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Carlsbad Area Office
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Carlsbad, New Mexico 88221

April 25, 1996

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Mr. Benito Garcia
Bureau Chief
New Mexico Environment Department
2044 Galisteo Street
Santa Fe, NM 87505

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DOE/WIPP-069
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April 1996

Dear Mr. Garcia:

Please find enclosed an uncontrolled copy of the Carlsbad Area Office Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria (WAC), Revision 5. All generator site comments have either been incorporated into the WAC or resolved.

If you have any questions about this document, you may contact Don Watkins, of my staff, at (505)234-7478.

Sincerely,

George E. Dials
Manager

Enclosure

cc w/enclosure:
P. McCasland, NMED

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C & C File

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April 1996

DOE/WIPP--069-Rev.5

WASTE ACCEPTANCE CRITERIA FOR THE WASTE ISOLATION PILOT PLANT

APRIL 1996

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DOE/WIPP-069
Revision 5
April 1996

WASTE ACCEPTANCE CRITERIA FOR THE WASTE ISOLATION PILOT PLANT

REVISION 5

APRIL 1996

Approved by: George E. Dials
Manager, Carlsbad Area Office

Date: April 4, 1996

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Processing and final preparation of this report was performed by the Waste Isolation Pilot Plant Management and Operating Contractor for the U.S. Department of Energy under Contract No. DE-AC04-86AL31950.

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CHANGE HISTORY

DOE/WIPP-069, Revision 5, April 1996

Revision 5 of DOE/WIPP-069, Waste Acceptance Criteria for the Waste Isolation Pilot Plant, replaces Revision 4. Revision 5 is a major change from Revision 4. The format and contents have changed dramatically. Because Revision 5 is a complete change from Revision 4, there are no side bars indicating change status. Major changes from Revision 4 are as follows:

- The Executive Summary was reduced to a brief overview;
- The Introduction redefines the terms "criteria "and "requirements," assigns site certification authority to the CAO Manager, and introduces the CAO Generator Sites Assessment and Certification (GSAC) organization as the assessment and certification function;
- The WAC implementation authority and responsibility have been assigned to the CAO;
- Waste certification, acceptance and data transmittal have been moved from Section 2 to Section 3;
- All criteria have been reorganized and rewritten;
- The RH-TRU criteria have been separated from the CH-TRU criteria; and
- The appendices have been rewritten and two new appendices have been added.

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RECORD OF REVISION/CHANGE ENTRIES

Revision/Change Number	Entered By (Printed Name)	Date Entered	Post Entry Page Check Complete (Signature Required)

NOTE: Instructions for the completion of this form will be supplied with each transmition of a revision/change.

LIST OF ACRONYMS AND ABBREVIATIONS

ALARA	As Low As Reasonably Achievable
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASQC	American Society for Quality Control
ASTM	American Society for Testing and Materials
CAO	Carlsbad Area Office
CAO/NTP	Carlsbad Area Office National Transuranic Program
CFR	Code of Federal Regulations
CH-TRAMPAC	TRUPACT-II Authorized Methods for Payload Control
CH-TRU	Contact-Handled Transuranic
CH-TRUCON	TRUPACT-II Content Codes document
C of C	Certificate of Compliance
dpm	Disintegrations per minute
DOE	Department of Energy
DOT	Department of Transportation
EEG	Environmental Evaluation Group
EM-1	Assistant Secretary for Environmental Management
EM-30	Deputy Assistant Secretary, DOE Office of Waste Management
EPA	Environmental Protection Agency
FGE	Fissile Gram Equivalent
GSAC	CAO Generator Sites Assessment and Certification Program
l	liter
LWA	The WIPP Land Withdrawal Act
M&O	Managing and Operating
MOA	Memorandum of Agreement
NIST	National Institute of Standards and Technology
NMED	New Mexico Environment Department
NQA-1	Quality Assurance Requirements for Nuclear Facility Applications
NRC	Nuclear Regulatory Commission
PCBs	Polychlorinated biphenyls
PDP	Performance Demonstration Program
PE-Ci	Plutonium Equivalent Curies
QA	Quality assurance
QAPD	Quality Assurance Program Description

QAPjP	Quality Assurance Project Plan
QAPP	Quality Assurance Program Plan
QC	Quality control
RA	Radioassay
RCRA	Resource Conservation and Recovery Act
RH-TRAMPAC	Transuranic Authorized Methods for Payload Control (RH-TRU 72-B Cask)
RH-TRU	Remote-Handled Transuranic
RH-TRUCON	RH-TRU 72-B Cask Content Codes document
SARP	Safety Analysis Report for Packaging (e.g.,TRUPACT-II, RH-TRU 72-B Cask)
SITES	DOE TRU waste generator/storage sites
SWB	Standard Waste Box
TDOP	Ten Drum Overpack
TICs	Tentatively Identified Compounds
TRU	Transuranic
TRUPACT-II	Transuranic Package Transporter-II
VOC	Volatile organic compound
WAC	Waste Acceptance Criteria for the Waste Isolation Pilot Plant
WID	Westinghouse Electric Corporation/Waste Isolation Division
WIPP	Waste Isolation Pilot Plant
WWIS	WIPP Waste Information System

EXECUTIVE SUMMARY

The Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria (WAC), DOE/WIPP-069, was initially developed by a U.S. Department of Energy (DOE) Steering Committee to provide performance requirements to ensure public health and safety as well as the safe handling of transuranic (TRU) waste at the WIPP. This revision updates the criteria and requirements of previous revisions and deletes those which were applicable only to the test phase. The criteria and requirements in this document must be met by participating DOE TRU Waste Generator/Storage Sites (Sites) prior to shipping contact-handled (CH) and remote-handled (RH) TRU waste forms to the WIPP.

The WIPP Project will comply with applicable federal and state regulations and requirements, including those in Titles 10, 40, and 49 of the Code of Federal Regulations (CFR). The WAC, DOE/WIPP-069, serves as the primary directive for assuring the safe handling, transportation, and disposal of TRU wastes in the WIPP and for the certification of these wastes. The WAC identifies strict requirements that must be met by participating Sites before these TRU wastes may be shipped for disposal in the WIPP facility. These criteria and requirements will be reviewed and revised as appropriate, based on new technical or regulatory requirements. The WAC is a controlled document. Revised/changed pages will be supplied to all holders of controlled copies.

1.0 INTRODUCTION

The Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria (WAC), DOE/WIPP-069, was initially developed by a U.S. Department of Energy (DOE) Steering Committee to provide performance requirements to ensure public health and safety as well as the safe handling of transuranic (TRU) waste at the WIPP. This revision of the WAC reflects the organizational restructuring of the DOE and the change from test phase requirements to disposal requirements. This revision incorporates the most current environmental compliance requirements from the Resource Conservation and Recovery Act (RCRA) Permit Application (Reference 1), the draft No-Migration Variance Petition (NMVP) (Reference 2) and the 40 CFR Part 191 Draft Compliance Certification Application (DCCA) (Reference 3), along with the most up-to-date technical and regulatory requirements for transportation and operational safety. This Revision 5 of the WAC supersedes Revision 4 (Reference 11). TRU Waste Generator/Storage Sites (Sites) participating in the National Transuranic Program (NTP) must certify their TRU waste to the criteria and requirements defined in this WAC prior to transport to, and disposal in, the WIPP. The characterization of TRU waste must be in accordance with the TRU Waste Characterization Quality Assurance Program Plan (QAPP) (Reference 4).

This WAC document applies to both contact-handled (CH) and remote-handled (RH) TRU waste forms for disposal in the WIPP. The criteria (parameters for waste acceptance) and the requirements (conditions or limits which must be met for each criterion) are presented in Section 3. Known criteria and requirements necessary for certification of CH-TRU waste have been defined; however only preliminary characterization and transportation-related waste packaging requirements for RH-TRU waste have been identified. The WAC does not address specific local, state or federal regulations affecting the handling or shipping of TRU mixed waste at Sites (e.g., state EPA Hazardous Waste Codes, DOE markings on containers, etc.). Requirements have not yet been finalized for the RH-TRU 72-B Cask but are included to provide technical guidance to Sites. Specific RH-TRU waste transportation requirements will be included after Nuclear Regulatory Commission (NRC) approval of the RH-TRU 72-B Cask Safety Analysis Report for Packaging (SARP) and issuance of a Certificate of Compliance (C of C). The WAC *is a controlled document. Revised/changed pages will be supplied to all holders of controlled copies.*

The DOE Carlsbad Area Office (CAO) Manager is responsible for granting, or suspending, authority to a Site to certify TRU waste to the WAC (TRU waste certification authority) and for Transuranic Package Transporter (TRUPACT-II) and RH-72B Cask usage (transportation authority). Each participating Site shall submit copies of TRU Waste Certification Plans, TRUPACT-II Authorized Methods for Payload Control (TRAMPACs) and associated Quality Assurance (QA) plans, and TRU Waste Characterization Quality Assurance Project Plans (QAPjPs) to the CAO for review and approval. The CAO, together with the WIPP Managing and Operating (M&O) Contractor, will perform certification audits of the Sites to

assess the implementation of, and compliance with, the approved plans. Continuing oversight of participating Sites will be provided by the CAO and the M&O Contractor through annual audits and surveillance of TRU waste characterization, certification, and transportation activities. The CAO Generator Sites Assessment and Certification (GSAC) Guide, CAO-95-1010, describes the responsibilities and duties for the WIPP personnel assigned to perform Site certification functions. The GSAC replaces the assessment and certification functions previously assigned to the Waste Acceptance Criteria Certification Committee (WACCC).

2.0 RESPONSIBILITIES

This section identifies the responsibilities of organizations which develop and approve this WIPP Waste Acceptance Criteria (WAC) document and those which oversee the implementation of the requirements defined herein. The responsibilities of the organizations to which these WAC apply are also identified in this section.

2.1 DOE HEADQUARTERS

The Assistant Secretary for Environmental Management (EM-1) provides policy and guidance for DOE environmental management sites, facilities and operations. The Deputy Assistant Secretary, DOE Office of Waste Management (EM-30), is responsible for providing policy guidelines for the Carlsbad Area Office National Transuranic Program (CAO/NTP) and to assure consistency with planning efforts for other DOE waste management programs (i.e., low-level waste and high-level waste programs).

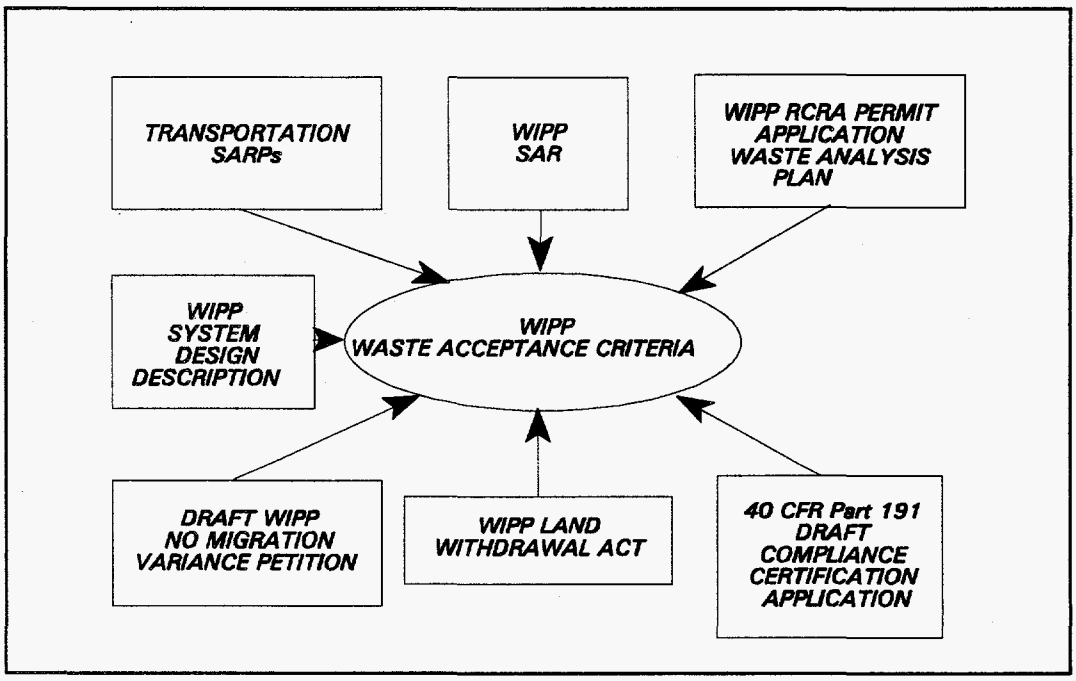
EM-30 is responsible for ensuring that CAO/NTP plans and operations are coordinated, integrated and consistent with HQ programs, policies, and guidelines. This is in regard to the WIPP WAC. EM-30 will review and provide comment on this document, and the Transuranic Waste Characterization Quality Assurance Program Plan (QAPP) (Reference 4) to ensure they are consistent with DOE/EM program requirements.

A Memorandum of Agreement (MOA) (Reference 5) has been promulgated between the DOE Office of Waste Management and the CAO relative to the management of the National Transuranic Program. This MOA designates the CAO as the science and technology center for TRU waste, responsible for establishing and managing the CAO/NTP. EM-30 is to provide DOE Headquarters policy direction and overall program guidance to the CAO through the review of proposed policy, guidance, plans, and other documents to assure consistency and integration with other DOE programs.

2.2 DOE CARLSBAD AREA OFFICE (CAO)

The CAO is responsible for the day-to-day management and direction of strategic planning and related activities associated with the characterization, treatment, storage, packaging, transportation and disposal of TRU waste. Within the CAO, this responsibility is assigned to the National TRU Program (NTP) team. The mission of the CAO/NTP is to assure that all TRU waste within the purview of the DOE is effectively and systematically managed from its generation to its final disposal. The CAO provides policy direction for, and oversight of, TRU waste program activities at participating DOE Sites relative to certification of waste for disposal in the WIPP. The CAO will provide a fleet of

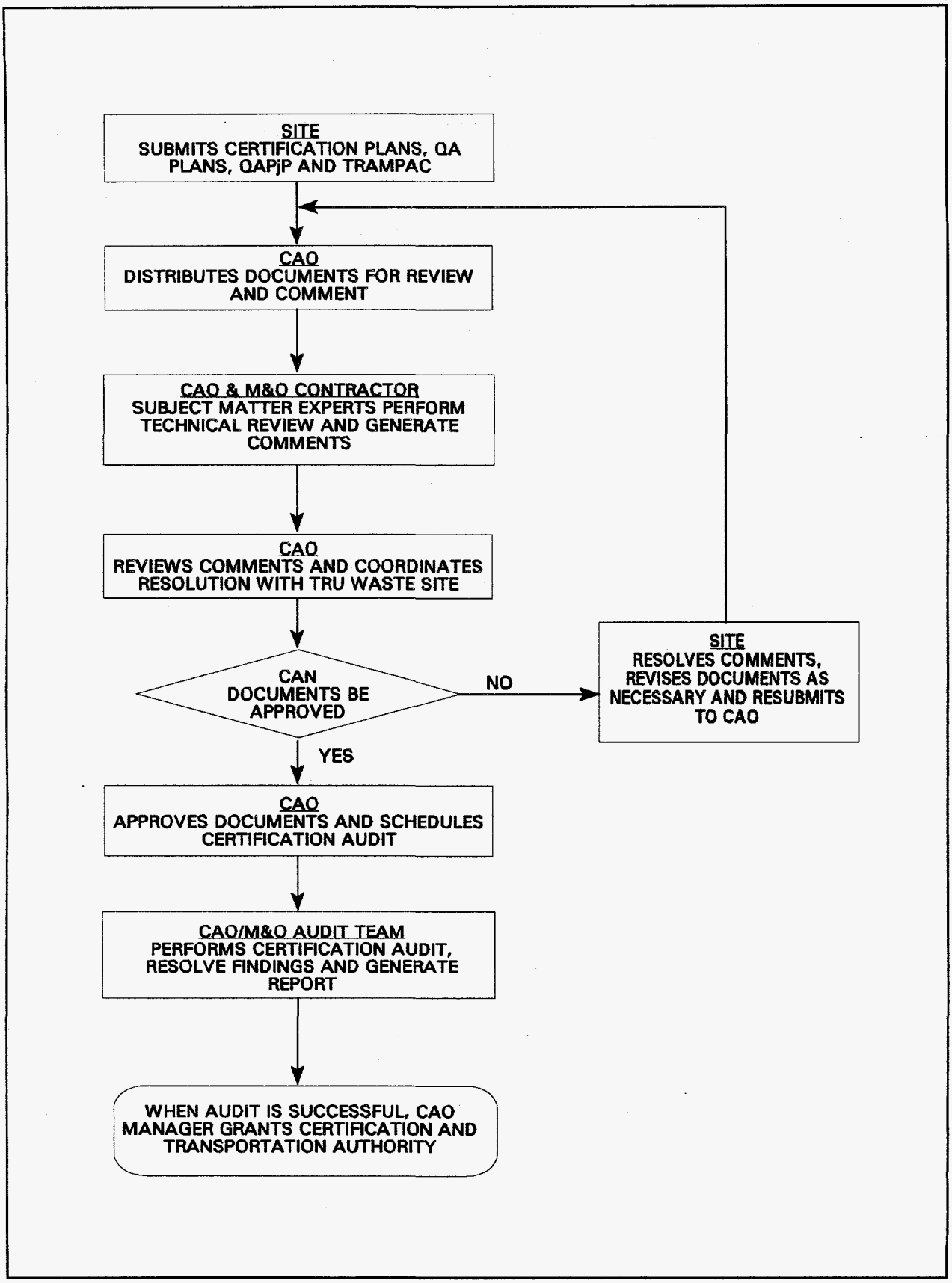
NRC-approved transportation packaging for shipment of TRU waste from the Sites to the WIPP. The CAO is responsible for the preparation of compliance documentation and the implementation of programs to meet the requirements specified in final operating permits for the WIPP facility. The responsibilities of the CAO encompass all activities associated with approving the characterization and certification of TRU waste, verification of the proper use of approved transportation packaging for TRU waste, and the receipt and disposal of TRU waste in the WIPP. The CAO is responsible for ensuring that all TRU waste accepted for disposal in the WIPP is in compliance with applicable federal, state and local laws and regulations, and this WAC. The CAO Manager is responsible for granting, or suspending, a Site's authority to certify TRU waste to the WAC (certification authority) and to use the TRUPACT-II and RH-TRU 72-B Cask (transportation authority) based upon an assessment of their documented TRU waste program and its implementation. The CAO Manager shall approve this WAC document and subsequent revisions. The derivation of the Waste Acceptance Criteria defined in this document is shown in Figure 2-1.



DERIVATION OF WAC
FIGURE 2-1

Each participating Site shall submit copies of their TRU Waste Certification Plans and associated QA plans, TRAMPACs and associated QA plans, and QAPjPs to the CAO for review and approval.

After approval of these plans, the CAO, together with the M&O Contractor, will perform certification audits of the Site to assess the implementation of, and compliance with, the approved plans. These certification audits will evaluate the Site TRU waste program as it relates to waste certification for waste to be disposed in the WIPP. Based upon acceptable results of the certification audits, the CAO will grant TRU waste certification authority and transportation authority to the Site. Within the CAO, the NTP's Generator Sites Assessment and Certification (GSAC) Guide assigns responsibility for the audit and surveillance functions previously assigned to the Waste Acceptance Criteria Certification Committee (WACCC). The Site certification process is shown in Figure 2-2. Subsequent to the initial audits, the CAO and the M&O Contractor will perform annual reaudits and surveillances at each Site to confirm continued compliance with the approved plans. The Site is responsible for resolution with the CAO of identified issues or concerns related to compliance with the WAC. Sites shall transmit controlled copies of site-specific certification plans and associated QA plans, TRAMPACs and associated QA plans, and QAPjPs to the CAO after formal approval.



TRU WASTE SITE CERTIFICATION PROCESS
FIGURE 2-2

2.3 DOE FIELD ELEMENTS

Each DOE Field Element is responsible for overseeing the management of the Site TRU waste program in compliance with the QAPP and established CAO/NTP policies and guidelines; and for providing liaison between the CAO and the Managing and Operating Contractors at DOE facilities participating in the CAO/NTP. The DOE Field Elements are responsible for ensuring that the TRU waste program documents prepared by participating Sites are in compliance with this WAC. The DOE Field Element shall review and approve these documents prior to their submittal to the CAO. The DOE Field Element is responsible for reviewing and approving the Site's Packaging QA Plan; however, this plan is not required to be submitted to the CAO.

2.4 TRU WASTE GENERATOR/STORAGE SITES

Each participating Site is responsible for developing and implementing site-specific TRU waste program documents (plans) that address all activities pertaining to TRU waste characterization, certification, and transportation packaging of TRU waste to be sent to the WIPP. These plans include the TRU Waste Certification Plan and associated QA plan, the TRUPACT-II and RH-TRU 72-B Cask Authorized Methods for Payload Control and associated QA Plans, the Packaging QA Program, and the TRU Waste Characterization Quality Assurance Project Plan. These plans may be all in one document or may be separate documents addressing each subject. Methods of compliance with each criterion and requirement shall be documented or specifically referenced, and shall include procedural and administrative controls. Table 2.4 is provided for guidance to summarize the various plans that must be developed by Sites and submitted to the CAO to complete the certification process.

TABLE 2.4 GENERATOR/STORAGE SITE TRU WASTE PROGRAM DOCUMENTATION				
REQUIRED DOCUMENT	**APPROVAL BY**	**SCOPE**	**OVERSIGHT BY**	**RELATIONSHIP TO OTHER REQUIRED DOCUMENTS**
TRU Waste Certification Plan (Incl. Certification QA Plan)	• DOE Field Element • CAO	Documents methods of compliance with each WAC requirement and the application of CAO-QAPD	• CAO • WIPP M&O • DOE Field Element	May include the TRAMPAC. The Certification QA Plan may be a separate document.
Site-Specific TRAMPAC	• DOE Field Element • CAO	Documents methods of compliance with NRC requirements for payload control, including QA (Appendix 1.3.7 of TRUPACT-II & RH-TRU 72-B Cask SARPs)	• CAO • WIPP M&O • DOE Field Element	May be incorporated into the Site's TRU Waste Certification Plan
Quality Assurance Project Plan (QAPjP)	• DOE Field Element • CAO	Documents site-specific waste sampling and analytical protocols, and associated QA controls required by the QAPP	• CAO • WIPP M&O • DOE Field Element	Document describing waste characterization and referencing detailed methods and procedures required by the QAPP
Packaging QA Program	• DOE Field Element	Documents QA requirements for NRC certified Type B packaging in accordance with 10 CFR Part 71, Subpart H	• CAO • WIPP M&O • DOE Field Element	May be incorporated into Site TRAMPACs or other Site QA documents

Each participating Site shall designate personnel, primary and alternate, to perform the following functions:

- Site Project Manager — responsible for overseeing TRU waste characterization program activities at the site as specified in the QAPP and for certifying the Waste Stream Profile Form data.
- Site Certification Official — responsible for documenting and certifying that all TRU waste payload containers prepared for shipment to the WIPP meet all specified criteria. Appendix F provides guidance on the recommended format.
- Site Transportation Certification Official — responsible for documenting Site approval of the authorized contents (payload); ensuring compliance with all packaging and records requirements; assuring that all parameters are met before the package is released to a carrier for transport; and obtaining WIPP authority to ship. Appendix C provides guidance on the recommended format.

