UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 28 2010

OFFICE OF
AIR AND RADIATION

Donald C. Gadbury
Manager, National TRU Program
Carlsbad Field Office
U.S. Department of Energy
P.O. Box 3090
Carlsbad, NM 88221-3090

Dear Mr. Gadbury:

On June 29, 2010, the Carlsbad Field Office (CBFO) requested, as a Tier 1 (T1) change, that the U.S. Environmental Protection Agency (EPA) approve 120 additional remote-handled (RH) transuranic (TRU) debris waste containers from Argonne National Laboratory (ANL) alpha gamma hot cells in Building 225 to a previously approved ANL debris waste stream (AERHDM). EPA's review identified that these additional 120 RH containers have the same pedigree as the previously approved RH debris containers belonging to the Waste Stream AERHDM. Therefore, EPA approves the addition of these containers and, as a result, ANL may dispose of this waste at the Waste Isolation Pilot Plant (WIPP). This approval also allows future addition of newly-generated debris waste with a waste pedigree (radiological and physical contents) similar to the previously-approved debris waste stream (AERHDM) by following new Tier 2 change requirements (shown in **bold**) listed in Table 1 of the enclosed report.

The enclosed report (EPA Docket No. A-98-49; II-A4-134) supports EPA's approval decision based on the information reviewed. Please note that in Table 1 of the report, when available, DOE needs to provide actual characterization information so that EPA can review batch data reports for a few EPA-selected RH debris containers from the population reviewed in this approval.

If you have any questions regarding this approval, please contact Rajani Joglekar at (202) 343-9462 or Ed Feltcorn at (202) 343-9422.

Sincerely,

Brian K Littleton for TP

Tom Peake, Director
Center for Waste Management and Regulations

Enclosure

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DOCKET NO: A-98-49; II-A4-134

WASTE CHARACTERIZATION TIER 1 CHANGE REPORT

ADDITION OF 120 ALPHA GAMMA HOT CELL FACILITY DEBRIS WASTE CONTAINERS TO THE REMOTE-HANDLED DEBRIS WASTE STREAM (AERHDM) AT THE ARGONNE NATIONAL LABORATORY

U.S. Environmental Protection Agency
Office of Radiation and Indoor Air
Center for Federal Regulations
1200 Pennsylvania Avenue, NW
Washington, DC 20460

September 2010

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ATTACHMENTS

ACRONYMS AND ABBREVIATIONS

AGHCF	Alpha Gamma Hot Cell Facility
AK	Acceptable Knowledge
AKE	Acceptable Knowledge Expert
AKSR	Acceptable Knowledge Summary Report
ANL	Argonne National Laboratory
ANL-E	Argonne National Laboratory – East
BDR	Batch Data Report
CBFO	Carlsbad Field Office
CCP	Central Characterization Project
CFR	Code of Federal Regulations
CH	Contact-Handled
CRR	Characterization Reconciliation Report
CSSF	Correlation and Surrogate Summary Form
CTP	Confirmatory Test Plan
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
DQO	Data Quality Objective
DR	Discrepancy Resolution
DTC	Dose-to-Curie
EPA	U. S. Environmental Protection Agency
ITR	Independent Technical Reviewer
m^3	cubic meters
NCR	Non-Conformance Report
RH	Remote-Handled
SPM	Site Project Manager
T1	Tier 1
T2	Tier 2
TRU	Transuranic
VE	Visual Examination

WCPIP	Remote-Handled TRU Waste Characterization Program Implementation Plan
WDS	WIPP Waste Data System
WIPP	Waste Isolation Pilot Plant
WSPF	Waste Stream Profile Form

1.0 EXECUTIVE SUMMARY

This report supports the U.S. Environmental Protection Agency's (EPA's) decision to approve as a Tier 1 (T1) change the addition of remote-handled (RH) transuranic (TRU) debris waste to Waste Stream AERHDM at the U.S. Department of Energy's (DOE's) Argonne National Laboratory (ANL), as characterized by the Central Characterization Project (CCP). Specifically, this approval is primarily based on acceptable knowledge documentation with some radiological information for the addition of 120 30-gallon newly-generated RH debris containers[1] from the Alpha Gamma Hot Cell Facility (AGHCF). When available, as objective evidence, EPA will review batch data reports for a few EPA-selected RH debris containers from this population.

