



**Department of Energy**  
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NMED  
Hazardous Waste Bureau

September 4, 2014

Ms. Trais Kliphuis  
WIPP Staff Manager  
Hazardous Waste Bureau  
New Mexico Environment Department  
2905 Rodeo Park Drive E, Building 1  
Santa Fe, New Mexico 87505

Subject: CBFO Responses to the Observer Inquiry Regarding Acceptable Knowledge

Dear Ms. Kliphuis:

Enclosed are the Carlsbad Field Office (CBFO) responses to the Observer Inquiry and the follow up email that was submitted to the CBFO from your office August 5, 2014, and August 22, 2014, clarifying several New Mexico Environment Department (NMED) Waste Analysis Plan (WAP) related comments within the Observer Inquiry. Responses to the Observer Inquiry were forwarded to the CBFO TRU Sites and Transportation Division for resolution.

Based on our responses to the Observer Inquiry and the Final Audit Report, A-14-18, the DOE/CBFO has determined that the INL/CCP program meets the requirements of the Hazardous Waste Facility Permit. However, based on the events and NMED concerns we are developing corrective actions that include review of procedures implementing requirements of the Waste Isolation Pilot Plant Hazardous Waste Facility Permit WAP and clarifying and strengthening procedures as required.

The CBFO would appreciate the opportunity to meet with you and discuss the responses to the Observer Inquiry in Carlsbad or at your office in Santa Fe, New Mexico.

If you have any questions, please contact me at (575) 234-7476 or Mr. Dennis Miehl, Senior Quality Assurance Specialist, at (575) 234-7491.

Sincerely,

Michael R. Brown, Director  
CBFO Quality Assurance Division

Enclosure



cc: w/enclosure

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\*ED denotes electronic distribution

## Observer Inquiry Form

Observer: Coleman Smith/TLK

Tracking No. \_\_\_\_\_

Date: August 5, 2014

### Discussion of Request:

During the June 3-5, 2014 Carlsbad Field Office (CBFO) audit of the Idaho National Laboratory/Central Characterization Project (INL/CCP) A-14-18, NMED observed an Acceptable Knowledge (AK) document that describes nitrate salt-bearing waste. The AK Summary CCP-AK-INL-001-Rev12 (AK001) discusses nitrate waste from the Rocky Flats Plant (RFP) that was buried on the current INL site prior to and during closure of the RFP. Nitrate salt-bearing waste appears to be implicated in the heat/deflagration event that caused the radiological release at the WIPP on February 14, 2014. NMED is concerned with this waste type not only at LANL, but also at any other site in the DOE weapons complex that may have used a similar process to produce nitrate salt-bearing waste. The RFP used chemical processes that are very similar or the same as processes used at LANL that generated nitrate-bearing waste. Therefore, the audited AK document AK001 was of particular interest to NMED.

The AK001 document contains the following quote:

*“Based on review of AK documentation, numerous oxidizers (e.g., chromates, nitrates, perchlorates, permanganate, peroxides) have been identified in processes that generated waste buried in the retrieval area (refer to Table 5-5). There is the possibility that bottles of chemicals, including oxidizers, were buried in the SDA. For that reason, bottles of chemicals (solids and liquids) will be removed from the waste during retrieval and packaging operations (References ID-P122, ID-P269, ID-P253, ID-P423, and ID-P427, and ID-P431). Evaporator Salts (745-series sludge) are composed of an approximately 90 wt% mixture of potassium nitrate and sodium nitrate, and in concentrated form this material is an oxidizer. For this reason, 745-series sludge is removed from the waste during retrieval and packaging operations such that the waste does not meet the definition of an oxidizer (References ID-P398 and ID-P400). Cellulosic (e.g., wipes) waste items may be contaminated with oxidizers; however, tests performed in 1984 to determine burning characteristics of wipes and mop heads contaminated with nitric acid and potassium permanganate indicated that these wastes are not considered oxidizers. In addition, studies evaluating the formation of lead nitrate from leaded rubber gloves contaminated with nitric acid concluded that the gloves are not considered oxidizers. Therefore, the wastes will not exhibit the characteristic of ignitability (References ID-C102, ID-P111, ID-P122, ID-P250, ID-P253, ID-P269, ID-P398, ID-P400, ID-P423, ID-P427, ID-P431, RF-C028, RF-C260, and RF-P090).”*

Because the AK document states that the 745-series sludge is removed from the waste (above quote), during the course of the audit, NMED requested to observe CCP or site-specific procedures related to nitrate salt remediation. The only applicable CCP document identified during the audit is CCP-TP-005, Rev. 26, CCP Acceptable Knowledge Documentation. This procedure discusses general AK documentation requirements, but does not include site-specific packaging requirements or procedures. NMED then requested any reference and/or training materials related to the handling and management of repackaged nitrate salt-bearing waste.

## Observer Inquiry Form

CCP manager Trey Greenwood spoke to the INL/contractor personnel at the audit, and three documents were provided:

1. a study by New Mexico Tech commissioned by INL in 2010 to evaluate how much zeolite clay and/or ground concrete must be added to a drum of pure nitrate salts to render it a "non-oxidizer";
2. an Idaho Cleanup Project engineering design file entitled "Impacts of Nitrated Salts in Targeted Waste from the Subsurface Disposal Area (SDA)", document EDF-8723 Rev. 1 dated 7/3/08; and
3. a copy of viewgraphs and attendance sheet for a briefing concerning VE of the nitrate salts. NMED requested the actual site-specific procedures for identification and remediation of nitrate salt-bearing waste.

NMED was told by Lisa Frost of INL that both the excavator operators and the glovebox VE operators are trained to be aware of the engineering design file, and training is recorded as attendance at a briefing. No other procedures were said to exist. Ms. Frost stated that only Oil-Dri® is used as an absorbent. Oil-Dri® is the name of a corporation that manufactures many different products, and does not identify a single absorbent or neutralizing agent. Sodium and potassium nitrate salts are produced by neutralization and evaporation of nitric acid solutions. Although the nitrate salts were likely neutralized at the RFP, some nitrate-bearing waste has been shown to have a pH too low to be considered non-corrosive (pH < 2). It is NMED's understanding that the pH should be rechecked during repackaging for any nitrate-bearing waste containing free liquids. If a low pH is indicated, a neutralizing agent must be added to the waste before addition of the absorbent. Before use, the precise chemical composition of both the neutralizer and the absorbent should be evaluated for chemical compatibility with the waste. Proper characterization should require that the quantities of neutralizer and absorbent added to the waste be documented, and steps involved in the entire repackaging process should appear in a written procedure that operators follow and are trained to.

The following quote is found in AK001:

*"CH2M WG Idaho, LLC (CWI) repackages ARP waste stream ID-SDA-SLUDGE at INTEC building CPP-653 (INTEC PCC [packaging configuration correction]) in support of compliant characterization and packaging of waste for disposal at the WIPP. The WIPP directed CWI to repack the ARP sludge wastes for those previously packaged drums of sludge where the tray liner was used. The tray liner forms a void space that could result in the non-compliant condition of liquid separation and accumulation in the void space. From the current population of waste, it is estimated that more than 1,700 (55-gallon drums and 85-gallon overpack drums) containers of waste will require repackaging. These actions necessitate opening the existing package, waste content removal, and subsequent repackaging for ultimate disposition at WIPP (References ID-C109, ID-P373, ID-P424, INTEC-P098, and ID-P214)."*

## Observer Inquiry Form

NMED requests documentation of how the following training is accomplished or alternately, a thorough explanation supported by data as available and necessary of why the Permittees believe this is not necessary.

### Response:

#### **NOTE 1:**

For the purposes of this inquiry, it is necessary to delineate the difference between the Accelerated Retrieval Project (ARP) and the Sludge Repackaging Project (SRP):

- The ARP exhumes newly-generated CERCLA waste identified as "targeted" from portions of the pits in the Subsurface Disposal Area (SDA) at RWMC. The targeted waste includes 741 sludge, 742 sludge, 743 sludge, graphite, filters, and Roaster Oxides originally generated at the Rocky Flats Plant. The ARP waste is described in CCP-AK-INL-001, *Central Characterization Program Acceptable Knowledge Summary Report For Waste Retrieved from Designated Areas within the Subsurface Disposal Area at the Idaho National Laboratory: ID-SDA-DEBRIS, ID-SDA-SLUDGE, ID-SDA-SOIL.*
- The SRP receives RCRA waste from AMWTP to repackage the waste in ARP-V at RWMC for the purpose of removing prohibited items. The waste approved for repackaging includes inorganic sludges: RF-001/741, RF-002/742, and RF-800 and organic sludge RF-003/743 originally generated at the Rocky Flats Plant. The SRP waste is described in CCP-AK-INL-026, *Central Characterization Program Acceptable Knowledge Summary Report For Idaho National Laboratory Sludge Repackage Project Combined Sludge Waste, Waste Stream: ID-SRP-S3000.*

In the following discussion the AK source documents referenced are for AK Summary CCP-AK-INL-001-Rev12 and CCP-AK-INL-026 Rev. 0. The references used in this response including the AK source documents, technical procedures and faxback documents are included as attachments to this response.

