January 16, 1997

JAN 1997
RECEIVED

Mr. Benito Garcia, Chief
New Mexico Environment Department
2044 Galisteo Street
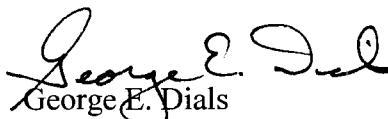P. O. Box 26110
Santa Fe, New Mexico 87505

Dear Mr. Garcia:

Please find enclosed Change Notice #1 to the Waste Acceptance Criteria, Revision 5,
DOE/WIPP-069. The change notice incorporates the following changes:

- deletes all references to the No Migration Variance Petition
- adds the definition and requirements for *defense* TRU waste
- adds some blocks on the Waste Stream Profile Form to document *defense* TRU
  waste streams
- revises VOC concentration requirements to allow averaging total quantities of
  VOCs at WIPP, and
- revises payload container description requirements to allow the use of UN1A2 55-
  gallon drums

The changed pages should be posted in your copies of the WAC, Revision 5. If you have
questions, please contact Don Watkins at (505) 234-7478 or Amber Clay at (505) 234-7432.

Enclosed are Instructions for completion of the Record of Revision/Change Entries, page vii of
the WAC.

Sincerely,

George E. Dials
Manager

Enclosure

cc w/o enclosure:
P. Kilgore, CAO
C&C File

printed on recycled paper

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INSTRUCTIONS FOR COMPLETION OF RECORD OF REVISION/CHANGE ENTRIES FORM

A form is provided on page vii of WAC, Rev. 5, which is required to be utilized for the purpose of documenting WAC revisions and change entries. For Change Notice #1 to WAC, Rev. 5, controlled copyholders are requested to perform the following actions:

1.　　Refer to page vi, Index of Current Revision Number by Page, and compare it to each page in the transmittal which you have received. This is a quality check to verify that all of the affected change pages have been included in the transmittal.

>　　NOTE: If it is found that the transmittal is missing any affected change pages, STOP and contact Larry Porter, Westinghouse Waste Isolation Division Document Services at (505) 234-8036 for resolution.

2.　　Enter "Revision 5, Change Notice #1" in the extreme left hand column of page vii.

3.　　Remove affected pages from the WAC document and replace them with the change pages included in the transmittal. It is recommended that each copyholder compare the change pages to the pages being removed to evaluate the effect of each WAC change as it applies to the TRU Waste Program from a complex-wide perspective or from the generator site perspective, as appropriate.

4.　　After all change pages have been inserted into the WAC document, the person who performed the task is required to print his/her name and the date in the appropriate columns next to each entry on the Record of Revision/Change Entries form.

5.　　The Post Entry Page Check may be performed in accordance with Departmental or Site procedure(s) as appropriate. The individual who performs the Post Entry Page Check is required to provide a legible signature in the far right hand column of the form next to each entry.

>　　NOTE: In organizations where written procedures to record revisions and change entries to external documents do not exist, it is recommended that the Post Entry Page Check be performed by an independent person who is familiar with the principles of quality and document control (e.g. the TRU Waste Program Quality Assurance Project Officer).

7.　　The original of the completed Record of Revision/Change Entries form must be re-inserted into the appropriate section of the WAC document if it was removed during the process of removing, inserting pages or documenting changes.

>　　NOTE: It is recommended that a copy of the completed Record of Revision/Change Entries form be provided to the Departmental or Site Document Services organization for distribution with the changes to holders of uncontrolled copies. For purposes of maintaining the highest level of WAC document quality, it is further recommended that Site Document Services organizations institute similar change documentation requirements when distributing WAC page changes to affected site personnel and organizations.

Replaced by
Rev 5
Change notice #1
12/20/96

WASTE ACCEPTANCE CRITERIA
FOR THE
WASTE ISOLATION PILOT PLANT

APRIL 1996

WASTE ACCEPTANCE CRITERIA
FOR THE
WASTE ISOLATION PILOT PLANT

REVISION 5

APRIL 1996

Approved by: _George E. Dials_   Date: _April 4, 1996_
Manager, Carlsbad Area Office

LIST OF TABLES

CHANGE HISTORY

<u>DOE/WIPP-069, Revision 5, April 1996</u>

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.