In accordance with 40 *Code of Federal Regulations* (CFR) 194.8(b), the EPA conducted Baseline Inspection No. EPA-ANL-CCP-RH-9.06-8 of the CCP waste characterization program at ANL on September 12-14, 2006. On January 16, 2007, EPA approved CCP's waste characterization processes for disposal of Waste Stream AERHDM at the Waste Isolation Pilot Plant (WIPP). This baseline approval applied to 45[2] containers of legacy RH debris waste drums. The ANL Baseline Final Inspection Report (see EPA Docket No. A-98-49; II-A4-73) documents the approval of the Acceptable Knowledge (AK), radiological characterization using Dose-to-Curie (DTC), and visual examination (VE) processes specific to RH TRU Waste Stream AERHDM and subject to the conditions and limitations specific to ANL-CCP's RH waste characterization program as outlined in the Baseline Report. Table 1 of that report cited the inclusion of any additional containers of debris wastes as a Tier 1 (T1) change that requires EPA approval prior to implementation. A summary of EPA's approval of the ANL RH TRU waste characterization program is included as Attachment A.

On June 29, 2010, CBFO requested EPA approval of a T1 change to include approximately 120 additional 30-gallon containers of AGHCF debris wastes in Waste Stream AERHDM. Because there were no new equipment or processes on site at ANL, and because there were no new characterization processes (or radionuclide scaling factors) associated with these wastes, EPA conducted a desktop review of this change, concluding that the ANL-CCP plan to use the EPA-approved systems of controls to characterize the additional 120 RH debris containers from the AGHCF (See Section 5.0 for details) was acceptable. The system of controls continues to be technically adequate. EPA did not identify any findings or concerns during this evaluation. As a result, EPA approves the T1 change request to add 120 additional containers to ANL-CCP's previously-approved AERHDM waste stream.

In addition, EPA is allowing ANL-CCP to expand the approved population of RH debris containers from the AGHCF in the AERHDM waste stream as shown in the Tier 2 (T2) column of Table 1. Particularly, ANL-CCP must:

- Notify EPA about the intention to add containers of debris from AGHCF;

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[1] *Containers* is a generic term which applies to cans, canisters, drums, and any other types of waste packaging units that may be characterized individually for their radiological and physical contents.

[2] The Baseline approval was written for 45 containers, however documentation from ANL-CCP indicates that the original waste stream contained 44 drums. Therefore, throughout this report the size of Waste Stream AERHDM varies depending on which document is being referenced.

- Provide an updated AK Summary Report with supporting AK information indicating that additional containers have the same pedigree as the approved AERHDM debris waste stream;
- Acknowledge that the scaling factors used for quantifying the radiological contents of these additional containers are those used to support EPA's approval of this waste stream as part of the baseline approval.

Following the T2 notification, as a second T2 change, ANL-CCP must provide EPA with a list of additional containers when a sufficient number of these containers are fully characterized. From this list, EPA will select a few containers to review the characterization information included in the respective batch data reports (BDRs).

This report serves as EPA's public notification of the results of the proposed T1 changes and their evaluations. This information will be provided through the EPA website and by sending e-mails to the WIPPNEWS list, in accordance with 40 CFR 194.8(b)(3).

Table 1. Tiering of RH TRU Waste Characterization Processes Implemented by ANL-CCP (Based on September 12–14, 2006 Baseline Inspection; Updated September 2010)