At the discretion of the participating Site, one person may fulfill any or all of the above listed functions.

3.0 WIPP WASTE ACCEPTANCE CRITERIA AND REQUIREMENTS

The criteria identified in this WAC document identify strict requirements that must be met before TRU wastes may be transported to and disposed in the WIPP. The requirements are the conditions or limits that must be met for each criterion. These criteria and requirements are derived from several sources which include: the WIPP Safety Analysis Report (Reference 6), the TRUPACT-II Safety Analysis Report for Packaging (SARP) (Reference 7), the draft RH-TRU 72-B Cask SARP (Reference 8), the RCRA Permit Application, the WIPP NMVP, the WIPP Land Withdrawal Act (Reference 9), the WIPP System Design Description (SDD) (Reference 10) and the WIPP 40 CFR Part 191 DCCA. Known criteria and requirements necessary for certification of CH-TRU waste have been defined. Only preliminary characterization and transportation-related waste packaging requirements for RH-TRU waste have been identified. Requirements for the RH-TRU 72-B Cask have not been finalized but are included as technical guidance. RH-TRU waste transportation requirements will be updated after NRC approval of the RH-TRU 72-B Cask SARP and issuance of a Certificate of Compliance (C of C).

3.1 SUMMARY OF WASTE ACCEPTANCE CRITERIA

The purpose of Section 3.0, including Table 3.2, *Summary of CH Waste Acceptance Criteria, Requirements and Compliance Methods*, and Table 3.7, *Summary of RH Waste Acceptance Criteria, Requirements and Compliance Methods*, is to assist participating Sites in preparing the site-specific plans and detailed procedures required for certifying TRU waste for transport to and disposal in the WIPP. The criteria and requirements are organized under five major headings: Container and Physical Properties; Nuclear Properties; Chemical Properties; Gas Generation; and Data. For each criterion, there are requirements covering WIPP Operations and Safety, Transportation, and Environmental Compliance.

Site-specific plans and procedures shall contain details of the processes, controls, techniques, tests, and other actions to be applied to each TRU waste payload container and/or waste stream. Methods of compliance with each criterion and requirement shall be documented or specifically referenced. These shall include procedural and administrative controls. The QA requirements applicable to waste certification are presented and discussed in Section 4.0. The documented data resulting from the implementation of the plans and procedures will form the basis for verifying that TRU waste to be sent to the WIPP is certified as meeting all the WIPP criteria by the responsible Site certifying official(s).

Revisions of requirements in referenced documents not controlled by the DOE (e.g., EPA, NRC, NMED) shall have precedence over the values quoted here, and will be incorporated in future revisions of the WAC. Sites will be notified of revised requirements by the CAO. The WAC is a controlled document. Revised/changed pages will be supplied to all holders of controlled copies.

Requests for exceptions (variances) to the WIPP operations and safety requirements must be formally submitted to the CAO for approval. The CAO cannot approve exceptions (variances) to requirements that are controlled by others, such as the NRC for transportation or the EPA and the NMED for the RCRA component of TRU mixed waste, without first obtaining changes to the controlling permits.

3.1.1 WIPP Operations and Safety Requirements

The WIPP Operations and Safety Requirements were developed to ensure safe handling of TRU wastes at the WIPP. Each Site shall prepare a TRU Waste Certification Plan identifying how the Site will ensure compliance with these requirements. The associated QA requirements shall be incorporated as quality control (QC) measures into the technical compliance activities. The certification and QA plans may be separate or in a single document. These plans may also be combined with a site-specific TRAMPAC.

3.1.2 Transportation Requirements

For CH-TRU waste, acceptable methods for payload compliance are defined in the TRUPACT-II SARP, Appendix 1.3.7 (TRAMPAC). For the use of the TRUPACT-II, each Site shall prepare a technical plan (site-specific CH-TRAMPAC) describing how the Site will ensure compliance with each payload parameter. This technical plan shall contain sufficient detail to allow reviewers to adequately understand and evaluate the compliance methodology for each payload parameter. The associated QA requirements shall be incorporated as QC measures into the technical compliance activities. The QA and technical plans (separately or combined) shall be submitted to the CAO for review and approval.

Sites shall develop and implement a Packaging QA Program that defines the quality assurance activities applicable to the use of NRC-approved transportation packaging.

Waste package requirements for transportation of RH-TRU waste will not be finalized until the RH-TRU 72-B Cask SARP is approved by the NRC and a C of C is issued. Preliminary criteria are included in Table 3.7 and Sections 3.7 through 3.11. Sites shall prepare an RH-TRAMPAC following the methodology described above.

3.1.3 Environmental Compliance Requirements

This section summarizes the requirements for TRU waste compliance with the WIPP RCRA Permit Application, the draft NMVP, and the 40 CFR Part 191 DCCA. TRU waste is classified as TRU mixed waste if it is co-contaminated with hazardous constituents as defined in 40 CFR Part 261

(Reference 12). Because of the presence of hazardous constituents, TRU mixed waste is subject to dual regulation under the Atomic Energy Act (Reference 13) and the RCRA.

The primary reference document for establishing the RCRA waste characterization requirements for TRU mixed waste included in this WAC is the WIPP Waste Analysis Plan (WAP). The WAP is Chapter C of the RCRA Permit Application. The DOE provided information in the WAP to the EPA and the NMED. This information also was used in the draft NMVP and the 40 CFR Part 191 DCCA. Sites must characterize their waste using the methods defined in the WAP. These methods comply with the requirements defined in the QAPP, which outlines the QA requirements for waste characterization methods target analytes, data verification, and other aspects of TRU mixed waste analysis at the Sites. Site QAPjPs provide detailed descriptions of the programs at the Sites which implement the requirements of the QAPP. Participating Sites have the responsibility for collecting data that will be used to demonstrate compliance with the WAP.

3.1.4 Compliance

The compliance sections describe the methods to be used by the Sites to comply with requirements for each criterion.

3.1.5 WIPP TRU Waste Acceptance Procedure

Participating Sites shall characterize their waste on a waste stream basis to the site-specific approved plans listed in Table 2.4. Waste characterization data is collected on a container basis; container data is combined to provide characterization information for a waste stream. A waste stream is defined as waste material generated from a single process or activity that is similar in material, physical form, isotopic makeup, and hazardous constituents.

> *NOTE: TRU waste that has been characterized in accordance with prior revisions of the WAC and the QAPP need not be re-characterized to the current revisions providing that characterization is reconciled with the requirements of this WAC and the current revision of the QAPP. This reconciliation shall be documented and maintained on file at the Site. Identified instances of noncompliance to this WAC or the current revision of the QAPP may be submitted to the CAO for consideration as an exception.*

A TRU waste characterization data package is a collection of the required characterization data for an individual payload container (e.g., 55 gallon drum, RH canister). After characterization of the individual payload container is completed, the TRU waste characterization data package shall be entered into the

WIPP Waste Information System (WWIS). The WIPP M&O Contractor will review this package for completeness and acceptability and provide appropriate notification to the Site.

When data from a particular waste stream characterization have been submitted, in the form of TRU waste characterization data packages that have received acceptance by the WIPP, the TRU Waste Generator/Storage Site Project Manager may make a determination that the waste stream characterization meets the WAC requirements. Based on this information, the Site Project Manager shall prepare a summary of the waste stream information and reconciliation with Data Quality Objectives defined in the QAPP. Based on this summary, the Site Project Manager shall complete a Waste Stream Profile Form. Instructions for completion of the Waste Stream Profile Form are provided in Appendix E.

The Waste Stream Profile Form is the tool with which the Sites notify the WIPP that the waste stream has been characterized. The data contained on this form will be used as the basis for acceptance of waste characterization information on TRU wastes to be disposed of at the WIPP. The Site Project Manager shall transmit the Waste Stream Profile Form to the WIPP. The WIPP M&O Contractor will verify that the entries on the Waste Stream Profile Form are complete and accurate based on audit experience and waste characterization documentation. Based on this review of the waste stream characterization data, the WIPP M&O Contractor will approve the completed Waste Stream Profile Form, place it on file, and notify the Site Project Manager.

After acceptance of the waste stream profile, the Site may certify individual payload containers, assemble a shipment, and load into the transportation packaging. The waste certification data package and shipment data package shall be transmitted to the WIPP for acceptance via the WWIS (see Appendix B). The WIPP M&O Contractor is responsible for final acceptance of TRU waste for disposal in the WIPP. The site will be notified of shipment approval via the WWIS; no shipment is authorized prior to this notification.

3.1.6 TRU Waste Data Transmittal

All required characterization, certification, and shipping data shall be transmitted to the WIPP by the WWIS. The WWIS has built-in edit, logic, and limit checks that will flag certain parameters if the data are out of tolerance for that particular parameter. Sites may transmit individual payload container waste characterization data packages via the WWIS prior to approving the Waste Stream Profile Form. Prior to shipping TRU waste payload containers from a certified and WIPP-accepted waste stream, the Site shall transmit the waste certification and shipment data packages to the WIPP to confirm data verification of the shipment. Details of the WWIS are provided in Appendix B.

NOTE: Table 3.2, Summary of WIPP CH-TRU Waste Acceptance Criteria, Requirements and Compliance Methods, follows the CH-TRU Sections.

3.2 CONTAINER AND PHYSICAL PROPERTIES CRITERIA AND REQUIREMENTS — CH-TRU WASTE

3.2.1 Container Description

3.2.1.1 WIPP Operations and Safety Requirements

Payload containers shall be DOT Specification 7A Type A (Reference 14) 55-gallon drums and SWBs and shall meet all applicable requirements of 49 CFR 173.412 (Reference 15) for Type A packaging as listed in Reference 14.

3.2.1.2 TRUPACT-II Requirements

Standard 55-gallon drums, SWBs, and ten-drum overpacks (TDOPs) are authorized for shipment of CH-TRU waste in the TRUPACT-II as specified in Section 8.0 of Appendix 1.3.7 of the TRUPACT-II SARP. The maximum number of containers per TRUPACT-II and the authorized packaging configurations are provided in Table 3.2.1.2.

TABLE 3.2.1.2
MAXIMUM NUMBER OF CONTAINERS PER TRUPACT-II AND AUTHORIZED PACKAGING CONFIGURATIONS

14	55-gallon drums
2	SWBs
2	SWBs, each containing one (1) bin
2	SWBs, each containing four (4) 55-gallon drums
1	TDOP, containing ten (10) 55-gallon drums
1	TDOP, containing one (1) SWB
1	TDOP, containing one (1) bin within a SWB
1	TDOP, containing four (4) 55-gallon drums within an SWB

3.2.1.3 Environmental Compliance Requirements

Only DOT Type A 55-gallon drums and TRUPACT-II SWBs as payload containers shall be unloaded at the WIPP.

3.2.1.4 Compliance

The Type A requirements for payload containers used for newly generated CH-TRU waste may be verified by procurement or fabrication documentation. Type A requirements for payload containers retrieved from storage may be verified by examination records demonstrating compliance with Type A requirements; or testing records showing compliance with 49 CFR 173.461.

3.2.2 Container/Assembly Weight and Center of Gravity

3.2.2.1 WIPP Operations and Safety Requirements

Individual container weights shall be limited to the weight capacities that meet DOT Specification 7A, Type A requirements.

3.2.2.2 TRUPACT-II Requirements

Table 3.2.2.2 defines the weight limits that apply to CH-TRU waste payload containers, loaded TRUPACT-IIs, and TRUPACT-II shipments. As all weight criteria must be met, different payload configurations are restricted by different requirements. For example, a payload assembly of fourteen 55-gallon drums may not be greater than 7,265 lbs even though the maximum weight of a single 55-gallon drum may be 1,000 lbs. Although the maximum weight of the payload assembly must not exceed 7,265 lbs, the weight available for the CH-TRU waste payload assembly will be less depending on the as-built weight of the TRUPACT-II to be used (the average as-built weight of production TRUPACT-IIs is 12,705 pounds). The weight available for the CH-TRU waste payload assembly is obtained by subtracting the as-built weight of a TRUPACT-II from the maximum gross weight of 19,250 lbs. The maximum gross weight per TRUPACT-II is specified based on an approximate as-built weight of 13,050 lbs and an average payload weight of 6,200 lbs; this is usually the limiting weight for two TRUPACT-IIs per shipment. The DOT limit of 80,000 lbs gross vehicle weight rating (GVWR) must also be met; this is the limiting weight for three TRUPACT-IIs per shipment.

The center of gravity of a loaded TRUPACT-II shall be determined by the weights and locations of the individual CH-TRU waste payload containers. The total weight of the top seven-pack of drums or SWB

shall be less than or equal to the total weight of the lower seven-pack of drums or SWB. The total weight of the top five drums in a TDOP shall be less than or equal to the total weight of the bottom five drums.

TABLE 3.2.2.2 CONTAINER/ASSEMBLY WEIGHT CRITERIA	
COMPONENT	**MAXIMUM WEIGHT (POUNDS)**
Individual Payload Container	
55-Gallon Drum	$\leq$ 1,000
55-Gallon Drum Overpacked in SWB	$\leq$ 1,450
SWB	$\leq$ 4,000
TDOP	$\leq$ 6,450
Payload Container Assembly	
Payload Container Assembly	$\leq$ 7,265
TRUPACT-II	$\leq$ 19,250
Truck (Tractor/Trailer)	$\leq$ 80,000

3.2.2.3 Environmental Compliance Requirements

No additional requirements.

3.2.2.4 Compliance

Documented evidence shall exist that each CH-TRU waste payload container has been weighed and that the weight of the payload container and container assembly meets the requirements. The weight of the payload container cannot exceed the weight for which the payload container has been certified in accordance with DOT Specification 7A, Type A.

3.2.3 Removable Surface Contamination

3.2.3.1 WIPP Operations and Safety Requirements

Removable surface contamination on CH-TRU waste payload containers or container assemblies to be disposed in the WIPP shall not be greater than 20 disintegrations per minute (dpm) per 100 cm^2 for alpha-emitting radionuclides and 200 dpm per 100 cm^2 for beta-gamma-emitting radionuclides. Beta -

Gamma contamination may be $\leq$ 1000 dpm/100 cm^2 if it meets the requirements of the DOE RadCon Manual, Table 2-2. The fixing of surface contamination to meet the above criterion is not permitted.

If shipments arrive at the WIPP which exceed this limit, a determination will be made as to the disposition of the shipment. CH-TRU waste payload containers with external contamination in excess of that which can be cleaned by spot decontamination procedures will be returned to the shipping Site.

3.2.3.2 TRUPACT-II Requirements

No additional requirements.

3.2.3.3 Environmental Compliance Requirements

No additional requirements.

3.2.3.4 Compliance

The Site must measure the degree of removable surface contamination for each CH-TRU waste payload container or payload container assembly prior to its shipment. The sampling methods are described in DOE-EH-0256T, *DOE Radiological Control Manual* (Reference 16). The results of these surveys must be documented.

3.2.4 Container Marking

3.2.4.1 WIPP Operations and Safety Requirements

Each CH-TRU waste payload container shall be uniquely identified by means of labels permanently attached in conspicuous locations. The container identification number shall be in medium to low density Code 39 barcode symbology per MIL-STD-1189B (Reference 17) in characters at least 1 inch high, and alphanumeric characters at least ½ inch high. The bar code identification labels shall be placed at three locations about 120 degrees apart so that at least one label is clearly visible when the drums are assembled into a seven pack (i.e., a label must be visible after slip sheets and wrapping are applied). Labels are required on the flat sides of SWBs.

3.2.4.2 TRUPACT-II Requirements

Each CH-TRU waste payload container shall be marked with the "shipping category" after verification of all payload parameters. All dunnage containers must be labeled "EMPTY" or "DUNNAGE." The shipping category is not required for empty drums.

3.2.4.3 Environmental Compliance Requirements

No additional requirements.

3.2.4.4 Compliance

Each CH-TRU waste payload container shall be labeled with a unique container identification number consisting of a Site identification and container identification. The shipping category shall be labeled conspicuously on each payload container. The container identification number and the shipping category may be on the same label(s).

3.2.5 Dunnage

3.2.5.1 WIPP Operations and Safety Requirements

No additional requirements.

3.2.5.2 TRUPACT-II Requirements

Dunnage must complete one of the configurations specified in Table 3.2.1.2 if too few payload containers are available that meet all payload container and transportation requirements. An empty, 55-gallon metal drum or an empty SWB may be used as dunnage as specified in Section 13.4 of Appendix 1.3.7 of the TRUPACT-II SARP.

3.2.5.3 Environmental Compliance Requirements

No additional requirements.

3.2.5.4 Compliance

If an empty drum is used as dunnage to complete a seven-pack in a shipment to the WIPP, the drum shall be labeled "EMPTY" or "DUNNAGE" and have a container marking per Section 3.2.4, as appropriate. The empty drum shall be reported by container ID number in the data package. Actual data (zeros, weights, etc., when applicable) shall be reported in the WWIS data fields for a dunnage drum that is part of an assembly.

If a seven-pack of empty drums or SWB is shipped as dunnage to fill a TRUPACT-II, label the drums/SWB "EMPTY" or "DUNNAGE," but do not label them with container ID numbers or include them in the WWIS data. Empty seven-packs will be returned to the shipper for reuse.

3.2.6 Filter Vents

3.2.6.1 WIPP Operations and Safety Requirements

All payload containers shall be vented.

3.2.6.2 TRUPACT-II Requirements

As specified in Section 8.0 of Appendix 1.3.7 of the TRUPACT-II SARP, all CH-TRU waste payload containers, including overpacks, shall be vented with filters to control gas concentration and pressure. Filters must meet the specifications described in Appendix 1.3.5 of the TRUPACT-II SARP. (See Section 3.5.6.2 for liners.)

3.2.6.3 Environmental Compliance Requirements

Payload containers with TRU waste shall be vented.

3.2.6.4 Compliance

The installation of filter vents shall be documented and verified by visual inspection.

3.2.7 Liquids

3.2.7.1 WIPP Operations and Safety Requirements

Liquid waste is not acceptable at the WIPP. CH-TRU waste shall contain as little residual liquid as is reasonably achievable by pouring, pumping, and/or aspirating. Internal containers (e.g., bottles, cans, etc.) shall contain less than 1 inch or 2.5 centimeters of liquid in the bottom of the container. In no case shall the total liquid volume (i.e., the sum of all internal or payload container volumes) exceed:

- 2 liters in a 55-gallon drum or
- 8 liters in a SWB

3.2.7.2 TRUPACT-II Requirements

The total volume of residual liquid in a payload container shall be less than 1 volume percent of the payload container.

3.2.7.3 Environmental Compliance Requirements

No additional requirements.

3.2.7.4 Compliance

Radiography or visual examination shall be used to determine the presence of liquids and to estimate the quantity of liquid in retrievably-stored waste. Radiography or visual records shall include a description of the location of any liquid detected (e.g., between the rigid liner and the 55-gallon poly bag liner or in a one-gallon poly bottle) and an estimate of its volume.

For newly generated waste, visual examination and documentation of container content at the time of waste packaging, or verification (random sampling) and documentation, may be used to demonstrate compliance. Sites shall have in place policies and procedures that prohibit free liquids being placed in newly generated CH-TRU wastes.

NOTE: It is not the intent of this WAC to require Sites to reject, repackage, or treat TRU waste solely because a small amount of liquid is detected in a payload container. At the same time, it is the Site's responsibility to restrict liquids to the extent possible as it generates new waste.

3.3 NUCLEAR PROPERTIES CRITERIA AND REQUIREMENTS — CH-TRU WASTE

3.3.1 Nuclear Criticality (Pu-239 FGE)

3.3.1.1 WIPP Operations and Safety Requirements

The fissile or fissionable radionuclide content, in terms of Pu-239 fissile-gram equivalent (FGE), of CH-TRU waste payload containers shall be no greater than 200 g per 55-gallon drum or 325 g per SWB maximum.

The Pu-239 FGE shall be calculated using the methods detailed in Section 9.4 of Appendix 1.3.7 of the TRUPACT-II SARP.

3.3.1.2 TRUPACT-II Requirements

Table 3.3.1.2 defines the maximum allowable quantity of fissile material, expressed as Pu-239 FGE, for CH-TRU waste in the TRUPACT-II. The FGE quantity includes two times the measurement error, as specified in Section 9.4 of Appendix 1.3.7 of the TRUPACT-II SARP.

TABLE 3.3.1.2
NUCLEAR CRITICALITY CRITERIA

COMPONENT	PU-239 FISSILE GRAM EQUIVALENT (FGE)
Payload Container	
55-Gallon Drum	< 200
SWB	< 325
TDOP	< 325
TRUPACT-II	**< 325**

3.3.1.3 Environmental Compliance Requirements

No additional requirements.

3.3.1.4 Compliance

Assay data shall be obtained in accordance with the QAPP-approved methods and shall be presented to show that the FGE content complies with the limits for a CH-TRU waste payload container. For

newly generated CH-TRU waste, documented procedures controlling the loading of contents into the payload container may be substituted for assay data. Records of calculations converting the specific activity of selected radionuclides to FGE using the methods detailed in Section 9.4 of Appendix 1.3.7 of the TRUPACT-II SARP shall be maintained.

3.3.2 Pu-239 Equivalent Activity

3.3.2.1 WIPP Operations and Safety Requirements

Untreated CH-TRU waste shall not exceed 80 Plutonium Equivalent Curies (PE-Ci) of activity per 55-gallon drum or 130 PE-Ci of activity per SWB. Untreated CH-TRU waste in 55-gallon drums may contain up to 1800 PE-Ci of activity if overpacked in SWBs or TDOPs. 55-gallon drums containing solidified/vitrified CH-TRU waste shall not exceed 1800 PE-Ci of activity per drum.

3.3.2.2 TRUPACT-II Requirements

No additional requirements.

3.3.2.3 Environmental Compliance Requirements

No additional requirements.

3.3.2.4 Compliance

Documented analyses or acceptable knowledge documentation that meets the QAPP requirements shall be available to show that each CH-TRU waste payload container does not exceed the limits. Appendix A details the calculational methods to obtain PE-Ci.

3.3.3 Contact Dose Rate

3.3.3.1 WIPP Operations and Safety Requirements

CH-TRU waste payload containers shall have a maximum contact dose rate (beta + gamma + neutron) at any point no greater than 200 milliroentgen equivalent man per hour (mrem/hr). Neutron contributions to the total payload container dose rate shall be reported separately in the data package.

3.3.3.2 TRUPACT-II Requirements

The external dose rate of individual CH-TRU waste payload containers is limited to 200 mrem/hr on contact. The external dose rate of the loaded TRUPACT-II to be transported is limited to 200 mrem/hr contact dose rate and 10 mrem/hr at two meters distance as specified in Section 12.0 of Appendix 1.3.7 of the TRUPACT-II SARP. Shielding is allowed only for As Low As Reasonably Achievable (ALARA) purposes.

3.3.3.3 Environmental Compliance Requirements

No additional requirements.

3.3.3.4 Compliance

Documented procedures shall be used for the measurement of dose rates on each type of payload container. The instrumentation used must be properly calibrated using sources traceable to the National Institute of Science and Technology (NIST) or other nationally recognized organization. The results of these measurements shall be documented for each CH-TRU waste payload container.