#### **NOTE 2:**

An additional note of clarification. Many of the questions and statements in this observer inquiry appear to be focused on the "nitrate salts" present in the ARP generated waste. Please note that these nitrate salts, referred to as IDC 745 came from very specific operations at the Rocky Flats Environmental Technology Site (RFETS) and are not a part of the waste targeted for removal as a part of the Idaho National Laboratory (INL) CERCLA clean-up. Further, these IDC 745 nitrate salts are a low level waste and those containers that were not disposed of in the ARP retrieval area are being characterized by the Advanced Mixed Waste Treatment Facility (AMWTP) and disposed of as low level waste. These IDC 745 nitrate salts are not shipped to the Waste Isolation Pilot Plant (WIPP) for disposal.

#### **NOTE 3:**

Throughout this document the responses reference the use of absorbents. These references

## Observer Inquiry Form

are sometimes in the form of the trade mark name of Oil-Dri®, granular clay based absorbent, or simply absorbent. In all cases the responses are referring to the only type of absorbent introduced into the ARP retrieval area and that is Oil-Dri® clay based absorbent. This has been verified by ARP management, operators, and a review of procedures and documents. In the responses the description of the absorbent varies as the procedures that call for the use of the absorbent vary in their description.

- 1) CWI excavator operators: how to identify nitrate compounds within a sludge matrix possibly combined with soil;

### **Response:**

The above question implies NMED is asking about the ARP newly-generated CERCLA waste based on “nitrate compounds within a sludge”; therefore, the response is in reference to the ARP, (CCP-AK-INL-001):

- a) CWI excavator operators for the newly-generated CERCLA waste at the Accelerated Retrieval Project (ARP) do not make the target/non-target waste determination. CWI utilizes Retrieval Specialist (RS) who are specifically selected based on their previous experience at Rocky Flats packaging the types of waste being retrieved, and are specifically trained on the methods in which the waste was packaged at the time of disposal and the targeted versus non-targeted waste types in accordance with GDE-318 (Reference ID-P239, Exhibit 1). The RS directs the excavator operator on which wastes to retrieve based on GDE-318, their experience, and training. They are in constant communication with the excavator operator and visually discriminate between targeted and non-targeted wastes.
- b) Based on the physical condition of containers in the excavation area and the nature of the excavation process, small amounts of non-targeted waste may be commingled with the targeted waste. Nitrate compounds are non-targeted and every effort is made by the CWI excavator operator (as directed by the RS) to remove chunks from the targeted waste and return them to the pit. The response to question 3 provides more detail on how this process is conducted

- 2) CWI excavator operators: (2a) how to identify free liquids when material is dumped onto “outside” tray; (2b) judgment or measurement of the absorbent added and how it was mixed with the waste prior to transfer to smaller “inside” tray and introduction into the glovebox line; (2c) how to identify and remove clumps of nitrate salts before introduction into the glovebox line; (2d) how does the operator know that the absorbent is Oil-Dri® and not some other un-reviewed absorbent;

## Observer Inquiry Form

### **Response:**

The above question implies NMED is asking about the SRP based on “outside” and “inside” trays; therefore, the response is in reference to AMWTP’s RCRA waste that was repacked at RWMC ARP-V for the SRP, (CCP-AK-INL-026):

- a) SRP Drum contents are emptied onto the sorting table (“outside” tray):
  - i. TPR-7867 (step 4.5.4): “RAKE through waste and visually examine for the following items:
    - A. Sealed Containers,
    - B. Containers of liquids,
    - C. WIPP prohibited items (see Appendix B),
    - D. Free liquids.” (AK # P543)
  - ii. TPR-7867 (step 4.5.9.1): “Place Oil-Dri® on the sorting table as needed to absorb the liquid.” (AK # P543)
- b) It is not necessary to measure the free liquid or the clay-based granular absorbent supplied by Oil-Dri® at the sorting table since it is mixed until no free liquid is observed. Once waste is moved to the DPS (“inside” tray), then free liquids are checked again per TPR-7866 (step 4.5.4). (AK # P542)
- c) Nitrate salts (745 sludge) are NOT an approved input in the SRP repackaging process (CCP-AK-INL-026).
- d) TPR-7867 specifies Oil-Dri® only as this is the treatment method spelled out and authorized in the INL RCRA permit. (AK # P543)

- 3) Glovebox VE operators (CWI?): dry or aqueous-based waste: (3a) how to identify prohibited items; (3b) how to identify and remove large pieces of nitrate salts; (3c) how to determine if additional absorbent is required; (3d) how to determine if the absorbent is Oil-Dri® specifically; (3e) how to determine if the waste is acidic (characteristic of corrosivity) and in need of neutralization; method and type of neutralization agent added to the waste; either in the drum or at the “indoor” tray area, (3f) how to determine if the waste has greater or less than 8% nitrate salts per engineering design file;

### **Response:**

The above question implies NMED is asking about the ARP newly-generated CERCLA waste based on “nitrate salts”; therefore, the response is in reference to newly-generated CERCLA waste at the ARP (CCP-AK-INL-001):

- a) CWI DPS operators are trained to their TPR-7415 and WIPP prohibited items are listed in Appendix A. (AK# ID-P122)
- b) CCP certified VE personnel are trained to their WIPP certified program and provide oversight to the CWI DPS operators to ensure waste is packaged compliantly. GDE-318 includes pictures of the targeted waste as well as many of the non-targeted wastes, such as 745-sludge. CWI DPS operators remove large pieces of nitrate salt and place in an empty tray to be sent back to the pit. (AK# ID-P239)
- c) Absorbent is required when free liquid is identified.

## Observer Inquiry Form

- d) CCP certified VE personnel are trained to their WIPP certified program and provide oversight to the CWI DPS operators to ensure waste is packaged compliantly. CCP certified VE personnel are trained to CCP-AK-INL-001 which includes GDE-318. GDE-318 provides visual discriminators to identify the waste including the clay-based granular absorbent supplied by Oil-Dri®.
- e) CWI DPS operators are not required to characterize the corrosivity (acidity) of the waste. Based on process knowledge the targeted wastes (741, 742, 743 sludges, filters, and graphite) are not corrosive. Liquids included with ARP targeted waste are generally associated with dewatering of targeted sludges and are not corrosive. The liquids from aqueous sludges were treated to be greater than 2 and less than 12.5 during the original waste generation process at Rocky Flats (RF-P090). Neutralization agents are therefore not used in conjunction with absorbent. In addition, the non-targeted nitrate salts from Building 774 waste evaporator were not acidic. Liquids have not been observed in the 745-series nitrate salts, and there is documentation indicating the process that generated these salts resulted in them containing less than 10% water by weight (Reference RF-C149). Liquids were previously observed in the targeted inorganic sludges which is why clay-based granular absorbent supplied by Oil-Dri® is added to the sludge. Historical characterization of the targeted inorganic sludges included measuring the pH of liquids from dewatering. The pH of the liquids was between 8 and 12 and therefore not RCRA corrosive (Reference RF-P090 and RF-P288).

There was a plutonium recovery evaporator used in Building 771 which processed acidic plutonium nitrate solutions for inclusion in the peroxide precipitation process. This process did not produce nitrate salts for disposal. This waste was not shipped to the Idaho National Laboratory (Reference RF-P264).

- f) CWI DPS operators are not required to determine if the waste has greater or less than 8% nitrate salts per engineering design file; however, CCP certified VE personnel are trained to CCP-TP-006 and as part of the CCP VE process, the weight of the waste is estimated (including salt) in the tray and recorded on the VE data sheets (CCP-TP-006 Attachment 1). After the ARP container is closed the container is weighed and the final weights are documented on the CCP VE data sheet and uploaded to IWTS. CWI Waste Generator Services (WGS) personnel are trained to MCP-1390, *Waste Generator Services Waste Management* and MCP-3938, *Accelerated Retrieval Project Waste Transfers between ITG and CWI..* WGS prepared the material profile documentation which includes the Waste Determination & Disposition Forms (WDDFs) which state: "Per EDF-8723 Nitrate salt limits can be a total of 30%; that means no more than 8% visible salt would be allowed in ARP waste intended for shipment to WIPP." The 8% limit in addition to the 22% assumed to be present in the matrix and not visible to the operator ensures that no container with greater than 30% nitrate salts distributed in the waste matrix will be shipped to WIPP (Reference ID-P400). WGS reviews the waste material parameters to ensure containers are placed in the appropriate material profiles. When containers are identified by WGS as having > 8% salt, then the container is removed from the ARP material profile and is not sent to AMWTP for further characterization. The containers that do not meet the ARP material profiles are placed in different material profiles for future disposition.

## Observer Inquiry Form

- 4) Glovebox VE operators (CWI?): how is the pH checked or the characteristic of corrosivity eliminated. NMED regards nitrate salts from the RFP to be acidic and to exhibit the characteristic of corrosivity. It is also NMED's understanding that this characteristic for wet or damp waste from aqueous processes cannot be ruled out without a pH check with the pH between 2 and 12.5 to delete this code.

### **Response:**

The above question implies NMED is asking about the ARP CERCLA waste based on "nitrate salt" comments; therefore, the response is in reference to newly-generated CERCLA waste at the Accelerated Retrieval Project (ARP) (CCP-AK-INL-001):

- a) CWI DPS operators are not required to check the pH for corrosivity on the ARP CERCLA waste. Based on process knowledge the targeted wastes (741, 742, 743 sludges, filters, and graphite) are not corrosive. Liquids included with targeted waste are associated with dewatering of targeted sludges and are not corrosive. The liquids from aqueous sludges were treated to be greater than 2 and less than 12.5 during the original waste generation process (RF-P090). Historical characterization of the targeted inorganic sludges included measuring the pH of liquids from dewatering. The pH of the liquids was between 8 and 12 (References RF-P090 and RF-P288).