RH Waste Characterization Process Elements	ANL-CCP RH Waste Characterization Process - T1 Changes	ANL-CCP RH Waste Characterization Process - T2 Changes*
Acceptable Knowledge (AK)	Any new waste streams not approved under this baseline Modification of the approved waste stream AERHDM to include additional containers beyond the approximately 45 included in CCP-AK-ANLE-500, Revision 1, if new or different radionuclide scaling factors are required. Substantive modification(s)*** that have the potential to affect the characterization process to CCP-AK-ANLE-500, CCP-AK-ANLE-501 or CCP-AK-ANLE-502 Implementation of load management for any RH waste stream	Notification to EPA that the final DTC determination is complete for RH containers in the approved waste stream Notification to EPA when updates are made to AK documentation as a result of WCPIP revisions** Notification that updates have been completed to the following documents: • All future revisions of CCP-ANLE-AK-500, CCP-ANLE-AK-501 • Listing of the references that document the assembly of fuel pin data and review process; • All future revisions of CCP-ANLE-AK-502; • CCP-AK-ANLE-500 and CCP-AK-ANLE-502 to address freeze file changes Notification to EPA that the data package for this debris waste stream is completed, including any modifications to the WSPF including the CRR and AK Summary Notification to EPA when AK accuracy reports are completed, prepared annually at a minimum Notification to EPA when Attachment 4 of CCP-TP-005 is generated to reflect the updated AKSR Source Document Reference List Notification to EPA when Attachment 8 of CCP-TP-005 has been formally updated **Submission of an updated AKSR documenting that the pedigree of additional containers is same as the containers approved during the baseline approval†** **Submission of a list of fully characterized containers from a population of additional containers proposed as a T2 change, above †**
Radiological Characterization, including Dose-To-Curie (DTC)	Use of any alternate radiological characterization procedure other than DTC with established scaling factors as documented in CCP-TP-504 and CCP-AK-ANLE-501, Revision 0, respectively, or substantive modification thereof*** Any new waste stream not approved under this baseline or addition	Notification to EPA that revisions of CCP-AK-ANLE-501 or CCP-TP-504 that require CBFO approval** are complete **Submission of DTC BDRs for containers selected by EPA from a list of fully characterized containers provided by ANL-CCP†**

Table 1. Tiering of RH TRU Waste Characterization Processes Implemented by ANL-CCP (Based on September 12–14, 2006 Baseline Inspection; Updated September 2010)

RH Waste Characterization Process Elements	ANL-CCP RH Waste Characterization Process - T1 Changes	ANL-CCP RH Waste Characterization Process - T2 Changes*
	of containers to waste stream AERHDM that require changing the established radionuclide scaling factors Application of new scaling factors for isotopic determination other than those documented in CCP-AK-ANLE-501	
Visual Examination (VE)	VE by reviewing existing audio/visual recordings for Summary waste category not covered by this approval VE by any new process for S5000 debris wastes	**Submission of VE BDRs for containers selected by EPA from a list of fully characterized containers provided by ANL-CCP †** Notification to EPA that revisions of any VE procedure that require CBFO approval are complete Addition of new S5000 debris waste streams
Real Time Radiography (RTR)	Any use of RTR requires EPA approval	**Submission of RTR BDRs for containers selected by EPA from a list of fully characterized containers provided by ANL-CCP †**
WIPP Waste Data System (WDS)	None	Changes made to WDS procedure(s) that require CBFO approval

* ANL-CCP will report all unmarked T2 changes to EPA quarterly.

** Excluding changes that are editorial in nature or are required to address administrative concerns. New references that are included as part of the document revision may be requested by EPA.

*** *Substantive modification* refers to a change with the potential to affect ANL's RH waste characterization process, e.g., the use of an inherently different type of measurement instrument or the use of the high range probe as described for CCP-TP-504 for radiological characterization.

† ANL-CCP will report this T2 change immediately.

2.0 PURPOSE OF TIER 1 EVALUATIONS

Any changes to the waste characterization activities from the date of the baseline inspection must be reported to, and, if applicable, approved by EPA, according to the tiering requirements set forth in the ANL Baseline Final Report cited above.

Under the changes to 40 CFR 194.8 promulgated in the July 16, 2004, *Federal Register* notice, EPA must perform a single baseline inspection of a TRU waste generator site's waste characterization program. The purpose of a baseline inspection is to approve the site's waste characterization program based on the demonstration that the program's components, with applicable conditions and limitations, can adequately characterize TRU wastes and comply with the regulatory requirements imposed on TRU wastes destined for disposal at the WIPP. An EPA inspection team conducts the baseline inspection to verify that the site's system of controls is technically adequate and properly implemented.