3.3.4 Thermal Power

3.3.4.1 WIPP Operations and Safety Requirements

Individual CH-TRU waste payload containers in which the average thermal power density exceeds 0.1 watt/ft^3 (3.5 watts/m^3) shall have the thermal power recorded in the data package.

3.3.4.2 TRUPACT-II Requirements

Based on the materials of construction, the thermal limit for total decay heat from all CH-TRU waste payload containers in a TRUPACT-II is 40 watts. See Section 3.5.1.2 for wattage limits for hydrogen gas generation.

3.3.4.3 Environmental Compliance Requirements

No additional requirements.

3.3.4.4 Compliance

Documented evidence, in accordance with the QAPP, shall be presented that each CH-TRU waste payload container meets the indicated limits based on the radionuclide distribution and quantity of radioactive material present. Records of calculations converting the specific activity of selected radionuclides to decay heat using the methods detailed in Section 10.0 of Appendix 1.3.7 of the TRUPACT-II SARP shall be maintained.

3.3.5 TRU Alpha Activity Concentration

3.3.5.1 WIPP Operations and Safety Requirements

For purposes of CH-TRU waste certification, the lower limit of >100 nanocuries/gram (nCi/g) of TRU radionuclides in the waste shall be interpreted as >100 nCi per gram of waste matrix. The weight of added external shielding and the payload containers (including any rigid liners) shall be subtracted prior to performing the nCi/g calculation. A propagated measurement error shall be included in the calculation of the lower limit of activity concentration (e.g., measurement plus error > 100 nCi/g).

3.3.5.2 TRUPACT-II Requirements

No additional requirements.

3.3.5.3 Environmental Compliance Requirements

Only TRU waste or TRU mixed wastes are acceptable for disposal in the WIPP.

3.3.5.4 Compliance

Documented evidence from assay data taken in accordance with the QAPP shall exist to show that the TRU alpha activity concentration of any CH-TRU waste payload container is greater than 100 nCi/g of waste matrix.

3.4 CHEMICAL PROPERTIES CRITERIA AND REQUIREMENTS — CH-TRU WASTE

3.4.1 Pyrophoric Materials

3.4.1.1 WIPP Operations and Safety Requirements

Pyrophoric materials, other than radionuclides, shall be rendered safe by mixing them with chemically stable materials (e.g., concrete, glass) or shall be processed to remove their hazardous properties. Not more than one percent by weight of the CH-TRU waste payload in each payload container may be pyrophoric forms of radionuclides, and these shall be generally dispersed in the payload.

3.4.1.2 TRUPACT-II Requirements

CH-TRU waste for shipment in TRUPACT-II shall contain less than one percent by weight of the payload container as pyrophoric radioactive materials as specified in Section 5.0 of Appendix 1.3.7 of the TRUPACT-II SARP. Nonradioactive pyrophorics shall be rendered nonreactive prior to placement in the CH-TRU waste payload container.

3.4.1.3 Environmental Compliance Requirements

No nonradionuclide pyrophorics.

3.4.1.4 Compliance

Documented procedures or evidence shall exist to show that the CH-TRU waste payload container contains no nonradionuclide pyrophorics and no significant quantities of radionuclide pyrophorics (i.e., <1 percent by weight) or other materials that could become pyrophoric compounds because of mixing. The one-percent limitation on radionuclides is to allow any minor residues of uranium or plutonium that may remain in an unoxidized state in the payload. CH-TRU wastes that are expected to contain any metallic radionuclides are to be treated (oxidized) to eliminate as much of the potential pyrophorics as possible, prior to placement in payload containers. A validated process (i.e., one that has been proven by test or analysis) that converts pyrophoric compounds to a nonpyrophoric form may be used to meet this requirement. This process may either change the chemical form of the pyrophoric material or mix and bind it within an inert matrix.

3.4.2 Mixed Wastes

3.4.2.1 WIPP Operations and Safety Requirements

CH-TRU waste shall contain hazardous constituents only as co-contaminants with transuranics (TRU mixed waste). All CH-TRU mixed waste exhibiting corrosive, reactive, or ignitable characteristics shall be treated to remove the hazardous characteristic.

3.4.2.2 TRUPACT-II Requirements

No additional requirements.

3.4.2.3 Environmental Compliance Requirements

CH-TRU waste must be characterized as defined in the QAPP. Table 3.4.2.3-1. provides a summary of the characterization requirements and methods detailed in the QAPP and the WAP. Sites must determine if their CH-TRU waste is a mixed waste. As detailed in the WAP and the QAPP, the determination shall be based upon acceptable knowledge documentation and/or sampling and analysis data that indicates that the waste is hazardous as defined in 40 CFR Part 261, Subparts C and D.

TABLE 3.4.2.3-1
SUMMARY OF CH-TRU WASTE CHARACTERIZATION METHODS [1]

WASTE MATRIX	CRITERIA PROPERTIES	CHARACTERIZATION METHODS
S3000 and S4000 Summary Category for Homogeneous Solids & Soils/Gravel • Solidified inorganics • Salt waste • Solidified organics • Soils	Nuclear	• 100% Radioassay OR • Previous assay data reconciled with WAC requirements
	Physical	• Radiography with statistical selection for visual examination per QAPP, Sections 5.0 and 10.0 OR • Visual examination and documentation of container content at time of waste packaging for newly generated waste OR • Documentation and verification (random sampling) for newly generated waste
	Gas Generation • Hydrogen • Methane • VOCs	100% Headspace gas sampling and analysis
	Chemical • Total Metals • Total VOCs • Total Semi-VOCs	• Acceptable Knowledge AND • Statistical sampling per QAPP
S5000 Summary Category for Debris Waste • Uncategorized Metal (other than Lead or Cadmium) • Lead or Cadmium waste • Inorganic nonmetal waste • Combustible waste • Graphite waste • Heterogeneous waste • Filters	Nuclear	• 100% Radioassay OR • Previous assay data reconciled with WAC requirements
	Physical	• Radiography with statistical selection for visual examination per QAPP, Sections 5.0 and 10.0 OR • Visual examination and documentation of container content at time of waste packaging for newly generated waste OR • Documentation and verification (random sampling) for newly generated waste
	Gas Generation • Hydrogen • Methane • VOCs	100% Headspace gas sampling and analysis
	Chemical • Total Metals • Total VOCs • Total Semi-VOCs	• Acceptable Knowledge

NOTE: (1) Characterization must be performed in accordance with the QAPP.

Each CH-TRU mixed waste payload container must be assigned one or more EPA hazardous waste codes. Only EPA hazardous waste codes listed in the WIPP RCRA Part A Permit Application may be managed at the WIPP. Table 3.4.2.3-2 lists the WIPP acceptable EPA hazardous waste codes.

TABLE 3.4.2.3-2
EPA HAZARDOUS WASTE CODES ACCEPTABLE AT WIPP

F001	D018	D037
F002	D019	D038
F003	D021	D039
F004	D022	D040
F005	D026	D043
D004	D027	P015
D005	D028	
D006	D029	
D007	D030	
D008	D032	
D009	D034	
D010	D035	
D011	D036	

3.4.2.4 Compliance

The types and quantities of the hazardous components in the CH-TRU mixed wastes shall be recorded in the Site's data records. Sites shall develop QAPjPs that establish procedures for sampling, analytical protocols and QA/QC guidance. All information required by the WIPP WAP and the QAPP (e.g., testing, sampling, and analytical techniques; statistical sample selection; sampling and analytical frequency, Quality Assurance Objectives; and applicable procedures) must be addressed in the QAPjP.

3.4.3 Chemical Compatibility

3.4.3.1 WIPP Operations and Safety Requirements

CH-TRU mixed waste shall contain no chemicals which would cause adverse reactions with other payload containers during handling or disposal.

3.4.3.2 TRUPACT-II Requirements

Wastes must be evaluated to ensure that no adverse reactions could take place during transport and that the chemical/material or any products of reaction are compatible with the TRUPACT-II construction materials as specified in Section 6.0 of Appendix 1.3.7 of the TRUPACT-II SARP.

3.4.3.3 Environmental Compliance Requirements

CH-TRU mixed waste must be compatible with its container and packaging materials as well as other waste.

3.4.3.4 Compliance

Documentation must show that chemicals, if present, in CH-TRU mixed waste are listed in Tables 5.1 through 5.6 of Appendix 1.3.7 of the TRUPACT-II SARP. A chemical compatibility analysis has been performed for the chemicals in these tables and ensures that these wastes meet the requirements for operations, TRUPACT-II, and environmental compliance.

3.4.4 Hazardous Constituents

3.4.4.1 WIPP Operations and Safety Requirements

No additional requirements.

3.4.4.2 TRUPACT-II Requirements

No additional requirements.

3.4.4.3 Environmental Compliance Requirements

For compliance with 40 CFR Part 268 and the WIPP NMVP, the type and quantity of hazardous constituents on the target analyte lists, as defined in the QAPP, and TICs must be reported.

3.4.4.4 Compliance

The type and quantities of hazardous constituents on the target analyte lists, as defined in the QAPP, and tentatively identified compounds (TICs) must be recorded in the Site's data package and reported in the WWIS database.

3.4.5 Explosives, Corrosives, and Compressed Gases

3.4.5.1 WIPP Operations and Safety Requirements

The CH-TRU waste payload shall contain no explosives, corrosives or compressed gases. 49 CFR 173.50 defines explosives; 40 CFR 261.22 defines corrosives; and 49 CFR 173.115 defines compressed gases.

3.4.5.2 TRUPACT-II Requirements

Explosive or corrosive chemical constituents are prohibited from a TRUPACT-II payload as specified in Section 5.0 of Appendix 1.3.7 of the TRUPACT-II SARP. Pressurized containers are not allowed in a TRUPACT-II payload as specified in Section 4.0 of Appendix 1.3.7 of the TRUPACT-II SARP.

3.4.5.3 Environmental Compliance Requirements

No ignitable, corrosive, or reactive wastes as defined by 40 CFR 261.21, 261.22, and 261.23 respectively.

3.4.5.4 Compliance

Documented procedures, radiography, or visual examination shall be used to ensure that individual CH-TRU waste payload containers contain no pressurized vessels. For newly generated waste, documented procedures shall be used to exclude explosive or corrosive items, compounds, or combinations of materials that could form explosive or corrosive constituents within the payload container. If explosive materials are present, they must be treated or diluted such that a detonation is not possible. Corrosive materials, if present, must be treated to render them noncorrosive.

3.4.6 PCBs Concentration

3.4.6.1 WIPP Operations and Safety Requirements

No additional requirements.

3.4.6.2 TRUPACT-II Requirements

No additional requirements.

3.4.6.3 Environmental Compliance Requirements

TRU waste with polychlorinated biphenyls (PCBs) concentrations equal to or greater than 50 ppm is not allowed for disposal in the WIPP.

3.4.6.4 Compliance

For CH-TRU organic sludges, statistical selection, sampling and analysis for PCBs must be performed in accordance with the QAPP. If transformer oils containing PCBs have been identified in a waste stream, these wastes shall be examined for PCBs. Acceptable knowledge may be used to characterize debris waste. Knowledge of the operations that generated these wastes is used to determine if the waste comes from a process where PCBs are a possible component of the waste.

3.5 GAS GENERATION CRITERIA AND REQUIREMENTS — CH-TRU WASTE

3.5.1 Decay Heat

3.5.1.1 WIPP Operations and Safety Requirements

No additional requirements.

3.5.1.2 TRUPACT-II Requirements

Based on gas generation concerns, there is a wattage limit for individual payload containers and a wattage limit for the TRUPACT-II. These wattage limits are presented in the TRUPACT-II SARP, Section 1.2.3.3.8. If the decay heat is less than the limits for the specified payload shipping category, the payload meets the payload compliance limit for decay heat. If individual payload containers exceed the limit, these containers must be tested in accordance with Appendix 1.3.7 of the TRUPACT-II SARP, Attachment 2.0, "Gas Generation Test Plan to Qualify Test Category Waste for Shipment in the TRUPACT-II."

3.5.1.3 Environmental Compliance Requirements

No additional requirements.

3.5.1.4 Compliance

Calculations must be performed as specified in Section 10.0 of Appendix 1.3.7 of the TRUPACT-II SARP and documented evidence shall exist to show that individual CH-TRU waste payload containers and the total payload to be transported meet the decay heat limits specified in the CH-TRUCON (Reference 20) for the appropriate shipping category.

3.5.2 Flammable VOCs

3.5.2.1 WIPP Operations and Safety Requirements

No additional requirements.

3.5.2.2 TRUPACT-II Requirements

The total concentration of potentially flammable VOCs is limited to 500 ppm in the headspace of a CH-TRU waste payload container as specified in Section 5.0 of Appendix 1.3.7 of the TRUPACT-II SARP.

3.5.2.3 Environmental Compliance Requirements

No additional requirements.

3.5.2.4 Compliance

Documented procedures shall be used to ensure that the total concentration of potentially flammable VOCs is less than or equal to 500 ppm in the headspace of a CH-TRU waste payload container. Content Codes which do not identify any of the flammable VOCs in the chemical lists do not have to implement additional controls to meet this requirement.

3.5.3 VOC Concentrations

3.5.3.1 WIPP Operations and Safety Requirements

No additional requirements.

3.5.3.2 TRUPACT-II Requirements

No additional requirements.

3.5.3.3 Environmental Compliance Requirements

No wastes shall be managed at the WIPP which contain headspace-gas VOC concentrations resulting in emissions not protective of human health and the environment. Table 3.5.3.3 lists the VOCs and limits for any CH-TRU waste payload container.

3.5.3.4 Compliance

Sites shall maintain records which show that the payload container headspace-gas concentrations do not exceed the limits defined in Table 3.5.3.3.

TABLE 3.5.3.3
VOC CONCENTRATION LIMITS

COMPOUND	MAXIMUM HEADSPACE CONCENTRATION (PPM)
Carbon Tetrachloride	7,510
Chloroform	6,325
1,1-Dichloroethylene *	28,750
1,2-Dichloroethane *	9,100
Methylene Chloride	368,500

* These compounds are also restricted to 500 ppm total per payload container by the TRUPACT-II SARP (see Para. 3. 5.2.2).

3.5.4 Aspiration

3.5.4.1 WIPP Operations and Safety Requirements

No additional requirements.

3.5.4.2 TRUPACT-II Requirements

As specified in Section 8.0 of Appendix 1.3.7 of the TRUPACT-II SARP, Sites adding filters to unvented payload containers of CH-TRU waste shall aspirate the payload containers, prior to transport, for a

sufficient period of time to ensure equilibration of any potentially flammable gases that may have accumulated in the closed containers. Refer to Appendix 3.6.11 of the TRUPACT-II SARP or the CH-TRUCON Tables 7-1 through 9-3 for specific aspiration times. Options for determining aspiration time include determination based on the date of drum closure and headspace gas sampling at the time of venting or during aspiration.

3.5.4.3 Environmental Compliance Requirements

No additional requirements.

3.5.4.4 Compliance

Documented procedures shall be used to ensure that an unvented CH-TRU waste payload container has had a filter installed and has been aspirated for a period of time sufficient to ensure equilibration of any potentially flammable gases prior to transport.

3.5.5 Shipping Category

3.5.5.1 WIPP Operations and Safety Requirements

No additional requirements.

3.5.5.2 TRUPACT-II Requirements

All CH-TRU waste payload containers in a single TRUPACT-II shall belong to the same shipping category, as defined in Section 13.0 of Appendix 1.3.7 of the TRUPACT-II SARP. Each payload container shall belong to one of the content codes defined in the CH-TRUCON.

3.5.5.3 Environmental Compliance Requirements

No additional requirements.

3.5.5.4 Compliance

Documented procedures shall be used to ensure that all CH-TRU waste payload containers to be transported in a single TRUPACT-II belong to one of the content codes defined in the CH-TRUCON and to the same shipping category.

3.5.6 Confinement Layers

3.5.6.1 WIPP Operations and Safety Requirements

No additional requirements.

3.5.6.2 TRUPACT-II Requirements

The requirements applicable to the layers of confinement in CH-TRU waste payload containers are defined in Section 8.0 of Appendix 1.3.7 of the TRUPACT-II SARP. These requirements include:

- Rigid 55-gallon drum liner, if present, shall be punctured or have a filter vent,
- Maximum number of confinement layers for the waste shall be known and must comply with the CH-TRUCON.
- Bags shall be closed by one of the following methods:

  1) Twist-and-tape closure — the use of wire or plastic ties to aid twist and tape closure is allowable.

  2) Fold-and tape closure — the use of wire or plastic ties to aid fold and tape closure is allowable.

  3) Heat-seal closure with a vented bag — heat-sealed unvented bags are prohibited.
- Sealed containers > 4 liters are prohibited except for Waste Material Type II.2 packaged in a metal container.

3.5.6.3 Environmental Compliance Requirements

No additional requirements.

3.5.6.4 Compliance

Documented procedures shall be used to ensure that the requirements specified in Section 8.0 of Appendix 1.3.7 of the TRUPACT-II SARP are met. The number of layers and bag closure shall be visually verified for newly generated waste; for stored waste, acceptable knowledge or sampling may be used.

3.6 DATA PACKAGE CRITERIA AND REQUIREMENTS — CH-TRU WASTE

3.6.1 Acceptance Data

3.6.1.1 WIPP Operations and Safety Requirements

An auditable package of data, with a signed certification statement (see Appendix F) attesting to the fact that the CH-TRU waste meets the requirements of the current WAC, shall be maintained at the Site. This data package shall include as a minimum:

- Container identification number
- Container assembly identification number (if applicable)
- Date of payload container certification
- WAC exception number (if applicable)
- Date of container closure
- Maximum contact dose rate in mrem/hr and specific neutron dose rate
- Weight
- Payload container type
- Assay information, including PE-Ci, alpha Ci, and Pu-239 FGE content
- Measured or calculated thermal power
- Shipment number
- Date of shipment
- Other information considered significant by the generator
- TRU Alpha Activity Concentration
- Removable Surface contamination

Required WWIS data (see Appendix B) must be entered and approved by the WIPP prior to shipping waste to the WIPP. Depending upon the waste form, some WWIS fields are not applicable or required.

3.6.1.2 TRUPACT-II Requirements

The data package shall include as a minimum:

- Physical description of waste form (content code)
- TRUPACT-II number(s)
- Flammable headspace gas VOC concentration
- Headspace flammable gas concentration (Hydrogen and Methane)
- Date of TRUPACT-II closure
- Shipping category

3.6.1.3 Environmental Compliance Requirements

The data package shall include as a minimum:

- Headspace gas VOC concentration
- PCB concentration, if applicable
- Hazardous constituents, if applicable
- EPA Hazardous Waste Codes, if applicable
- Waste Stream Profile Form number
- Total VOC, SVOC, and metal concentrations, if applicable

3.6.1.4 Compliance

The signed and dated Certification Statement (see Appendix F) shall be maintained on file by the Site. Waste characterization and waste certification data records shall be maintained as required by the QAPP and the QAPD. WWIS data shall be entered and transmitted to the WIPP per Appendix B.

3.6.2 RCRA Data

3.6.2.1 WIPP Operations and Safety Requirements

No additional requirements.

3.6.2.2 TRUPACT-II Requirements

No additional requirements.

3.6.2.3 Environmental Compliance Requirements

Sites shall prepare and transmit to the WIPP a Waste Stream Profile Form for each waste stream in accordance with Appendix E. Sites shall prepare a Uniform Hazardous Waste Manifest in accordance with 40 CFR 262.23 and a Land Disposal Restriction notification in accordance with 40 CFR Part 268 for each shipment of CH-TRU m

3.6.2.4 Compliance

Sites shall have procedures in place for generating Waste Stream Profile Forms (see Appendix E), Uniform Hazardous Waste Manifests, and Land Disposal Restriction notifications.

3.6.3 Shipping Data

3.6.3.1 WIPP Operations and Safety Requirements

No additional requirements.

3.6.3.2 TRUPACT-II Requirements

Sites shall prepare a "TRUPACT-II Payload Container Transportation Certification Document" (PCTCD) in accordance with Section 13 of Appendix 1.3.7 of the TRUPACT-II SARP for each payload container prior to loading the container into a TRUPACT-II. Appendix C provides a suggested format for a PCTCD.

3.6.3.3 Environmental Compliance Requirements

No additional requirements.

3.6.3.4 Compliance

Sites shall have procedures in place for certifying a TRUPACT-II payload in accordance with Appendix 1.3.7 of the TRUPACT-II SARP. Sites shall prepare a Bill of Lading for CH-TRU waste shipments in accordance with 49 CFR Part 172, Subpart C; or a Uniform Hazardous Waste Manifest in accordance with 40 CFR 262.23.

