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Westinghouse Hanford Company Plan for Certifying Newly Generated Contact - Handled Transuranic Waste

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TRANSURANIC WASTE GENERATION PLAN

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9/21/95
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9/21/95
Date

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LIST OF TERMS

CH	contact-handled
DOE	U.S. Department of Energy
DOE-WAC	Department of Ecology-Washington Administrative Code
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
NDA	nondestructive assay
QA	quality assurance
RCRA	Resource Conservation and Recovery Act
RH	remote-handled
SARP	Safety Analysis Report for Packaging (including the TRUPACT-II)
SWB	standard waste boxes
TRU	transuranic
WAC	Waste Acceptance Criteria
WIPP	Waste Isolation Pilot Plant

1.0 INTRODUCTION

All transuranic (TRU) waste generators are required by U.S. Department of Energy (DOE) Order 5820.2A to package their TRU waste in order to comply with the Waste Isolation Pilot Plant (WIPP) - Waste Acceptance Criteria (WAC) or to keep non-certifiable containers segregated.

The Westinghouse Hanford Company (WHC) Transuranic Waste Certification Plan was developed to ensure that TRU newly generated waste at WHC meets the DOE Order 5820.2A and the WHC-WAC which includes the State of Washington - Department of Ecology - Washington Administrative Code (DOE-WAC). The methods used at WHC to package TRU waste are described in sufficient detail to meet the regulations.

This document is organized to provide a brief overview of waste generation operations at WHC. The methods used to implement this plan are discussed briefly along with the responsibilities and authorities of applicable organizations.

This plan describes how WHC complies with all applicable regulations and requirements set forth in the latest approved revision of WHC-EP-0063-4.

TRU waste sent to WHC storage facilities is accepted from all approved TRU waste generators. These generators will comply with all provisions contained in this plan. The approved TRU waste generators can be determined from Appendix A.

The following requirements are addressed:

- WHC-WAC
  - Operations and Safety requirements
  - Transportation: Waste package requirements
  - Resource Conservation and Recovery Act (RCRA) requirements
  - Performance Assessment requirements
- Quality Assurance (QA) requirements.

This document is a revision of WHC-SP-1142, dated October 1994.

2.0 RESPONSIBILITIES

The WHC develops, prepares, and implements this plan. The WHC will address and resolve all comments generated as the result of reviews and audits. The WHC will revise this plan, as necessary, to maintain a current and approved plan. The generators will participate in audits and surveillances. All documents that require approval(s) will be sent to the appropriate organization(s).

3.0 WASTE ACCEPTANCE CRITERIA

The criteria and requirements are organized under four major headings: (1) Waste Containers; (2) Waste Form; (3) Waste Package; and (4) Data Package. Under each criterion, there are four separate entries covering: (1) Operations and Safety; (2) Transportation - Waste Package Requirements; (3) RCRA/DOE-WAC Requirements; and (4) Performance Assessment.

Each request for exception(s) to the Waste Specification System (WSS) will be submitted to the Acceptance Services Group.

Every TRU waste generator that ships containers to the Hanford treatment, storage, and disposal (TSD) facility will be required to be an approved generator in the WSS.

3.1 SUMMARY OF WASTE ACCEPTANCE CRITERIA

The WHC plan and all referenced documents contain sufficient detail for the waste handling, process, and administrative controls needed to attest that each waste package and/or waste form meets the Hanford Site Waste Acceptance Criteria, WHC-EP-0063-4. The QA criteria applicable to certification are presented and discussed in Section 4.

3.1.1 Operations and Safety Criteria

The receiving TSD operations and safety criteria are discussed in Sections 3.2 through 3.6 of this plan.

3.1.2 Transportation - Waste Package Requirements

All Department of Transportation (DOT) or equivalent requirements to transport waste on the Hanford site will be met. The equivalent requirements are specified in the applicable Safety Analysis Report for Packaging (SARP).

3.1.3 RCRA/DOE-WAC Requirements

The generator will use process knowledge in conjunction with sampling and analysis to characterize the hazardous components of the waste. The generator will characterize all TRU waste to meet RCRA and the DOE-WAC-173-303 requirements.

3.1.4 Performance Assessment Criteria

For the waste generated at a facility, the following criteria are satisfied:

- Radionuclide assay for total alpha activity
  (If the activity is below detection limits of the assay equipment, process knowledge will be used)

- Visual examination of the waste
- Analysis of sludges for pH and major cations and anions.

3.2 WASTE CONTAINER REQUIREMENTS

3.2.1 Waste Containers

Refer to Appendix A for the list of applicable site specific documents for this section.

3.2.1.1 Operations and Safety Criteria

Contact-Handled (CH) Waste

The TRU CH waste containers will meet the U.S. Department of Transportation (DOT) Type A or equivalent packaging requirements. Waste containers will be used, handled, and stored in a manner that is expected to maintain packaging integrity.

TRU waste types or waste sizes that cannot be placed into a 55-gal drum or standard waste box (SWB) will be evaluated on a case-by-case basis to determine the acceptable packaging for storage at Hanford.

Remote-Handled (RH) Waste

The RH waste containers will meet the DOT Type A or equivalent packaging requirements. Waste containers will be used, handled, and stored in a manner that is expected to maintain Type A or equivalent packaging specifications.

3.2.1.2 Transportation - Waste Package Requirements

CH & RH Waste Requirements

Standard 55-gal (208-L) metal drums, SWBs, and 55-gal drums overpacked in a SWB are authorized packages.

TRU waste types or waste sizes that cannot be placed into a 55-gal drum or SWB will be evaluated on a case-by-case basis to determine the acceptable packaging for shipments made on the Hanford site.

3.2.1.3 RCRA/DOE-WAC Requirements

No additional requirements.