Following the EPA's approval of waste characterization processes evaluated during the baseline inspection, EPA is authorized to evaluate and approve, if necessary, changes to the site's approved waste characterization program by conducting additional inspections under the authority of 40 CFR 194.24(h). Under 40 CFR 194.24, EPA has the authority to conduct continued compliance inspections to verify that the site continues to use only the approved waste characterization processes to characterize the waste and remains in compliance with all the regulatory requirements. Based on the adequacies of the waste characterization processes demonstrated during the baseline inspection, including all conditions and limitations, EPA specified which subsequent waste characterization program changes or modifications must undergo further EPA inspection or approval under 40 CFR 194.24. This was accomplished by assigning a tier level to each aspect of the ANL-CCP's characterization program. T1 activities have more stringent reporting requirements and require that DOE notify EPA, and that EPA provide approval prior to implementation. The rule under which baseline inspections are conducted can be found in the *Federal Register* (Vol. 69, No. 136, pages 42571–42583 of July 16, 2004).

3.0 PURPOSE OF THIS REPORT

This report presents the results of EPA's evaluation of T1 changes to include approximately 120 additional 30-gallon containers of AGHCF RH TRU debris wastes (Section 5.0, below), as described in CCP-AK-ANLE-500, Revision 5 and Discrepancy Resolution (DR) 023. This report presents the technical basis and results of EPA's approval decision. EPA's approval decision regarding the inclusion of the additional AGHCF waste has been conveyed to DOE separately by letter. As discussed previously, EPA will also announce the decision on its website at www.epa.gov/radiation/WIPP, in accordance with 40 CFR 194.8(b)(3).

The DOE documents that EPA reviewed for this evaluation are cited in different sections throughout the report and are listed in Attachment B. Any of these documents can be requested from the following address:

Carlsbad Field Office
Manager, National TRU Program
U S Department of Energy
P O Box 3090
Carlsbad, NM 88221-3090

4.0 SCOPE OF THIS EVALUATION

The scope of this evaluation covers inclusion of approximately 120 additional 30-gallon containers of AGHCF RH TRU debris waste as described in CCP-AK-ANLE-500, Revision 5. The evaluation was performed by comparing elements assessed in the previous EPA approval with information about the new waste containers provided by ANL-CCP/CBFO to ensure that they fit within the approval issued by EPA previously. Because this evaluation involved expanding an existing waste stream to incorporate new containers and not the addition of a new Summary Category Group or waste stream, inspection checklists were not used.

A discrepancy resolution (DR) form that was provided by ANL-CCP for incorporation into the AK Summary Report (AKSR) corrects the number of drums and waste volume described in Revision 5 of the AKSR (DR023). The DR form describes Waste Stream AERHDM as containing (a) 15.6 cubic meters (m^3) of debris waste from the K-Wing in Building 205 and (b) 37.4 m^3 of debris waste from the AGHCF in Building 225, including the additional 120 containers of newly-generated debris waste from packaging of waste in the alpha gamma hot cells that are the subject of this T1 evaluation.

As part of this evaluation, EPA examined the updated AK information to verify that the additional waste containers had the same pedigree as the approved AERHDM debris waste stream and were characterized using the same radiological characterization process and/or radionuclide scaling factors. This examination applies to approximately 120 30-gallon drums of newly-generated AGHCF debris waste with the same pedigree and characterized using the same scaling factors as the previously approved Waste Stream AERHDM, as discussed in Section 5.0 of this report.

Personnel who participated in the T1 evaluation are listed in Table 2, along with each person's affiliation and function during the evaluation.