INDEX OF CURRENT REVISION/CHANGE NUMBER BY PAGE

PAGE NUMBER	REVISION NUMBER
I thru viii	5
ES - 1	5
1 - 1 thru 1 - 2	5
2 - 1 thru 2 - 6	5
3 - 1 thru 3 - 58	5
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5 - 1 thru 5 - 3	5
A - 1 thru A - 3	5
B - 1 thru B - 11	5
C - 1 thru C - 5	5
D - 1 thru D - 5	5
E - 1 thru E - 9	5
F - 1 thru F - 5	5

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

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
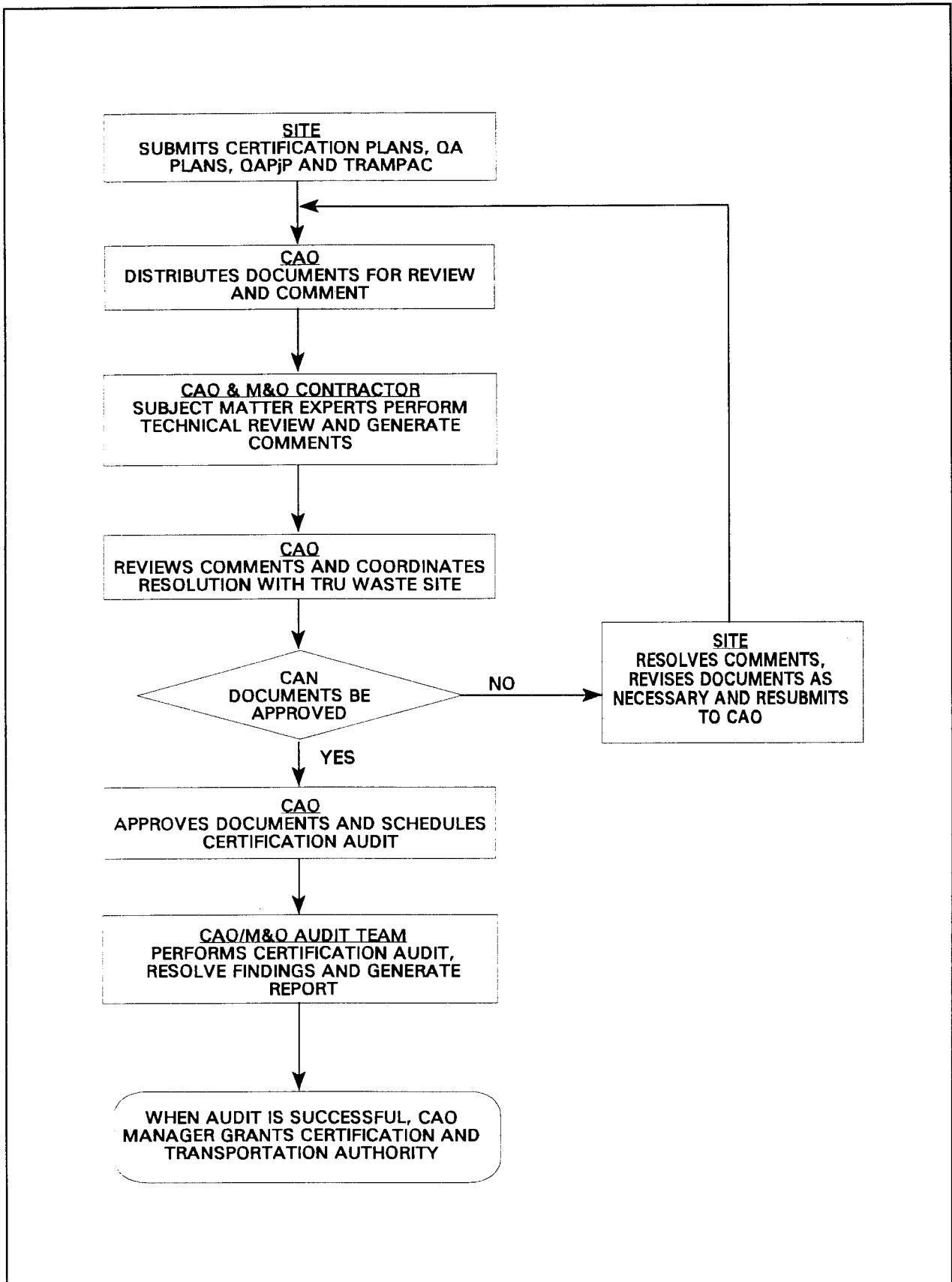
NRC-approved transportation packaging for shipment of TRU waste from the Sites to the WIPP. The CAO is responsible for the preparation of compliance documentation and the implementation of programs to meet the requirements specified in final operating permits for the WIPP facility. The responsibilities 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.
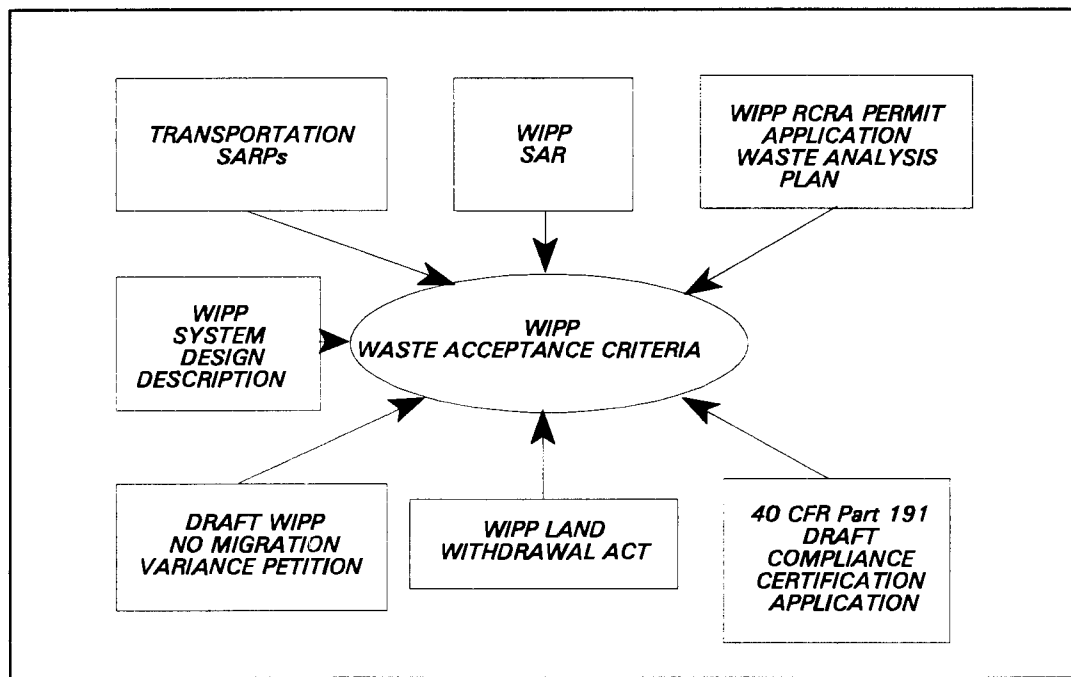
DERIVATION OF WAC
FIGURE 2-1