3.2.1.4 Performance Assessment

All containers will meet the criteria as required in the WSS and in WHC-EP-0063-4.

3.2.2 Waste Package Size

Refer to Appendix A for the list of applicable site specific documents for this section.

3.2.2.1 Operations and Safety

CH Waste

Package(s) will consist of 55-gal drums or SWBs.

TRU waste types or waste sizes that cannot be placed into a 55-gal drum or SWB will be evaluated on a case-by-case basis to determine the acceptable packaging for storage at Hanford.

RH Waste

RH waste containers must meet the requirements for CH TRU waste.

3.2.2.2 Transportation - Waste Package Requirements

CH & RH Waste Requirements

All DOT or equivalent requirements to transport waste on the Hanford site will be met. The equivalent requirements are specified in the applicable SARP.

3.2.2.3 RCRA/DOE-WAC Requirements

No additional requirements.

3.2.2.4 Performance Assessment

N/A

3.2.3 Waste Package Handling

Refer to Appendix A for the list of applicable site specific documents for this section.

3.2.3.1 Operations and Safety

CH Waste

TRU waste types or waste sizes that cannot be placed into a 55-gal drum or SWB will be evaluated on a case-by-case basis to determine the acceptable packaging for storage at Hanford. The handling of these containers will be documented and have approved plans/procedures (i.e. operating or rigging procedures).

RH Waste

The RH-TRU waste package must meet the requirements for CH waste packages.

3.2.3.2 Transportation - Waste Package Requirements

When a waste container is transported on the Hanford site, DOT and/or an approved SARP is used to control the activities associated with the shipment.

3.2.3.3 RCRA/DOE-WAC Requirements

No additional requirements.

3.2.3.4 Performance Assessment

N/A

3.3 WASTE FORM REQUIREMENTS/CRITERIA

3.3.1 Immobilization

Refer to Appendix A for the list of applicable site specific documents for this section.

3.3.1.1 Operations and Safety

Powders, ashes, and similar particulate waste materials will be immobilized if more than 1 wt% of the waste matrix in each package is in the form of particulate below 10 microns in diameter, or if more than 15 wt% of the waste matrix is in the form of particles below 200 microns in diameter.

Every effort will be made to segregate High Efficiency Particulate Air (HEPA) filters until such time it can be determined that the above criterion can be met.

3.3.1.2 Transportation - Waste Package Requirements

No additional requirements.

3.3.1.3 RCRA/DOE-WAC Requirements

No additional requirements.

3.3.1.4 Performance Assessment

Powders, ashes, and similar particulate waste materials will be immobilized if more than 1 wt% of the waste matrix in each package is in the form of particulate below 10 microns in diameter, or if more than 15 wt% of the waste matrix is in the form of particles below 200 microns in diameter. Verification will be made via the WSS.

3.3.2 Free Liquids

Refer to Appendix A for the list of applicable site specific documents for this section.

3.3.2.1 Operations and Safety

CH and RH Waste

TRU waste for storage at Hanford will not be in free-liquid form. Minor residual liquids remaining in well-drained inner containers will not exceed 1 vol% and the total liquid in the waste package will not exceed 1 vol%.

3.3.2.2 Transportation - Waste Package Requirements

CH and RH Waste Requirements

See Section 3.3.2.1.

3.3.2.3 RCRA/DOE-WAC Requirements

No additional requirements.

3.3.2.4 Performance Assessment

N/A

3.3.3 Pyrophoric Materials

Refer to Appendix A for the list of applicable site specific documents for this section.

3.3.3.1 Operations and Safety

CH and RH Wastes

If nonradionuclide pyrophoric materials are identified, they will be rendered safe by mixing with chemically stable materials (e.g., concrete, glass) or will be processed to remove their hazardous properties. Not more than one percent by weight of the waste in each waste container may be pyrophoric forms of radionuclides.

3.3.3.2 Transportation - Waste Package Requirements

CH and RH Waste Requirements

Reference Section 3.3.3.1.

3.3.3.3 RCRA/DOE-WAC Requirements

The RCRA requirements for this section are addressed in TRU Mixed Wastes Section 3.3.5.3.

3.3.3.4 Performance Assessment

Verification will be made via the WSS whenever applicable.

3.3.4 Explosives and Compressed Gases

Refer to Appendix A for the list of applicable site specific documents for this section.

3.3.4.1 Operations and Safety

CH and RH Waste

TRU waste for shipment to the TSD will contain no explosives as defined in 49 CFR 173, Subpart C, and no compressed gases as defined in 49 CFR 173, Subpart G.

3.3.4.2 Transportation - Waste Packages

CH and RH Waste Requirements

Same as Section 3.3.4.2 above.

3.3.4.3 RCRA/DOE-WAC Requirements

RCRA/DOE-WAC regulated substances or verification of the absence of these substances in the waste to be shipped to the TSD are determined by the WSS verification.

3.3.4.4 Performance Assessment

N/A

3.3.5 TRU Mixed Wastes

Refer to Appendix A for the list of applicable site specific documents for this section. In addition, WHC will implement all State of Washington regulations as agreed to in the approved Part B permits.

3.3.5.1 Operations and Safety

CH Waste

The TRU waste contains no hazardous constituents unless they exist as co-contaminates with the transuranic isotopes. Waste packages containing hazardous waste are identified with the appropriate DOT label. The TRU waste

contaminated with corrosive, reactive, and ignitable materials as defined by DOT or RCRA/DOE-WAC will not be accepted.

While the TRU waste containers are stored at Hanford, all state regulations will also apply to TRU waste and the containers will be managed accordingly.

RH Waste

The same requirements for identification, labeling, treatment, and reporting of hazardous co-contaminates which are specified for CH-TRU waste packages, also apply to WHC RH waste packages.

3.3.5.2 Transportation - Waste Package Requirements

CH and RH Waste Requirements

See Section 3.3.5.1.