Table 2: T1 Evaluation Participants

Name	Affiliation & Function
Rajani Joglekar	Lead Inspector, U.S. EPA
Ed Feltcorn	Inspector, U.S. EPA
Connie Walker	Technical Evaluator – Acceptable Knowledge, SC&A
Kira Darlow	Technical Evaluator – Acceptable Knowledge, SC&A
Patrick Kelly	Technical Evaluator – Radiological Characterization, SC&A
Amir Mobasheran	Technical Evaluator – Radiological Characterization, SC&A
Kevin Peters	Acceptable Knowledge Expert, ANL-CCP
Irene Quintana	Site Project Manager, ANL-CCP
Jene Vance	Radiological Characterization Subject Matter Expert, ANL-CCP

5.0 TECHNICAL EVALUATION OF THE ADDITION OF 120 DRUMS OF ALPHA GAMMA HOT CELL FACILITY DEBRIS WASTE

The population of waste approved during the Baseline Inspection consisted of 45 retrievably-stored 30-gallon drums of debris waste generated in the AGHCF. Revision 5 of the AKSR and DR023 incorporate and explain the addition of 120 additional drums of debris waste from the alpha gamma hot cells to the previously approved RH debris Waste Stream AERHDM. Reference DR023 states that the increase in drums is due to an underestimate of the waste volume and packaging configuration, and not due to the addition of waste not previously described in the AKSR. EPA examined the AK and radiological characterization processes and associated information to determine whether ANL-CCP demonstrated compliance with 40 CFR 194.8 for a T1 change to add containers to Waste Stream AERHDM. EPA concluded that ANL-CCP continues to appropriately apply the system of controls approved by the EPA during the Baseline Inspection.

Documents, Waste Containers, and Batch Data Reports Provided

EPA evaluated the documentation that ANL-CCP had prepared to support the inclusion of approximately 120 additional 30-gallon debris waste containers from the AGHCF in Waste Stream AERHDM. ANL-CCP provided CCP-AK-ANLE-500, Revision 5 and CCP-AK-ANLE-501, Revision 2 to EPA for review of the additional 120 30-gallon containers being generated. In addition, several attachments, source documents, required forms and other data were provided to EPA, and relevant sources were examined as part of this T1 inspection. The listing of all documentation reviewed is in Attachment B. These additional containers are being generated and characterized, therefore no BDRs were provided for review during this evaluation. However, notification is to be provided to EPA as a T2 change when a sufficient number of containers have been characterized to generate 1-2 BDRs, along with a list of the characterized drums as soon as the list is available.

5.1 Acceptable Knowledge

EPA examined the AK process and associated information to determine whether the ANL-CCP waste characterization program demonstrated compliance with the requirements of 40 CFR 194.8 for the addition of approximately 120 AGHCF 30-gallon containers of RH TRU debris waste to Waste Stream AERHDM.

Waste Characterization Element Description

As part of the inspection, EPA reviewed the following with respect to the use of AK for waste characterization as impacted by addition of new containers:

- Waste stream identification and definition
- Radionuclide content of additional waste
- Physical composition of additional waste

- Identification of high-level waste and spent nuclear fuel
- Sufficiency of modified AKSR to include the additional waste
- Drum data traceability
- Defense origin of additional waste
- AK source document sufficiency
- Modifications to the Confirmatory Test Plan (CTP)
- Modifications to the Waste Stream Profile Form (WSPF) and Characterization Reconciliation Report (CRR)
- Correlation and Surrogate Summary Form (CSSF) and Contact Handled (CH)-RH correlation
- Personnel training
- Non-Conformance Reports (NCRs) and AK DRs
- AK accuracy
- Load management
- Identification and attainment of Data Quality Objectives (DQOs)

Technical Evaluation

To assess the appropriateness of inclusion of approximately 120 additional 30-gallon RH debris drums that will be generated from the packaging of waste in the AGHCF in Building 225, EPA evaluated the AK-based radiological and physical characteristics information. EPA evaluated the following: how these data had been integrated, impacts of the information on the waste stream, changes to the radiological and physical characteristics of the waste and other elements that could affect pertinent characteristics of Waste Stream AERHDM. Results of the analysis are presented below. When information presented in the text is supported directly by an AK reference, the reference is cited in parentheses.

(1) The definition of Waste Stream AERHDM was examined with respect to the addition of the newly-generated waste and found to be adequate.