In addition, the non-targeted evaporator salts are not corrosive. Installed in 1966 and in service beginning in 1967, the Building 774 evaporator and double-drum dryer began to treat the chemically-contaminated liquids that had accumulated in the solar evaporation ponds. The pond water was pumped by pipeline from the ponds to the evaporator feed tanks. From the feed tanks, the waste was pumped on a liquid-level-control demand into the evaporator where it was brought to a boil by a steam-heated exchanger. The distillate and other materials that evolved from the evaporator were untreated and discharged to the atmosphere. The concentrated salt solution remaining in the evaporator was continuously circulated through the heat exchanger, along with the waste feed stream. A portion of the concentrate was continuously removed from the evaporator and gravity fed through a pipeline to the steam-heated double-drum dryer where the remaining water was evaporated, leaving a film of dry salts baked on the rotating drum surfaces. The dust scrubber system pulled any fumes off the dryer and the scrubbing solution was also processed through the evaporator. The salt on the drums was scraped off using a knife-blade arrangement. The dried salts, containing less than 10 wt% water, were collected for shipment off-site and identified as 745-sludge (References RF-C149, RF-P260, RF-P262, RF-U172).

As described previously, liquids are prohibited and absorbed in the DPS when observed. In accordance with the WAP Section C-1c, prohibited liquids include observable liquid no more than 1 percent by volume of the outermost container at the time of radiography or visual examination. Clay-based granular absorbent supplied by Oil-Dri® may be added to the waste during certified VE to prevent dewatering of sludges. Therefore, if the waste does not contain prohibited quantities of liquid, it is not a corrosive waste and is not assigned D002. Pursuant to

## Observer Inquiry Form

40 CFR 261.22 a waste exhibiting a characteristic of corrosivity must either be aqueous or a liquid. A 1993 memo from EPA (see Faxback 11738) indicates waste being tested for pH must contain at least 20% free liquid by volume. Liquids have not been observed in the 745-series nitrate salts, and as described previously the generation process ensured salts contained less than 10% water by weight (Reference RF-C149). Because the waste is not aqueous; nor is it a liquid; nor does it contain at least 20% free liquid by volume the waste is not corrosive.

- 5) Glovebox VE operators (CWI?): organic-based waste: (5a) how to determine if the waste requires absorbent; (5b) how to determine if the absorbent is the correct Oil-Dri® product; (5c) how to determine if the waste contains any of the compounds listed as incompatible with the specific Oil-Dri® product or with a neutralizing agent per the manufacturer's MSDS documentation. Incompatible materials for Oil-Dri® granular clay absorbents include turpentine, vegetable oil, and other similar unsaturated hydrocarbons.

### Response:

- a) CWI DPS operators are trained to their TPR-7415 and WIPP prohibited items are listed in Appendix A. CCP certified VE personnel are trained to their WIPP certified program and provide oversight to the CWI DPS operators to ensure waste is packaged compliantly. (AK# ID-P122)
- b) Same as 3d: CCP certified VE personnel are trained to their WIPP certified program and provide oversight to the CWI DPS operators to ensure waste is packaged compliantly. CCP certified VE personnel are trained to CCP-AK-INL-001 which includes GDE-318. GDE-318 provides visual discriminators to identify the waste including the clay-based granular absorbent supplied by Oil-Dri®. (AK# ID-P239)
- c) CWI DPS operators are not required to determine incompatibles; however, the CCP certified program has addressed the compatibility of chemical constituents in the waste in CCP-AK-INL-001. According to RPT-228 (AK# ID-U330), "the Material Safety Data Sheet for clay based granular absorbent supplied by Oil-Dri® indicates that heat can be generated if Oil-Dri® is used to absorb unsaturated hydrocarbon liquids. Both tetrachloroethylene and trichloroethylene contain double bonds as do other unsaturated hydrocarbons. Other possible organics in the Subsurface Disposal Area (SDA) are saturated and do not have the potential for heating. Testing of Aquaset and Petroset at MSE Technology Applications in Butte, MT during 2006 showed that these materials did not react at all with these chlorinated solvents. Since Oil-Dri® is composed of the same or a similar type of clay as the Aquaset and Petroset materials tested at MSE, it is highly unlikely that Oil-Dri® will react with the saturated organics." However, in the unlikely event that a reaction should occur, calculations assuming a conservative amount of unsaturated hydrocarbon (TCE) reacts with the absorbent result in a waste temperature increase of less than 25°F, which poses no concerns for propagating undesirable reactions (EDF-5307, *Chemical Compatibility and Inventory Evaluation for the Accelerated Retrieval Project*, Revision 2 draft).

NMED believes there should be a formality of operations at any certified generator site to drive the initiation and subsequent revisions of site-specific procedures in order to ensure the

## Observer Inquiry Form

absence of RCRA codes D001 (ignitability), D002 (corrosivity), and D003 (reactivity). Without procedures associated with remediation of waste and modification or elimination of RCRA codes, WIPP and NMED cannot be sure if the WIPP WAP was complied with at the time the waste was repackaged.

During the audit, NMED raised these concerns with the CTAC AK auditor, Dick Blauvelt, the Lead Auditor, Tammy Achman and the CBFO QA team, Martin Navarette and Dennis Miels. Mr. Blauvelt did not agree that the remediation of nitrate salt-bearing waste needed procedures to formalize the process. He also did not agree that the quantities and types of materials added to any waste drum during repackaging must be explicitly included in container-specific records. Much discussion took place regarding NMED's concerns during the audit and the Audit Team caucuses. By the close of the audit, NMED's concerns did not rise to the CBFO/CTAC audit concerns list and NMED and CBFO agreed that submitting an Observer Inquiry was the best path forward for NMED concerns to be formally addressed.

NMED is also inquiring about compliance with procedure CCP-TP-005, Rev. 26 (TP005) at the following citations (the words "packaging" and "repackaging" are underlined for reference):

- 1) TP005, Section 4.4.27 [A] (pp. 25 of 81): *"See Attachment 6, Waste Form, Waste Material Parameters, Prohibited Items, and Packaging - Example Form for an example. Include the Waste Material Parameter Evaluation Memorandum described in step 4.4.26 as an addendum to Waste Form, Waste Material Parameters, Prohibited Items, and Packaging."*

**NMED comment TP1:** NMED believes that this addendum should include detailed packaging information, including any materials added to the waste during repackaging.

### **Response:**

The remediation of nitrate salts is not the purpose of the ARP process as they are not a targeted waste. Nitrate salts are removed to the extent possible and this is proceduralized and covered in the AK documentation.

The addition of absorbents or other materials added to the waste during packaging/repackaging are identified in the AK Summary Report, CCP-AK-INL-001 (see Sections 4.4.2.6, 5.6, and 5.7). Attachment 6 is a checklist used to delineate and categorize the waste stream by estimating the physical composition (summary category group, waste matrix code group, waste matrix code, and waste material parameter weights), identify potential prohibited items, and describe the payload packaging configuration and liners used for subsequent characterization (VE or RTR). The addition of absorbents or other materials added during packaging/repackaging are included in the estimation of the waste material parameters. The addendum is prepared specifically to meet the WAP requirement to estimate waste material parameter weights.

- 2) TP005, Section 4.4.30 (pp. 26 of 81): *"**IF** prohibited items or incompatible materials are listed on the Waste Form, Waste Material Parameters, Prohibited Items, and Packaging, **THEN** perform the following:"*

## Observer Inquiry Form

**NMED comment TP2:** NMED believes that this list should include chemicals and/or absorbent materials added during repackaging.

**Response:**

The purpose of CCP-TP-005, Section 4.4.30 is to notify the SPM of problems with the waste stream that need to be addressed by the host site, not to restate the content of the AK Summary Report. Chemicals added during the waste generating processes are identified during the compilation of the AK and listed in the AK Summary Report (Table 5-5). The addition of absorbents or other materials added during packaging/repackaging are included in the AK Summary Report (Sections 4.4.2.6, 5.6, and 5.7 of CCP-AK-INL-001). This information is used to complete Attachment 6. In addition, the prohibited items are listed on the Attachment 6 to aid RTR and VE operators during characterization. This section does not direct the identification of materials added during repackaging.

- 3) TP005, Attachment 1 – Acceptable Knowledge Documentation Checklist– Example Form (pp.46-49 of 81): *“Waste identifiers assigned by the generator site (e.g., item description code, packaging identification numbers. AK# WS10)”*; *“Waste Packaging records, AK # S4”* and *“Packaging, AK #S16”*, and footnote 1: *“(1) AK#s are used as identifiers for program, waste stream-specific and supporting elements. The identifiers are to be used in the Acceptable Knowledge Source Document Summary and Acceptable Knowledge Information List to aid in the page location of program and waste stream-specific elements within a given document. N/A means that item is not applicable.”*

**NMED comment TP5:** NMED believes that packaging records should include a detailed description of all materials added during repackaging and requests explanation as to why this is not addressed.

**Response:**

The Acceptable Knowledge (AK) Expert is responsible for, with assistance from the generator site, collecting AK documentation. The AK documentation includes mandatory generator site TRU waste program information, mandatory generator site TRU waste stream specific information, and additional AK documentation. The documentation that is collected and referenced in the AK Summary Report is listed on the CCP-TP-005, Attachment 1 with a unique identifier (tracking number). Attachment 1 is a checklist used to document that the mandatory information has been obtained for a waste stream. Waste packaging/repackaging information is considered additional AK and is collected and included in the AK record in compliance with the WIPP HWFP Section C4-2c. Regardless, a description of materials added to the waste stream during waste repackaging can be found in Sections 4.4.2.6, 5.6, and 5.7 of CCP-AK-INL-001.