3.3.5.3 RCRA/DOE-WAC Requirements

The generator will determine whether or not its TRU waste is subject to RCRA/DOE-WAC regulation due to the presence of listed hazardous materials as defined by 40 CFR 261, or because the materials exhibit regulated characteristics such as Ignitability (40 CFR 261.21), Corrosivity (40 CFR 261.22), and Reactivity (40 CFR 261.23) and/or DOE-WAC 173-303. Listed hazardous materials would be those specifically listed in 40 CFR 261, Subparts C and D.

Each identified hazardous constituent will be assigned the applicable U.S. Environmental Protection Agency (EPA) hazardous waste code(s).

3.3.5.4 Performance Assessment

N/A

3.3.6 Specific Activity of Waste

Refer to Appendix A for the list of applicable site specific documents for this section.

3.3.6.1 Operations and Safety

CH Waste

TRU waste will contain >100 nCi/g of TRU nuclides in the waste matrix. The weight of waste containers and external shielding will be subtracted prior to performing the nCi/g calculation.

RH Waste

TRU waste will contain >100 nCi/g of TRU nuclides in the waste matrix. The weight of waste containers and external shielding will be subtracted prior to performing the nCi/g calculation.

The maximum content of any RH-TRU will not exceed 23 Ci/L.

3.3.6.2 Transportation - Waste Package Requirements

CH and RH Waste Requirements

No additional requirements.

3.3.6.3 RCRA/DOE-WAC Requirements

No additional requirements.

3.3.6.4 Performance Assessment

N/A

3.4 WASTE PACKAGE REQUIREMENTS/CRITERIA

3.4.1 Waste Package Weight

Refer to Appendix A for the list of applicable site specific documents for this section.

3.4.1.1 Operations and Safety

CH Waste

The CH-TRU waste package assemblies will weigh no more than:

- 1,000 lb per drum
- 1,450 lb per drum overpacked in an SWB
- 4,000 lb per SWB.

Weight limits for special case items or packages will be specified in writing from the TSD.

RH Waste

The RH-TRU waste packages will be addressed on a case-by-case basis.

3.4.1.2 Transportation - Waste Package Requirements

CH and RH Waste Requirements

All DOT or equivalent requirements to transport waste on the Hanford site will be met. The equivalent requirements are specified in the applicable SARP.

3.4.1.3 RCRA/DOE-WAC Requirements

No additional requirements.

3.4.1.4 Performance Assessment

N/A

3.4.2 Nuclear Criticality

Refer to Appendix A for the list of applicable site specific documents for this section.

3.4.2.1 Operations and Safety

CH Waste

The 55-gal drum and the SWB will contain fissile or fissionable radionuclide content no greater than the following ^{239}Pu fissile gram equivalents (FGE):

- 55-gal drum = 200 FGE
- SWB = 325 FGE

The ^{239}Pu FGE will be calculated using the methods detailed in WHC-EP-0063-4.

RH Waste

RH TRU waste will be evaluated on a case-by-case basis.

3.4.2.2 Transportation - Waste Package Requirements

CH and RH Waste Requirements

All DOT or equivalent requirements to transport waste on the Hanford site will be met. The equivalent requirements are specified in the applicable SARP.

3.4.2.3 RCRA/DOE-WAC Requirements

No additional requirements.

3.4.2.4 Performance Assessment

The amount of fissile material or other radionuclide(s) will be determined by assay or other documented method.

3.4.3 Plutonium-239 Equivalent Activity

Refer to Appendix A for the list of applicable site specific documents for this section.

3.4.3.1 Operations and Safety

CH and RH Waste

Waste packages will not exceed 1,000 Ci of ^{239}Pu equivalent activity (PE-Ci).

The generator will package containers that comply with the above limits. The Central Waste Complex has a limit of 35 DE-Ci. (The DE-Ci takes into consideration all radioactive isotopes.) De-Ci's will be reported.

3.4.3.2 Transportation - Waste Package Requirements

CH and RH Waste Requirements

No additional requirements.

3.4.3.3 RCRA/DOE-WAC Requirements

No additional requirements.

3.4.3.4 Performance Assessments

N/A

3.4.4 Surface Dose Rate

Refer to Appendix A for the list of applicable site specific documents for this section.

3.4.4.1 Operations and Safety

CH Waste

CH TRU waste containers are defined as having a maximum surface dose rate at any point no greater than 200 mrem/h.

The generator will package TRU waste containers that do not exceed a surface dose rate of 100 mrem/h. Any neutron dose rate from the container will be reported.

RH Waste

RH-TRU waste containers are defined as having a surface dose rate at any point greater than 200 mrem/h.

RH TRU waste containers must meet the surface dose rate of the CH TRU containers.

3.4.4.2 Transportation - Waste Package Requirements

CH and RH Waste Requirements

All DOT or equivalent requirements to transport waste on the Hanford site will be met. The equivalent requirements are specified in the applicable SARP.

3.4.4.3 RCRA/DOE-WAC Requirements

No additional requirements.

3.4.4.4 Performance Assessment

CH and RH Waste

Dose rate measurements will be taken at the TSD to verify the limits in Section 3.4.4.1 are met.

3.4.5 Removable Surface Contamination

Refer to Appendix A for the list of applicable site specific documents for this section.

3.4.5.1 Operations and Safety

CH and RH Waste

Removable surface contamination limits for each waste container will meet the approved prescribed limit(s) in the applicable Safety Analysis Report for Packaging and/or controlled procedure(s) for the container.

3.4.5.2 Transportation - Waste Package Requirements

CH and RH Waste Requirements

No additional requirements.

3.4.5.3 RCRA/DOE-WAC Requirements

No additional requirements.

3.4.5.4 Performance Assessment

CH and RH Waste

The determination of removable surface contamination will be made by using acceptable methods prescribed in Hanford site documents.