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.

SITE
SUBMITS CERTIFICATION PLANS, QA PLANS, QAPjP AND TRAMPAC

CAO
DISTRIBUTES DOCUMENTS FOR REVIEW AND COMMENT

CAO & M&O CONTRACTOR
SUBJECT MATTER EXPERTS PERFORM TECHNICAL REVIEW AND GENERATE COMMENTS

CAO
REVIEWS COMMENTS AND COORDINATES RESOLUTION WITH TRU WASTE SITE

CAN DOCUMENTS BE APPROVED

NO

SITE
RESOLVES COMMENTS, REVISES DOCUMENTS AS NECESSARY AND RESUBMITS TO CAO

YES

CAO
APPROVES DOCUMENTS AND SCHEDULES CERTIFICATION AUDIT

CAO/M&O AUDIT TEAM
PERFORMS CERTIFICATION AUDIT, RESOLVE FINDINGS AND GENERATE REPORT

WHEN AUDIT IS SUCCESSFUL, CAO MANAGER GRANTS CERTIFICATION AND TRANSPORTATION AUTHORITY

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.

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

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   <u>Container Description</u>

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.

3.3 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.

3.3.4.4   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.

3.4.2   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.

3.5.3.2   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

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

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

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.

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

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.

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

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.

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

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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.

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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.

DEFINITIONS

<u>Acceptable Knowledge</u> — 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.

<u>Certification Authority</u> — 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.

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

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

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

<u>DOE Field Element</u> — 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.

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

<u>Flammable VOC</u> — 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.

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

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

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_____

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 cm² Alpha • ≤ 200 dpm/100 cm² 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	