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Title/Desc:

ASSAY & RTR OF SOLID WASTE MGMT RECEIVED TRU WASTE

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ENGINEERING DATA TRANSMITTAL

Page 1 of 1
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				10. System/Bldg./Facility: 224-T and CWC	
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Approval Designator (F) E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	Reason for Transmittal (G) 1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	Disposition (H) & (I) 1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

(G)	(H)	17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)								(G)	(H)
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
1	1	Cog.Eng.RM Irwin	<i>[Signature]</i>	10/10/95		T4-03					
1	1	Cog. Mgr.DB Powell	<i>[Signature]</i>	10/10/95		T4-03					
		QA									
1	1	Safety Tad Nishioka	<i>[Signature]</i>	11/10/95		T3-05					
		Env.									
1	1	Operations PJ Crane	<i>[Signature]</i>	11/02/95		T4-03					
1	1	Peer Review KR Busching	<i>[Signature]</i>	11/02/95		T4-03					

18. RM Irwin <i>[Signature]</i> 11/10/95 Signature of EDT Originator		19. N/A Authorized Representative Date for Receiving Organization		20. DB Powell <i>[Signature]</i> 10/14/95 Cognizant Manager Date		21. DOE APPROVAL (if required) Ctrl. No. N/A ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments	
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RELEASE AUTHORIZATION

Document Number: WHC-SD-WM-ES-360, REV 0

Document Title: Assay and RTR of Solid Waste Management Received TRU Waste

Release Date: 11/15/95

**This document was reviewed following the
procedures described in WHC-CM-3-4 and is:**

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WHC Information Release Administration Specialist:

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11/15/95

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SUPPORTING DOCUMENT

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7. Abstract

The purpose of this document is to evaluate and document SWM policy for assay and RTR of received TRU waste drums. This document establishes the basis for current and future TRU receipt activities.

8. RELEASE STAMP

EXECUTIVE SUMMARY

The Transuranic Storage and Assay Facility (TRUSAF) provides storage of Transuranic (TRU) and Transuranic Mixed (TRUM) waste from U.S. DOD and DOE offsite and onsite generators. In addition to storage, TRUSAF also performs assay and RTR (real time radiography) on each TRU drum with the intent of certification of the waste to WIPP-WAC (Waste Isolation Pilot Plant-Waste Acceptance Criteria) to allow eventual disposal of the TRU waste at WIPP. Due to the uncertainties associated with WIPP-WAC and the potential for all TRU WIPP-WAC certification at the generator or WRAP (Waste Receiving and Processing) facility, this study documents the requirements for TRU assay and RTR of all incoming TRU drums and establishes SWM (Solid Waste Management) policy on future assay and RTR of received TRU waste.

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1.0 INTRODUCTION

The 224-T Building was constructed in 1944 to support the operations of the 221-T building. The building is divided into two sections by a 1-ft thick concrete wall. The northwest section of the building consists of three floors with the mission of storing TRU and TRUM wastes. The southeast section consists of contaminated process cells which are isolated from the rest of the facility. Pursuant to eventual disposal of TRU wastes, TRUSAF has traditionally performed assay and RTR of 100% of received TRU wastes with the intent of using this information to satisfy WIPP-WAC and allow for shipment and disposal at WIPP. Uncertainties associated with WIPP-WAC and WIPP itself has challenged this policy and resulted in the need to evaluate the applicable requirements and change the policy on assay and RTR accordingly. The following sections analyze each requirements document applicable to TRUSAF assay and RTR to determine the appropriate policy for these processes in the future.