3.4.6 Thermal Power

Refer to Appendix A for the list of applicable site specific documents for this section.

3.4.6.1 Operations and Safety

CH Waste

Wattage for each waste container will be calculated, documented, and reported.

RH Waste

The thermal power generated by waste materials in any RH-TRU waste package will not exceed 300 watts (W). The thermal power will be recorded in the data package.

3.4.6.2 Transportation - Waste Package

CH TRU Waste Requirements

See the applicable SARP.

RH TRU Waste Requirements

See the applicable SARP.

3.4.6.3 RCRA/DOE-WAC Requirements

No additional requirements.

3.4.6.4 Performance Assessment

N/A

3.4.7 Gas Generation

Refer to Appendix A for the list of applicable site specific documents for this section.

3.4.7.1 Operations and Safety

CH and RH Waste

Waste containers with waste that could potentially generate gases will be vented. Approved venting devices will be used.

- All waste containers, including any overpacks, will be vented with filters that meet the specifications. The minimum number of filters will be one per drum and two per SWB.
- Any rigid drum liners used in the waste containers will either be filtered or punctured with a minimum 0.3 inch diameter hole.
- Any confinement layers used in the waste containers will be closed only by a twist and tape or fold and tape closure. No sealed container greater than one gallon in size will be present as part of the waste.
- The maximum number of confinement layers in the waste containers will be known and reported.

3.4.7.2 Transportation - Waste Package

CH TRU Waste Requirements

All DOT or equivalent requirements to transport waste on the Hanford site will be met. The equivalent requirements are specified in the applicable SARP.

RH Cask Requirements

To be determined.

3.4.7.3 RCRA/DOE-WAC Requirements

No additional requirements.

3.4.7.4 Performance Assessment

N/A

3.4.8 Labeling

Refer to Appendix A for the list of applicable site specific documents for this section.

3.4.8.1 Operations and Safety

CH and RH Waste

In addition to DOT labeling requirements, each waste container will be uniquely identified. Waste generators will label each container as prescribed in WHC-EP-0063-4. The markings must be legible and have an expected life of 10 yr.

3.4.8.2 Transportation - Waste Package Requirements

CH and RH Waste Requirements

In addition to the Operations and Safety criteria, each waste package will be marked with the appropriate labeling required (40 CFR 262.30 and 262.33, 49 CFR 172, 173, 178, and 179) for transportation.

3.4.8.3 RCRA/DOE-WAC Requirements

Per 40 CFR 262.30 through 33, WHC will properly package, label, mark, and placard hazardous waste before transportation offsite in accordance with applicable DOT regulations, 49 CFR 172, 178, and 179, as these sections apply to RCRA/DOE-WAC requirements.

3.4.8.4 Performance Assessment

Refer to the WHC transportation requirements for details of the specific labeling for waste packages and the applicable sections of WHC-EP-0063-4.

3.5 DATA PACKAGE REQUIREMENTS

3.5.1 Data Package/Certification

Refer to Appendix A for the list of applicable site specific documents for this section.

3.5.1.1 Operations and Safety

CH and RH Waste

A data package which documents/certifies the waste package meets the requirements of these criteria will be transmitted to the TSD.

- Package identification number
- Date of package closure
- Maximum surface dose rate in mrem/h and specific neutron dose rate
- Weight (in kg)
- Container type

- Physical description of waste form (content code)
- Assay information and/or documented accountability procedure data, including PE-Ci, alpha Ci, and ^{239}Pu FGE content
- Radioactive mixed waste (identity and quantity of listed wastes and those that exhibit the characteristic(s) of a hazardous waste)
- Weight and volume percent of organic materials content
- Measured or calculated thermal power
- Date of shipment
- Other information considered significant by the generator

3.5.1.2 Transportation - Waste Package Requirements

CH and RH Waste Requirements

Any additional information required by the SARP or other WHC manual.

3.5.1.3 RCRA/DOE-WAC Requirements

A generator must prepare a specific hazardous waste manifest in accordance with the EPA requirements of 40 CFR 262.20 through 262.23. Identification numbers that link each RCRA/DOE-WAC - regulated waste container and its waste data package will also accompany the manifest.

Documentation gathered during the packaging process that is State specific will be available for inclusion into the data package.

3.5.1.4 Performance Assessment

The generator will provide a data package of the information required by Section 3.5.1.1 of this document, prior to shipment.

4.0 QUALITY ASSURANCE REQUIREMENTS

The QA elements found in this plan follow the framework established in DOE Orders 5700.6C and 5820.2A.

This section defines planned and systemic QA activities which provide adequate confidence that the TRU Waste Program will perform satisfactorily. This section defines in written form the following: policy, requirements, authority and responsibility, organization, method of implementation, activities subject to control (e.g., design, processes, test, procurement), nonconformance identification, corrective active procedures, record functions (e.g., identification, control, preservation), documentation scheme, methods of independent verification (e.g., inspection, surveillance and audit, procedures for implementing all aspects of the QA Program and a method for assessing the program's effectiveness.

4.1 WASTE ACCEPTANCE CRITERIA QUALITY ASSURANCE REQUIREMENTS

The QA Program elements that apply to TRU waste certification are defined in this section. The elements have been structured to conform to DOE Order 5700.6C.

4.1.1 Transuranic Waste Certification Program

Refer to Appendix A for the list of applicable site specific documents for this section.

The generator will assign individuals who will be responsible for the implementation of this program.

The generator will describe or provide reference to the organizational structure and functional responsibilities for the TRU waste program. The functional responsibilities include activities such as: planning; equipment design; methods for issuing approved instructions, procedures, and specifications; verification of work; controlling hardware and software; managing and operating facilities; calibrating and controlling of measuring and test equipment; controlling records; and assessments.

