedures which he will carry out to comply with paragraph (a) of this section. . . .

II. THE APPLICANTS FAILED TO SUBMIT AN APPROVABLE WASTE ANALYSIS PLAN FOR RH WASTE

A. THE APPLICATION DOES NOT CONTAIN A WASTE ANALYSIS PLAN FOR RH WASTE

The WIPP RCRA Part B Permit Application (Application), Revision 5.0, submitted on May 26, 1995, proposed to store, manage, and dispose RH waste at WIPP. However, the Application failed to include an approvable waste analysis plan for RH waste as required by 20 NMAC 4.1.500 (incorporating 20 NMAC §264.13).

Revision 5.0 of the Application (p. C-4) stated that the proposed WAP applied to CH waste, but acknowledged that it did not contain any characterization procedures for RH waste, and in fact, that none had been developed:

> Waste characterization methods [for RH waste] may differ from those currently implemented by the QAPP [and included in the WAP] for CH TRU waste due to the more radioactive nature of the waste. Specific RH-waste analysis methods will be included in the Methods Manual as they are approved by WIPP facility personnel.

In addition, the Applicants have made conflicting statements regarding the applicability of WAP waste characterization methodology to RH waste. The WAP (Rev. 5.0) was based on Revision 0 of the DOE's Transuranic Waste Characterization Program Plan (QAPP)(DOE 1995a), and the QAPP is DOE's document which implements the WAP. This QAPP explicitly acknowledged that it applied only to CH-TRU waste. The most recent QAPP (1998) repeats this admission (Section 1.0 at 1): "This QAPP discusses the characterization of contact-handled transuranic (CH-TRU) waste streams only. Remote-handled transuranic (RH-TRU) waste streams will be addressed in a later revision". This statement directly conflicts with Revision 6.0 of the Application, which states: "Since the DOE has determined that the waste analysis parameters . . . are the same for CH and RH TRU mixed waste, RH will be characterized using the same techniques as are used for CH TRU waste". See C-4, lines 1-4. For the same reason, the Transuranic Waste Characterization Sampling and Analysis Methods Manual (DOE, 1995b), which was devised to support the QAPP, has no relevance to RH waste.

In this light, NMED concluded that the Applicants must submit additional information regarding the chemical and physical analysis of RH waste. Accordingly, in November 1995, NMED issued a Notice of Deficiency. In December 1995, the Applicants responded to the Notice of Deficiency, stating "[a]t this time, detailed information on RH TRU waste characterization methods is not available."

Subsequently, the Applicants submitted Revision 6.0 to the Application. Revision 6.0 asserted that CH waste methods applied to RH waste. However, the Applicants again failed to include any detailed waste characterization procedures for RH waste.

Finally, in their public comments submitted on December 19, 1998, the Applicants concede that the WAP procedures cannot be applied to RH waste. See Comment 167 (headspace gas sampling procedures designed for CH waste cannot be performed in a glovebox, which is required for handling RH waste); Comment 177 (a permit modification must be obtained to add RH TRU-mixed waste characterization methods).

B. THERE ARE SUBSTANTIAL QUESTIONS WHETHER CH WASTE CHARACTERIZATION TECHNIQUES CAN BE APPLIED TO RH WASTE

There are substantial questions whether CH waste characterization techniques can be applied to RH waste. For instance,

- The Applicants failed to present evidence supporting their assertion that CH waste characterization techniques are applicable to RH waste;
- The Applicants failed to explain the application of radiographic analysis to lead-shielded RH waste containers;
- The Applicants failed to describe the application of core technology to RH waste;
- The Applicants failed to adequately address whether modifications to CH techniques would be required for use in radiological containment areas;
- The Applicants failed to address the need for additional equipment, the likelihood of longer periods of time and increased analytical costs, and radiological safety and secondary waste generation issues associated with RH waste characterization;
- The Applicants failed to address potential problems with RCRA analytical methods for RH waste, such as interference, gas generation, and other method limitations;
- The Applicants failed to describe the procedures for acquiring representative samples of RH waste, given the applicable radiation protection requirements for personnel; and
- The Applicants failed to describe the QA/QC requirements for sampling and analysis of RH waste (e.g., the accuracy and precision associated with samples collected in compliance with ALARA principles; the QC criteria applicable to data collected by methods subject to sampling and analytical limitations);

In sum, the Applicants failed to provide any technical information supporting their assertion that CH waste characterization methodologies apply to RH waste. Nor have the Applicants addressed numerous critical technical questions regarding RH waste characterization.