2.0 REQUIREMENTS ANALYSIS

2.1 TRUSAF Hazards Identification and Evaluation (Current SAR)

Page 5 of WHC-SD-WM-SAR-025 ECN 121576 states "The transuranic waste storage and assay facility (TRUSAF) operation consists of a nondestructive analysis (NDA) of transuranic (TRU) waste. The analysis is used as an overview for sealed, certified (from newly generated) and uncertified (from retrieved) contact handled, TRU solid-waste packages, to verify general compliance with the Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria (WAC). Those containers meeting the WIPP-WAC criteria are stored at 224-T and maintained in a manner to retain their certification pending shipment to the WIPP. Some containers that are determined to be low-level waste by assay (<100 nCi/g) are transferred to the low-level waste burial trenches." All other references in the Hazards Identification & Evaluation are in reference to the NDA equipment operation and interlocks. Thus, the current safety analysis report recognizes that the NDA is performed to establish conformance with WIPP WAC and is not depended upon for facility safety or compliance. Furthermore, WHC-SP-1142 Rev. 1 (WHC Plan for Certifying Newly Generated Contact-Handled Transuranic Waste) documents the requirements for generator certification of transuranic waste. Revision 1 to WHC-SP-1142 places certification responsibility on the waste generator. The certification process no longer relies upon verification of the waste by SWM equipment.

2.2 224-T Transuranic Waste Storage and Assay Facility
 Dangerous Waste Permit Application

Page 1-2 of the Part B permit application (DOE/RL-91-51, Rev. 0) states "The administrative processing of waste in the 224-T TRUSAF includes inspection of containers (exterior only) and associated documentation, a neutron assay of the waste container(s) to determine fissile content, and an examination with a real-time radiography system to confirm the absence of prohibited items. Following this administrative processing, the containers are placed in the assigned storage module(s)." Because the permit describes the NDA activities as administrative in nature, NDA is not required beyond that needed for the waste verification program for receipt and storage of TRU waste.

2.3 Criticality Safety Documentation

WHC-SD-SQA-CSA-20122 documents the criticality evaluation that approved storage of fissile material on the first floor of 224-T in March of 1989. WHC-SD-SQA-CSA-20123 was issued at the same time to document the criticality evaluation of the use of the transuranic waste assayer and the RTR unit at 224-T. WHC-SD-SQA-CSA-20123 states that "the proposed operation in the 224-T Building is identical to that previously permitted with the exception of the operation of a real time X-ray Examination and Transuranic Waste Assayer (TWA) System to screen the incoming material for compliance with WIPP criteria and determining if the waste can be classified as nontransuranic waste." The evaluation further discusses assay by stating "If a measurement of the contents of a drum were to indicate more than 200 grams but not more than 400 grams of fissile material, the drum may be set aside in a separate single tier array pending reevaluation of the contents of the drum. Such action would not be considered as a violation of the criticality prevention specification." This requirement is implemented in the Criticality Prevention Specification (CPS-SW-149-00001) in the form of single tier 10 X 10 array requirements for drums which have assay results greater than 200 grams but less than 400 grams. The criticality documentation discusses the assay and RTR of all containers received but the first sentence specifies that the purpose is to verify compliance with WIPP-WAC. Thus, assay and RTR of all TRU containers received by TRUSAF is not required to maintain criticality safety.

2.4 Hanford Site Solid Waste Acceptance Criteria
 WHC-EP-0063

Per section 5.3.2.1.2 of the WAC, "Transuranic wastes shall be assayed or otherwise evaluated to determine the kinds and quantities of transuranic radionuclides present prior to storage." This information is certified by the generator prior to SWM approval to receive the waste for interim storage. The WAC does not discuss any additional requirements to assay or RTR after receipt of the TRU waste.

3.0 CONCLUSIONS

All of the safety documentation associated with TRUSAF discuss the assay and RTR of all containers received at the facility for certification to WIPP-WAC. None of the analysis or safety documentation depends upon 100% assay and RTR of received containers. Due to the uncertainty in WIPP-WAC it is desired to modify the policy concerning assay and RTR of received containers. Thus, this document will establish the current and future policy concerning assay and RTR of received TRU waste. Upon finalized WIPP WAC requirements, the current inventory of SWM TRU waste shall be evaluated and actions performed as necessary to meet the final WIPP WAC requirements prior to shipment to WIPP. TRU waste generators maintain responsibility for the waste throughout the waste certification process. Upon approval of this document, facility safety documentation shall be evaluated and changed as necessary to implement this policy.