- 4) TP005, Attachment 6 – Waste Form, Waste Material Parameters, Prohibited Items, and Packaging – Example Form (pp.58, 59 of 81): checklist *“Packaging Materials: Present (Y/N)?”* and *“Waste incompatible with backfill, seal and panel closure materials, container and packaging materials, shipping container materials, or other wastes”* with footnote h: *“This waste has been approved for disposal at the WIPP by the Permittee as documented by Appendix C1 of the WIPP RCRA Part B Application and the Permittee’s*

## Observer Inquiry Form

*approval and assignment of the applicable TRUCON Codes for this waste stream.” and signature/date on form by the Acceptable Knowledge Expert.*

**NMED comment TP6:** NMED believes that this checklist should include a compatibility analysis between the drum contents and any chemicals/absorbents added during repackaging or an explanation as to why it is not necessary.

### **Response:**

See response to comments TP1 and TP2. Materials added during the process of placing the waste material in the packaging at ARP are described in numerous locations in CCP-AK-INL-001. These include:

Pg. 72, Section 4.4.2.6 – “INTEC CPP-653, ARP Sludge Repackaging - Waste repackaging is performed in the repack tent of CPP-653, which provides containment of contamination during repackaging. Drums from waste stream ID-SDA-SLUDGE to be repackaged include a tray liner and/or without absorbent and will be repackaged to meet the new packaging configuration. Repackaging will involve removal of the waste and tray liner, replacement of the sludge directly into the rigid liner, and the addition of granular absorbent, such as the clay based absorbent Oil-Dri®. By repackaging the waste in this manner all of the ID-SDA-SLUDGE drums will have the same packaging configuration, with the only difference being that the repackaged drums will have the tray liner rolled up and placed on the top of the waste, when possible. Repackaged ID-SDA-SLUDGE is characterized by radiography. The original VE data will then be used in conjunction with radiography to estimate the organic and inorganic sludge composition of the repackaged waste. In addition, secondary waste consisting of small quantities of sludge contaminated debris such as tray liners, plastic sheeting, rubber bands, glovebox gloves, HEPA filters, duct work, and metal tools are generated from this operation. This debris waste is packaged and the waste containers are added to the debris waste stream, ID-SDA-DEBRIS. They are then characterized by radiography (References ID-C109, ID-D003, ID-P122, ID-P269, ID-P373, ID-P424, ID-U356, and INTEC-P214).”

Pg. 92, Section 5.4 – “The waste also contains interstitial soils placed among and atop the waste during burial and granular absorbent, such as Oil-Dri®, that is added to prepared containers in the drum packaging station (References ID-P109, ID-P122, ID-P269, ID-P276, ID-P423, ID-P427, and ID-P431). Table 5-1B, Specific Waste Items Buried in the Retrieval Area, lists specific items that may be buried in the retrieval area, many of which will potentially be included in the waste streams.”

Pg. 104, Section 5.4.3 – “Waste stream ID-SDA-SLUDGE is predominantly wastewater treatment sludge, absorbed organic liquids (organic setups), and RO by volume. The waste water treatment sludge targeted for retrieval is first-stage and second-stage sludge. The balance of this waste is absorbent added during VE, soil and debris (see Table 5-1B). Therefore, Waste Matrix Code S3900, Unknown/Other Homogeneous Solids, is applied to this waste stream. This category includes waste that is predominantly homogeneous solids as described in the DOE Waste Treatability Group Guidance (Reference 4).”

Pg. 105, Section 5.4.3 – “Waste stream ID-SDA-SOIL is predominantly soil by volume with the

## Observer Inquiry Form

balance being absorbent added during VE, homogenous solids (i.e., RO, sludges and absorbed liquids) and debris (see Table 5-1B). Soil is not a targeted waste form but the possibility exists for the retrieved waste to contain targeted waste but the predominant component is soil.”

Pg. 105, Section 5.4.3 – “Waste stream ID-SDA-DEBRIS is predominantly debris waste by volume. The waste forms targeted for retrieval are filters and graphite. Numerous other organic and inorganic debris waste items (see Table 5-1B) will also be retrieved in the process. The balance of this waste is absorbent added during VE, homogenous solids (i.e., RO, sludges and absorbed liquids) and soil.”

Pg. 167, Table 5-5 – Oil-Dri® “Used to absorb liquids at RFP. Added to waste during VE in the drum packaging station.”

Pg. 205, Section 5.6.5 – “Any un-containerized liquids discovered during retrieval or packaging are absorbed into the soil or other suitable absorbents. Absorbent may be added to the waste during VE in the drum packaging station (References ID-C223, ID-P109, ID-P122, ID-P253, ID-P269, ID-P271, ID-P276, ID-P423, ID-P427, and ID-P431).” (As stated in Note 3 clay based Oil-Dri® is the only absorbent introduced into the ARP area.)

Pg. 207-208, Section 5.6.5 – “Any un-containerized liquids discovered during retrieval or packaging are absorbed into the soil or other suitable absorbents. Absorbent may be added to the waste during VE in the drum packaging station (References ID-C223, ID-P109, RF-P084, ID-P122, ID-P269, ID-P271, ID-P276, ID-P423, ID-P427, and ID-P431).”

Pg. 211, Section 5.7 – “Un-containerized liquids are absorbed using soil and other suitable absorbents, and any other prohibited items are removed. Bottles of chemicals are removed from the waste during retrieval and packaging operations...A VE record is generated to document the absence of prohibited items (References ID-P109, ID-P122, ID-P250, ID-P253, ID-P269, ID-P423, ID-P427, ID-P431, and ID-U305).”

Pg. 212, Section 5.7 – “In addition, a granular absorbent is added to the top of the waste during VE in the drum packaging station (Reference ID-D003, ID-P122, ID-P269, ID-P273, ID-P276, ID-P423, ID-P427, ID-P431, and ID-U330)... The repackaging will involve removal of the waste and tray liner, replacement of the sludge directly into the rigid liner, and the addition of granular absorbent, such as the clay based absorbent Oil-Dri®... In addition, secondary waste consisting of small quantities of sludge contaminated debris such as tray liners, plastic sheeting, rubber bands, glovebox gloves, and metal tools are generated from this operation. These waste containers are added to the debris waste stream, ID-SDA-DEBRIS, and are characterized by radiography (References ID-D003, ID-P122, ID-P269, ID-P373, and ID-U356).”

Pg. 213, Section 5.8 – “For repackaged sludge drums, the tray liners are removed and either rolled and placed on top of the repackaged waste or packaged separately with secondary waste. Granular absorbent, such as Oil-Dri®, is added to the waste during packaging...Secondary waste generated during this process, consisting of small quantities of sludge-contaminated debris such as tray liners, plastic sheeting, rubber bands, glovebox gloves, HEPA filters, duct work, and metal tools, are packaged in 55-gallon drums and SWBs as part of debris waste stream ID-SDA-DEBRIS.”

## Observer Inquiry Form

Waste compatibility is evaluated as part of the CH-TRUCON code development for the waste stream. The required elements of a CH-TRUCON code are described by CH-TRAMPAC Section 1.5.1. Each CH-TRUCON code is required to have an associated chemical list. The generator site uses the AK information (e.g., CCP-AK-INL-001) as the data source for the chemicals/materials to be listed in the CH-TRUCON code chemical list.

All chemicals/materials in the waste described by a given CH-TRUCON code, including any chemicals/absorbents added during repackaging, are restricted to the allowable chemical lists (CH-TRAMPAC Tables 4.3-1 through 4.3-8). Chemicals/materials listed in CH-TRAMPAC Tables 4.3-1 through 4.3-8 are allowed by waste material type in quantities >1% (weight) and must be inert (nonreactive), be in a nonreactive form, or have been rendered nonreactive. As required by CH-TRAMPAC Section 1.5.2, the chemicals/materials present in quantities >1% (weight) in the chemical list associated with a given CH-TRUCON code are evaluated by the WIPP CH-TRU Payload Engineer during CH-TRUCON code development for compliance with the list of allowable materials for the appropriate waste material type.

The chemicals/materials are restricted to define the scope of the chemical compatibility analysis, which is described in CH-TRU Payload Appendix 6.1. The analysis uses the lists of allowable materials for each waste material type in CH-TRAMPAC Section 4.3 and a EPA method, EPA-600/2-80-076, *A Method for Determining the Compatibility of Hazardous Wastes*.

- 5) TP005, Attachment 12 – Example Form and Content Guide for AK Summary Reports, Section 2.2: Waste Stream Description (p.69 of 81): “(Describe any other specific waste items in the waste stream, equipment, items not included above, secondary waste/chemicals introduced during packaging/repackaging.); “(Describe waste packaging/repackaging and final waste container configuration) (Refer to Section 5.5)”.

**NMED comment TP7:** NMED observed that the Waste Stream Description in AK001 did not address secondary waste/chemicals introduced during packaging/repackaging. NMED believes the AK should include this information. Please provide a specific citation to the document (name of document and location within the document) that addresses this or an explanation as to why the Permittees believe this is not necessary.