TABLE 3.2
SUMMARY OF CH-TRU WASTE ACCEPTANCE CRITERIA, REQUIREMENTS AND COMPLIANCE METHODS

CRITERIA	REQUIREMENTS/LIMITS	COMPLIANCE METHODS
3.2 CONTAINER AND PHYSICAL PROPERTIES		
Container Description 3.2.1	• DOT Type A 55-gallon Drums and SWBs	Procurement or fabrication documentation or examination records demonstrating compliance to Type A requirements; or testing records showing compliance with 49 CFR 173.461
Container/Assembly Weight 3.2.2	• ≤ 1000 lbs/55-gallon Drum • ≤ 4000 lbs/SWB • ≤ TRUPACT-II Weight [4] Limits shown in Table 3.2.2.2	Record of loaded container/assembly weights. [Weighing individual containers and totaling is acceptable.]
Removable Surface Contamination 3.2.3	• ≤ 20 dpm/100 cm^2 Alpha • ≤ 200 dpm/100 cm^2 Beta-Gamma	Record of contamination surveys taken prior to shipment
Container Marking 3.2.4	• Bar Code • Shipping Category [1]	Records of compliance inspection at time of shipment
Dunnage 3.2.5	• Empty 55-gallon Drums or empty SWBs	Labeled and applicable WWIS data reported
Filter Vents 3.2.6	• Payload containers vented	Records of visual inspection
Liquids 3.2.7	• No Liquid Wastes • < 2 Liters total residual liquid per 55-gallon Drum • < 8 Liters per SWB • < 1 in. (2.5 cm) in the bottom of any container	Radiography records, visual examination records, or acceptable knowledge documentation; Site policies/procedures restricting liquids in newly generated waste
3.3 NUCLEAR PROPERTIES		
Nuclear Critically (Pu-239 FGE) 3.3.1	• < 200 g/55-gallon Drum • < 325 g/SWB • TRUPACT-II limits shown in Table 3.3.1.2	Records of assay data or acceptable knowledge documentation, and records of conversion and calculations using the table in CH-TRAMPAC
Pu-239 Equivalent Activity (PE-Ci) 3.3.2	<u>Untreated Waste</u> • ≤ 80 PE-Ci/55-gallon Drum • ≤ 130 PE-Ci/SWB • ≤ 1800 PE-Ci/55-gal. Drum overpacked in SWB or TDOP <u>Solidified/Vitrified Waste</u> • ≤ 1800PE-Ci/55-gallon Drum	Records of assay data or acceptable knowledge documentation, and records of conversion and calculations using Appendix A

TABLE 3.2
SUMMARY OF CH-TRU WASTE ACCEPTANCE CRITERIA, REQUIREMENTS AND COMPLIANCE METHODS

CRITERIA	REQUIREMENTS/LIMITS	COMPLIANCE METHODS
3.3 NUCLEAR PROPERTIES		
Contact Dose Rate 3.3.3	• ≤ 200 mrem/hr	Records of radiation surveys taken prior to shipment
Thermal Power 3.3.4	• Report if > 0.1 watts/ft^3 • < 40 watts per TRUPACT-II	Records of assay data or acceptable knowledge documentation, and records of conversion and calculations using the tables in Appendix C
TRU Alpha Activity 3.3.5	• > 100 nCi/g of waste matrix	Records of assay data or acceptable knowledge documentation, and records of calculations showing concentrations of the total TRU radionuclides in the waste matrix
3.4 CHEMICAL PROPERTIES		
Pyrophoric Materials 3.4.1	• < 1% Radionuclide pyrophorics • No nonradionuclide pyrophorics	Records of procedures, processes or evidence which shows no presence of pyrophorics; or treatment to eliminate the characteristic
Mixed Waste 3.4.2	• Characterization per QAPP and Table 3.4.2.3 • Limited to EPA Waste Codes listed in Table 3.4.2.3-2	Hazardous waste characterization records; records showing types and quantities of hazardous constituents; and approved QAPjPs
Chemical Compatibility 3.4.3	• All chemicals must be allowable per the CH-TRAMPAC	Records showing chemical constituents listed per CH-TRUCON content codes and chemical lists
Hazardous Constituents 3.4.4	• Target analytes and TICs to be reported per the QAPP	Records showing types and quantities of hazardous constituents in the waste
Explosives, Corrosives and Compressed Gases 3.4.5	• No compressed gases • No ignitable, reactive or corrosive wastes	Radiography records, visual examination records or acceptable knowledge documentation; Site policies/procedures prohibiting these items in newly generated wastes; and/or treatment to eliminate the characteristic
PCBs Concentration 3.4.6	• < 50 ppm	Records of sampling and analysis; or acceptable knowledge of waste that may contain PCBs

TABLE 3.2
SUMMARY OF CH-TRU WASTE ACCEPTANCE CRITERIA, REQUIREMENTS AND COMPLIANCE METHODS

CRITERIA	REQUIREMENTS/LIMITS	COMPLIANCE METHODS
3.5 GAS GENERATION		
Decay Heat[1] 3.5.1	• ≤ Wattages listed in CH TRUCON Tables	Records of assay data or acceptable knowledge documentation; records of conversion and calculations showing compliance.
Flammable VOCs 3.5.2	• ≤ 500 ppm in container headspace	Records of acceptable knowledge or headspace gas analysis
VOC Concentration 3.5.3	• ≤ Limits shown in Table 3.5.3.3	Records showing container headspace gas VOC concentrations are below limits
Aspiration[1] 3.5.4	• ≥ Times shown in CH-TRUCON tables	Records of unvented container aspiration times
Shipping Category[1] 3.5.5	• Content Codes listed in CH-TRUCON tables; and one category per TRUPACT-II	Records showing only one Content Code per payload container and only one shipping category per TRUPACT-II
Confinement Layers[1] 3.5.6	• Liner punctured/vented • Number of layers known • Bags closed by approved methods • Sealed containers >4 liters prohibited (except for waste material type II.2)	Records showing compliance with Section 8.0, Appendix 1.3.7 of the TRUPACT-II SARP
3.6 DATA		
Acceptance Data 3.6.1	• Auditable package of data with signed Certification Statement on file • WWIS data transmitted	Auditable record of waste characterization data on file; signed waste Certification Statement on file; WWIS data entered and approved by WIPP
RCRA Data 3.6.2	• Waste Stream Profile Form • Uniform Hazardous Waste Manifest[2] • Land Disposal Restriction notification[2]	Waste Stream Profile Form generated by Site and accepted by WIPP; Uniform Hazardous Waste Manifest and Land Disposal Restriction notification generated
Shipping Data 3.6.3	• TRUPACT-II Payload Container Transportation Certification Documents • Bill of Lading[3]	TRUPACT-II Payload Container Transportation Certification Documents on file; Bill of Lading[3] generated

NOTES: (1) Applies to TRUPACT-II payload control only
(2) Applies to mixed wastes only
(3) A Uniform Hazardous Waste Manifest may be substituted
(4) ≤ 900 lbs for material form 1 (see WHC-EP-0558)

NOTE: Table 3.7, Summary of WIPP Preliminary RH-TRU Waste Acceptance Criteria, Requirements and Compliance Methods, follows the RH-TRU sections. RH-TRU criteria and requirements are preliminary and are provided for information. Final requirements will not be available until the RH-TRU 72-B Cask SARP is approved and the WIPP SAR is updated.

3.7 CONTAINER AND PHYSICAL PROPERTIES CRITERIA AND REQUIREMENTS – RH-TRU WASTE

3.7.1 Container Description

3.7.1.1 WIPP Operations and Safety Requirements

Canisters shall be noncombustible and meet, as a minimum, the structural requirements and design conditions for Type A packaging as contained in 49 CFR 173.412. In addition, all RH-TRU canisters shall be certified in accordance with DOT Specification 7A, Type A, and shall meet the Type A packaging specification from the time of RH-TRU waste certification to disposal in the WIPP.

RH-TRU canisters shall be no larger than a nominal 26 inches (0.66 m) in diameter with a maximum length of 10 feet, 1 inch (3.1 m), including the pintle, per Rockwell International Drawing RI-H-2-91273 (Reference 21).

RH-TRU canisters shall be equipped with an axial lifting pintle of a design acceptable to the WIPP. The canisters shall have no other lifting devices without WIPP prior approval.

3.7.1.2 RH-TRU 72-B Cask Requirements

The WIPP RH canister configured with the axial lifting pintle shall be used.

3.7.1.3 Environmental Compliance Requirements

No additional requirements.

3.7.1.4 Compliance

Documentation shall be available to show that the RH-TRU canister is fabricated to the dimensions specified in the RH-TRU canister design criteria and Drawing RI-H-2-91273. All RH-TRU canisters shall

be fabricated in accordance with documented design criteria incorporating the WIPP approved handling fixture.

3.7.2 Canister Gross Weight

3.7.2.1 WIPP Operations and Safety Requirements

RH-TRU canisters shall weigh no more than 8,000 lbs when loaded.

3.7.2.2 RH-TRU 72-B Cask Requirements

Gross weight of the RH-TRU canister must be 8,000 lbs or less.

3.7.2.3 Environmental Compliance Requirements

No additional requirements.

3.7.2.4 Compliance

For RH-TRU waste, the canister weight may be calculated based on the weight of the empty canister plus the weight of RH-TRU waste that will be placed in the canister. The weight of the canister cannot exceed the weight for which the canister has been certified in accordance with 49 CFR 173.463.

3.7.3 Removable Surface Contamination

3.7.3.1 WIPP Operations and Safety Requirements

Removable surface contamination on RH-TRU canisters to be disposed in the WIPP shall not be greater than 20 dpm per 100 cm^2 for alpha-emitting radionuclides and 200 dpm per 100 cm^2 for beta-gamma-emitting radionuclides. Beta - Gamma contamination may be $\leq$ 1000 dpm/100 cm^2 if it meets the requirements of the DOE RadCon Manual, Table 2-2. The fixing of surface contamination to meet the above criterion is not permitted.

3.7.3.2 RH-TRU 72-B Cask Requirements

No additional requirements.

3.7.3.3 Environmental Compliance Requirements

No additional requirements.

3.7.3.4 Compliance

The Site must measure the degree of removable surface contamination for each RH-TRU canister prior to its shipment. The sampling methods are described in DOE-EH-0256T, *DOE Radiological Control Manual*. The results of these surveys must be documented.

3.7.4 Container Marking

3.7.4.1 WIPP Operations and Safety Requirements

RH canisters shall be uniquely identified by means of an identification number consisting of a Site identification and a package identification permanently attached to the canister in a conspicuous location using characters at least 2 inches high.

3.7.4.2 RH-TRU 72-B Cask Requirements

On the top closure and on the outside surface of the top crush ring, there shall be an identification consisting of 2-inch-high characters, raised or indented into the surface by forging, die-stamping, or welding. The identification shall begin with the Site's two-letter identifier code (consistent with Table E-1) and a four-digit sequential number (e.g., IN0001 or LA0003).

3.7.4.3 Environmental Compliance Requirements

No additional requirements.

3.7.4.4 Compliance

Each canister shall be marked with a unique identification number.

3.7.5 Dunnage

3.7.5.1 WIPP Operations and Safety Requirements

No requirements.

3.7.5.2 RH-TRU 72-B Cask Requirements

Dunnage may be used to fill voids inside the RH-TRU canister.

3.7.5.3 Environmental Compliance Requirements

No requirements.

3.7.5.4 Compliance

Dunnage shall be reported as part of the waste volume.

3.7.6 Filter Vents

3.7.6.1 WIPP Operations and Safety Requirements

All canisters shall be vented.

3.7.6.2 RH-TRU 72-B Cask Requirements

As specified in Section 8.0 of Appendix 1.3.7 of the RH-TRU 72-B Cask SARP, all RH-TRU canisters shall be vented with filters to control gas concentration and pressure. Filters must meet the specifications described in Appendix 1.3.5 of the SARP.

3.7.6.3 Environmental Compliance Requirements

All canisters shall be vented.

3.7.6.4 Compliance

The placement of filter vents shall be documented and verified by visual inspection.

3.7.7 Liquids

3.7.7.1 WIPP Operations and Safety Requirements

Liquid waste is not acceptable at the WIPP. RH-TRU waste shall contain as little residual liquid as is reasonably achievable by pouring, pumping, and/or aspirating. Internal containers (e.g., bottles, cans, etc.) should contain less than 1 inch or 2.5 centimeters of liquid in the bottom of the container. In no case shall the total liquid volume (i.e., sum of all internal or payload container volumes) exceed 6 liters in a canister.

3.7.7.2 RH-TRU 72-B Cask Requirements

The total volume of residual liquid in a canister shall be not greater than 1 volume percent of the canister.

3.7.7.3 Environmental Compliance Requirements

No additional requirements.

3.7.7.4 Compliance

Radiography, when feasible, visual examination, or acceptable knowledge shall be used to determine the presence and quantity of liquid. Inspection records shall include a description of the location of any liquid detected and an estimate of its volume.

Sites shall have in place policies and procedures that prohibit free liquids being placed in newly generated RH-TRU wastes.

NOTE: It is not the intent of this WAC to require Sites to reject, repackage, or treat TRU waste solely because a small amount of liquid is detected in a payload container. At the same time, it is the Site's responsibility to restrict liquids to the extent possible as it generates new waste.

3.8 NUCLEAR PROPERTIES CRITERIA AND REQUIREMENTS — RH-TRU WASTE

3.8.1 Nuclear Criticality (Pu-239 FGE)

3.8.1.1 WIPP Operations and Safety Requirements

The fissile or fissionable radionuclide content of RH-TRU canister shall not exceed 600 g total of Pu-239 FGE.

3.8.1.2 RH-TRU 72-B Cask Requirements

The fissile or fissionable radionuclide content of RH-TRU waste in an RH-TRU 72-B Cask, including two times the measurement error, shall be less than 325 grams of Pu-239 FGE.

3.8.1.3 Environmental Compliance Requirements

No additional requirements.

3.8.1.4 Compliance

Assay data shall be presented to show that the FGE content complies with the limits for both a canister and a cask. For newly generated RH-TRU waste, documented procedures controlling the loading of contents into the canister inner containers may be substituted for assay data.

3.8.2 Pu-239 Equivalent Activity

3.8.2.1 WIPP Operations and Safety Requirements

RH-TRU waste canisters shall not exceed 1000 PE-Ci of activity.

3.8.2.2 RH-TRU 72-B Cask Requirements

No additional requirements.

3.8.2.3 Environmental Compliance Requirements

No additional requirements.

3.8.2.4 Compliance

Documented analyses shall be available to show that each RH-TRU canister meets the limit. Appendix A details the calculational methods to obtain PE-Ci.

3.8.3 Canister/Cask Contact Dose Rates

3.8.3.1 WIPP Operations and Safety Requirements

The RH-TRU canister limit is based upon the total RH-TRU waste volume at the WIPP, not upon the Site's number of RH-TRU canisters. No more than 5 percent of the RH canisters received at the WIPP are allowed to have dose rates of > 100 rem/hr. Prior approval by the WIPP is required before RH-TRU canisters having dose rates > 100 rem/hr but ≤ 1000 rem/hr may be shipped to the WIPP. All RH-TRU canisters shall have a maximum contact dose rate at any point no greater than 1000 rem/hr. Neutron contributions are limited to 270 mrem/hr. Neutron contributions of greater than 20 mrem/hr to the total canister dose rate shall be reported in the data package.

3.8.3.2 RH-TRU 72-B Cask Requirements

The external dose rate on the loaded RH-TRU 72-B Cask is limited to 200 mrem/hr at the surface of the cask and 10 mrem/hr at two meters distance from the cask.

3.8.3.3 Environmental Compliance Requirements

No additional requirements.

3.8.3.4 Compliance

Documented procedures shall be used for the measurement of dose rates on each RH-TRU canister. The instrumentation used must be properly calibrated using sources traceable to the NIST. The results of these measurements shall be documented for each canister.

3.8.4 Thermal Power

3.8.4.1 WIPP Operations and Safety Requirements

The thermal power generated by RH-TRU waste materials in any RH-TRU canister shall not exceed 300 watts. The thermal power shall be recorded in the RH-TRU waste data package.

3.8.4.2 RH-TRU 72-B Cask Requirements

Addressed in Section 3.8.4.1.

3.8.4.3 Environmental Compliance Requirements

No additional requirements.

3.8.4.4 Compliance

Documented evidence shall be presented that each RH-TRU canister meets the indicated limits based on the radionuclide distribution and quantity of radioactive material present.

3.8.5 TRU Alpha Activity Concentration

3.8.5.1 WIPP Operations and Safety Requirements

For purposes of RH-TRU waste certification, the lower limit of >100 nCi/g of TRU radionuclides in the waste shall be interpreted as >100 nCi/g of waste matrix. The weight of internal containers (including any rigid liners) shall be subtracted prior to performing the nCi/g calculation. A propagated measurement error may be included in the calculation of the lower limit of activity concentration (e.g., measurement plus error > 100 nCi/g).

The maximum TRU alpha activity concentration for an RH-TRU canister shall not exceed 23 curies/liter. The concentration may be averaged over the canister.

3.8.5.2 RH-TRU 72-B Cask Requirements

No additional requirements.

3.8.5.3 Environmental Compliance Requirements

Addressed in Section 3.8.5.1.

3.8.5.4 Compliance

Documented evidence shall exist to show that the TRU alpha activity concentration of any RH-TRU canister is greater than 100 nCi/g of waste matrix and that the activity of RH-TRU waste does not exceed 23 Ci/liter.

3.9 CHEMICAL PROPERTIES CRITERIA AND REQUIREMENTS – RH-TRU WASTE

3.9.1 Pyrophoric Materials

3.9.1.1 WIPP Operations and Safety Requirements

Pyrophoric materials, other than radionuclides, shall be rendered inert by mixing them with chemically stable materials (e.g., concrete, glass) or shall be processed to remove their hazardous properties. Not more than one percent by weight of the payload in each RH-TRU canister may be pyrophoric forms of radionuclides, and these shall be generally dispersed in the payload.

3.9.1.2 RH-TRU 72-B Cask Requirements

Addressed in Section 3.9.1.1.

3.9.1.3 Environmental Compliance Requirements

No nonradionuclides.

3.9.1.4 Compliance

Documented procedures or evidence shall exist to show that the RH-TRU canister contains no nonradionuclide pyrophorics and no significant quantities of radionuclide pyrophorics (i.e., <1 percent by weight) or other materials that could become pyrophoric compounds because of mixing. The one-percent limitation on radionuclides is to allow any minor residues of uranium or plutonium that may remain in an unoxidized state in the payload. RH-TRU wastes that are expected to contain metallic radionuclides are to be treated (oxidized) to eliminate as much of the potential pyrophorics as possible,

prior to placement in canisters. A validated process (i.e., one that has been proven by test or analysis) that converts pyrophoric compounds to a nonpyrophoric form may be used to meet this requirement. This process may either change the chemical form of the pyrophoric material or mix and bind it within an inert matrix.

3.9.2 Mixed Wastes

3.9.2.1 WIPP Operations and Safety Requirements

RH-TRU waste shall contain hazardous constituents only as co-contaminants with transuranics (TRU mixed waste). All RH-TRU mixed waste exhibiting corrosive, reactive, or ignitable characteristics shall be treated to remove the hazardous characteristic.

3.9.2.2 RH-TRU 72-B Cask Requirements

No additional requirements.

3.9.2.3 *Environmental Compliance Requirements*

RH-TRU waste must be characterized as defined in the QAPP. Table 3.9.2.3-1 provides a summary of the characterization requirements and methods detailed in the QAPP and the WAP. Sites must determine if their RH-TRU waste is a mixed waste. The determination shall be based upon acceptable knowledge documentation and/or sampling and analysis data that indicate that the waste is hazardous as defined in 40 CFR Part 261, Subparts C and D.

TABLE 3.9.2.3-1
SUMMARY OF RH-TRU WASTE CHARACTERIZATION METHODS [1]

WASTE MATRIX	CRITERIA PROPERTIES	CHARACTERIZATION METHODS
S3000 and S4000 Summary Categories for Homogeneous Solids & Soils/Gravel • Solidified inorganics • Salt waste • Solidified organics • Soils	Nuclear	• Nondestructive Radioassay OR • Previous isotopic distribution from destructive radiochemistry OR • Previous assay data reconciled with WAC requirements
	Physical	• Radiography with statistical selection for visual examination per QAPP, Sections 5.0 and 10.0 OR • Visual examination and documentation of container content at time of waste packaging for newly generated waste
	Gas Generation • Hydrogen • Methane • VOCs	100% Headspace gas sampling and analysis
	Chemical • Total Metals • Total VOCs • Total Semi-VOCs	• Acceptable Knowledge AND/OR • Statistical sampling per QAPP
S5000 Summary Category for Debris Waste • Uncategorized Metal (other than Lead or Cadmium) • Lead or Cadmium waste • Inorganic nonmetal waste • Combustible waste • Graphite waste • Heterogeneous waste • Filters	Nuclear	• Nondestructive Radioassay OR • Previous isotopic distribution from destructive radiochemistry OR • Previous assay data reconciled with WAC requirements
	Physical	• Radiography with statistical selection for visual examination per QAPP, Sections 5.0 and 10.0 OR • Visual examination and documentation of container content at time of waste packaging for newly generated waste
	Gas Generation • Hydrogen • Methane • VOCs	100% Headspace gas sampling and analysis
	Chemical • Total Metals • Total VOCs • Total Semi-VOCs	• Acceptable Knowledge

NOTE: (1) Characterization must be performed in accordance with the QAPP.

Each RH-TRU mixed waste canister must be assigned one or more EPA hazardous waste codes. Only EPA hazardous waste codes listed in the WIPP RCRA Part A Permit Application can be managed at the WIPP. Table 3.9.2.3-2 lists the WIPP acceptable EPA hazardous waste codes.

TABLE 3.9.2.3-2
EPA HAZARDOUS WASTE CODES ACCEPTABLE AT WIPP

F001	D018	D037
F002	D019	D038
F003	D021	D039
F004	D022	D040
F005	D026	D043
D004	D027	P015
D005	D028	
D006	D029	
D007	D030	
D008	D032	
D009	D034	
D010	D035	
D011	D036	

3.9.2.4 Compliance

The types and quantities of the hazardous components in RH-TRU wastes must be recorded in the Site's data records. Sites shall develop QAPjPs which establish procedures for sampling, analytical protocols, and QA/QC guidance. All information required by the WIPP WAP and the QAPP (e.g., testing, sampling, and analytical techniques; statistical sample selection; sampling and analytical frequency, Quality Assurance Objectives; and applicable procedures) must be addressed in the QAPjP.

3.9.3 Chemical Compatibility

3.9.3.1 WIPP Operations and Safety Requirements

RH-TRU mixed waste shall contain no chemicals which would cause adverse reactions with the canisters during handling or disposal.

3.9.3.2 RH-TRU 72-B Cask Requirements

Any chemical/material in the RH-TRU waste in excess of one weight percent shall conform to the allowable chemicals in each "waste material type" as defined in the RH-TRUCON. Wastes must be evaluated to ensure that no adverse reactions could take place during transport and that the

chemical/material or any products of reaction are compatible with the RH-TRU 72-B Cask construction materials as specified in Section 6.0 of Appendix 1.3.7 of the RH-TRU 72-B Cask SARP.

3.9.3.3 Environmental Compliance Requirements

RH-TRU mixed waste must be compatible with its container and packaging materials as well as other waste.

3.9.3.4 Compliance

RH-TRU mixed waste must be listed in the RH-TRUCON and be limited to the chemical amounts shown in the RH-TRUCON Chemical List for the applicable Content Code.

3.9.4 Hazardous Constituents

3.9.4.1 WIPP Operations and Safety Requirements

Hazardous constituents included in the target analyte lists and TICs as defined in the QAPP shall be reported.

3.9.4.2 RH-TRU 72-B Cask Requirements

No additional requirements.

3.9.4.3 Environmental Compliance Requirements

For compliance with 40 CFR Part 268 and the WIPP NMVP, the type and quantity of hazardous constituents on the target analyte lists and TICs as defined in the QAPP must be reported.

3.9.4.4 Compliance

The type and quantity of hazardous constituents on the target analyte lists and the TICs as defined in the QAPP must be recorded in the Site's data package and be reported in the WWIS database.

3.9.5 Explosives, Corrosives, and Compressed Gases

3.9.5.1 WIPP Operations and Safety Requirements

The RH-TRU waste payload shall contain no explosives, corrosives or compressed gases. 49 CFR 173.50 defines explosives; 49 CFR 173.136 defines corrosives; and 49 CFR 173.115 defines compressed gases.

3.9.5.2 RH-TRU 72-B Cask Requirements

Explosives or pressurized containers are not permitted.

3.9.5.3 Environmental Compliance Requirements

No ignitable, corrosive, or reactive wastes as defined by 40 CFR 261.21, 261.22, and 261.23 respectively.

3.9.5.4 Compliance

Documented procedures or visual examination shall be used to ensure that individual RH-TRU canisters contain no pressurized vessels. Documented procedures shall be used to exclude explosive or corrosive items, compounds, or combination of materials that could form explosive or corrosive conditions within the canister. If explosive materials are present, they must be treated or diluted such that a detonation is not possible. Corrosive materials, if present, must be treated to render them noncorrosive. Documented procedures shall be used to exclude these items from newly generated waste.

3.9.6 PCBs Concentration

3.9.6.1 WIPP Operations and Safety Requirements

No additional requirements.

3.9.6.2 RH-TRU 72-B Cask Requirements

No additional requirements

3.9.6.3 Environmental Compliance Requirements

TRU waste with PCB concentrations equal to or greater than 50 ppm are not allowed for disposal in the WIPP.

3.9.6.4 Compliance

For RH-TRU organic sludges, statistical selection, sampling, and analysis for PCBs must be performed in accordance with the QAPP. If transformer oils containing PCBs have been identified in a waste stream these wastes shall be examined for PCBs. Acceptable knowledge may be used to characterize debris waste. Knowledge of the operations that generated these wastes is used to determine if the waste comes from a process where PCBs are a possible component of the waste.