3.1 Assay

Assay of received TRU containers will not be performed on all containers. Assay shall be performed on containers which have the potential to be redesignated as LLW. TRU waste which does not contain Pu-239 will not be assayed since the TRUSAF assayer software does not recognize waste with a Pu distribution that does not include Pu-239. TRU containers with approximately 1 gram or less of TRU will be assayed to determine if the waste is actually LLW (ie <100 nCi/g). Assay shall also be performed on any containers of waste retrieved from the burial grounds due to changes in the waste acceptance criteria over time and the potential errors in fissile characterization in place at the time of waste generation. Newly generated and currently stored TRU waste will not require additional assay for fissile content beyond the certification of container contents provided by the waste generator. The assayer may be used if there is a question or concern regarding a particular container or waste stream fissile content. The assayer may also be used in support of any changes and commitments established by the final WIPP WAC requirements.

3.2 RTR

RTR of newly generated TRU waste containers will be completed in accordance with the current SWM waste verification program (WHC-IP-1159). The actual quantity of drums requiring RTR will be determined by the waste verification program and generator performance. RTR will be performed on all drums retrieved from the burial grounds in accordance with the retrieval safety documentation (WHC-SD-SAR-058). RTR may be performed if there is any question or concern regarding a particular container or waste stream, but RTR will not generally be performed on 100% of newly generated drums unless required by the waste verification program.

3.3 TRU Distribution between TRUSAF and CWC

Due to the facility inventory limitations TRU container storage needs to be managed between TRUSAF and CWC to maximize storage space efficiency. TRUSAF is approved for storage of higher fissile content but is limited by physical available space. CWC is restricted by lower facility fissile content limits, but has a higher quantity of physical space available. Analysis of these restrictions was performed in WHC-SD-WM-ES-201 and the results will be repeated here to establish SWM policy. TRUSAF will generally store newly generated or retrieved TRU drums with fissile content above approximately 2 DE-Ci. RTR and assay shall be performed on all retrieved TRU drums to assist in characterization. Retrieved TRU drums below 2 DE-Ci may be stored at CWC after successful completion of the RTR and assay. Newly generated TRU drums containing less than 2 DE-Ci may be routed to CWC for interim storage. Drums with less than 1 gram of fissile material with a Pu distribution including Pu-239 may be routed to TRUSAF for assay and LLW determination. Those containers which assay <100 nCi/g shall be redesignated in SWITS and routed to the burial grounds per current policy. The SWITS redesignation shall include use of the assay data for LLW Category determination and the generator TRU quantity will be moved to the comments section. Those containers which assay as Transuranic may be routed to the CWC for interim storage and the information contained in SWITS shall be updated in the same manner as discussed above for redesignated waste. Storage DE-Ci quantities may be modified as the physical storage space at TRUSAF is exhausted and additional fissile inventory is available at CWC. Any changes to this policy will be documented as a change to this engineering study.

4.0 REFERENCES

1. WHC-SD-WM-SAR-025, "Transuranic Waste Storage and Assay Facility Hazard Identification and Evaluation", current revision and applicable ECNs.
2. WHC-SP-1142, Rev. 1, "Westinghouse Hanford Company Plan for Certifying Newly Generated Contact - Handled Transuranic Waste," September 1995.
3. DOE/RL-91-51, Rev. 0, "224-T Transuranic Waste Storage and Assay Facility Dangerous Waste Permit Application," June 22, 1992.
4. WHC-SD-SQA-CSA-20122, "CSAR 80-021 Addendum 1, "Packaging, Storage, and Disposal of Solid Waste (55-gallon drums, Unrestricted H/Pu Only)," March 3, 1989.
5. WHC-SD-SQA-CSA-20123, "CSAR 80-021 Addendum 2, " Packaging, Storage, and Disposal of Solid Waste (55-gallon drums, Unrestricted H/Pu Only)," March 3, 1989.
6. WHC-SD-WM-WP-313, Rev. 0, "Verification Program Manual for Solid Waste Disposal Facilities."
7. WHC-SD-WM-ES-201, Rev. 0, "Waste Storage Analysis for the Transuranic Storage and Assay Facility," January 6, 1992.