### **Response:**

As described in response to TP6, materials added to the waste during packaging and repackaging are described in Sections 4.4.2.6, 5.4, 5.6.5, 5.7, and 5.8 of CCP-AK-INL-001.

- 6) TP005, Attachment 12 – Example Form and Content Guide for AK Summary Reports, Section 4.0: Required Program Information(p.72 of 81): “*Included is a description of the (facility/building/operation), summary of the mission, defense determination, and descriptions of (other operations including D&D, maintenance, repackaging, etc.) operations associated with the generation of waste stream (number) are provided.*”

**NMED comment TP8:** NMED was not able to find or observe a detailed description of repackaging operations. Please provide a specific citation to the document (name of

## Observer Inquiry Form

document and location within the document) that addresses this.

### **Response:**

See response to comment TP6.

- 7) TP005, Attachment 12 – Example Form and Content Guide for AK Summary Reports, Section 5.0: Required Waste Stream Information (p.72 of 81): *“This section presents the mandatory TRU waste stream specific information required by the WIPP-WAP (RH only - and the WCPIP) for waste stream (number) (References \_\_ and \_\_). The area of generation, waste stream volume, period of generation, prohibited items, waste packaging, and the physical, chemical, and radiological composition of the waste stream are described.”*

**NMED comment TP9:** NMED was not able to find or observe detailed waste packaging information in the above cited Section 5.0 of AK001. Please provide a specific citation to the document (name of document and location within the document) that addresses this.

### **Response:**

CCP-TP-005, Attachment 12 is a guide for new AK Summary Reports and is an example form as indicated in the procedure. The intent of the guide is to help ensure all required information is included and to improve consistency. The initial issue of CCP-AK-INL-001 was 11/18/2004, well before the current guide included in Attachment 12. However, the relevant information listed in Attachment 12 is present in Section 5.8 of CCP-AK-INL-001.

- 8) TP005, Attachment 12, Section 5.5 (p.73 of 81): *“Required Waste Stream Information: 5.5: Waste Packaging”.*

**NMED comment TP10:** NMED believes that this section of the AK Summary should describe all waste packaging activities, including the addition of neutralizing agents and/or absorbents.

### **Response:**

The addition of absorbents or other materials added to the waste during packaging/repackaging are identified in the AK Summary Report, CCP-AK-INL-001 (see Sections 4.4.2.6, 5.6, and 5.7). CCP-TP-005, Attachment 12 is a guide for new AK Summary Reports and is an example form as indicated in the procedure. The intent of the guide is to help ensure all required information is included and to improve consistency. The initial issue of CCP-AK-INL-001 was 11/18/2004, well before the current guide included in Attachment 12. The description of the waste packaging information listed in Attachment 12 is present in Section 5.8 of CCP-AK-INL-001. As discussed in response to comment 3c, neutralizing agents were not used during the generation of the waste described in CCP-AK-INL-001.

All of the above references require the AK Summary Report to include packaging information and specifically, to include any secondary waste and/or chemicals introduced during packaging and repackaging (see Item 7 above). NMED is concerned that the AK001 is deficient concerning information related to repackaging, and does not fully comply with TP005. NMED is requesting

## Observer Inquiry Form

a detailed response regarding repackaging information and TP005 compliance for each of the items listed above.

The WIPP RCRA TSDF Permit contains the following pertinent citations:

- 1) Attachment C, Waste Analysis Plan (WAP), Section 1b: *"The Permittees will only allow generators to ship those TRU mixed waste streams with EPA hazardous waste numbers listed in Table C-5."*

**NMED comment WAP1:** Table C-5 in AK001 does not include RCRA codes D001, D002, or D003. NMED believes that if INL/CWI does not test the waste for pH, the characteristic of corrosivity (D002) cannot be ruled out. The federal regulation at 40 CFR 261.22 (incorporated by 20.4.1.200 NMAC) uses the terminology "aqueous" and "liquid" in subsections (a)(1) and (a)(2) when referring to corrosive solid waste. For the purposes of this Observer Inquiry, all waste drums/excavated material requiring absorbent to be added will be considered by NMED to be "liquid", and all wet or damp nitrate salt-bearing waste will in addition be considered "aqueous". NMED believes that the pH can be tested using EPA approved methods even if there is only a small amount of free liquid present. NMED believes that the pH of any aqueous sludge, whether it be newly generated or retrievably stored, should be measured before the D002 code can be eliminated. 40 CFR 261.22 Subsection (a)(1) also defines lack of corrosivity to be material that exhibits a pH that is greater than 2 and less than 12.5. NMED believes that the pH should be verified to be within this range before the D002 code can be eliminated. Please provide an explanation supported by data as available and necessary of why the Permittees believe this is not necessary.

### **Response:**

To consider waste where absorbent is added to be liquid is inconsistent with the WAP. In accordance with the WAP Section C-1c, prohibited liquids include observable liquid no more than 1 percent by volume of the outermost container at the time of radiography or visual examination. As described in Section 5.6.5 of CCP-AK-INL-001 and in Reference ID-U330, clay-based granular absorbent supplied by Oil-Dri® may be added to the waste during certified VE by CCP in the DPS to prevent dewatering of sludges. Therefore, if the waste does not contain prohibited quantities of liquid, it is not a corrosive waste and is not assigned D002. Prohibited liquids defined in WAP Section C-1c also include internal containers with more than 60 milliliters or 3 percent by volume observable liquid, whichever is greater. As required by procedure TPR-7415 (Reference ID P122) and described in Section 5.6.5 of CCP-AK-INL-001, bottles of chemicals will be removed from the waste during retrieval and packaging operations and will not be shipped to WIPP. Pursuant to 40 CFR 261.22 a waste exhibiting a characteristic of corrosivity must either be aqueous or a liquid. A 1993 memo from EPA (see Faxback 11738) indicates waste being tested for pH must contain at least 20% free liquid by volume. Liquids have not been observed in the 745-series nitrate salts, and there is documentation indicating the process that generated these salts resulted in them containing less than 10% water by weight (Reference RF-C149). Liquids were previously observed in the targeted inorganic sludges which is why clay-based granular absorbent supplied by Oil-Dri is added to the sludge. Historical characterization of the targeted inorganic sludges included measuring the pH of liquids from dewatering. The pH of the liquids was between 8 and 12 and therefore not RCRA corrosive (References RF-P090, and

## Observer Inquiry Form

RF-P288).

- 2) WAP Section C-1c: Waste Prohibited at the WIPP Facility: *“The following TRU mixed waste are prohibited at the WIPP facility: (4<sup>th</sup> bullet): wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes.”*

**NMED comment WAP2:** NMED questions the addition of absorbent and/or neutralizing agents if the Material Safety Data Sheet (MSDS) for the added material states any incompatibility with the waste. For example, the absorbent Oil-Dri® is stated to be incompatible with turpentine, vegetable oils, and other unsaturated hydrocarbons. If the organic sludge contains unsaturated hydrocarbons, the AK summary report should address this possible incompatibility or provide an explanation as to why it does not address this.

**Response:**

See response provided for Question 5c above, regarding the compatibility of clay-based granular absorbent supplied by Oil-Dri® with organic sludges.

- 3) WAP Section C4-2: Acceptable Knowledge Documentation: *“The New Mexico Environment Department (NMED) may independently validate the implementation of and compliance with applicable provisions of the WAP at each generator/storage site by participation in the Audit and Surveillance Program (Permit Attachment C6).”*

**NMED comment WAP3:** This Observer Inquiry is part of NMED’s independent validation of the AK Summary Report AK001.

**Response:**

This is understood and responses are included as noted.

- 4) WAP Section C4-2a: Required TRU Mixed Waste Management Program Information (7<sup>th</sup> bullet): *“The following information shall be included as part of the acceptable knowledge written record: Waste certification procedures for retrievably stored and newly generated wastes to be sent to the WIPP facility.”*

**NMED comment WAP4:** NMED believes that the waste certification procedures should require a check of the AK for completeness. NMED does not consider the AK Summary complete if it does not include all processes, including the process of repackaging.

**Response:**

The AK Summary Report, CCP-AK-INL-001 is complete as it includes a description of all processes including repackaging. The documentation that is collected and referenced in the AK Summary

## Observer Inquiry Form

Report is listed on the CCP-TP-005, Attachment 1 with a unique identifier (tracking number). Attachment 1 is a checklist used to document that the mandatory information has been obtained for a waste stream. Certification procedures for waste to be sent to the WIPP facility (i.e., procedures to ensure that prohibited items are documented and managed in accordance with site-specific certification plans) are collected and included in the AK record as noted for AK element number PR8 on Attachment 1 for each waste stream. The waste certification procedures used to certify ARP waste are described in Section 4.8 of CCP-AK-INL-001.

The process of repackaging is described on Pg. 72, Section 4.4.2.6 – “INTEC CPP-653, ARP Sludge Repackaging - Waste repackaging is performed in the repack tent of CPP-653, which provides containment of contamination during repackaging. Drums from waste stream ID-SDA-SLUDGE to be repackaged include a tray liner and/or without absorbent and will be repackaged to meet the new packaging configuration. Repackaging will involve removal of the waste and tray liner, replacement of the sludge directly into the rigid liner, and the addition of granular absorbent, such as the clay based absorbent Oil-Dri®. By repackaging the waste in this manner all of the ID-SDA-SLUDGE drums will have the same packaging configuration, with the only difference being that the repackaged drums will have the tray liner rolled up and placed on the top of the waste, when possible. Repackaged ID-SDA-SLUDGE is characterized by radiography. The original VE data will then be used in conjunction with radiography to estimate the organic and inorganic sludge composition of the repackaged waste. In addition, secondary waste consisting of small quantities of sludge contaminated debris such as tray liners, plastic sheeting, rubber bands, glovebox gloves, HEPA filters, duct work, and metal tools are generated from this operation. This debris waste is packaged and the waste containers are added to the debris waste stream, ID-SDA-DEBRIS. They are then characterized by radiography (References ID-C109, ID-D003, ID-P122, ID-P269, ID-P373, ID-P424, ID-U356, and INTEC-P214).”