NMED's conclusion regarding RH waste characterization is supported by several commentors, including the New Mexico Attorney General and the Environmental Evaluation Group (EEG). For instance, EEG concurs that the Application failed to "provide detailed discussion of the RH-TRU waste characterization efforts by the generators and/or storage sites." EEG further notes that DOE contractors (Bild, 1994) have long recognized the need for new facilities for RH waste

characterization, but that the Applicant do not expect to construct such facilities for years in the future.

C. DOE CURRENTLY DOES NOT HAVE THE CAPABILITY TO CHARACTERIZE RH WASTE

The Applicants have failed to provide any information regarding procedures to characterize RH waste. In fact, the DOE's own publicly available documents raise substantial questions regarding DOE's capability to characterize RH waste. For instance, DOE's Remote-Handled Transuranic System Assessment (DOE/CAO-95-1143), Appendix C, acknowledges DOE's lack of capability to characterize RH waste:

- Table 1 questions the applicability of DOE's Waste Acceptance Criteria (e.g., identification of liquids, sampling and analysis of sludges) to RH waste. Notably, the table differentiates between two "levels" of RH waste that were never identified in the Application;

- Page C-11 states that for RH waste with certain surface radiation doses, "the existing CH-TRU [RTR] instrumentation becomes unsuitable for characterization of RH-TRU waste";

- Page C-12 acknowledges that DOE currently does not have technology to radiographically examine RH waste containers: "There exists in the DOE RH-TRU system a need to modify existing technology or to develop new technology to replace the RTR system for examination of waste containers with internal lead shielding and/or the occurrence of "high surface dose rate" radiation";

- Table 3 purports to describe DOE facilities with the technology to characterize RH waste, but a footnote explains that this technology "requires modification for use on RH-TRU waste and containers";

- Table 4 indicates that the DOE facilities slated to ship RH waste to WIPP have no plans to develop the capability to conduct radiographic analyses or visual examinations of RH waste, and that most of the DOE facilities have no intent to conduct gas sampling or chemical analyses;

- Pages C-26 and C-27 question DOE's capability to characterize RH waste, stating "there appears to be limited characterization capabilities specifically designed for 'High Surface Dose Rate' RH-TRU waste at the sites identified. In fact, it is unlikely that the current infrastructure for RH-TRU waste characterization would support certification to the WIPP WAC . . . Current capabilities for RTR of RH-TRU waste are essentially nonexistent . . . Only the ANL-W system [for headspace gas], which is located in the Waste Characterization Area of the HFEF, is . . . capable of accepting RH-TRU waste . . . DOE will need to develop

additional capabilities to support the necessary characterization activities to enable [RH waste] shipment to WIPP."

NMED recognizes that the Applicants may have conducted more research regarding RH waste characterization since the publication of the above-cited document. However, the Applicants failed to provide such information in response to NMED's Notice of Deficiency. Accordingly, NMED must conclude that the Applicants do not have the capability to characterize RH TRU-mixed waste in accordance with the WAP (particularly for waste with high surface dose rates).

III. THE RH WASTE PROHIBITION COMPORTS WITH APPLICABLE LAW

In their public comments, the Applicants contended that the RH waste prohibition was improper and undermined WIPP's mission. Specifically, the Applicants alleged that the prohibition (1) conflicted with the WIPP Land Withdrawal Act (LWA), which authorized the disposal of RH waste; (2) was based on radionuclide content, which NMED cannot regulate under RCRA and HWA; (3) was based on the lack of data in the Methods Manual, which the application no longer incorporated by reference; and (4) created logistical problems, which threatened WIPP's mission. NMED addresses each argument in turn.

A. THE RH WASTE PROHIBITION DOES NOT VIOLATE THE LWA

The RH Waste prohibition does not violate the LWA. While the LWA Section 7(a) may authorize RH waste disposal, Section 9(a)(1) clearly requires the DOE to comply with all federal laws pertaining to public health and safety or the environment. These federal laws include RCRA. The only exemption is from the RCRA treatments standards and land disposal restrictions. Therefore, the Applicants must obtain a RCRA permit that complies with all applicable requirements of 20 NMAC 4.1.500 (incorporating 40 CFR 264.13), including the submittal of an adequate waste analysis plan. In this case, the Applicants have failed to provide any information demonstrating their ability to characterize RH waste. Accordingly, NMED must prohibit RH waste, and this prohibition does not violate the LWA.

B. THE RH WASTE PROHIBITION DOES NOT VIOLATE THE AEA

The RH waste prohibition does not violate the Atomic Energy Act (AEA). The Applicants assert that the RH waste prohibition is based on the radiation surface dose rate of RH waste, thereby regulating radioactive materials in violation of the AEA. However, NMED based the RH waste prohibition on the Applicants' failure to demonstrate their ability to characterize RH waste, not its radionuclide content. CH waste characterization methods may not be applicable to RH waste because of radionuclide content, but NMED would be forced to prohibit any hazardous waste for which the Applicants could not demonstrate the ability to characterize hazardous constituents.