3.10 GAS GENERATION CRITERIA AND REQUIREMENTS – RH-TRU WASTE

3.10.1 Decay Heat

3.10.1.1 WIPP Operations and Safety Requirements

No additional requirements.

3.10.1.2 RH-TRU 72-B Cask Requirements

The decay heat limits for canisters in each shipping category are presented in the RH-TRU 72-B Cask SARP Table 1.2-7.

3.10.1.3 Environmental Compliance Requirements

No additional requirements.

3.10.1.4 Compliance

Calculations must be performed as specified in Section 10.0 of Appendix 1.3.7 of the RH-TRU 72-B Cask SARP and documented evidence shall exist to show that the RH-TRU canister and payload assembly to be transported meets the decay heat limits specified.

3.10.2 Flammable VOCs

3.10.2.1 WIPP Operations and Safety Requirements

No additional requirements.

3.10.2.2 RH-TRU 72-B Cask Requirements

The total concentration of potentially flammable VOCs is limited to 500 ppm in the headspace of a RH-TRU canister as specified in Section 5.0 of Appendix 1.3.7 of the RH-TRU 72-B Cask SARP. Content Codes which do not identify any of the flammable VOCs in the chemical lists do not have to implement additional controls to meet this requirement.

3.10.2.3 Environmental Compliance Requirements

No additional requirements.

3.10.2.4 Compliance

Documented procedures shall be used to ensure that the total concentration of potentially flammable VOCs is less than or equal to 500 ppm in the headspace of a RH-TRU waste canister.

3.10.3 VOC Concentrations

3.10.3.1 WIPP Operations and Safety Requirements

No additional requirements.

3.10.3.2 RH-TRU 72-B Cask Requirements

No additional requirements.

3.10.3.3 Environmental Compliance Requirements

No wastes shall be managed at the WIPP which contain headspace-gas VOC concentrations resulting in emissions not protective of human health and the environment. Table 3.10.3.3 lists the VOCs and limits for any RH-TRU canister.

3.10.3.4 Compliance

Sites shall maintain records which show that the canister headspace-gas concentrations do not exceed the limits defined in Table 3.10.3.3.

TABLE 3.10.3.3 VOC CONCENTRATION LIMITS	
COMPOUND	MAXIMUM HEADSPACE CONCENTRATION (PPM)
Carbon Tetrachloride	7,510
Chloroform	6,325
1,1-Dichloroethylene *	28,750
1,2-Dichloroethane *	9,100
Methylene Chloride	368,500

* These compounds are also restricted to 500ppm total per payload container by the TRUPACT-II SARP (see Para. 3. 10.2.2).

3.10.3.4 Compliance

Documented evidence shall exist to show that the total VOC concentration of any RH-TRU canister is less than the values specified in Table 3.10.3.3.

3.10.4 Aspiration

3.10.4.1 WIPP Operations and Safety Requirements

None currently identified.

3.10.4.2 RH-TRU 72-B Cask Requirements

None currently identified.

3.10.4.3 Environmental Compliance Requirements

None currently identified.

3.10.4.4 Compliance

N/A

3.10.5 Shipping Category

3.10.5.1 WIPP Operations and Safety Requirements

None currently identified.

3.10.5.2 RH-TRU 72-B Cask Requirements

None currently identified.

3.10.5.3 Environmental Compliance Requirements

None currently identified.

3.10.5.4 Compliance

N/A

3.10.6 Confinement Layers

3.10.6.1 WIPP Operations and Safety Requirements

None currently identified.

3.10.6.2 RH-TRU 72-B Cask Requirements

None currently identified.

3.10.6.3 Environmental Compliance Requirements

None currently identified.

3.10.6.4 Compliance

N/A

3.11 DATA PACKAGE CRITERIA AND REQUIREMENTS — RH-TRU WASTE

3.11.1 Acceptance Data

3.11.1.1 WIPP Operations and Safety Requirements

An auditable package of data, with a signed certification statement (see Appendix F) attesting to the fact that the RH-TRU waste meets the requirements of current WAC, shall be maintained at the Site. This data package shall include as a minimum:

- Container identification number
- Date of canister certification
- WAC exception number (if applicable)
- Date of container closure
- Maximum contact dose rate in mrem/hr and specific neutron dose rate
- Weight
- Assay information, including PE-Ci, alpha Ci, and Pu-239 FGE content
- Measured or calculated thermal power
- Shipment number
- Date of shipment
- Other information considered significant by the generator
- TRU Alpha Activity Concentration
- Removable Surface contamination

Required WWIS data must be entered and approved by the WIPP prior to shipping waste to the WIPP. Depending upon the waste form, some WWIS fields are not applicable or required.

3.11.1.2 RH-TRU 72-B Cask Requirements

The data package shall include as a minimum:

- Physical description of waste form (content code)
- RH-TRU 72-B Cask number(s)
- Flammable headspace gas VOC concentration
- Headspace flammable gas concentration (hydrogen and methane)

- Date of RH-TRU 72-B Cask closure
- Shipping category

3.11.1.3 Environmental Compliance Requirements

The data package shall include as a minimum:

- Headspace gas VOC concentration
- PCB concentration, if applicable
- Hazardous constituents, if applicable
- Total VOC, SVOC, and metal concentrations, if applicable
- EPA Hazardous Waste Codes, if applicable
- Waste Stream Profile Form number

3.11.1.4 Compliance

The signed and dated RH-TRU waste Certification Statement (see Appendix F) shall be maintained on file by the Site. Waste characterization and waste certification data records shall be maintained as required by the QAPP and the QAPD. WWIS data shall be entered and transmitted to the WIPP per Appendix B.

3.11.2 RCRA Data

3.11.2.1 WIPP Operations and Safety Requirements

No additional requirements.

3.11.2.2 RH-TRU 72-B Cask Requirements

No additional requirements.

3.11.2.3 Environmental Compliance Requirements

Sites shall prepare and transmit to the WIPP a Waste Stream Profile Form for each waste stream in accordance with Appendix E. Sites shall prepare a Uniform Hazardous Waste Manifest in accordance with 40 CFR 262.23, and a Land Disposal Restriction notification in accordance with 40 CFR Part 268 for each shipment of RH-TRU mixed waste.

3.11.2.4 Compliance

Sites shall have procedures in place for generating Waste Stream Profile Forms (see Appendix E), Uniform Hazardous Waste Manifests, and Land Disposal Restriction notifications.

3.11.3 Shipping Data

3.11.3.1 WIPP Operations and Safety Requirements

No additional requirements.

3.11.3.2 RH-TRU 72-B Cask Requirements

Sites shall prepare a "RH-TRU 72-B Cask Payload Container Transportation Certification Document" (PCTCD) in accordance with Section 13 of Appendix 1.3.7 of the RH-TRU 72-B Cask SARP for each canister prior to loading the canister into a RH-TRU 72-B Cask. Appendix C provides a suggested format for an RH-PCTCD.

3.11.3.3 Environmental Compliance Requirements

No additional requirements.

3.11.3.4 Compliance

Sites shall have procedures in place for certifying an RH-TRU 72-B Cask payload in accordance with Appendix 1.3.7 of the RH-TRU 72-B Cask SARP. Sites shall prepare a Bill of Lading for RH-TRU waste shipments in accordance with 49 CFR Part 172, Subpart C, or a Uniform Hazardous Waste Manifest in accordance with 40 CFR 262.23.

TABLE 3.7
SUMMARY OF WIPP PRELIMINARY RH-TRU WASTE ACCEPTANCE CRITERIA, REQUIREMENTS AND COMPLIANCE METHODS

CRITERIA	REQUIREMENTS/LIMITS	COMPLIANCE METHODS
3.7 CONTAINER AND PHYSICAL PROPERTIES		
Container Description 3.7.1	• DOT Type A RH Canister	Procurement or fabrication documentation or examination records demonstrating compliance to Type A requirements; or testing records showing compliance with 49 CFR 173.461
Canister Gross Weight 3.7.2	• ≤ 8000 lbs	Record of loaded canister weight. [Weighing individual components and totaling is acceptable]
Removable Surface Contamination 3.7.3	• ≤ 20 dpm/100 cm^2 Alpha • ≤ 200 dpm/100 cm^2 Beta-Gamma	Record of contamination surveys taken prior to shipment
Container Marking 3.7.4	• Canister ID	Records of compliance inspection at time of shipment
Dunnage 3.7.5	• Limited to inside canister	Reported in WWIS
Filter Vents 3.7.6	• Canisters vented	Records of visual inspection
Liquids 3.7.7	• No Liquid Wastes • < 6 Liters total residual liquid per canister • < 1 in. (2.5 cm) in the bottom of any container	Radiography records, visual examination records or acceptable knowledge documentation; Site policies/procedures restricting liquids in newly generated waste
3.8 NUCLEAR PROPERTIES		
Nuclear Critically (Pu-239 FGE) 3.8.1	• < 325 g/Cask	Records of assay data or acceptable knowledge documentation, and records of conversion and calculations using the table in RH-TRAMPAC
Pu-239 Equivalent Activity (PE-Ci) 3.8.2	• ≤ 1000 PE-Ci/canister	Records of assay data or acceptable knowledge documentation, and records of conversion and calculations using Appendix A

TABLE 3.7
SUMMARY OF WIPP PRELIMINARY RH-TRU WASTE ACCEPTANCE CRITERIA, REQUIREMENTS AND COMPLIANCE METHODS

CRITERIA	REQUIREMENTS/LIMITS	COMPLIANCE METHODS
3.8 NUCLEAR PROPERTIES		
Contact Dose Rate 3.8.3	• ≤ 1000 rem/hr per canister • Preapproval required if > 100 rem/hr per canister • ≤ 200 mrem/hr per Cask	Records of radiation surveys taken prior to shipment
Thermal Power 3.8.4	• < 300 watts/canister	Records of assay data or acceptable knowledge documentation, and records of conversion and calculations showing compliance with RH-TRU 72-B Cask SARP
TRU Alpha Activity 3.8.5	• > 100 nCi/g of waste matrix AND • ≤ 23 Ci/liter	Records of assay data or acceptable knowledge documentation, and records of calculations showing concentrations of the total TRU radionuclides in the waste matrix
3.9 CHEMICAL PROPERTIES		
Pyrophoric Materials 3.9.1	• < 1% Radionuclide pyrophorics • No Nonradionuclide pyrophorics	Records of procedures, processes or evidence which shows no presence of pyrophorics; or treatment to eliminate the characteristic
Mixed Waste 3.9.2	• Characterization per QAPP and Table 3.9.2.3 • Limited to EPA Waste Codes listed in Table 3.9.2.3-2	Hazardous waste characterization records; and approved QAPjPs
Chemical Compatibility 3.9.3	• All chemicals must be allowable per the RH-TRAMPAC	Records showing chemical constituents listed per RH-TRUCON content codes and chemical lists
Hazardous Constituents 3.9.4	• Target analytes and TICs reported per QAPP	Records showing types and quantities of hazardous constituents in the waste
Explosives, Corrosives and Compressed Gases 3.9.5	• No compressed gases • No ignitable, reactive or corrosive wastes	Visual examination records or acceptable knowledge documentation; Site policies/procedures prohibiting these items in newly generated wastes; and/or treatment to eliminate the characteristic
PCBs Concentration 3.9.6	• < 50 ppm	Records of sampling and analysis; or acceptable knowledge of waste that may contain PCBs

TABLE 3.7
SUMMARY OF WIPP PRELIMINARY RH-TRU WASTE ACCEPTANCE CRITERIA, REQUIREMENTS AND COMPLIANCE METHODS

CRITERIA	REQUIREMENTS/LIMITS	COMPLIANCE METHODS
3.10 GAS GENERATION		
Decay Heat[1] 3.10.1	• ≤ Wattages listed in RH-TRU 72-B Cask SARP Table 1.2-7	Records of assay data or acceptable knowledge documentation; records of conversion and calculations showing compliance with RH-TRU 72-B Cask SARP wattage table
Flammable VOCs 3.10.2	• ≤ 500 ppm in canister headspace	Records of acceptable knowledge or headspace gas analysis
VOC Concentration 3.10.3	• ≤ Limits shown in Table 3.10.3.3	Records showing canister headspace gas VOC concentrations are below limits
Aspiration[1] 3.10.4	• None currently identified	None currently identified
Shipping Category[1] 3.10.5	• None currently identified	None currently identified
Confinement Layers[1] 3.10.6	• None currently identified	None currently identified
3.11 DATA		
Acceptance Data 3.11.1	• Auditable package of data with signed Certification Statement on file • WWIS data transmitted	Auditable record of waste characterization data on file; signed waste Certification Statement on file; WWIS data entered and approved by WIPP
RCRA Data 3.11.2	• Waste Stream Profile Form • Uniform hazardous Waste Manifest[2] • Land Disposal Restriction notification[2]	Waste Stream Profile Form generated by Site and accepted by WIPP; Uniform Hazardous Waste Manifest and Land Disposal Restriction notification procedures
Shipping Data 3.11.3	• RH-TRU 72-B Cask Payload Container Transportation Certification Documents • Bill of Lading[3]	RH-TRU 72-B Cask Payload Container Transportation Certification Documents on file; Bill of Lading[3] generated

NOTES: (1) Applies to RH-TRU 72-B Cask payload control only
(2) Applies to mixed wastes only
(3) Uniform Hazardous Waste Manifest may be substituted

4.0 QUALITY ASSURANCE REQUIREMENTS

Quality assurance is an integral part of TRU waste characterization, certification, transportation and operation activities. This section defines the QA program requirements which provide confidence that TRU waste characterization, certification, and transportation activities will be performed satisfactorily by each participating Site. These requirements are derived from the applicable QA criteria contained in documents such as DOE Orders 5700.6C (Reference 22), 5820.2A (Reference 18), 460.1 (Reference 23), and 460.2 (Reference 24); and 10 CFR 830.120 (Reference 25), 10 CFR Part 71 (Reference 19), ASME NQA-1 (Reference 26), and EPA QA/R-5 (Reference 27).

Each Site shall be responsible for developing, documenting and implementing site-specific QA plans that address the elements of these standards that are applicable to their TRU waste program. Specifically, Sites shall develop QA plans that govern TRU waste characterization, certification, and transportation activities. These site-specific QA plans shall be submitted to the CAO for approval. TRU wastes may not be formally characterized, certified or shipped to the WIPP prior to CAO approval of these QA plans. The CAO and the M&O Contractor will conduct audits and surveillances to assure that Sites are in compliance with their approved site-specific QA Plans. Observers from the EPA, NMED, and EEG may provide independent oversight during these audits and surveillances. Site-specific QA Plans governing TRU waste certification and transportation activities may be combined with other required TRU waste program documents as indicated in Table 2.4.

4.1 TRU WASTE CHARACTERIZATION QA REQUIREMENTS

The QA requirements governing TRU waste characterization activities at participating Sites are contained in the Transuranic Waste Characterization Quality Assurance Program Plan (QAPP). The requirements of the QAPP are based upon the Waste Analysis Plan of the WIPP RCRA permit application and the CAO QAPD (CAO-94-1012)(Reference 30). Sites are responsible for describing required QA and QC activities applicable to TRU waste characterization in a site-specific Quality Assurance Project Plan (QAPjP). The QAPjPs of participating analytical laboratories and testing facilities additionally shall describe the QA/QC elements applicable to their Performance Demonstration Program as required by the QAPP. All QAPjPs must be submitted to the CAO for approval. Once implemented at the Site, the QAPjP program will be audited by the CAO and the M&O Contractor.

4.2 TRU WASTE CERTIFICATION QA REQUIREMENTS

The quality assurance requirements governing TRU waste certification activities are derived from DOE Order 5700.6C, 10 CFR 830.120, and ASME NQA-1. Participating Sites shall develop and implement a site-specific QA Plan for Waste Certification that describes the required QA and QC activities applicable to the certification of TRU waste to the WIPP WAC.

4.3 TRU WASTE TRANSPORTATION QUALITY ASSURANCE REQUIREMENTS

Quality assurance requirements for the transportation of TRU waste involve two elements — compliance with TRUPACT-II and RH-TRU 72-B Cask payload control requirements and compliance with TRUPACT-II and RH-TRU 72-B Cask usage requirements. The quality assurance requirements for payload control compliance are derived from the C of C for the TRUPACT-II issued by the NRC and those anticipated for the RH-TRU 72-B Cask. The C of C references the TRUPACT-II SARP Appendix 1.3.7, "TRUPACT-II Authorized Methods for Payload Control (TRAMPAC)." The quality assurance requirements for compliance with TRUPACT-II and RH-TRU 72-B Cask usage requirements are derived from 10 CFR Part 71, 49 CFR Part 173, the TRUPACT-II C of C (Reference 28), DOE Orders 460.1 and 460.2 and the CAO Packaging Procedures and Maintenance Instructions Manual (Reference 29). Participating Sites shall develop and implement site-specific QA Plans that comply with these requirements. Sites are responsible for describing the quality assurance and quality control activities applicable to the specific parameters of the transportation packaging SARP methods for payload control in a site-specific TRAMPAC. Sites shall develop and implement a Transportation Packaging QA Program that defines the quality assurance and quality control activities applicable to usage of the TRUPACT-II and/or the RH-TRU 72-B Cask. This program controls the use of the NRC certified packaging (TRUPACT-II and RH-TRU 72-B Cask) and shall comply with the CAO Packaging Procedures and Maintenance Instructions Manual. The TRUPACT-II may not be used without CAO granting transport authority.

5.0 REFERENCES

[NOTE: The current revision of these reference documents is applicable.]

1. U.S. Department of Energy/Westinghouse Electric Corporation. *Waste Isolation Pilot Plant Resource Conservation and Recovery Permit Application*, DOE/WIPP 91-005.

2. U.S. Department of Energy. *Draft No-Migration Variance Petition*, DOE/CAO-95-2043.

3. U.S. Department of Energy. *Draft 40 CFR Part 191 Compliance Certification Application*, Draft-DOE/CAO-2056.

4. U.S. Department of Energy. *Transuranic Waste Characterization Quality Assurance Program Plan*, CAO-94-1010.

5. U.S. Department of Energy. "Memorandum of Agreement" between the Carlsbad Area Office and Headquarters.

6. U.S. Department of Energy. *Waste Isolation Pilot Plant Safety Analysis Report,* DOE/WIPP-95-2065.

7. U.S. Department of Energy. *Safety Analysis Report for the TRUPACT-II Shipping Package (SARP)*, U.S. NRC Docket No. 71-9218.

8. U.S. Department of Energy. *Safety Analysis Report for the RH-TRU 72-B Shipping Package.*

9. U.S. Congress. *Waste Isolation Pilot Plant Land Withdrawal Act,* Public Law 102-579.

10. Westinghouse WID. *System Design Description, Waste Handling,* SDD-WH00.

11. U.S. Department of Energy. *Waste Acceptance Criteria for the Waste Isolation Pilot Plant*, DOE/WIPP - 069, Revision 4, December 1991.

12 Code of Federal Regulations, Title 40, Parts 261, 262, 264, 265, and 268, *Protection of Environment,* Office of the Federal Register National Archives and Records Administration.

13. U.S. Congress. *Atomic Energy Act of 1954,* Public Law 703, as amended.

14. U.S. Department of Energy. *DOE Test and Evaluation Document for DOT Specification 7A, Type A Packaging*, WHC-EP-0558.

15. Code of Federal Regulations, Transportation, Title 49, Parts 171,172, 173, 177, and178, Office of the Federal Register National Archives and Records Administration.

16. U.S. Department of Energy. *DOE Radiological Control Manual,* DOE-EH-0256T.

17. U.S. Department of Defense. *Standard Department of Defense Bar Code Symbology,* MIL-STD-1189B.

18. U.S. Department of Energy. *Radioactive Waste Management,* DOE Order 5820.2A.

19. Code of Federal Regulations, Energy, Title 10, Part 71, *Packaging and Transportation of Radioactive Material*, Office of the Federal Register National Archives and Records Administration.

20. U.S. Department of Energy. *TRUPACT-II Content Codes (TRUCON),* DOE/WIPP 89-004.

21. U.S. Department of Energy. Rockwell International Drawing, *RH-TRU Waste Container Assembly,* RI-H-2-91273.

22. U.S. Department of Energy. *Quality Assurance,* DOE Order 5700.6C.

23. U.S. Department of Energy. *Packaging and Transportation Safety,* DOE Order 460.1.

24. U.S. Department of Energy. *Departmental Materials Transportation and Packaging Management,* DOE Order 460.2.

25. Code of Federal Regulations, Energy, Title 10, Part 830, *Nuclear Safety Management*, Office of the Federal Register National Archives and Records Administration.

26. American Society of Mechanical Engineers (ASME). *Quality Assurance Programs Requirements for Nuclear Facilities,* ASME NQA-1.

27. U.S. Environmental Protection Agency. *EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations,* EPA QA/R-5. Available from the Quality Management Staff, U.S. Environmental Protection Agency, Washington, D.C.

28. U.S. Department of Energy. *TRUPACT-II Certificate of Compliance*, NRC Docket No. 71-9218.

29. U.S. Department of Energy. *CAO Packaging Procedure and Maintenance Manual*, DOE/WIPP-93-1001.

30. U.S. Department of Energy. CAO, *Quality Assurance Program Description,* CAO-94-1012.

31. U.S. Department of Energy. CAO, *Generator Sites Assessment and Certification (GSAC) Guide*, CAO-95-2119.

APPENDIX A

CALCULATION OF PU-239 EQUIVALENT ACTIVITY

A.0 CALCULATION OF PU-239 EQUIVALENT ACTIVITY

Pu-239 equivalent activity is determined using radionuclide-specific weighting factors. To obtain this correlation, the 50-year committed effective dose equivalent (CEDE) or dose conversion factor (DCF) for a unit intake of each radionuclide will be used. These DCFs have been determined by the methodology described in International Commission on Radiological Protection (ICRP) Publications 26 and 30 (References A1 and A2) and are consistent with current DOE guidance (Reference A3). The Pu-239 equivalent activity (AM) can be characterized by:

$$AM = \sum_{i=1}^{K} \frac{A_i}{WF_i}$$

where K is the number of transuranic (TRU) radionuclides, A_i is the total radioactivity of radionuclide I, and WF_i is the PE-Ci weighting factor for radionuclide I.

WF_i is further defined as the ratio:

$$WF_i = \frac{E_0}{E_i}$$

Where E_o (rem/μCi) is the 50-year CEDE due to the inhalation of Pu-239 particulates with a 1.0 μm Activity Median Aerodynamic Diameter (AMAD) and a weekly (W) pulmonary clearance class, and E_i (rem/μCi) is the 50-year CEDE due to the inhalation of radionuclide I particulates with a 1.0 μm AMAD and the pulmonary clearance class resulting in the highest 50-year CEDE.

The value of E_o and E_i may be obtained from DOE/EH-0071 (Reference A4). Weighting factors calculated in this manner are presented below for selected radionuclides of interest.