- 5) WAP Section C4-2b: Required TRU Mixed Waste Stream Information: *“At a minimum, the waste process information shall include the following written information (6<sup>th</sup> bullet after 1<sup>st</sup> paragraph): Material inputs or other information that identifies the chemical content of the waste stream and the physical waste form (e.g., glove box materials and chemicals handled during glove box operations; events or processes that may have modified the chemical or physical properties of the waste stream after generation; data obtained through visual examination of newly generated waste that later undergoes radiography; information demonstrating neutralization of U134 [hydrofluoric acid] and waste compatibility.”*

**NMED comment WAP5:** NMED concludes that addition of absorbent is modification of a physical property of the waste (liquid/semi-solid to solid), and that addition of a neutralizing agent is modification of a chemical characteristic (removing D002 and possibly D003).

**Response:**

This is understood and accounted for in the AK process as described above. Refer to the responses provided for Question 5, and NMED comment TP6 above.

## Observer Inquiry Form

- 6) WAP Section C4-2b: Required TRU Mixed Waste Stream Information: *“The Permittees shall obtain from each site, at a minimum, procedures that comply with the following acceptable knowledge requirements (6<sup>th</sup> bullet after 2<sup>nd</sup> paragraph): Procedures to ensure radiography and visual examination include a list of prohibited items that the operator shall verify are not present in each container (e.g., liquid exceeding TSDF-WAC limits, corrosives, ignitables, reactives, and incompatible wastes).”*

**NMED comment WAP6:** NMED expects that the AK Summary Report would contain reference to a procedure that ensures no D002 waste is repackaged for disposal at the WIPP, and that the waste was treated to remove this characteristic.

**Response:**

The procedure is separate and available to meet this WAP requirement. The purpose of the AK Summary Report is to describe the waste and processes generating the waste, including expected physical, chemical, and radiological properties and potential prohibited items to be verified during subsequent characterization activities (NDA, NDE, and VE). The AK Summary Report identifies CCP-PO-001, CCP Transuranic Waste Characterization Quality Assurance Project Plan, the CCP document used to address the WAP requirements in Section 1.0 of CCP-AK-INL-001. The ARP waste is characterized by CCP VE personnel as newly generated waste in accordance with CCP-TP-006. The addition of absorbent to the waste is conducted according to procedures TPR-7415 (CCP-AK-INL-001 AK # ID-P122). The CCP VE procedure, CCP-TP-006, includes corrosives as a prohibited item. The absence of corrosives in the waste is confirmed during VE.

- 7) WAP Section C4-2b: Required TRU Mixed Waste Stream Information (8<sup>th</sup> bullet after 2<sup>nd</sup> paragraph): *“Procedures that ensure the assignment of EPA hazardous waste numbers is appropriate, consistent with RCRA requirements, and considers site historical waste management.”*

**NMED comment WAP7:** NMED expects that the AK Summary Report would contain references to a procedure that discusses elimination of the D002 code through proper treatment of the waste.

**Response:**

Refer to the responses provided for questions WAP1 and WAP6.

- 8) WAP Section C4-2c: Additional Acceptable Knowledge Information: *“The generator/storage sites shall obtain additional acceptable knowledge information. Sites shall collect information as appropriate to augment required information and provide any other information obtained to further delineate the waste streams...Additional acceptable knowledge documentation includes, but is not limited to, the following information: (4<sup>th</sup> bullet after 1st paragraph): Waste packaging records.”*

## Observer Inquiry Form

**NMED comment WAP8:** NMED expects generator sites to have container-specific packaging records that detail any materials added to a waste drum in order to meet the requirements of the WAP.

**Response:**

Packaging records (AK element S16 listed on CCP-TP-005 Attachment 1) are included as "Additional AK" and collected as available (not required) to support the physical description of the waste stream contents in the AK Summary Report. Materials added to the waste during the waste generating processes, including waste repackaging and the absorption of liquids, are cited in the AK summary report as described above for responses to questions 2, 3, 5, and TP6.

For newly generated waste streams, the VE data sheets are compiled as required for CCP-TP-006, and reviewed to assure that each container is bounded by the description of the waste stream in the AK Summary Report, CCP-AK-INL-001.

- 9) WAP Section C4-3: Acceptable Knowledge Training, Procedures and Other Requirements: *"The Permittees shall require consistency among sites in using acceptable knowledge information to characterize TRU mixed waste by the use of the following: 1) compiling the required and additional acceptable knowledge documentation in an auditable record, 2) auditing acceptable knowledge records, and 3) WSPF approval and waste confirmation. This section specifies qualification and training requirements, describes each phase of the process, specifies the procedures that the Permittees shall require all sites to develop to implement the requirements for using acceptable knowledge, and specifies data quality requirements for acceptable knowledge."*

**NMED comment WAP9:** NMED did not find or observe evidence that the Permittees performed verification that the site has procedures describing acceptable knowledge for each phase of the repackaging process.

**Response:**

The "site" in this case is CCP. CWI does not have AK procedures. Compliance with the WAP requirements of each phase of the waste characterization process are described, as noted above in responses to questions WAP6 and WAP7. AK describing the repackaging process is summarized in CCP-AK-INL-001 as noted in response to question TP6.

- 10) WAP Section C4-3a: Qualification and Training Requirements: *"Site personnel responsible for compiling acceptable knowledge, assessing acceptable knowledge, and resolving discrepancies associated with acceptable knowledge shall be qualified and trained in the following areas at a minimum: (4<sup>th</sup> bullet) Site-specific procedures associated with waste characterization using acceptable knowledge."*

## Observer Inquiry Form

**NMED comment WAP10:** NMED regards the omission of repackaging information in AK001 to be a discrepancy requiring resolution.

**Response:**

AK describing the repackaging process is summarized in CCP-AK-INL-001 as noted in response to question TP6 and WAP4. In addition, compliance with the WAP requirements of each phase of the waste characterization process are described, as noted above in responses to questions WAP6 and WAP7.

11) WAP Section C4-3b: Acceptable Knowledge Assembly and Compilation: *“The Permittees shall obtain from sites acceptable knowledge procedures which require consistent application of the acceptable knowledge process and requirements. Site-specific acceptable knowledge procedures shall address the following: (3<sup>rd</sup> bullet) Sites shall develop and implement a written procedure that ensures unacceptable wastes (e.g., reactive, ignitable, corrosive) are identified and segregated from TRU mixed waste populations sent to WIPP.”*

**NMED comment WAP11:** NMED has reviewed procedures at other generator sites that specify details concerning neutralization and/or addition of absorbents, and NMED believes that CCP has not been consistent in the application of the AK process.

**Response:**

As indicated in response to question 3e, neutralization agents are not used at ARP. The application of the AK process has been demonstrated during numerous certification audits.

12) WAP Section C4-3b: Acceptable Knowledge Assembly and Compilation (end of 5<sup>th</sup> bullet paragraph): *“For newly generated wastes, procedures shall be developed and implemented to characterize hazardous waste using acceptable knowledge prior to packaging the waste.”*

**NMED comment WAP12:** NMED believes that the processes and requirements of neutralization and/or addition of absorbent is identical between newly generated waste and repackaging of retrievably stored waste.

**Response:**

As indicated in response to question 3e, neutralization agents are not used at ARP. CCP agrees and as indicated in response to comments TP6 and WAP4, these operations are described in CCP-AK-INL-001 with the relevant procedures incorporated as AK source documents.

13) WAP Section C4-3b: Acceptable Knowledge Assembly and Compilation (7<sup>th</sup> bullet): *“Sites shall identify all process controls (implemented to ensure that the waste contains no prohibited items and to control hazardous waste content and/or physical form) that may have been applied to retrievably stored waste and/or may presently be applied to newly*

## Observer Inquiry Form

*generated waste.”*

**NMED comment WAP13:** NMED expects that the processes of neutralization and absorption of liquids should be identified as process controls to meet requirements of the WAP, and that procedures documenting the proper use of these controls should be followed by the operator at all times.

**Response:**

As indicated in response to question 3e, neutralization agents are not used at ARP. The waste generating processes, including the absorption of liquids is cited in the AK summary reports as described above for responses to questions 2, 3, 5, and TP6.

14) WAP Section C4-3g: Audits of Acceptable Knowledge (1<sup>st</sup> bullet): *“Audit checklists shall include Table C6-3 in Permit Attachment C6, and will include but not be limited to the following elements for review during the audit: Documentation of the process used to compile, evaluate, and record acceptable knowledge is available and implemented; (2<sup>nd</sup> bullet) Personnel qualifications and training are documented;”*

**NMED comment WAP14:** NMED expects that the documented site process to evaluate AK should include language addressing neutralization, addition of absorbents, and any other material that is added to the drum during packaging/repackaging.