Quality Assurance

The QA organization is responsible for identifying the applicable portions of the QA program to effect compliance with Hanford requirements, assisting in the development of the QA Program Plan and providing an overview of activities to ensure compliance with designated QA requirements. These responsibilities include developing quality instructions for monitoring work operations in the facilities, document review, and confirming the status of waste packages prior to storage or shipment.

A surveillance program will be set up by the facility or line QA organization. The program will consist of written surveillance(s) and a pre-determined frequency in which the surveillance(s) will be conducted.

Plant Operations

Plant Operations is comprised of several departments and groups whose responsibilities are to manage the site facilities. Their responsibilities to the TRU Waste Program are described in various sections of this plan.

Plant Operations personnel will operate facility waste stations; assist engineering to identify and characterize facility TRU waste streams; segregate TRU waste forms from low-level waste; and reprocess waste forms when required to meet the waste certification requirements.

When applicable, waste storage facilities are responsible for operating the area described below.

- *The receipt of TRU waste packages for interim storage in accordance with the site criteria.*
- *The segregated storage of received TRU waste packages.*
- *Assisting the Nondestructive Examiners conducting realtime radiography or linear array operations, when applicable.*
- *Nondestructive assay (NDA) operations with plutonium analytical laboratory services support, when applicable.*
- *Application of labels and required identification.*

Transportation

Transportation and Packaging (T&P) has the responsibility for developing and maintaining a comprehensive program for the transportation and packaging of all hazardous materials. These responsibilities include implementing and maintaining the shipping and receiving program for both onsite and offsite, provide site support for transportation and packaging activities as outlined in approved WHC manuals. This comprehensive program complies with the requirements identified in the DOE Orders 1540 and 5480.3 and Richland Implementing Directive 5480.1, Chapter III.

4.1.2 Personnel Training and Qualification

Refer to Appendix A for the list of applicable site specific documents for this section.

Personnel will be trained to all applicable criteria that pertain to TRU waste program in order to perform assigned tasks.

Training will address specific needs for the TRU waste program and be revised as necessary to maintain effectiveness.

Personnel requiring specialized training will be required to demonstrate proficiency at their jobs, and periodically thereafter, demonstrate skills to meet the present criteria.

Personnel training and qualification records will be maintained and available for review.

The facility management has established operator training and safety courses in their individual facility manuals in accordance with site requirements. The following are examples of specific training requirements which apply to WHC:

- *Personnel performing operations in radiation areas and those required to enter radiation areas as an assistant or observer will be required to successfully complete radiation worker training as specified by the Safety Department.*
- *Personnel who authorize shipments of radioactive materials will be required to successfully complete the course for packaging and shipping hazardous materials.*
- *The QA management will develop and maintain training for QA personnel in accordance with established procedures.*
- *Operational personnel are trained in facility specific TRU certification practices.*

4.1.3 Quality Improvement

Refer to Appendix A for the list of applicable site specific documents for this section.

Processes will be implemented to ensure quality improvement and problem prevention (e.g., accidents, Unusual Occurrences, nonconformance).

All nonconforming conditions will be addressed in accordance with approved procedures to prevent additional TRU waste packages from becoming uncertifiable. All uncertifiable TRU waste will be handled, identified, and treated in a manner that will preclude the inadvertent shipment to the TSD.

The TRU waste program personnel are responsible for identifying to management any action or condition that will result in uncertifiable TRU waste. All individuals will have the authority to stop any work resulting in an unsafe action or condition.

All TRU waste packages that are identified as uncertifiable will be processed in accordance with an approved disposition.

Personnel involved with the final disposition of the nonconformance will have sufficient training or understanding of the TRU waste certification process to ensure that the Hanford criteria in question have been adequately addressed.

4.1.4 Documents and Records

Refer to Appendix A for the list of applicable site specific documents for this section.

a. Documents

A process will be implemented for review, approval, issuance, use, and revisions of controlled documents for the TRU Waste Program.

Controlled procedures will be used for all work performed in the TRU waste generating process. All superseded or canceled procedures will be removed from the work locations. Record copies should be marked "superseded" or "canceled."

b. Records

Records that verify and/or document work that has been performed will be retained in such a manner that traceability, accountability, retrievability, and protection is ensured.

Where data related to TRU waste certification has been stored electronically (e.g., magnetic media or optical disks), the special hardware and software required to retrieve the data will be maintained for the required life of the data.

All records that will be required for long term verification will be stored in an approved storage location. Record retention, as a minimum, will follow the General Records Schedule or DOE Order 1324.2A. Retained records will meet all of the requirements for final disposal.

Documents that identify decisions associated with waste forms, waste packaging controls, and waste package certification will be considered QA records and retained. Permanent and lifetime records will be transferred to a storage facility for the designated storage period.

Example of records to be maintained are shown in Table 1.

Table 1. Record Retention.

Records	Retention period
Drawings, procedures, and specifications	Lifetime[1]
Calibration records	Nonpermanent[2]
Audit reports	Lifetime[1]
Corrective action requests	Lifetime[1]
Unusual occurrence reports	Lifetime[1]
Procurement quality assurance records	Lifetime[1]
Nonconformance reports	Lifetime[1]
Surveillance reports	Lifetime[1]
Special process records: video records, data printouts, equipment qualification, procedures qualification, personnel qualification	Lifetime[1]
Certified data package	Lifetime[1]
Quality Assurance Project Plan	Nonpermanent[3]
Special process software documentation	Nonpermanent[3]

[1]Will meet the WHC RIDS requirements.
[2]Records are kept until the item has been calibrated three times; radiation instrument records are kept for 75 years.
[3]Program nonpermanent records kept 3 yr.