Radionuclide	Pulmonary Clearance Class*	Weighting Factor	80 Ci Pu-239 Equivalent (CiE)
U-233	Y	3.9	312
Np-237	W	1.0	80
Pu-236	W	3.2	256
Pu-238	W	1.1	88
Pu-239	W	1.0	80
Pu-240	W	1.0	80
Pu-241	W	52.0	4160
Pu-242	W	1.1	88
Am-241	W	1.0	80
Am-243	W	1.0	80
Cm-242	W	30.0	2400
Cm-244	W	1.9	152
Cf-252	Y	3.9	312

* (W) Weekly (Y) Yearly

To determine if a waste package with several radionuclides does not exceed 80 Ci Pu-239 equivalent, AM from the previous page must be less than or equal to 80.

No estimate of non-TRU radionuclides, except those within the scope of the above description, should be included.

APPENDIX A REFERENCES

A1. *Recommendations of the International Commission on Radiological Protection*, ICRP Publication 26, January 1977.

A2. *Limits for Intakes of Radionuclides by Workers*, ICRP Publication 30, July 1978.

A3. DOE Memorandum, April 25, 1985, R. W. Earl (Acting Director, Real Property and Facilities Management Division, Office of Project and Facilities Management) to C. N. Mitchell (Director, Office of Project and Facilities Management) *Radiological Siting Requirements DOE Order 6430.1, General Design Criteria*, dated December 12, 1983.

A4. DOE/EH-0071, *Internal Dose Conversion Factors for Calculation of Dose to the Public*, July 1988.

APPENDIX B

WIPP OPERATIONS AND SAFETY DATA PACKAGE REQUIREMENTS

B.0 DATA PACKAGE REQUIREMENTS

NOTE: The WIPP Waste Information System (WWIS) is not yet functional. Characterization data are currently being transmitted by mail.

This section identifies and describes the data required to be reported to the WIPP for TRU waste to be received. Formal instructions will be prepared, in the form of a WIPP Waste Information System (WWIS) user's guide, for those personnel responsible for the transmission of the data package to the WIPP.

B.1 TRANSMISSION OF DATA TO THE WWIS

The Data Administrator at the WIPP will be the liaison between the shippers and CAO/WID, who operate the host computer where the WWIS resides. Shippers will contact the Data Administrator to obtain a password and identification (ID) code to transmit data to the WWIS. In the event a shipper encounters problems with data transmittal, deletion, or editing in the WWIS, the shipper should contact the Data Administrator.

The shipper must format the data package in accordance with the user's guide and transmit it to the host computer. In accordance with Site procedures, authorized personnel will determine the correct data. The shipper must be able to retransmit the data package for 30 days, if necessary, in the event of a mainframe failure.

B.2 WASTE CHARACTERIZATION DATA

The shipper shall provide the characterization data in the format to be specified in the WWIS user's guide. The data is identified and described in Table B-1, which is an example of the WWIS Data Dictionary and is provided for information only. The shipper is cautioned to use the current version of the WWIS Data Dictionary.

B.3 WASTE CERTIFICATION DATA

The shipper shall provide the certification data in the format to be specified in the WWIS user's guide. The data is identified and described in Table B-1, which is an example of the WWIS Data Dictionary and is provided for information only. The shipper is cautioned to use the current version of the WWIS Data Dictionary.

B.4 SHIPMENT DATA

The shipper shall provide the shipment data in the format to be specified in the WWIS user's guide. The shipper shall also assign a unique shipment number to each shipment. The shipment number consists of the 2-letter shipping site identification code specified in Table E-1 (Appendix E), followed by the last two digits of the year the shipment to the WIPP and the next consecutive 4-digit shipment number for the site. The 6-digit shipment date is entered in YYMMDD format.

TABLE B-1
EXAMPLE OF THE WWIS DATA DICTIONARY (For Information Only)

NO	FIELD	UNITS	DEFINITION	FORMAT	LIMITS, EDITS, & RANGE CHECKS	CALCULATED	RELATED FIELDS
1	Aspiration Method	None	Method used for aspirating the container prior to shipment per Appendix 1.3.7 of the TRUPACT-II Safety Analysis Report. Method is to be identified as either Option 1, 2, or 3.	A1	Edit check of either 1, 2, or 3. No Blanks	No	2
2	Aspiration Period	Days	Time that the container must be aspirated based on the aspiration method selected per Appendix 3.6.11 of the TRUPACT-II Safety Analysis Report	999	Look-up table of container aspiration periods	No	1
3	Assay Characterization Method	None	Identifies the characterization method(s) or system(s) that was used to identify and quantify the radionuclide masses	A4	Look-up table listing approved methods	No	4
4	Assay Date	None	The date when the assay was completed at the certification site	Date	None	No	3
5	Assembly Identification Number	None	A unique number assigned by the shipper to an assembly. The number consists of the 2-letter site identification code followed by the last two digits of the year and the 4-digit package assembly number.	AAYY9999	Unique number Each container in an assembly (e.g. a seven pack) must be of the same shipping category	No	None
6	Characterization Methods	None	Identifies the approved EPA characterization methods or systems that were used to obtain the waste characterization data.	A20	Look-up table of characterization techniques	No	3, 34, 41
7	Comments	None	Data field to be used to provide additional information	A200	None	No	None
8	Contact Dose Rate of Container (Beta/Gamma)	mrem/hr	Beta/gamma contact dose rate at the surface of the Type A container	9999999	≤ 200 mrem/hr for CH ≤ 1000 rem/hr for RH	No	None
9	Contact Dose Rate of Container (Neutron)	mrem/hr	Neutron contact dose rate at the surface of the Type A container	9999999	≤ 270 mrem/hr for RH	No	None
10*	Contact Dose Rate of Container (Total)	mrem/hr	Total contact dose rate at the surface of the Type A container	9999999	≤ 200 mrem/hr for CH ≤ 1000 rem/hr for RH	Yes	8, 9
11	Contact Dose Rate of Package (Total at Surface)	mrem/hr	Total contact dose rate at the surface of the Type B packaging (TRUPACT-II and RH Cask)	9999999	≤ 200 mrem/hr	No	None
12	Contact Phone	None	Phone number of the shipper technical contact. Number to be listed is to include area code + prefix + number	A12	None	No	None
13	Container Closure Date	None	Date the container was closed	Date	None	No	None
14	Container Identification Number	None	A unique identification number assigned to each container	AA99999999999	Unique number	No	None
15	Container Liner Punctured	None	Identifies whether the container liner was punctured (if applicable)	Logical (yes/no)	If field 16 had identified the use of a liner, reject if "no"	No	16
16	Container Liner Type	None	Identifies the type of container liner (if applicable)	A3	Look-up table of standard liners. Look-up table is also to contain the option of "no liner".	No	None

TABLE B-1
EXAMPLE OF THE WWIS DATA DICTIONARY (For Information Only)

NO	FIELD	UNITS	DEFINITION	FORMAT	LIMITS, EDITS, & RANGE CHECKS	CALCULATED	RELATED FIELDS
17*	Container Type Code	None	A 3-digit container type code	A3	Look-up table of approved container type codes 001 55-gallon drum 002 SWB 003 TDOP 101 RH-TRU 72-B canister 102 RH-TRU drum canister	No	54, 56, 57, 127, 136
18*	Decay Heat	Watts	The rate of deposition of thermal energy within the container associated with the decay of radionuclides. The terms "decay heat" and "thermal power" are synonymous.	9.99E+99	None	Yes	62, 98
19	Decay Heat of Package	Watts	Sum of decay heats of containers within the package	9.99E+99	< 40 Watts per TRUPACT-II package	Yes	18
20	Decay Heat Uncertainty	Watts	Uncertainty in the decay heat	9.99E+99	None	Yes	63
21	Decay Heat Uncertainty of Package	Watts	Square root of the sum of the squares of the container decay heat uncertainties	9.99E+99	None	Yes	20
22			**This line intentionally left blank**				
23	Dose Rate of Package at 1 meter	mrem/hr	Total dose rate at 1 meter from the surface of the Type B packaging (required to assign a transport index)	9999999	None	No	None
24	Dose Rate of Package at 2 Meters	mrem/hr	Total dose rate at 2 meters from the surface of the Type B packaging (TRUPACT-II and RH Cask)	9999999	≤ 10 mrem/hr	No	None
25	DOT Description	None	U.S. Department of Transportation description for the Uniform Hazardous Waste Manifest	Memo	None	No	None
26*	EPA ID	None	U.S. Environmental Protection Agency's number for the waste site having responsibility for shipment of the waste	A15	Look-up table containing the corresponding name and address of the generator	No	12, 76, 77
27	Filter Install Date	None	The date the filter was installed in the container	Date	None	No	None
28	Filter Model	None	Vendor model number of the filter used to vent a container	A6	Look-up table listing approved filters	No	None
29	Gas Generation Completion Date	None	The date of test completion for a container shipping category	Date	None	No	None
30	Gas Generation Rate - Measured H_2 + CH_4	moles/s	Measured hydrogen and methane gas generation rate for a container shipping category	9.9E+99	Look-up table containing hydrogen and methane gas generation rate limits as a function of packaging layers, content code, and radionuclide activity	No	None
31	Gas Generation Rate - Measured Total	moles/s	Measured total gas generation rate for a container shipping category	9.9E+99	Look-up table containing total gas generation rate limits as a function of packaging layers, content code, and radionuclide activity	No	None
32	Hazardous ID Code	None	Hazardous waste EPA codes listed for the container. This is a multiple occurring field.	A4	Look-up table listing the codes	No	39, 46, 79, 83, 87

TABLE B-1
EXAMPLE OF THE WWIS DATA DICTIONARY (For Information Only)

NO	FIELD	UNITS	DEFINITION	FORMAT	LIMITS, EDITS, & RANGE CHECKS	CALCULATED	RELATED FIELDS
33	Headspace Gas Innermost Layer: Analyte Name	None	The element, ion, or compound an analysis seeks to determine; the element of interest	A20	Look-up table containing the 29 targeted analytes (this is a multiple occurring data field)	No	34, 35, 36, 37, 39
34	Headspace Gas Innermost Layer: Characterization Method	None	Identifies the characterization method or system that was used to obtain the innermost layer gas data.	A30	Look-up table listing approved methods	No	6
35	Headspace Gas Innermost Layer: Date Analyzed	None	Date gas of innermost layer was analyzed	Date	≤ 34 days from date sampled	No	33, 36
36	Headspace Gas Innermost Layer: Date Sampled	None	Date gas of innermost layer was sampled	Date	None	No	None
37	Headspace Gas Innermost Layer: Flammable Gas Concentrations	Volume Percent	Concentrations of flammable gases in the innermost layer including but not limited to H_2 and CH_4	999	≤ 5% (H_2 + CH_4)	No	33, 35, 36, 38
38	Headspace Gas Innermost Layer: Identification	None	Innermost layers of confinement must be consecutively numbered and labeled starting with 1 as they are sampled and removed from the waste container during visual examination. The sample collected from each innermost layer of confinement must be referenced to that particular inner most layer of confinement and to the waste container.	99	None	No	None
39	Headspace Gas Innermost Layer: VOC Concentrations	ppmv	Concentrations of the 29 target VOCs in the innermost layer	999999	This is a multiple occurring data field	No	33, 33, 34, 35, 36, 38
40*	Headspace Gas: Analyte Name	None	The element, ion, or compound an analysis seeks to determine; the element of interest. This is a multiple occurring field.	A20	Look-up table containing the 29 targeted VOC analytes	No	41, 42, 43, 44, 46
41	Headspace Gas: Characterization Method	None	Identifies the characterization method or system used to obtain the headspace gas data.	A30	Look-up table listing approved methods	No	6
42	Headspace Gas: Date Analyzed	None	Date headspace gas was analyzed	Date	≤ 34 days after sampling date	No	40, 43
43	Headspace Gas: Date Sampled	None	Date headspace gas was sampled	Date	None	No	108
44	Headspace Gas: Flammable Gas Concentrations	Volume Percent	Concentrations of H_2 plus CH_4 flammable gases in the headspace	A20	≤ 5% (H_2 + CH_4)	No	40, 42
45*	Headspace Gas: Total Flammable VOC Concentration	ppmv	Total concentration of target flammable VOCs in the headspace.	999999	≤ 500 ppm total flammable VOCs	Yes	40, 46
46*	Headspace Gas: VOC Concentrations	ppmv	Concentrations of the 29 target VOCs in the headspace. This is a multiple occurring field.	999999	No limit for target VOCs except for the following: Carbon Tetrachloride ≤ 7510ppm Chloroform ≤ 6325ppm 1,1-Dichloroethylene ≤28750ppm 1,2-Dichloroethane ≤ 9100ppm Methylene Chloride ≤368500ppm	Yes	32, 40, 42

TABLE B-1
EXAMPLE OF THE WWIS DATA DICTIONARY (For Information Only)

NO	FIELD	UNITS	DEFINITION	FORMAT	LIMITS, EDITS, & RANGE CHECKS	CALCULATED	RELATED FIELDS
47	ICV Closure Date	None	The date when the inner containment vessel was closed	Date	None	No	None
48	Item Description Code	None	A site specific numerical code applied to individual waste forms to identify their source	A4	Look-up table listing approved item description codes taken from the site's certification plan	No	75, 105, 123
49	Layers of Packaging	None	Identifies the number of layers of plastic confinement within a container	9	None	No	75
50	Manifest Document Number	None	Identifies the manifest number assigned to the waste shipment	A5	None	No	None
51	Nondestructive Examination	None	The radiometric examination of retrievably stored waste	Logical (yes/no)	100% sampling of retrievably stored waste	No	None
52	Packaging Serial Number	None	The TRUPACT-II, Cask, or other Type B shipping container number	A3	None	No	None
53	PCB Concentration	ppm	The concentration of polychlorinated biphenyls (PCBs) in the container	9999	≤ 50 ppm No blanks	No	None
54	Plutonium-239 Equivalent Activity	PE-Ci	The plutonium-239 equivalent activity per container	9.9E+99	≤ 80 PE-Ci per drum ≤ 130 PE-Ci per SWB ≤ 1000 PE-Ci per canister	Yes	62
55	Plutonium-239 FGE per Type B RH-TRU 72-B Waste Shipping Package (Total)	FGE	The Plutonium-239 FGE plus the Plutonium-239 FGE uncertainty per RH-TRU 72-B waste shipping package	9.9E+99	≤ 325 FGE	Yes	58, 61
56	Plutonium-239 Fissile Gram Equivalent	FGE	The Plutonium-239 fissile gram equivalent per container	9.9E+99	≤ 200 FGE per drum ≤ 325 FGE per SWB ≤ 325 FGE per canister	Yes	17, 66
57	Plutonium-239 Fissile Gram Equivalent (Total)	FGE	The Plutonium-239 FGE plus twice the Plutonium-239 FGE uncertainty per container	9.9E+99	≤ 200 FGE per drum ≤ 325 FGE per SWB ≤ 325 FGE per canister	Yes	56, 60
58	Plutonium-239 Fissile Gram Equivalent per Type B Package	FGE	Sum of the Plutonium-239 fissile gram equivalent per container per Type B package	9.9E+99	≤ 325 FGE	Yes	56
59	Plutonium-239 Fissile Gram Equivalent per Type B Package for CH-TRU (Total)	FGE	The Plutonium-239 FGE plus twice the Plutonium-239 FGE uncertainty per Type B package for CH-TRU	9.9E+99	≤ 325 FGE	Yes	58, 61
60	Plutonium-239 Fissile Gram Equivalent Uncertainty	FGE	The Plutonium-239 fissile gram equivalent uncertainty per container	9.9E+99	None	Yes	67
61	Plutonium-239 Fissile Gram Equivalent Uncertainty per Type B Package	FGE	Square root of the sum of the squares of the Plutonium-239 fissile gram equivalent uncertainties per container per Type B package	9.9E+99	None	Yes	60
62	Radionuclide Activity	Curies	Activity of the individual radionuclides	9.9E+99	None	No	18, 54, 69, 101

TABLE B-1
EXAMPLE OF THE WWIS DATA DICTIONARY (For Information Only)

NO	FIELD	UNITS	DEFINITION	FORMAT	LIMITS, EDITS, & RANGE CHECKS	CALCULATED	RELATED FIELDS
63	Radionuclide Activity Uncertainty	Curies	Uncertainty in the activity of the individual radionuclides	9.9E+99	None	No	20, 102
64	Radionuclide Activity Uncertainty (Total)	Curies	Uncertainty in the summation of activities of the individual radionuclides within a container	9.9E+99	None	Yes	63
65	Radionuclide Highway Route Controlled Quantity	None	A Highway Route Controlled Quantity is that quantity of normal form material in a Type B package which exceeds 3000 times the A2 value of the radionuclide as specified in 49 CFR 173.443 or 30,000 curies, whichever is least	Logical (yes/no)	Yes if > 1 No if ≤ 1	Yes	None
66	Radionuclide Mass	Grams	Mass of the individual radionuclides	9.9E+99	None	Yes	62
67	Radionuclide Mass Uncertainty	Grams	Uncertainty in the mass of the individual radionuclides	9.9E+99	None	Yes	63
68	Radionuclide Reportable Quantity	None	A reportable quantity is that quantity of material in a Type B package which equals or exceeds the quantity listed in the Appendix to 49 CFR 172.101	Logical (yes/no)	None	Yes	None
69	Radionuclide Symbol	None	The radionuclide the analysis seeks to determine	A7	Look-up table containing the predominant radionuclides (this is a multiple occurring data field)	No	3, 4, 62
70	Reporting Flag	None	Designator which is used by the analytical laboratory to identify detection levels of the various analytes within a sample	A2	Coded to indicate appropriate flag per QAPP requirements	No	79, 83, 87, 96, 97
71	Shipment Certification Date	None	The date when the shipment was certified for transport to the WIPP	Date	Shipment certification date ≥ WAC certification date	No	112
72	Shipment Number	None	Number assigned to the shipment	A12	Unique	No	71, 73, 74, 75
73			This line intentionally left blank				
74	Shipment Send Date	None	The date the waste shipment left the shipper site (to be entered at the time of receipt at the WIPP using date on manifest)	Date	Shipment send date ≥ shipment certification date	No	71
75	Shipping Category	None	A category under which a content code is shipped	A8	All containers within a package must be of the same shipping category	No	48, 49, 105, 123
76	Site Address	None	Address of the waste site having responsibility for shipment of the waste	A50	None	No	None
77	Site Name	None	Name of the site which shipped the waste	A30	None	No	None
78	Solid Waste Metals: Analyte Name	None	The element, ion, or compound an analysis seeks to determine; the element of interest	A50	Look-up table of target solid waste metal analytes (this is a multiple occurring field)	No	79, 80
79	Solid Waste Metals: Concentration	mg/kg	The concentration of the solid waste metal analytes the analysis seeks to determine	9.99E+99	None	No	32, 70, 78, 80

TABLE B-1
EXAMPLE OF THE WWIS DATA DICTIONARY (For Information Only)

NO	FIELD	UNITS	DEFINITION	FORMAT	LIMITS, EDITS, & RANGE CHECKS	CALCULATED	RELATED FIELDS
80	Solid Waste Metals: Date Analyzed	None	The date solid waste metals were analyzed	Date	≤ 180 days after sampling date ≤28 days for Mercury	No	None
81	Solid Waste Metals: Date Sampled	None	The date solid waste metals were sampled	Date	None	No	None
82	Solid Waste Semi-VOC: Analyte Name	None	The element, ion, or compound an analysis seeks to determine; the element of interest	A50	Look-up table of target solid waste semi-VOC analytes (this is a multiple occurring field)	No	83, 84, 85
83	Solid Waste Semi-VOC: Concentration	mg/kg	The concentration of the solid waste semi-VOC analytes the analysis seeks to determine	9.99E+99	Look-up table of target solid waste semi-VOC analytes	No	32, 70, 84
84	Solid Waste Semi-VOC: Date Analyzed	None	The date solid waste semi-VOCs were analyzed	Date	≤ 180 days after sampling date	No	None
85	Solid Waste Semi-VOC: Date Sampled	None	The date solid waste semi-VOCs were sampled	Date	None	No	None
86	Solid Waste VOC: Analyte Name	None	The element, ion, or compound an analysis seeks to determine; the element of interest	A50	Look-up table of target solid waste VOC analytes (this is a multiple occurring field)	No	87, 88, 89
87	Solid Waste VOC: Concentration	mg/kg	The concentration of the solid waste VOC analytes the analysis seeks to determine	9.99E+99	Look-up table of target solid waste VOC analytes	No	32, 88
88	Solid Waste VOC: Date Analyzed	None	The date solid waste VOCs were analyzed	Date	≤ 54 days after sampling date	No	None
89	Solid Waste VOC: Date Sampled	None	The date solid waste VOCs were sampled	Date	None	No	None
90	Surface Contamination of Container (Alpha)	dpm/cm^2	The removable alpha emitting radionuclide surface contamination on waste containers	9.9E+99	≤ 20 $dpm/100\ cm^2$ (alpha)	No	None
91	Surface Contamination of Container (Beta/Gamma)	dpm/cm^2	The removable beta/gamma emitting radionuclide surface contamination on waste containers	9.99E+99	≤ 200 $dpm/100\ cm^2$ (beta/gamma)	No	None
92	Technical Contact	None	Name of the person at the shipper site who is the technical contact for the site. Information is to be recorded based on the last name, first name, and middle initial (if available)	A20	None	No	None
93	Tentatively Identified Compounds (TICs): Date Analyzed	None	The date the TICs were analyzed	Date	See limits in fields 36, 77, 80, and 83	No	42, 81, 84, 88
94	Tentatively Identified Compounds (TICs): Date Sampled	None	The date the TICs were sampled	Date	None	No	43, 81, 85, 89
95	Tenatively Identified Compounds (TICs): Analyte Name	None	Compounds not initially anticipated to be in the waste stream but subsequently identified in either the headspace gas or solid waste analysis	A30	Look-up table of TICs identified in 40 CFR 264, Appendix IX	No	93, 96, 97

TABLE B-1
EXAMPLE OF THE WWIS DATA DICTIONARY (For Information Only)

NO	FIELD	UNITS	DEFINITION	FORMAT	LIMITS, EDITS, & RANGE CHECKS	CALCULATED	RELATED FIELDS
96	Tenatively Identified Compounds (TICs): Concentration (mg/kg)	mg/kg	Concentrations of compounds not initially anticipated to be in the waste stream but subsequently identified in either the headspace gas or solid waste analysis, if possible	9.99E+99	None	No	70, 93, 95
97	Tenatively Identified Compounds (TICs): Concentration (mg/kg)	mg/kg	Concentrations of compounds not initially anticipated to be in the waste stream but subsequently identified in either the headspace gas or solid waste analysis, if possible	9.99E+99	None	No	70, 93, 95
98	Thermal Power Density	Watts/ft^3	The thermal power per unit volume of the container	9.9E+99	A flag is to be raised ≥ 0.1 watt/ft3 when averaged over the container	Yes	18
99*	Transporter EPA ID	None	U.S. Environmental Protection Agency identification number for the transporter of the waste shipment	A15	Look-up table containing the corresponding name and address of the transporter	No	100
100	Transporter Name	None	The name of the transporter of the waste shipment	A25	None	No	99
101	TRU Alpha Activity	Curies	Summation of the alpha activities of the transuranic (TRU) isotopes within a container	9.9E+99	None	Yes	62
102	TRU Alpha Activity Concentration	Curies per gram	Summation of the alpha activities of the transuranic isotopes divided by the mass of the waste within a container (excluding the masses of the container, liner (if applicable), and shielding (if applicable))	9.9E+99	> 100 nCi/gram	Yes	101, 131
103	TRU Alpha Activity Concentration Uncertainty	Curies per gram	Uncertainty in the TRU waste alpha activity concentration	9.9E+99	None	Yes	102, 104, 133
104	TRU Alpha Activity Uncertainty	Curies	Uncertainty in the TRU waste alpha activity	9.9E+99	None	Yes	63
105	TRUCON Content Code	None	The TRUCON content code which describes the contents of the container based on the Site Item Description Code	A6	Look-up table of approved content codes	No	48, 75, 123
106	TRUPACT-II OCA Lid Number	None	The TRUPACT-II OCA lid number	A8	None	No	52
107	Vehicle Type	None	The type of vehicle used to transport the waste.	A1	Look-up table containing either "R" for railcar or "T" for truck	No	None
108	Vent/Puncture Date	None	The date when the container was vented and, if applicable, the liner punctured	Date	None	No	43
109	Verification Date	None	The date when the radiography or visual examination was completed at the certification site	Date	None	No	None
110	Verification Method	None	Identifies if radiography or visual examination was used to identify and quantify the waste form	A4	Radiography or Visual examination	No	123