**Response:**

Table C6-2 is the applicable checklist for auditing the Acceptable Knowledge record for a waste stream(s) and includes all of the WAP required elements for AK. The checklist documents the compilation, evaluation and recording of all WAP required programmatic and waste stream specific information. That information includes a description of materials added to a waste package during repackaging, such as absorbents either specified or from a list of approved absorbents with supporting MSDS sheets. Neutralization is also addressed on a waste stream specific basis as applicable.

15) WAP Section C4-3g: Audits of Acceptable Knowledge (2<sup>nd</sup> paragraph after bullets): *“For these waste streams, auditors will review all procedures and associated processes developed by the site for documenting the process of compiling acceptable knowledge documentation; correlating information to specific waste inventories; assigning hazardous waste numbers; and identifying, resolving, and documenting discrepancies in acceptable knowledge records.”*

**NMED comment WAP15:** NMED believes that the CTAC auditors were not thorough in their review of AK001, and that a site-specific procedure should have been used to identify discrepancies, such as lack of sufficiently detailed information regarding the repackaging process.

## Observer Inquiry Form

**Response:**

As noted above, the CBFO QA audit process follows the requirements documented in the C6- 2 checklist. This includes a review of the information in the AK Summary Report as well as review of AK Source Documentation and other AK or characterization records that support and justify the AK Summary data presentation. CBFO believes that a thorough review of CCP-AK-INL-001 was performed within the audit constraints and that the details of the packaging process noted are captured in the AK record.

16) WAP Section C4-3g: Audits of Acceptable Knowledge (3<sup>rd</sup> paragraph after bullets): *“The criteria that will be used by auditors to evaluate the logic and defensibility of the acceptable knowledge documentation include completeness and traceability of the information, consistency of application of information, clarity of presentation, degree of compliance with this Permit Attachment with regard to acceptable knowledge data, nonconformance procedures, and oversight procedures.”*

**NMED comment WAP16:** NMED cannot identify the documents necessary to make AK001 complete. Items that require additional review are found in, but not limited to, comments WAP4, WAP6, WAP10, WAP20, and WAP22 – WAP33). Please provide the additional information identified in those sections.

**Response:**

CBFO does believe that CCP-AK-INL-001 is complete and in compliance with the requirements of the WAP. As noted above, CBFO follows the WAP specified checklist for reviewing the AK record. That review includes the compilation of objective evidence to support logic, defensibility, completeness and traceability and other areas noted above such as NCRs for addressing prohibited items and review of oversight activities such as internal audits/surveillances. CBFO believes that a thorough and complete review of CCP-AK-INL-001 and the supporting AK record was performed. The applicable citations from CCP-AK-INL-001, including the supporting AK source documents are included in the responses to comments WAP4, WAP6, WAP10, WAP20, and WAP22 – WAP33.

17) WAP Section C4-3g: Audits of Acceptable Knowledge (4<sup>th</sup> paragraph after bullets): *“Auditors will verify and document that sites use administrative controls and follow written procedures to characterize hazardous waste for newly-generated and retrievably stored wastes.”*

**NMED comment WAP17:** NMED expects the auditors to investigate such procedures, or to document the lack thereof.

**Response:**

The process for assigning HWNs is well documented in the AK Summary Reports and is supported and justified by AK Source Documentation. CBFO QA reviews both the AK Summary and supporting documentation to assure that the assignments are supported. The physical

## Observer Inquiry Form

parameters of the waste stream are also noted in the AK Summary and are supported by AK Source Documentation and augmented by the RTR or VE process, all reviewed by CBFO auditors.

18) WAP Section C4-3g: Audits of Acceptable Knowledge (last paragraph): *"The Permittees will maintain an operating record for review during regulatory agency audits. NMED may also review any information relevant to the scope of the audit during site audits."*

**NMED comment WAP18:** This Permit condition allows NMED to request additional information that is related to the WAP.

**Response:**

Agree.

19) WAP Section C4, Figure C4-1: Acceptable Knowledge Auditing (2<sup>nd</sup> through 5<sup>th</sup> activity in flowchart): *"Assess site procedures for acceptable knowledge compilation, interpretation and discrepancy resolution"; "All procedures complete and adequate?"; "Review acceptable knowledge documentation for selected waste stream"; "Is the documentation complete, logical, and defensible? Are records traceable to waste streams and hazardous waste information?"*

**NMED comment WAP19:** NMED does not believe that this flowchart was followed in a comprehensive manner. Please provide an explanation.

**Response:**

Figure 4-2 depicts the audit process. As noted above, the CBFO QA audit process as applied to all elements in this figure, including steps 2-5, is thorough and comprehensive. Relevant AK documentation is reviewed and compiled to support the characterization and certification process including AK Source Documentation such as ID-P122 *AR Project-Drum Packaging System*, ID-U330, *Managing Free Liquid in Newly Generated Waste Drums*, and ID-P239, *SDA Targeted and Non-Targeted Waste Identification Operator Guide* along with CCP procedures such as CCP-TP-006, *Visual Examination Technique for Idaho National Laboratory (INL) Newly Generated TRU Waste*.

20) WAP Section C4a(4): Data Verification: *"NMED may request, through the Permittees, copies of any BDR, and/or the raw data validated by the generator/storage sites, to check DOE's audit of the validation process."*

**NMED comment WAP20:** NMED was not provided and did not observe raw data regarding use of neutralizers and/or the addition of absorbents, and NMED does not believe that the validation process was complete. . Please provide a specific citation to the document (name of document and location within the document) that addresses this.

## Observer Inquiry Form

**Response:**

As indicated in response to question 3c, neutralization agents are not used at ARP. The addition of absorbent to the waste would be included as organic matrix, inorganic matrix, or other inorganic materials on the VE data sheets completed as required by CCP-TP-006. VE BDRs were evaluated by the auditors. NMED personnel did review VE BDRs for waste processed at the ARP facility with the auditors during the audit.

21) WAP Section C5-1: Quality Assurance Project Plans: *“Prior to management, storage, or disposal of a generator/storage site’s TRU mixed waste at WIPP, the Permittees shall require that each participating site develops and implements a quality assurance project plan (QAPjP) that addresses all the applicable requirements specified in Waste Isolation Pilot Plant waste analysis plan (WAP) in Permit Attachment C. The U.S. Department of Energy (DOE) will approve QAPjPs from all generator/storage sites that intend to send TRU mixed waste to the Waste Isolation Pilot Plant. DOE shall ensure that these QAPjPs include the qualitative or quantitative criteria for determining whether waste characterization program activities are being satisfactorily performed. DOE shall also ensure that QAPjPs identify the organization(s) and position(s) responsible for their implementation. Additionally, the QAPjPs shall also reference site-specific documentation that details how each of the required elements of the characterization program will be performed. DOE shall ensure that prior to the implementation of characterization activities at participating sites, standard operating procedures (SOPs) were developed for all activities which affect the quality of the waste characterization program elements specified in the WAP. For the purposes of the quality assurance program, the term SOP refers to any site-specific implementing document. Compliance with SOPs will ensure that tasks are performed in a consistent manner that results in achieving the quality required for the quality assurance program. The organization, format, content, and designation of SOPs shall be described in the QAPjPs. Site-specific SOPs will be reviewed for consistency with the QAPjP according to the Audit and Surveillance Program specified in Permit Attachment C6.”*

**NMED comment WAP21:** NMED believes that the QAPjP must require sufficient formality so that detailed repackaging information is required to be explained in the AK Summary. Please provide a specific citation to the document (name of document and location within the document) that addresses this.

**Response:**

CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*, Section C4-2b, identifies CCP-TP-005 as the implementing AK procedure for compiling the required TRU waste stream information. Per CCP-TP-005, waste generating processes, including repackaging information, are described in CCP-AK-INL-001 as indicated in response to question TP6.

22) WAP Section C-5a(3) Audit and Surveillance Program states: *“An important part of the Permittees’ verification process is the Audit and Surveillance Program. The focus of this*

## Observer Inquiry Form

*audit program is compliance with this WAP and the Permit. This audit program addresses all AK implementation and testing activities, from waste stream classification assignment through waste container certification, and ensures compliance with SOPs and the WAP. Audits will ensure that containers and their associated documentation are adequately tracked throughout the waste handling process. Operator qualifications will be verified, and implementation of QA/QC procedures will be surveyed... These audits will allow NMED to verify that the Permittees have implemented the WAP and that generator/storage sites have implemented a QA program for the characterization of waste and meet applicable WAP requirements. The accuracy of physical waste description and waste stream assignment provided by the generator/storage site will be verified by review of the radiography results, and visual examination of data records and radiography images (as necessary) during audits conducted by DOE.”*

**NMED comment WAP22:** NMED believes that by exclusion of the neutralization and addition of absorbent processes, AK001 does not include descriptions of all AK implementation and testing procedures, and calls into question compliance with the WAP.

**Response:**

As indicated in response to question 3c, neutralization agents are not used at ARP. A description of the absorption process is included in CCP-AK-INL-001 as indicated in response to question TP6.

**C6 checklist inconsistencies:**

- 23) WAP Section C6, Table C6-2: Acceptable Knowledge (AK) Checklist, INL #40, last bullet: “Waste certification procedures for retrievably stored and newly generated wastes to be sent to the WIPP facility.” Ref: Section C4-2a

**NMED comment WAP23:** NMED believes that certification procedures should include a requirement to check for inclusion of neutralization and/or addition of absorbent information. NMED does not believe that this requirement has been adequately addressed in AK001. . Please provide a specific citation to the source document (name of document and location within the document) that addresses this.