4.1.5 Work Processes

Refer to Appendix A for the list of applicable site specific documents for this section.

a. Work

Individuals performing work including special processes are responsible for the quality of the work. The personnel involved with the TRU waste process will be knowledgeable of the Hanford criteria.

Special processes will be performed by qualified personnel using qualified procedures and qualified equipment.

The line management at WHC will ensure that the individuals working in the TRU Waste Program are provided with the training, resources, and controls necessary to certify TRU waste packages.

Work conducted for the certification of TRU waste will be planned, authorized, and performed in compliance with applicable national standards and/or approved WHC procedures (e.g., American National Standards Institute, American Society for Testing and Materials).

Appropriate technical or QA personnel will assist in the development, validation, and approval of all work related instructions or procedures in the TRU waste process.

b. Identification and Control of Items

The WHC will implement a control system for items affecting certification. These will include items such as carbon composite filters, 55-gal drums (Note: DOT and UN container parts cannot be interchanged), SWBs. Traceability of these items will be maintained.

c. Handling, Storing, and Shipping

A system will be implemented to ensure any item used in the TRU waste process is not damaged or is not deteriorated to the extent that would result in a nonconforming TRU waste package.

Marking and/or labeling of TRU waste packages will be in accordance with the Hanford criteria and 49 CFR 172.

d. Calibration and Maintenance of Monitoring and Data Collection Equipment

A method will be implemented to control the calibration, maintenance, and use of measuring and test equipment used for monitoring and collecting data in support of the TRU waste program.

The suitability and accuracy of equipment used for the assay, examination, and characterization of TRU waste and packages will be documented and referenced to applicable standards. Equipment will be calibrated by methods and on schedules defined in approved WHC calibration and maintenance procedures. Whenever possible, these WHC procedures will conform to the manufacture's guidelines. Also, whenever possible, calibrations will be performed using standard materials traceable to the national measurement system. When no nationally recognized standard exists, the basis for the standard used will be documented.

Measuring and Test Equipment calibration records will be maintained, legible, and readily retrievable.

4.1.6 Design

Refer to Appendix A for the list of applicable site specific documents for this section.

Design of items and processes which directly, or indirectly, support the TRU waste activities will follow established procedures and applicable codes and standards at WHC. The necessary interfaces and overviews will be implemented to ensure that the designed items or processes are correct for the application. Verification and validation of a new design will be completed prior to approval and implementation.

4.1.7 Procurement

Refer to Appendix A for the list of applicable site specific documents for this section.

Applicable procurement requirements will be used when procuring items and services in support of the TRU Waste Program.

4.1.8 Inspection and Acceptance Testing

Refer to Appendix A for the list of applicable site specific documents for this section.

a. Inspection

Inspections will be implemented to verify that the process for the certification of TRU waste packages and the final TRU waste packages meet all of the WAC. Administrative controls will be implemented to preclude an inadvertent bypass of an inspection step.

b. Acceptance Testing

Testing will be implemented to ensure that the item, process, or design of the certified waste package meets the requirements of the WAC.

c. Measuring and Test Equipment

Refer to Section 4.1.5.d.

4.1.9 Management Assessment

Refer to Appendix A for the list of applicable site specific documents for this section.

Planned and periodic self assessments of the TRU waste QA Program will be conducted and documented at each of the waste generating facilities.

A follow-up assessment will be conducted and documented to ensure that all noncompliant items have been corrected.

4.1.10 Independent Assessment

Refer to Appendix A for the list of applicable site specific documents for this section.

The TRU waste program as outlined in this plan will be assessed on an annual basis in accordance with WHC's approved Integrated Audit/Appraisal Standards Board (IAASB) schedule. The assessment will include a review of generator packaging activities, acceptance activities, and storage of TRU waste.

The Environment, Safety, Health, and Quality Assurance (ESQ) Organization is the independent auditing function at WHC. As part of this organization, the IAASB is responsible for the preparation of the Integrated Audits and Appraisals schedule(s). The Compliance Assurance Group is responsible for performing the audits and appraisals in accordance with the approved IAASB schedule.

5.0 REFERENCES

1. 40 CFR 261, "Protection of Environment", Subpart C, "Characteristics of Hazardous Wastes," and Subpart D, "Lists of Hazardous Wastes," current revision.

2. 49 CFR 172, "Hazardous Materials Tables, Hazardous Materials Communications Requirements and Emergency Response Information Requirements," current revision.

3. 49 CFR 173, Subpart C, "Explosives and Blasting Agents; Definitions and Preparation," and Subpart G, "Gases; Definition and Preparation," current revision.

4. DOE Order 1324.2A, "Record Disposition," current revision.

5. DOE Order 5700.6C, "Quality Assurance," current revision.

6. DOE Order 5820.2A, "Radioactive Waste Management," September 26, 1988 or current revision.

7. WHC-EP-0063-4, "Hanford Site Solid Waste Acceptance Criteria," current revision.

8. WHC-SP-1070, "Radioactive Hazardous Waste Materials Packaging Directory," current revision.

APPENDIX A

The TRU Waste Certification Plan Referenced Documents Index is used to help WHC organize the certification plan.

The Section title describes the certification plan section name and number. The Facility title describes the place where waste is stored or generated.