TABLE B-1
EXAMPLE OF THE WWIS DATA DICTIONARY (For Information Only)

NO	FIELD	UNITS	DEFINITION	FORMAT	LIMITS, EDITS, & RANGE CHECKS	CALCULATED	RELATED FIELDS
111	Visual Examination of Container	None	A statistical sample of retrievably stored waste streams must be examined visually. This field serves to identify whether visual examination was performed.	Logical (yes/no)	None	No	None
112	WAC Certification Date	None	The date when the certifying official signed the certification statement for the container	Date	None	No	None
113	WAC Certification Site	None	The site where the container was certified shall be identified by the 2-character site code as in Table E-1 of the WIPP WAC	A2	Look-up table of site identification codes	No	None
114	WAC Exception Number	None	A number granted to the shipper for an exception to the WAC. The number consists of a 2-character site code plus the last two numbers of the year the request was made plus a sequential number beginning with one each year.	AAYYXXX	Look-up table containing approved WAC exception numbers	No	None
115	WAC Revision Number	None	Revision number of the WIPP-WAC to which the waste was certified	A2	≥ Revision 4	No	112
116	Waste Container Fill Factor	Percentage	Estimated percentage of the waste container volume occupied by the waste (zero percent is interpreted as dunnage)	999	Lower bound = 0 Upper bound = 100	No	None
117	Waste Handling Code	None	The code is "CH" for contact-handled TRU waste or "RH" for remote-handled TRU waste	A2	None	No	None
118	Waste Material Parameters	None	Waste materials having the potential of impacting performance assessment	A40	Look-up table of waste material parameters	No	None
119	Waste Matrix Code	None	Numerical codes used to classify mixed waste at DOE facilities	A4	Look-up table of waste matrix codes	No	125
120	Waste Matrix Code Date	None	The date the site Project review of the waste matrix code has been completed	Date	None	No	None
121	Waste Matrix Code Group	None	The group identification taken from the Baseline Inventory Report	A2	None	No	119
122	Waste Stream MWIR ID	None	The waste stream MWIR identification number	A6	None	No	32
123	Waste Stream Profile Form Number	None	The waste stream profile form number	9999	Look-up table of approved waste stream profile form numbers	No	48, 75, 105
124	Waste Stream WIPP ID	None	The waste stream WIPP identification number	A6	None	No	None
125	Waste Type Code	None	The code is "TRU" for non-mixed waste and "MTRU" for mixed waste	A4	None	No	32, 119
126	Weight (empty container, liner, and shielding)	Pounds	The weight of the empty container including liner & shielding if applicable	999999.9	None	No	None
127	Weight (Gross)	Pounds	The gross weight of a container	999999.9	≤ 1000 lbs per drum ≤ 4000 lbs per SWB ≤ 6450 lbs per TDOP ≤ 8000 lbs per canister	No	None

TABLE B-1
EXAMPLE OF THE WWIS DATA DICTIONARY (For Information Only)

NO	FIELD	UNITS	DEFINITION	FORMAT	LIMITS, EDITS, & RANGE CHECKS	CALCULATED	RELATED FIELDS
128	Weight of a TRUPACT-II Shipment	Pounds	The weight of the TRUPACT-II packages including their payloads per railcar or truck	999999.9	The sum of the weights of the TRUPACT-II packages (unique for each serial number) including their payloads per railcar or truck	Yes	52, 72, 75, 99, 106, 130
129	Weight of Payload Assembly	Pounds	The weight of a seven pack payload assembly	999999.9	Equal to the sum of the gross weights of the seven drums contained in the payload assembly	Yes	5, 135
130	Weight of TRUPACT-II	Pounds	The weight of a TRUPACT-II package (unique per serial number) including its payload	999999.9	The sum of the weights of the TRUPACT-II (using a look-up table of TRUPACT-II weights per serial number) and the payload.	Yes	5, 52, 106, 127, 128
131	Weight of Waste	Pounds	The weight of the waste inside a container	999999.9	None	Yes	126, 127
132	Weight of Waste Material Parameters	Pounds	The estimated weight of the waste material parameters	999999.9	Sum of the estimated waste material parameter weights should equal the weight of the waste	Yes	118, 131
133	Weight of Waste Uncertainty	Pounds	The uncertainty in the weight of the waste inside a container	999999.9	None	Yes	134, 135
134	Weight Uncertainty (empty container, liner, and shielding)	Pounds	The uncertainty in the weight of the empty container including liner & shielding if applicable	999999.9	None	No	None
135	Weight Uncertainty (Gross)	Pounds	The uncertainty in the gross weight of a container	999999.9	None	No	None

NOTES - FIELD SPECIFIC

3 The method to be used for this designator is to be determined.

4 Data field will include a list of acronyms for the characterization equipment used.

10 No more than 5% of the RH canisters received at the WIPP are allowed to have dose rates > 100 rem/hr. This requirement necessitates that a running calculation of the percentage be performed in the background. If the percentage exceeds 5%, a flag will be raised. Prior approval by the WIPP is required before RH canisters having dose rates > 100 rem/hr but ≤ 1000 rem/hr may be shipped to the WIPP.

17 The look-up table used for this field will also include the internal volume of each container listed. This volume is required for the calculation of thermal power density (see field #98).

18 Reporting of thermal power per container will be made using the calculated value of the container's decay heat.

26 A unique generator name and address corresponds to each generator EPA ID.

40 The 11 flammable VOCs, a subset of the 29 target VOC analytes, need to be identified in order to calculate the total flammable VOC concentration required by field #45.

45 A flag will be raised if any of the flammable VOC headspace gas concentration limits are exceeded. Based on a running average of these concentrations, a determination will be made whether to accept the container with the outlying VOC(s).

46 A flag will be raised if any of the VOC headspace gas concentration limits are exceeded. Based on a running average of these concentrations, a determination will be made whether to accept the container with the outlying VOC(s).

99 A unique transporter name and address corresponds to each transporter EPA ID.

NOTES - GENERIC

- Since SI units will be used in all reports, conversion constants need to be identified for the purpose of implementing this requirement. This includes curies to becquerels, pounds to kilograms, grams to kilograms, feet to meters, centimeters to meters, etc.
- Data calculated by the sites will be verified in the background; i.e., the data (whether measured or calculated) is the property of the sites, any calculations performed by the WWIS are for purposes of verification only. If verification cannot be obtained, a flag will be raised to obtain clarification. Look-up tables will be generated which set appropriate upper and lower bound limits.
- Reports to be generated from the WWIS data base include the 1) shipment summary, 2) annual waste inventory, 3) waste volume, 4) waste radionuclide inventory, 5) hazardous waste inventory (RCRA), 6) thermal power, 7) shipment manifest, 8) Waste Stream Profile Form, and others yet to be determined.

APPENDIX C

PAYLOAD ASSEMBLY CRITERIA
TABLES REPRODUCED FROM TRUPACT-II SARP, APPENDIX 1.3.7, SECTION 13

TRUPACT-II
PAYLOAD CONTAINER TRANSPORTATION CERTIFICATION DOCUMENT (PCTCD)

(ANALYTICAL PAYLOAD SHIPPING CATEGORY)

IDENTIFICATION PARAMETERS

Container ID#:_____ Container Bar Code#: _____ IDC:_____
Shipping Category:_____ TRUCON Content Code:_____ Decay Heat Limit:_____
☐ SWB ☐ DRUM ☐ TDOP Certification Site:_____

WAC/TRANSPORTATION PARAMETERS

Parameter	Initials	Filter(s) Serial/Model Numbers
Free liquids are ≤ 1% of container volume	_____	1._____ 2. _____
Non-radionuclide pyrophorics are not present	_____	3._____ 4._____
Explosives are not present	_____	
Corrosives are not present	_____	5._____ 6._____
Pressurized containers are not present	_____	7._____ 8._____
Drum Liner is punctured/filtered	_____	
Flammable VOCs are ≤ 500 ppm	_____	9._____ 10._____

MEASURED PARAMETERS

Container Parameter	Value	Error
Weight		
Decay Heat		
Fissile Mass (FGE)		
Fissile Mass$_e$ (plus two times the Error) : _____		

RETRIEVABLY STORED WASTE PARAMETERS ONLY

Aspiration Method:
☐ Option 1 ☐ Option 2 ☐ Option 3

Container closed time:_____
(Option 1 only)
Headspace H_2 Concentration:_____
(Option 2 or 3)
Aspiration Period (if applicable):_____

Aspiration Table (if applicable):_____

Time container vented:_____

I certify that the above container meets all the requirements for shipment as stated in Appendix 1.3.7 of the Safety Analysis Report for the TRUPACT-II Shipping Package, current revision. The container is approved for shipment.

_____ / _____
TRANSPORTATION CERTIFICATION OFFICIAL / DATE

TRUPACT-II
PAYLOAD CONTAINER TRANSPORTATION CERTIFICATION DOCUMENT (PCTCD)
(TEST PAYLOAD SHIPPING CATEGORY)

IDENTIFICATION PARAMETERS

Container ID#:_____ Container Bar Code#: _____ IDC:_____
Shipping Category:_____TRUCON Content Code:_____ Decay Heat Limit:_____
☐ SWB ☐ DRUM ☐ TDOP Certification Site:_____

WAC/TRANSPORTATION PARAMETERS

Parameter	Initials	Filter(s) Serial/Model Numbers
Free liquids are ≤ 1% of container volume	_____	1._____ 2. _____
Non-radionuclide pyrophorics are not present	_____	3._____ 4._____
Explosives are not present	_____	
Corrosives are not present	_____	5._____ 6._____
Pressurized containers are not present	_____	7._____ 8._____
Drum Liner is punctured/filtered	_____	
Flammable VOCs are ≤ 500 ppm	_____	9._____ 10._____

MEASURED PARAMETERS

Container Parameter	Value	Error
Weight		
Decay Heat		
Fissile Mass (FGE)		
Fissile Mass$_e$ (plus two times the Error) : _____		

TEST CRITERIA

Parameter	Limit	Measurement
Total Gas Gen. Rate	_____ /	_____
H_2 Gen. Rate	_____ /	_____
Flam. VOC Conc.	_____ /	_____

Date Test completed:_____

I certify that the above container meets all the requirements for shipment as stated in Appendix 1.3.7 of the Safety Analysis Report for the TRUPACT-II Shipping Package, current revision. The container is approved for shipment.

_____ / _____
TRANSPORTATION CERTIFICATION OFFICIAL / DATE

TRUPACT-II
PAYLOAD ASSEMBLY TRANSPORTATION CERTIFICATION DOCUMENT (PCTCD)

IDENTIFICATION PARAMETERS

Shipment # :_____ TRUPACT-II OCA Body/Lid #s : _____/_____
Payload Shipping Category:_____ Category Decay Heat Limit:_____
Type of Payload : ☐ SWBs ☐ DRUMs ☐ TDOP Date ICV Closed:_____

PAYLOAD CERTIFICATION PARAMETERS

Bottom Assembly Weight plus RMS Error(lbs):_____ Decay Heat plus Error (watts):_____

Top Assembly Weight plus RMS Error (lbs):_____

Total Weight plus RMS Error[a]:_____ Fissile Mass(FGE) plus 2 x Error:_____

TRUPACT-II Dose Rates (mRem/hr) : contact _____ @ 2 meters _____ in Cab _____

Bottom Weight $\geq$ Top Weight ☐ Total Weight plus Error $\leq$ 7, 265 lbs ☐

Decay Heat $\leq$ Category Limit ☐ Fissile Mass (Pu-239 FGE) plus 2 x Error $\leq$ 325 grams ☐

BOTTOM PAYLOAD ASSEMBLY COMPOSITION (DRUMS, SWB OR TDOP)

Container ID[b] Number	Weight (lbs)	Error (lbs)	Decay Heat (watts)	Error (watts)	Fissile Mass (FGE)	Error (FGE)
Sub-Total (A)						

[a] Error on total weight may be determined by weighing the entire payload assembly.
[b] Use Top Payload Composition table to complete recording drums in a TDOP.

TOP PAYLOAD COMPOSITION (DRUMS OR SWB)						
Container ID Number	Weight (lbs)	Error (lbs)	Decay Heat (watts)	Error (watts)	Fissile Mass (FGE)	Error (FGE)
Sub-Total (B)						
Total RMS Error[b]						

PAYLOAD TOTALS

Total (A + B) Weight :_____ Total[a] RMS Weight Error:_____

Total (A + B) Decay Heat:_____ Total RMS Decay Heat Error:_____

Total (A + B) Fissile Mass:_____ Total RMS Fissile Mass Error X 2 :_____

I certify that the above payload meets all the requirements for shipment as stated in Appendix 1.3.7 of the Safety Analysis Report for the TRUPACT-II Shipping Package, current revision. The payload is approved for shipment.

_____ / _____

TRANSPORTATION CERTIFICATION OFFICIAL / DATE

[a] Total weight error may be determined by weighing entire payload assembly.
[b] Total RMS error for the entire payload (Top and Bottom)

Page 2 of 2

RH-TRU 72-B CASK
PAYLOAD CONTAINER TRANSPORTATION CERTIFICATION DOCUMENT
(PCTCD)

IDENTIFICATION PARAMETERS

Canister ID#:_____ Payload Content Code:_____

Decay Heat Limit:_____ Certification Site:_____

WAC/TRANSPORTATION PARAMETERS

Parameter	Initials	Filter(s) Serial/Model Numbers
		Canister:
Free liquids are ≤ 1% of container volume	_____	1._____
Non-radionuclide pyrophorics are not present	_____	2._____
Explosives are not present	_____	Inner container: (if applicable)
Corrosives are not present	_____	
Pressurized containers are not present	_____	1._____ 2. _____
Flammable VOCs are ≤ 500 ppm	_____	3. _____ 4. _____
List inner containers:_____		
_____		

MEASURED PARAMETERS

Canister Parameter	Value	Error
Weight		
Fissile Mass (FGE)		
Fissile Mass$_e$ (plus two times the Error) : _____		

DECAY HEAT

Limit for Hydrogen Generation rate/Determined Hydrogen Generation Rate

(Option 1):_____/_____

Calculated Decay Heat / Decay Heat Limit

(Option 2):_____/_____

I certify that the above canister meets all of the requirements for shipment as stated in Appendix 1.3.7 of the Safety Analysis Report for the RH-TRU 72-B Cask, current revision. The canister is approved for shipment.

_____/_____

TRANSPORTATION CERTIFICATION OFFICIAL / DATE

APPENDIX D

DEFINITIONS

DEFINITIONS

Acceptable Knowledge — An EPA term which includes process knowledge and results from previous testing, sampling, and analysis associated with the waste. Acceptable knowledge includes information regarding the raw materials used in a process or operation, process description, products produced, and associated wastes. Acceptable knowledge documentation includes the site history and mission, site-specific processes or operations, administrative building controls, and all previous and current activities that generate a specific waste.

Certification Authority — Authorization to certify TRU waste to the WIPP Waste Acceptance Criteria which is granted by the CAO to those TRU waste generator/storage sites whose TRU Waste Programs have been evaluated and found to be acceptable.

Certified Waste — Payload containers, loaded with waste, that has been verified to meet the criteria of this document.

Contact-Handled Transuranic Waste — TRU waste whose external contact dose rate does not exceed 200 mrem per hour.

Corrosives — Corrosives are those materials defined as such by 40 CFR 261.22, *Characteristics of Corrosivity*.

DOE Field Element — The first line DOE field element that carries the organizational responsibility for (1) managing and executing assigned programs, (2) directing contractors who conduct the programs, and (3) assuring that environment, safety, and health are integral parts of each program.

Fissile Gram Equivalent (FGE) — An isotopic mass of radionuclide normalized to Pu-239.

Flammable VOC — A headspace gas VOC that has a National Fire Protection Association (NFPA) Flammability Hazard Degree of 3 or 4 and a flashpoint of less than 100°F or considered, by EPA, to be a significant fire hazard under WIPP repository conditions. Flammable headspace gas VOCs that are evaluated for the TRU waste program are listed in Table 1-3 of the TRU Waste Characterization QAPP.

Free Liquid — Liquid that is not sorbed into a host material such that it could spill or drain from its container.

Headspace — That volume of any containment that is not occupied by the volume of waste material. "Headspace" is also used to refer to the gases contained in this volume.

Newly Generated TRU Waste — Waste generated after the development, approval, and implementation of a TRU waste characterization program that meets the requirements outlined in the TRU Waste Characterization QAPP. Newly generated TRU waste also includes any previously generated waste (stored waste) that undergoes any form of treatment, processing, or repackaging in accordance with an approved QAPjP.

Overpack — A payload container placed around another container to control contamination, or enclose a damaged container.

Package — The reusable Type B shipping container (i.e., TRUPACT-II or RH-TRU 72-B Cask) loaded with TRU waste payload containers, that has been prepared for shipment in accordance with the Packaging QA Program.

Packaging — The reusable Type B shipping container for transport of TRU waste payload containers (i.e., TRUPACT-II or RH-TRU 72-B Cask). A transportation device consisting of an assembly of components necessary to ensure compliance with the requirements of Titles 49 CFR Part 173, Subpart I and 10 CFR Part 71.

Packaging QA Program — A site-specific document which defines the quality assurance and quality control activities applicable to usage of the NRC-approved packaging. This program shall meet the requirements of 10 CFR Part 71, Subpart H.

Payload Container — The outermost container for TRU waste material that is placed in a reusable Type B shipping container (i.e., TRUPACT-II or RH-TRU 72-B Cask), for transport.

Payload Container Assembly — An assembly of payload containers, such as a seven-pack of drums, that is intended to be handled and emplaced as a single unit.

Plutonium Equivalent Curie (PE-Ci) —An equivalent radiotoxic hazard of a radionuclide normalized to Pu-239.

Pyrophoric — Materials which may ignite spontaneously or which emit sparks when scratched or struck especially with materials such as steel.

Radioassay (RA) — Assay methods used to identify and quantify radionuclides in TRU waste.

Radiography — A nondestructive testing method that uses X-rays, gamma rays, or neutrons to inspect and determine the physical form of waste.

Remote Handled Transuranic Waste — Packaged TRU waste whose external surface dose rate exceeds 200 mrem per hour. For the WIPP, there is an upper limit of 1000 rem per hour.

Residual Liquid — Liquids in quantities of less than 1 volume percent of the waste container that result from liquid residues remaining in well-drained internal containers, condensation of moisture, and liquid separation resulting from sludge/resin setting.

Retrievable Stored TRU Waste — Waste generated after 1970 and before the development, approval and implementation of a TRU waste characterization program that meets the requirements outlined in the TRU Waste Characterization QAPP.

Shipper — A TRU Waste Generator/Storage Site that releases a TRUPACT-II or RH-TRU 72-B Cask to a carrier for shipment.

Standard Waste Box (SWB) — A payload container authorized for use with TRUPACT-II Transportation Packages that meets Department of Transportation (DOT) Specification 7A Type A.

Ten Drum Overpack (TDOP) — A specialized payload container authorized for use within the TRUPACT-II packaging that meets DOT Specification 7A Type A.

Test Category — Decay Heat determination from testing of individual waste packages for hydrogen generation prior to placement in TRUPACT-II.

Tentatively Identified Compounds (TICs) — Nontarget compounds identified using GC/MS. These reported concentrations will have a higher uncertainty associated with them than the reported target analyte concentrations.

Transuranic (TRU) Wastes — Wastes contaminated with alpha-emitting radionuclides of atomic number greater than 92 (e.g., the radioactive isotopes of plutonium), have half-lives greater than 20 years, and are present in concentrations greater than 100 nanocuries per gram of waste.

Transportation Authority — Authorization for use of the TRUPACT-II or RH-TRU 72-B Cask for transportation of TRU waste, which is granted by the CAO to those TRU waste generator/storage sites whose TRU Waste Programs have been evaluated and found to be acceptable.

TRUPACT-II — An NRC certified Type B transportation packaging used for transportation of contact-handled transuranic wastes.

TRUPACT-II User — Organizations or facilities that prepare a TRUPACT-II for release to a carrier for shipment. Users assure, via their TRUPACT-II User Program, that the payload, inspection, testing, closing and release for shipment of the TRUPACT-II meets the requirements of the TRUPACT-II C of C. Users may also perform minor maintenance on the TRUPACT-II.

TRU Mixed Waste — TRU waste that is co-contaminated with hazardous constituents as identified in 40 CFR Part 261, Subparts C and D.

TRU Waste Certification Plan — A site-specific document that describes the methods used by the Site to comply with each TRU waste acceptance criterion and requirement. This program document shall include procedural and administrative controls, and must describe all activities pertaining to TRU waste certification including the required QA and QC activities applicable to the certification of TRU waste to the WAC.

Validation — An activity that demonstrates or confirms that a process, item, data set, or service satisfies the requirements defined by the user. Data validation requirements for the TRU waste program include signature release and are described in the TRU Waste Characterization QAPP.

Verification — The act of authenticating or formally asserting the truth that a process, item, data set or service is, in fact, that which is claimed. Data verification is the process used to confirm that all review and validation procedures have been completed. Data verification requirements for the TRU waste program are described in TRU Waste Characterization QAPP.

Volatile Organic Compounds (VOCs) — For the purposes of the TRU waste program, those gas VOCs listed in the TRU Waste Characterization QAPP (Table 12-1 and the target VOCs listed in Table 13-1) and any additional compounds tentatively identified by the VOC analytical procedures used to satisfy QAPP requirements.

Waste Characterization — The process of determining that TRU waste meets the requirements of the WAC by the acceptable performance of the activities defined by site-specific, CAO-approved plans outlined in Table 2.4 (QAPjPs, etc.).

Waste Certification — Formal and documented declaration by Sites that waste has been characterized and meets the requirements of the WAC.

Waste Form — The physical form of the waste such as sludges, combustibles, metals, etc.

Waste Stream — Waste material generated from a single process or from an activity that is similar in material, physical form, isotopic makeup, and hazardous constituents.