**Response:**

See response to question WAP4.

- 24) WAP Section C6, Table C6-2: Acceptable Knowledge (AK) Checklist, INL #41, Item F: “Material inputs of other information that identifies the chemical content of the waste stream and the physical waste form (e.g., glove box materials and chemical handled during glove box operations, events or processes that may have modified the chemical or physical properties of the waste stream after generation, data obtained through visual examination of newly generated waste that later undergoes radiography; information demonstrating neutralization of U134 [hydrofluoric acid] and waste compatibility.” Ref: Section C4-2b

## Observer Inquiry Form

**NMED comment WAP24:** NMED believes that AK001 should include neutralization and/or addition of absorbent information as these processes can modify the chemical and physical properties of the waste. NMED does not believe that this requirement has been adequately addressed in AK001. . Please provide a specific citation to the source document (name of document and location within the document) that addresses this.

**Response:**

As indicated in response to question 3c, neutralization agents are not used at ARP. A description of the absorption process is included in CCP-AK-INL-001 as indicated in response to question TP6.

25) WAP Section C6, Table C6-2: Acceptable Knowledge (AK) Checklist, INL #44, Item F:  
“Procedures to ensure radiography and visual examination include a list of prohibited items that the operator shall verify are not present in each container (e.g., liquid exceeding TSDF-WAC limits, corrosives, ignitables, reactives, and incompatible wastes).” Ref: Section C4-2b

**NMED comment WAP25:** NMED did not find or observe any procedure that ensures operators can recognize and reconcile existence of codes D001, D002, or D003 in the waste through radiography or VE. NMED does not believe that this requirement has been adequately addressed in AK001. . Please provide a specific citation to the source document (name of document and location within the document) that addresses this.

**Response:**

See response to WAP6.

26) WAP Section C6, Table C6-2: Acceptable Knowledge (AK) Checklist, INL #45: “Does the generator provide procedures or written commitment to collect additional acceptable knowledge information, as available and as necessary to augment mandatory information?” Ref: Section C4-2c

**NMED comment WAP26:** NMED believes that additional acceptable knowledge information regarding neutralization and/or addition of absorbents should have been requested by the auditors to augment mandatory information. NMED does not believe that this requirement has been adequately addressed in AK001. . Please provide a specific citation to the source document (name of document and location within the document) that addresses this.

**Response:**

As indicated in response to question 3c, neutralization agents are not used at ARP. A description of the absorption process is included in CCP-AK-INL-001 as indicated in response to question TP6.

27) WAP Section C6, Table C6-2: Acceptable Knowledge (AK) Checklist, INL #46: “Does the generator site document that all additional specific, relevant information used in the

### Observer Inquiry Form

acceptable knowledge process will be identified and its use explained? Is all necessary information assembled and has it been appropriately used?" Ref: Section C4-2c

**NMED comment WAP27:** NMED does not believe that these requirements have been adequately addressed in AK001. . Please provide a specific citation to the source document (name of document and location within the document) that addresses this.

**Response:**

See response to WAP8.

28) WAP Section C6, Table C6-2: Acceptable Knowledge (AK) Checklist, INL #48, Item D:

"Does the generator site have procedures to ensure that all personnel involved with acceptable knowledge waste characterization have the following training, and is this training documented? (Item D:) Site-specific procedures associated with waste characterization using acceptable knowledge" Ref: Section C4-3a

**NMED comment WAP28:** NMED did not find or observe site procedures regarding characterization that includes details of the neutralization and/or addition of absorbent processes. NMED does not believe that this requirement has been adequately addressed in AK001. . Please provide a specific citation to the source document (name of document and location within the document) that addresses this.

**Response:**

The addition of neutralization agents and/or absorbents is not part of the characterization process. Activities of this nature are done prior to CCP's characterization of the waste and are captured in the waste description in the AK. CBFO believes this has been adequately described in the AK. The AK Summary report, in combination with the cited source documents, provides a detailed description of the activities and processes occurring prior to the waste being presented to CCP for characterization.

As indicated in response to question 3c, neutralization agents are not used at ARP. This requirement refers to training of AK waste characterization personnel which would not be documented in CCP-AK-INL-001. The ARP waste is characterized by CCP VE personnel as newly generated waste in accordance with CCP-TP-006. The addition of absorbent to the waste is conducted according to procedures TPR-7415 (CCP-AK-INL-001 AK # ID-P122), TPR-7867 (CCP-AK-INL-026 AK # P543), TPR-7866 (CCP-AK-INL-026 AK # P542) as described for comments 2, 3, 5, and referenced in CCP-AK-INL-001 as indicated in response to comment TP6. The procedures and activities where absorbents are added to the waste are addressed in a large number of the previous responses.

29) WAP Section C6, Table C6-2: Acceptable Knowledge (AK) Checklist, INL #49, Item C:

"Sites must develop and implement a written procedure that ensures unacceptable wastes (e.g., reactive, ignitable, corrosive) are identified and segregated from TRU mixed waste populations sent to WIPP." Ref: Section C4-3b

## Observer Inquiry Form

**NMED comment WAP29:** NMED did not find or observe any site procedures that ensures unacceptable wastes that may have codes D001, D002, or D003 are positively identified. NMED does not believe that this requirement has been adequately addressed in AK001. . Please provide a specific citation to the source document (name of document and location within the document) that addresses this.

**Response:**

See responses to questions WAP6, WAP9, and WAP11.

30) WAP Section C6, Table C6-2: Acceptable Knowledge (AK) Checklist, INL #49b, Item G: "Sites shall identify all process controls (implemented to ensure that the waste contains no prohibited items and to control hazardous waste content and/or physical form) that have been applied to retrievably stored waste and/or may presently applied to newly generated waste..." Ref: Section C4-3b

**NMED comment WAP30:** NMED did not find or observe any site process controls or related procedures to control the inadvertent inclusion of D002 wastes. NMED does not believe that this requirement has been adequately addressed in AK001. Please provide a specific citation to the source document (name of document and location within the document) that addresses this.

**Response:**

See responses to questions WAP6, WAP9, and WAP11.

31) WAP Section C6, Table C6-2: Acceptable Knowledge (AK) Checklist, INL #50, Item E: "Container inventories for TRU mixed waste in retrievable storage shall be delineated into waste streams by correlating the container identification to all of the required and additional AK information." Ref: Section C4-3c

**NMED comment WAP31:** NMED did not find or observe evidence that container identification was correlated to all of the required and additional AK information. NMED does not believe this was possible because the processes related to neutralization and/or addition of absorbents were not described in AK001. Please provide a specific citation to the source document (name of document and location within the document) that addresses this.

**Response:**

As indicated in response to question 3c, neutralization agents are not used at ARP. As described in CCP-AK-INL-001 Section 4.7.2, the waste streams are delineated at the point of generation based on the summary category group predominant in individual waste containers.

## Observer Inquiry Form

- 32) WAP Section C6, Table C6-2: Acceptable Knowledge (AK) Checklist, INL #68, Item C: "Completeness – The acceptable knowledge record must contain 100 percent of the information (Permit Attachment C4-3). The usability of the acceptable knowledge information will be assessed for completeness during audits." Ref: C3-3

**NMED comment WAP32:** NMED does not believe that this requirement has been adequately addressed in AK001, as the exclusion of information regarding neutralization and/or addition of absorbents resulted in AK001 containing less than 100 percent of the information. Please provide a specific citation to the source document (name of document and location within the document) that addresses the addition of neutralization and/or absorbants.

**Response:**

As indicated in response to question 3c, neutralization agents are not used at ARP. A description of the absorption process is included in CCP-AK-INL-001 as indicated in response to question TP6.

- 33) WAP Section C6, Table C6-2: Acceptable Knowledge (AK) Checklist, INL #69: "Does the generator site address quality control by tracking its performance with regard to the use of acceptable knowledge by: 1) assessing the frequencies of inconsistencies among information, and 2) documenting the results of waste discrepancies identified by the generator/storage site during waste characterization or the Permittees during waste confirmation using radiography, review of radiography audio/video recordings, or visual examination, or review of visual examination records. In addition, the acceptable knowledge process and waste stream documentation must be evaluated through internal assessments by generator/storage site quality assurance organizations." Ref: Section C4-3e

**NMED comment WAP 33:** NMED did not find or observe any documentation related to neutralization and/or addition of absorbents. NMED believes that this is a discrepancy that should have been identified by site quality assurance organizations. NMED does not believe that this requirement has been adequately addressed in AK001. Please provide a specific citation to the source document (name of document and location within the document) that addresses the addition of neutralization and/or absorbants.

**Response:**

As indicated in response to question 3c, neutralization agents are not used at ARP. A description of the absorption process is included in CCP-AK-INL-001 as indicated in response to question TP6.

## Observer Inquiry Form

As required by Permit condition C6-4, which states: "NMED may submit a written Observer Inquiry to DOE if necessary to seek resolution to a question raised or issue posed during the audit. DOE shall be responsible for obtaining a response to the Observer Inquiry and submitting a written response to NMED within 30 days of inquiry submission." , please respond by September 4, 2014 addressing items 1-5 concerning the method of operator training, items 1-9 related to compliance with procedure TP005, and by addressing items 1-33 concerning compliance with the WAP. As stated in C6-4, NMED will examine the response and consider this information as part of the audit review and approval process.

**ATL Response:**

**Observer/NMED: Accept Response    Do Not Accept Response**

**Inquiry Closed: [Enter Date]**