Section	Facility	Document
Name of main section (X.X or X.X.X) Number of all subsections (X.X.X.X)	Generator	Number

The following TRU waste generators are approved to use this plan:

- PFP
- PUREX

TRU Waste Plan
Referenced Document Index

Section number	Section title	Facility	Document
1.0	Introduction	N/A	N/A
2.0	Responsibilities	N/A	N/A
3.0	Waste Acceptance Criteria (WAC) and requirements	N/A	N/A
3.1	Summary of WAC	N/A	N/A
3.1.1	Operations and Safety Criteria	N/A	N/A
3.1.2	Transportation Waste Packaging Requirements	ALL	APPLICABLE SARP
3.1.3	RCRA/DOE-WAC Requirements	ALL	WAC-173-303
3.1.4	Performance Assessment Criteria	N/A	N/A
3.2	Waste Container Requirements/ Criteria	N/A	N/A
3.2.1	Waste Containers	N/A	N/A
3.2.1.1	Operation and Safety	PFP PUREX	ZO-170-015 LO-100-323 PO-100-100 LO-100-224

TRU Waste Plan
Referenced Document Index

Section number	Section title	Facility	Document
3.2.1.2	Transportation Waste Package Requirements	PFP PUREX	ZO-170-015 LO-100-323 PO-100-078 PO-100-100 LO-100-224
3.2.1.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.2.1.4	Performance Assessment Criteria	PFP PUREX	ZO-170-015 LO-100-323 PO-100-078 PO-100-100 LO-100-224
3.2.2	Waste Package Size	N/A	N/A
3.2.2.1	Operations and Safety	PFP PUREX	ZO-170-015 LO-100-323 PO-100-078 PO-100-100 LO-100-224
3.2.2.2	Transportation Waste Packaging Requirements	N/A	N/A
3.2.2.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.2.2.4	Performance Assessment	N/A	N/A
3.2.3	Waste Package Handling	N/A	N/A
3.2.3.1	Operations and Safety	PFP PUREX	ZO-170-015 ZO-170-016 ZO-170-044 ZO-170-051 LO-100-323 PO-100-078 PO-100-100 LO-100-224
3.2.3.2	Transportation Waste Package Requirements	ALL	WHC-SP-1070
3.2.3.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.2.3.4	Performance Assessment	N/A	N/A
3.3	Waste Form Requirements/Criteria	N/A	N/A
3.3.1	Immobilization	N/A	N/A

TRU Waste Plan
Referenced Document Index

Section number	Section title	Facility	Document
3.3.1.1	Operations and Safety	PFP PUREX	ZO-170-015 LO-100-323 PO-100-100 LO-100-224
3.3.1.2	Transportation Waste Package Requirements	N/A	N/A
3.3.1.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.3.1.4	Performance Assessment	PFP PUREX	ZO-170-015 LO-100-323 PO-100-100 LO-100-224
3.3.2	Liquids	N/A	N/A
3.3.2.1	Operations and Safety	PFP PUREX	ZO-170-015 LO-100-323 CM-5-8 PO-100-100 LO-100-224
3.3.2.2	Transportation Waste Package Requirements	ALL	WHC-SP-1070
3.3.2.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.3.2.4	Performance Assessment	N/A	N/A
3.3.3	Pyrophoric Materials	N/A	N/A
3.3.3.1	Operations and Safety	PFP PUREX	ZO-170-015 LO-100-323 PO-100-100 LO-100-224
3.3.3.2	Transportation Waste Package Requirements	PFP PUREX ALL	ZO-170-015 LO-100-323 PO-100-100 LO-100-224 WHC-SP-1070
3.3.3.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.3.3.4	Performance Assessment	N/A	N/A
3.3.4	Explosives and Compressed Gases	N/A	N/A

TRU Waste Plan
Referenced Document Index

Section number	Section title	Facility	Document
3.3.4.1	Operations and Safety	PFP PUREX	ZO-170-015 LO-100-323 PO-100-100 LO-100-224
3.3.4.2	Transportation Waste Package Requirements	PFP PUREX	ZO-170-015 LO-100-323 PO-100-100 LO-100-224
3.3.4.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.3.4.4	Performance Assessment	N/A	N/A
3.3.5	TRU Mixed Wastes	N/A	N/A
3.3.5.1	Operations and Safety	PFP PUREX	ZO-170-015 LO-100-323 PO-100-100 LO-100-224
3.3.5.2	Transportation Waste Package Requirements	PFP PUREX	ZO-170-015 LO-100-323 PO-100-100 LO-100-224
3.3.5.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.3.5.4	Performance Assessment	N/A	N/A
3.3.6	Specific Activity of Waste	N/A	N/A
3.3.6.1	Operations and Safety	PFP PUREX	ZO-170-015 LA-948-333 LA-948-334 LA-948-342 LO-100-323 PO-100-100 LA-948-242 LO-100-224
3.3.6.2	Transportation Waste Package Requirements	N/A	N/A
3.3.6.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.3.6.4	Performance Assessment	N/A	N/A
3.4	Waste/Package Requirements/Criteria	N/A	N/A

TRU Waste Plan
Referenced Document Index

Section number	Section title	Facility	Document
3.4.1	Waste Package Weight	N/A	N/A
3.4.1.1	Operations and Safety	PFP PUREX	ZO-170-015 ZO-170-044 LO-100-323 PO-100-100 PO-100-078 LO-100-224
3.4.1.2	Transportation Waste Package Requirements	PFP PUREX ALL	ZO-170-015 ZO-170-044 LO-100-323 PO-100-100 PO-100-078 LO-100-224 WHC-SP-1070
3.4.1.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.4.1.4	Performance Assessment	N/A	N/A
3.4.2	Nuclear Criticality	N/A	N/A
3.4.2.1	Operations and Safety	PFP PUREX	ZO-170-015 LO-100-323 PO-100-100 PO-100-078 LO-100-224
3.4.2.2	Transportation Waste Package Requirements	PFP PUREX ALL	ZO-170-015 LO-100-323 PO-100-100 PO-100-078 LO-100-224 WHC-SP-1070
3.4.2.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.4.2.4	Performance Assessment	N/A	N/A
3.4.3	Plutonium-239 Equivalent Activity	N/A	N/A
3.4.3.1	Operations and Safety	PFP PUREX	LA-948-333 LA-948-334 LA-948-342 PO-100-100 LA-948-242