C. THE RH WASTE PROHIBITION DOES NOT RELY ON THE METHODS MANUAL

The RH waste prohibition does not rely on the Methods Manual. While NMED may have considered the Methods Manual when evaluating the Application, it was the Application, not the Methods Manual, which conceded the lack of ability to characterize RH waste. In fact, it was the Revision 5.0 of the Application, not the Methods Manual, which stated: "Waste characterization methods [for RH waste] may differ from those currently implemented by the QAPP [and included in the WAP] for CH TRU waste due to the more radioactive nature of the waste. Specific RH-waste analysis methods will be included in the Methods Manual as they are approved by WIPP facility personnel." The Applicants never included such methods in the Application, the Methods Manual, or any other publicly-available document. Perforce, NMED must conclude that the Applicants had no such methods. This conclusion does not depend specifically on the Methods Manual, but generally on the utter lack of information in the record.

D. THE RH WASTE PROHIBITION DOES NOT UNDERMINE WIPP'S MISSION

The RH waste prohibition does not undermine WIPP's mission. First, the prohibition is not permanent; the Applicants may, at any time, seek to modify the permit to dispose RH waste, provided they submit detailed RH waste characterization methods. Second, a vital part of WIPP's mission is to protect public health and the environment. Prohibiting hazardous waste which the Applicants cannot characterize fulfills this mission. Finally, WIPP's mission includes compliance with applicable law. In this case, the applicable law is RCRA and HWA, and in particular, 20 NMAC 4.1.500 and 900 (incorporating 40 CFR 264 and 270). These regulations require applicants to provide "all information which must be known to treat store and dispose of the waste." See 40 CFR 264.13(a)(1). The Applicants have not provided this information for RH waste. As a result, NMED cannot authorize the disposal of RH waste. The Applicants should not be offended by the correct application of law.

IV. NMED DECLINES TO REVISE THE RH WASTE PROHIBITION AS REQUESTED BY THE APPLICANTS

For the reasons stated above, the revised draft permit contained the RH waste prohibition. In response, the Applicants resubmitted their objections, but suggested that their "concerns ... would be adequately addressed" if NMED took the following steps:

(1) included the RH Bay as an area in the Waste Handling Building Unit;

(2) authorized modification of the RH Bay;

(3) deleted the RH waste prohibition from the Treatment, Storage and Disposal Facility Waste Acceptance Criteria, the WAP, and Permit Attachments B1-B6 and M-M2; and

(4) authorized the Applicants to store, manage, and dispose TRU waste if the Applicants obtained a permit modification for RH waste characterization methods, and the storage and management of RH waste in the RH Bay.

See Comment 177.

NMED believes that the Applicants should have modified their Application to obtain the substantial changes requested in their public comments. Typically, an applicant must amend its permit application to include specific information in support of such substantial changes to the facility and operation. Specifically, 20 NMAC 4.1.900 (incorporating 40 CFR §270.23(a)(2)) requires the permit application to provide "[d]etailed plans . . . describing how the unit will be . . . constructed, operated, maintained, monitored . . . to comply with the requirements of §264.601 and §264.602." For NMED to consider the proposed changes, the Applicants should have modified the Application to submit detailed engineering design drawings, design standards, construction and material specifications, structural calculations, and quality assurance/quality control procedures. Further, the Applicants' late disclosure of the proposed changes precluded NMED from thoroughly reviewing the information, requesting additional information, as necessary, and making a completeness determination. See 20 NMAC 4.1.900 (incorporating 40 CFR §270.10(c)). Even if NMED developed permit conditions authorizing these changes, the public would be precluded from commenting meaningfully on such conditions in violation of RCRA public participation requirements. See 20 NMAC 4.1.900 (incorporating 40 CFR §270); 20 NMAC 4.1.901. Of course, such a process would require additional time, resulting in a delay in the permitting process. Perhaps for this reason, the Applicants declined an invitation to modify the Application in precisely this manner. AR #970425 (April 29, 1997, Letter from Benito Garcia, NMED, to George Dials, DOE, and Joe Epstein, WID). Finally, even if NMED treated the Applicants' public comments as a modification of the Application, the comments do not contain sufficient information, as outlined above, to determine compliance with RCRA.

NMED's determination does not preclude the Applicants from implementing the proposed changes in the future. RCRA establishes a process for modifying a final permit. 20 NMAC 4.1.900 (incorporating 40 CFR §§270.14(a) and 270.42).