The RH TRU Waste Characterization Program Implementation Plan (WCPIP) defines a waste stream as "waste material generated from a single process or activity, or as waste with similar physical, chemical, and radiological properties." Waste Stream AERHDM is a debris waste stream that was generated in the ANL-E hot cell and includes wastes that are currently in drums as well as waste awaiting packaging that still resides in the hot cell. After reviewing the modified documentation, EPA concluded that inclusion of newly-generated AGHCF waste in Waste Stream AERHDM was adequately supported.

During the Baseline Inspection, EPA evaluated inclusion of both retrievably-stored debris waste in Waste Stream AERHDM and found that the waste stream was adequately defined. The approval, however, did not include newly-generated waste from AGHCF. As indicated in the AK Summary CCP-AK-ANLE-500, Revision 5 and DR023, and as described in the EPA Baseline Report (EPA Docket No. A-98-49; II-A4-73), the waste stream consisted of approximately 45 drums of waste generated in the cells from February 1993 through February 2002 and additional material that would be packaged in the future as newly-generated waste. Approximately 220 additional drums of newly-generated waste will be packaged from materials that remained in the

hot cell and/or were created during ongoing decontamination and decommissioning (D&D) operations of the AGHCF.

(2) Sufficiency of Acceptable Knowledge support documents and related document tracking with respect to the addition of newly-generated Alpha Gamma Hot Cell Facility debris waste references were evaluated and were found to be adequate.

An AK Source Document Reference List was prepared using unique identifiers for the different document types, following the format typically used by ANL-CCP for RH wastes. The listing was complete, and easy to understand. ANL-CCP identified additional references specific to newly-generated AGHCF wastes. Available information indicates that the evaluated references support the overall inclusion of newly-generated waste into the existing AERHDM stream. EPA only examines the documentation specific to the technical elements discussed in the AKSR and not the individual documents used by the AK Expert (AKE) to prepare the AK basis for the waste stream in question (see Attachment B and the Baseline Report for lists of reviewed references).

(3) Modifications to the waste stream profile form and related characterization reconciliation report were assessed and found to be adequate.

ANL-CCP representatives indicated that revisions to the WSPF and CRR had not yet been prepared. EPA has previously evaluated WSPFs and CRRs related to AGHCF debris waste in Waste Stream AERHDM and found them to be adequate. As required in EPA's baseline approval, revision of the WSPF and related attachments including the CRR is a T2 change, and EPA will receive notification of these changes when they are made.

(4) Non-Conformance Reports and Discrepancy Resolution Forms were examined and were found to be adequate.

EPA examined NCRs and DRs related to Waste Stream AERHDM during Baseline Inspection No. EPA-ANL-CCP-RH-9.06-8 and found the preparation of these documents to be adequate. NCRs are not available for the additional containers of newly-generated AGHCF debris wastes as only a small number of containers have been characterized. One DR Form (DR023) addresses the change in the estimated volume of AGHCF debris waste. Based on this single DR, and NCRs and DRs evaluated during previous reviews, EPA expects that the process EPA evaluated in the past will continue to be used to develop these documents when necessary.

(5) Acceptable Knowledge accuracy was assessed and was found to be adequate.

ANL-CCP revises its AK Accuracy Report annually. The last AK Accuracy Report was completed on May 13, 2010, but does not include evaluation of the AK accuracy for any of the additional 120 AGHCF debris containers that are the subject of this T1 evaluation. EPA's baseline approval includes changes or updates to the AK Accuracy Report as a T2 change. Therefore, ANL-CCP/CBFO will automatically notify EPA when the next AK Accuracy Report specific to this waste stream is available.

(6) Defense origin and identification of high-level waste and spent nuclear fuel in Waste Stream AERHDM with respect to the additional Alpha Gamma Hot Cell Facility debris waste containers were evaluated and were found to be adequate.

EPA previously evaluated and approved the defense waste determination of Waste Stream AERHDM during the Baseline Inspection and determined that all RH TRU debris waste from the AGHCF meets the WIPP requirement of defense-related waste. Therefore, the additional containers of AGHCF debris waste are also considered to meet the WIPP requirement of defense-related waste (Reference C006).