APPENDIX E

WIPP WASTE STREAM PROFILE FORM
AND
COMPLETION INSTRUCTIONS

COMPLETION INSTRUCTIONS
FOR
WIPP WASTE STREAM PROFILE FORM

General Instructions:

The Waste Stream Profile Form (WSPF) provided in this appendix has been prepared from a sample form described in the WIPP RCRA Permit Application. Participating TRU Waste Generator/Storage Sites (Sites) may use a photocopy of the attached WSPF, or a computer disk version, in WordPerfect®, available upon request from the CAO Waste Certification Manager.

TRU waste streams (nonmixed) not identified in the Waste Isolation Pilot Plant Transuranic Waste Baseline Inventory Report (WTWBIR) must be submitted to the CAO for inclusion in the WTWBIR. Participating Sites must describe these waste streams in a manner similar to that provided in the Mixed Waste Baseline Inventory Report or the WTWBIR.

If data are unavailable to complete any of the first five lines of the WIPP Waste Stream Profile Form, contact the CAO Waste Certification Manager for assistance.

Do not leave any lines blank. If a particular line is not applicable, write N/A on that line. If additional space is required to provide the requested information, use separate continuation sheets or the back of the form.

Specific Instructions:

Line 1: Assign a site-specific Waste Stream Profile Number to each form generated. The number should start with the applicable two-digit site designator found in Table E-1. The number should be limited to 10 digits maximum.

Line 2: Enter the name and EPA identification number of the DOE TRU Waste Generator/Storage Site preparing the form. Refer to Table E-1 for the accepted site designator.

Line 3: Enter the name, title/position and telephone number of the individual who will act as the technical contact for the Site. This should be the individual who should be contacted if there are questions concerning the data reported on the form.

Line 4: Enter the date that the CAO granted waste certification authority to the Site. If your site has been recertified, use the most recent recertification date. List the site-specific TRU Waste Program documents (e.g., QAPjPs, TRAMPACs, etc.) and the revision of the WAC upon which waste certification authority was based.

Line 5: Check the appropriate box and follow the instruction. Refer to Table E-1 for accepted site designators. If the original generator site is unknown, contact the CAO Waste Certification Manager for assistance.

Line 6: Enter the WIPP identification number, from the current revision of the WTWBIR, which best describes the waste stream being certified. If there is no corresponding WIPP ID number listed in the WTWBIR, contact the CAO Waste Certification Manager for assistance.

Line 7: Enter the Summary Category Group, from the current revision of the WTWBIR, which best describes the waste stream being certified. If there is no corresponding Summary Category Group listed in the WTWBIR, contact the CAO Waste Certification Manager for assistance.

Line 8: Enter the Waste Matrix Code Group, from the current revision of the WTWBIR, which best describes the waste stream being certified. If there is no corresponding Waste Matrix Code Group listed in the WTWBIR, contact the CAO Waste Certification Manager for assistance.

Line 9: Enter the Waste Stream Name, from the current revision of the WTWBIR, which best describes the waste stream being certified. If there is no corresponding Waste Stream Name listed in the WTWBIR, contact the CAO Waste Certification Manager for assistance.

Line 10: Enter the Waste Stream Description, from the current revision of the WTWBIR, which best describes the waste stream being certified. If there is no corresponding Waste Stream Description listed in the WTWBIR, contact the CAO Waste Certification Manager for assistance.

Lines 11: Check the appropriate block to delineate whether the TRU waste can be Contact Handled (CH) or must be Remote Handled (RH). Enter the approximate number of SWBs, 55-gallon drums and/or RH canisters that comprise this waste stream.

Line 12: Record the TRU waste data package report numbers assigned by your Site to the data reports containing raw characterization data which support the certification of this waste

stream. The intent is to be able to trace data generation through the Site's internal data generation, review, validation and verification processes. Use the continuation sheet if necessary.

Line 13: List each EPA Hazardous Waste Code that is present in the waste stream. If a Hazardous Waste Code found in this waste stream is not listed in Table 3.4.2.3-2 of the WAC, contact the CAO Waste Certification Manager for assistance. For each EPA Hazardous Waste Code listed, explain how the presence of that material was determined (i.e., by analysis or acceptable knowledge). If radiography, visual examination, headspace gas analysis, and/or homogeneous solids/soils/gravel sample analysis were used to determine Hazardous Waste Codes, attach signed reports documenting this determination.

Line 14: Enter the TRUCON Content Codes, from the current revision of the WTWBIR, which best describes the waste stream being certified. If there is no corresponding TRUCON Content Code listed in the WTWBIR, contact the CAO Waste Certification Manager for assistance.

Lines 15: TRU waste program information is required to provide an overall perspective of TRU waste management operations and serve as a guide to the waste stream-specific information. The following information must be included as part of the acceptable knowledge record:

- A map of the site with the areas and facilities involved in TRU waste generation, treatment, and storage identified;

- Facility mission description as related to TRU waste generation and management (e.g., nuclear weapons research may involve metallurgy, radiochemistry, and nuclear physics operations that result in specific waste streams);

- Description of the operations that generate TRU waste at the site (e.g., plutonium recovery, weapons design, or weapons fabrication);

- Waste identification and categorization schemes used at the facility (e.g., item description codes, content codes);

- Types and quantities of TRU waste generated, including historical generation through future projections;

- Correlation of waste streams generated from the same building and process, as appropriate (e.g., sludge, combustibles, metal, and glass); and

- Waste stream certification procedures for retrievably stored and newly generated wastes to be sent to the WIPP facility.

Lines 16: Sites must compile all process information and data that support the acceptable knowledge used to characterize each TRU waste stream. At a minimum, the waste process information must include:

- Area(s) and building(s) from which the waste stream was or is generated;

- Waste stream volume and time period of generation (e.g., 100 SWBs of retrievable stored waste generated from June 1977 through December 1977);

- Waste generating process described for each building (e.g., batch waste stream generated during decommissioning operations of glove boxes);

- Process flow diagrams (e.g., a diagram illustrating glove boxes from a specific building to a size reduction facility to a container storage area);

- Material inputs or other information that identify the chemical and radionuclide content of the waste stream and the physical waste form (e.g., glove box materials, chemicals and radionuclides handled during glove box operations, if applicable).

Lines 17: Enter any additional documentation that is used to support the use of acceptable knowledge for TRU waste characterization. The specific, relevant information must be identified and justification provided for its use. This documentation may include, but is not limited to, the following:

- Process design documents (e.g., Title II Design);

- Standard operating procedures that may include a list of raw materials or reagents, a description of the process or experiment generating the waste, and a description of wastes generated and how the wastes are managed at the point of generation;

- Preliminary and final safety analysis reports and technical safety requirements;

- Waste packaging logs;
- Test plans or research project reports that describe reagents and other raw materials used in experiments;
- Site databases (e.g., chemical inventory database for Superfund Amendments and Reauthorization Act Title III requirements);
- Information from site personnel (e.g., documented interviews);
- Standard industry documents (e.g., vendor information);
- Previous analytical data relevant to the waste stream, including results from fingerprint analyses, spot checks, or routine verification sampling;
- Material Safety Data Sheets (MSDSs), product labels, or other product package information;
- Sampling and analysis data from comparable or surrogate waste streams (e.g., equivalent nonradioactive materials);
- Laboratory notebooks that detail the research processes and raw materials used in an experiment.

Using Tables 3.4.2.3-1 or 3.9.2.3-1 of the WAC, determine the waste characterization methods that are required for this specific waste stream and waste form (see lines 6 and 10).

Lines 18: Check the applicable blocks if **Radiography** or **Visual Examination** were used to characterize this waste stream. List the field procedures, by title, number, and issue date, that were used to collect and/or record the raw data. These may or may not be the machine operating procedures. The intent is to be able to go to the data collection sheets that the technician used to record the raw characterization data for this waste stream.

Lines 19: Check this block if waste container headspace gases were analyzed for **hydrogen, methane, flammable VOCs and volatile organic hazardous compounds.** List the field procedures, by title, number, and issue date, that were used to record the raw data from the analyses.

Lines 20: Check this block if Homogeneous Solids (e.g. sludges, or soil/gravel) were core sampled for **Total Metals, PCBs, Total VOCs, Total Nonhalogenated VOCs, Total Semi-VOCs** or other analyses to characterize this waste stream. These analyses apply only to S3000 and S4000 categories of waste. List the field procedures, by title, number, and issue date, that were used to record the raw data from the analyses.

Line 21: When a waste stream is fully characterized, the TRU Waste Generator/Storage Site Project Manager shall attest to authenticity and validity of the data and certify that the waste stream meets all the requirements for compliance to the WAC.

TABLE E-1 GENERATOR/SHIPPER/CERTIFIER SITE IDENTIFICATION CODES		
SITE NAME	SITE ACRONYM	SITE IDENTIFIER CODE
MAJOR SITES		
Argonne National Laboratory - East	ANL-E	AE
Idaho National Engineering Laboratory	INEL	IN [1]
Los Alamos National Laboratory	LANL	LA
Lawrence Livermore National Laboratory	LLNL	LL
Mound Plant	MOUND	MD
Nevada Test Site	NTS	NT
Oak Ridge National Laboratory	ORNL	OR
Rocky Flats Environmental Technology Site	RFETS	RF
Richland (Hanford) Site	RH	RL [1]
Savannah River Site	SRS	SR
MINOR & SMALL QUANTITY SITES		
Ames Laboratory	AL	AL
Argonne National Laboratory - West	ANL-W	AW
Battelle Columbus Laboratory	BCDP	BC
Battelle - Pacific Northwest Laboratory	BPNL	BP
Bettis Atomic Power Laboratory	BAPL	BT
Energy Technology Engineering Laboratory	ETEC	ET
Hanford [2]	—	HF
Inhalation Toxicology Research Institute	ITRI	IT
Knolls Atomic Power Laboratory - Schenectady	KAPL	KA
Lawrence Berkeley Laboratory	LBL	LB
University of Missouri	MU	MU
Paducah Gaseous Diffusion Plant	PGDP	PA
Pantex Site [3]	PX	PX
Sandia National Laboratories - Albuquerque	SNL/NM	SA
Naval Reactors Facility	NRF	NR
Waste Isolation Pilot Plant	WIPP	WI

NOTES: (1) Site Codes were changed to be consistent with the WTWBIR. Waste currently identified by the previous Codes (ID or RH) need not be relabeled.
(2) Small Offsite Generators shipping waste to RL for interim storage.
(3) Staging site only

WIPP WASTE STREAM PROFILE FORM

Waste Stream Profile Number: _____1_____

Generator site name: _____2_____ Technical contact: _____3_____

Generator site EPA ID: _____2_____ Technical contact phone number: _____3_____

Date site certified by CAO: _____4_____

Title, version number, and date of documents used for WAC certification: _____4_____

_____

Did your facility generate this waste? ☐ Yes ☐ No If no, provide the name and EPA ID of the original generator:

_____5_____

Waste Stream Information [1]

WIPP ID: _____6_____ Summary Category Group: _____7_____

Waste Matrix Code Group: _____8_____ Waste Stream Name: _____9_____

Description from the WTWBIR: _____10_____

_____

Check one: ☐ CH ☐ RH Number of SWBs __11__ Number of Drums __11__ Number of Canisters __11__

Data package numbers supporting this waste stream characterization: _____12_____

List applicable EPA Hazardous Waste Codes[2]: _____13_____

Applicable TRUCON Content Codes: _____14_____

Acceptable Knowledge Information [1]

[For the following, enter supporting the documentation used (i.e., references and dates)]

Required Program Information

- Map of site: _____15_____
- Facility mission description: _____15_____
- Description of operations that generate waste: _____15_____

  _____
- Waste identification/categorization schemes: _____15_____
- Types and quantities of waste generated: _____15_____
- Correlation of waste streams generated from the same building and process, as appropriate: _____15_____

  _____
- Waste certification procedures: _____15_____

Required Waste Stream Information

- Area(s) and building(s) from which the waste stream was generated: _____16_____
- Waste stream volume and time period of generation: _____16_____
- Waste generating process description for each building: _____16_____
- Process flow diagrams: _____16_____
- Material inputs or other information identifying chemical/radionuclide content and physical waste form: __16_____

  _____

Supplemental Documentation

- Process design documents: _____17_____
- Standard operating procedures: _____17_____
- Safety Analysis Reports: _____17_____
- Waste packaging logs: _____17_____
- Test plans/research project reports: _____17_____
- Site databases: _____17_____
- Information from site personnel: _____17_____
- Standard industry documents: _____17_____
- Previous analytical data: _____17_____
- Material safety data sheets: _____17_____
- Sampling and analysis data from comparable/surrogate Waste: _____17_____
- Laboratory notebooks: _____17_____

Sampling and Analysis Information [1]

[*For the following, when applicable, enter procedure title(s), number(s) and date(s)*]

☐ Radiography: _____18_____

☐ Visual Examination: _____18_____

☐ Headspace Gas Analysis
VOCs: _____19_____
Flammable: _____19_____
Other gases (specify): _____19_____

☐ Homogeneous Solids/Soils/Gravel Sample Analysis
Total metals: _____20_____
PCBs: _____20_____
VOCs: _____20_____
Nonhalogenated VOCs: _____20_____
Semi-VOCs: _____20_____
Other (specify): _____20_____

Waste Stream Profile Form certification:
I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

_____21_____	_____	_____
Signature of Site Project Manager	Printed Name and Title	Date

NOTE: (1) Use back of sheet or continuation sheets, if required.
(2) If radiography, visual examination, headspace gas analysis, and/or homogeneous solids/soils/gravel sample analysis were used to determine EPA Hazardous Waste Codes, attach signed summary reports documenting this determination.

WIPP WASTE STREAM PROFILE FORM

Waste Stream Profile Number: _____

Generator site name: _____ Technical contact: _____

Generator site EPA ID: _____ Technical contact phone number: _____

Date site certified by CAO: _____

Title, version number, and date of documents used for WAC certification: _____

_____

Did your facility generate this waste? ☐ Yes ☐ No If no, provide the name and EPA ID of the original generator:

_____

Waste Stream Information [1]

WIPP ID: _____ Summary Category Group: _____

Waste Matrix Code Group: _____ Waste Stream Name: _____

Description from the WTWBIR: _____

_____

Check one: ☐ CH ☐ RH Number of SWBs _____ Number of Drums _____ Number of Canisters _____

Data package numbers supporting this waste stream characterization: _____

List applicable EPA Hazardous Waste Codes[2]: _____

Applicable TRUCON Content Codes: _____

Acceptable Knowledge Information [1]

[*For the following, enter supporting the documentation used (i.e., references and dates)*]

Required Program Information

- Map of site: _____
- Facility mission description: _____
- Description of operations that generate waste: _____

  _____
- Waste identification/categorization schemes: _____
- Types and quantities of waste generated: _____
- Correlation of waste streams generated from the same building and process, as appropriate: _____

  _____
- Waste certification procedures: _____

Required Waste Stream Information

- Area(s) and building(s) from which the waste stream was generated: _____
- Waste Stream volume and time period of generation: _____
- Waste generating process description for each building: _____
- Process flow diagrams: _____
- Material inputs or other information identifying chemical/radionuclide content and physical waste form: _____

  _____

Supplemental Documentation

- Process design documents: _____
- Standard operating procedures: _____
- Safety Analysis Reports: _____
- Waste packaging logs: _____
- Test plans/research project reports: _____
- Site databases: _____
- Information from site personnel: _____
- Standard industry documents: _____
- Previous analytical data: _____
- Material safety data sheets: _____
- Sampling and analysis data from comparable/surrogate waste: _____
- Laboratory notebooks: _____

Sampling and Analysis Information [1]

[*For the following, when applicable, enter procedure title(s), number(s) and date(s)*]

☐ Radiography: _____

☐ Visual Examination: _____

☐ Headspace Gas Analysis
VOCs: _____
Flammable: _____
Other gases (specify): _____

☐ Homogeneous Solids/Soils/Gravel Sample Analysis
Total metals: _____
PCBs: _____
VOCs: _____
Nonhalogenated VOCs: _____
Semi-VOCs: _____
Other (specify): _____

Waste Stream Profile Form certification:

I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

_____	_____	_____
Signature of Site Project Manager	Printed Name and Title	Date

NOTE: (1) Use back of sheet or continuation sheets, if required.
(2) If Radiography, visual examination, headspace gas analysis, and/or homogeneous solids/soils/gravel sample analysis were used to determine EPA Hazardous Waste Codes attach signed summary reports documenting this determination.

APPENDIX F

FORMAT GUIDANCE FOR SITE-SPECIFIC TRU WASTE CERTIFICATION STATEMENTS

CH-TRU WASTE CERTIFICATION STATEMENT

Container ID Number: _____

CRITERIA	LIMITS	INITIALS
Container Description	• DOT Type A 55-gallon Drums or SWBs	
Container/Assembly Weight	• ≤ 1000 lbs/55-gallon Drum • ≤ 4000 lbs/SWB • ≤ TRUPACT-II weight Limits	
Removable Surface Contamination	• ≤ 20 dpm/100 cm^2 Alpha • ≤ 200 dpm/100 cm^2 Beta-Gamma [4]	
Container Marking	• Bar Code • Shipping Category [1]	
Filter Vents	• Payload containers vented	
Liquids	• No Liquid Wastes • < 2 Liters total residual liquid per 55-gallon Drum • < 8 Liters per SWB • < 1 in. (2.5 cm) in the bottom of any container	
Pu-239 FGE	• < 200 g/55-gallon Drum • < 325 g/SWB • <TRUPACT-II limits	
Pu-239 Equivalent Activity	<u>Untreated Waste</u> • ≤ 80 PE-Ci/55-gallon Drum • ≤ 130 PE-Ci/SWB • ≤ 1800 PE-ci/55-gal. Drum overpacked in SWB or TDOP <u>Solidified/Vitrified Waste</u> • ≤ 1800PE-Ci/55-gallon Drum	
Contact Dose Rate	• ≤ 200 mrem/hr	
Thermal Power	• Reported if > 0.1 watts/ft^3 • < 40 watts per TRUPACT-II	
TRU Alpha Activity	• > 100 nCi/g of waste matrix	
Pyrophoric Materials	• < 1% Radionuclide pyrophorics • No Non-radionuclide pyrophorics	
Mixed Waste	• Characterization per QAPP • Limited to EPA Waste Codes listed in WAC	
Chemical Compatibility	• Chemicals allowed by the CH-TRAMPAC	
Hazardous Constituents	• Target analytes and TICs reported per QAPP	

CRITERIA	LIMITS	INITIALS
Explosives, Corrosives and Compressed Gases	• None Present	
PCBs Concentration	• < 50 ppm	
Decay Heat[1]	• ≤ Wattages listed in CH-TRUCON	
Flammable VOCs	• ≤ 500 ppm in container headspace	
VOC Concentration	• ≤ Limits shown in WAC Table 3.5.3.3	
Aspiration[1]	• ≥ Times shown in CH-TRUCON tables	
Shipping Category[1]	• Content Codes listed in CH-TRUCON • One category per TRUPACT-II	
Confinement Layers[1]	• Liner punctured/vented • Number of layers known • Bags closed by approved methods • Sealed containers > 4 liters prohibited (except for waste material Type II.2)	
Acceptance Data	• Auditable package of data with signed Certification Statement on file • WWIS data transmitted	
RCRA Data	• Waste Stream Profile Form • Uniform Hazardous Waste Manifest[2] • Land Disposal Restriction notification[2]	
Shipping Data	• TRUPACT-II Payload Container Transportation Certification Documents • Bill of Lading[3]	

NOTES: (1) Applies to TRUPACT-II payload control only
(2) Applies to mixed wastes only
(3) A Uniform Hazardous Waste Manifest may be substituted
(4) May be 1000 dpm/100 cm^2 for certain isotopes

I hereby certify that I have reviewed the data for this waste container and that it is complete and accurate to the best of my knowledge. I have determined that it meets the requirements stated in the current revision of the WIPP Waste Acceptance Criteria. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Waste Certification Official Signature _____ Date _____ Initials _____

RH-TRU WASTE CERTIFICATION STATEMENT

Container ID Number: _____

CRITERIA	LIMITS	INITIALS
Container Description	• DOT Type A RH Canister	
Canister Gross Weight	• ≤ 8000 lbs	
Removable Surface Contamination	• ≤ 20 dpm/100 cm^2 Alpha • ≤ 200 dpm/100 cm^2 Beta-Gamma [4]	
Container Marking	• Canister ID	
Dunnage	• Limited to inside canister	
Filter Vents	• Canisters vented	
Liquids	• No Liquid Wastes • < 6 Liters total residual liquid per canister • < 1 in. (2.5 cm) in the bottom of any container	
Pu-239 FGE	• < 325 g/Cask	
Pu-239 Equivalent Activity	• ≤ 1000 PE-Ci/canister	
Contact Dose Rate	• ≤ 1000 rem/hr per Canister • Preapproval received for > 100 rem/hr per Canister • ≤ 200 rem/hr per Cask	
Thermal Power	• < 300 watts/canister	
TRU Alpha Activity	• > 100 nCi/g of waste matrix and ≤ 23 Ci/liter	
Pyrophoric Materials	• < 1% Radionuclide pyrophorics • No nonradionuclide pyrophorics	
Mixed Waste	• Characterization per QAPP • Limited to EPA Waste Codes listed in WAC	
Chemical Compatibility	• Chemicals allowed by the RH-TRAMPAC	
Hazardous Constituents	• Target analytes and TICs reported per QAPP	
Explosives, Corrosives and Compressed Gases	• None present	
PCBs Concentration	• < 50 ppm	
Decay Heat[1]	• ≤ Wattages listed in RH Cask SARP Table 1.2.7	

CRITERIA	LIMITS	INITIALS
Flammable VOCs	• ≤ 500 ppm in canister headspace	
VOC Concentration	• ≤ Limits shown in WAC	
Aspiration[1]	• None currently identified	
Shipping Category[1]	• None currently identified	
Confinement Layers[1]	• None currently identified	
Acceptance Data	• Auditable package of data with signed Certification Statement on file • WWIS data transmitted	
RCRA Data	• Waste Stream Profile Form • Uniform hazardous Waste Manifest[2] • Land Disposal Restriction notification[2]	
Shipping Data	• RH-TRU 72-B Cask Payload Container Transportation Certification Documents • Bill of Lading[3]	

NOTES: (1) Applies to RH-TRU 72-B Cask payload control only
(2) Applies to mixed wastes only
(3) Uniform Hazardous Waste Manifest may be substituted
(4) May be 1000 dpm/100 cm^2 for certain isotopes

I hereby certify that I have reviewed the data for this waste container and that it is complete and accurate to the best of my knowledge. I have determined that it meets the requirements stated in the current revision of the WIPP Waste Acceptance Criteria. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Waste Certification Official Signature _____ Date _____ Initials _____

CH-TRU WASTE DUNNAGE CERTIFICATION STATEMENT

Container ID Number: _____

CRITERIA	LIMIT	INITIALS
Container Type	• Empty 55-gal drum	
Container Weight	• < 60 lbs	
Surface Contamination	• ≤ 20 dpm/100 cm^2 Alpha • ≤ 200 dpm/100 cm^2 Beta-Gamma	
Container Marking	• Bar Code; "Empty" or "Dunnage"	
Liquids	• Dry	
Pu-239 FGE	0	
Thermal Power	0	
Comments:		

I hereby certify that I have reviewed the data for this assembly dunnage and have determined that it meets the requirements stated in the current revision of the WIPP Waste Acceptance Criteria.

(Signature) _____ _____ _____
Waste Certification Official Signature Date Initials