TRU Waste Plan
Referenced Document Index

Section number	Section title	Facility	Document
3.4.3.2	Transportation Waste Package Requirements	N/A	N/A
3.4.3.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.4.3.4	Performance Assessment	N/A	N/A
3.4.4	Surface Dose Rate	N/A	N/A
3.4.4.1	Operations and Safety	PFP PUREX	ZO-170-015 PO-100-100
3.4.4.2	Transportation Waste Package Requirements	ALL	HSRCM-1 APPLICABLE SARP
3.4.4.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.4.4.4	Performance Assessment	PFP PUREX	ZO-170-015 PO-100-100
3.4.5	Removable Surface Contamination	N/A	N/A
3.4.5.1	Operations and Safety	ALL	HSRCM-1 APPLICABLE SARP
3.4.5.2	Transportation Waste Package Requirements	ALL	HSRCM-1 APPLICABLE SARP
3.4.5.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.4.5.4	Performance Assessment	N/A	N/A
3.4.6	Thermal Power	N/A	N/A
3.4.6.1	Operations and Safety	N/A	N/A
3.4.6.2	Transportation Waste Package Requirements	N/A	N/A
3.4.6.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.4.6.4	Performance Assessment	N/A	N/A
3.4.7	Gas Generation	N/A	N/A
3.4.7.1	Operations and Safety	PFP PUREX	ZO-170-015 LO-100-323 PO-100-100 LO-100-224
3.4.7.2	Transportation Waste Package Requirements	ALL	APPLICABLE SARP

TRU Waste Plan
Referenced Document Index

Section number	Section title	Facility	Document
3.4.7.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.4.7.4	Performance Assessment	N/A	N/A
3.4.8	Labeling	N/A	N/A
3.4.8.1	Operations and Safety	N/A	N/A
3.4.8.2	Transportation Waste Package Requirements	N/A	N/A
3.4.8.3	RCRA/DOE-WAC Requirements	N/A	N/A
3.4.8.4	Performance Assessment	N/A	N/A
3.5	Data Package Requirements	N/A	N/A
3.5.1	Data Package/Certification	N/A	N/A
3.5.1.1	Operations and Safety	PFP PUREX	ZO-107-015 LO-100-323 PO-100-100 LO-100-224
3.5.1.2	Transportation Waste Package Requirements	ALL	APPLICABLE SARP
3.5.1.3	RCRA/DOE-WAC Requirements	ALL	MANIFESTED AS NECESSARY
3.5.1.4	Performance Assessment	N/A	N/A

TRU Waste Plan
Referenced Document Index

Section number	Section title	Facility	Document
4.0	Quality Assurance Requirements	N/A	N/A
4.1	Waste Acceptance Criteria Quality Assurance Requirements	N/A	N/A
4.1.1	Transuranic Waste Certification Program	ALL	WHC-CM-2-14 WHC-CM-4-2 WHC-CM-5-8 WHC-CM-5-9
4.1.2	Personnel Training and Qualification	ALL	WHC-CM-4-2, QR 2.0
4.1.3	Quality Improvement	ALL	WHC-CM-1-3, MRP 5.1 WHC-CM-4-1 WHC-CM-4-2, QR 15.0 WHC-CM-4-2, QR 16.0
4.1.4	Documents and Records	ALL	WHC-CM-4-2, QR 6.0 WHC-CM-4-2, QR 17.0
4.1.5	Work Processes	ALL PFP PUREX	WHC-CM-1-3, MRP 5.43 WHC-CM-2-14, PART IV WHC-CM-4-2, QR 2.0 WHC-CM-4-2, QR 5.0 WHC-CM-4-2, QR 9.0 WHC-CM-4-2, QR 12.0 WHC-CM-4-2, QR 13.0 WHC-CM-4-2, QR 14.0 ZO-170-015 ZO-170-016 ZO-170-044 ZO-170-051 LO-100-323 LA-948-333 LA-948-334 LA-948-342 PO-100-100 LO-100-224 LA-948-242
4.1.6	Design	ALL	WHC-CM-4-2, QR 3.0
4.1.7	Procurement	ALL	WHC-CM-4-2, QR 4.0 WHC-CM-4-2, QR 7.0 WHC-CM-4-8, QI 7.1

TRU Waste Plan
Referenced Document Index

Section number	Section title	Facility	Document
4.1.8	Inspection and Acceptance Testing	ALL	WHC-CM-4-2, QR 10.0 WHC-CM-4-2, QR 11.0 WHC-CM-4-2, QR 12.0 WHC-CM-4-2, QR 14.0
4.1.9	Management Assessment	ALL	WHC-CM-4-2, QR 2.0 WHC-CM-4-6
4.1.10	Independent Assessment	ALL	WHC-CM-4-2, QR 18.0 WHC-CM-4-6

GLOSSARY

DE-Ci: The dose equivalent curie used to determine the amount of radioactive material that can be stored in the Central Waste Complex. The dose equivalent curie is a relationship of activity with Pu-239 being equal to 1. This terminology was used in the development of the SAR for the CWC.

Nonconformance: A deficiency in characteristic, documentation, or procedure that renders the quality of an item or activity unacceptable or indeterminate.

PE-Ci: Same as DE-Ci. This terminology is found in the WIPP documentation.

Storage: The place or location for waste to be placed until such time that treatment or disposal of the waste can be determined.

Uncertifiable: Waste or container that does not meet the criteria of an accepted certification program.

Waste: The material to be disposed that is contaminated with transuranium isotopes.

Waste container: A receptacle for waste, including any liner or shielding material that is intended to accompany the waste during transport, treatment, or disposal.

Waste package: The combining of the waste and waste container.

Weight percent: The mass of a particular constituent as compared to the mass of the whole multiplied by 100.

Note: Other definitions can be found in the "Hanford Site Solid Waste Acceptance Criteria," WHC-EP-0063 manual.

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