As stated in the Baseline Report (EPA Docket No. A-09-49; II-A4-73), "[CCP-AK-INL-500, Revision 1] indicates that while samples of spent nuclear fuel were assessed to determine composition (References P344, P349 and P602), the actual spent nuclear fuel is separate from the RH debris waste generated through testing of this fuel, and is therefore not included in this waste stream. ANL-CCP representatives interviewed indicated that [high-level waste] is by definition not included in this waste stream." Revision 5 of the AKSR indicates that these statements continue to apply to Waste Stream AERHDM after inclusion of the additional 120 containers are added. ANL-CCP has concluded that the waste is not spent nuclear fuel or high-level waste and EPA accepts ANL-CCP's conclusion.

(7) Several items reviewed by EPA were determined to not be impacted by the addition of newly-generated Alpha Gamma Hot Cell Facility debris containers to Waste Stream AERHDM. See EPA Docket No. A-98-49; II-A4-73 for a full discussion of each of the items listed below.

- The AK Summary and implementation of AK as required in Attachment A of the WCPIP were evaluated and were found to be adequate.
- Interpretation of WCPIP with respect to contents of the Certification Plan and CTP was evaluated and found to be satisfactory.
- Personnel training was evaluated and was found to be adequate.
- Attainment of DQOs was evaluated and found to be adequate.

(8) Use of a Correlation and Surrogate Summary Form and use of Load Management were evaluated and were determined to not apply to this waste stream.

ANL-CCP representatives indicated that load management is not intended for Waste Stream AERHDM and this will not change with inclusion of the additional AGHCF debris waste that comprises this T1 evaluation. EPA's Baseline Inspection report indicated that the implementation of load management is a T1 change requiring EPA prior approval.

Acceptable Knowledge Conclusion

There are no findings or concerns associated with the AK portion of this T1 evaluation. Based on the results of this AK evaluation, EPA is approving the T1 request to add additional 30-gallon containers of AGHCF debris waste to Waste Stream AERHDM. The addition of any containers

that were characterized using a different radiological characterization process and/or with different scaling factors is a T1 change. As a T2 change, when adding debris containers from AGHCF to the previously-approved debris waste stream AERHDM, ANL-CCP must provide a revised AKSR with supporting source documents to EPA. Also, upon characterization of a sufficient number of containers to generate 1-2 BDRs, a list of fully-characterized containers will be provided to EPA. EPA will request BDRs for a few containers from this list for review.

5.2 Radiological Characterization

EPA examined the documentation for the radiological characterization process and associated information to determine whether the ANL-CCP waste characterization program demonstrated compliance with the requirements of 40 CFR 194.8 for the addition of approximately 120 additional 30-gallon drums of AGHCF RH TRU debris waste to ANL Waste Stream AERHDM.

Technical Evaluation

The characterization method used for the additional AGHCF RH TRU debris waste was evaluated to determine whether the following elements of the ANL-CCP radiological characterization program were impacted by the addition of new AGHCF debris containers:

- Development of DTC relationships as a function of waste density using MicroShield™ based on each drum's measured external exposure (dose) rate, assuming the main contributor to the external exposure was cesium-137
- Derivation of radionuclide scaling factors for quantification of the 10 WIPP-tracked radionuclides, as supported by the sampling and the calculation packages

The EPA team compared three revisions of the Radiological Characterization Technical Report: Revision 2, provided for this T1 evaluation; Revision 0, provided during the Baseline Inspection; and the version provided in October 2008 and found no significant differences to the sections describing AGHCF debris waste. EPA determined that the radiological characterization process and scaling factors that will be used to characterize the additional newly-generated drums are identical to the process and scaling factors used to characterize the previously approved AGHCF debris drums in Waste Stream AERHDM. Therefore, EPA approves the addition of 30-gallon drums of AGHCF debris waste to Waste Stream AERHDM.

Radiological Characterization Conclusion

There are no findings, concerns, or tiering changes associated with the radiological characterization portion of this T1 evaluation. Based on the results of this evaluation, EPA is approving the T1 request to add additional 30-gallon containers of AGHCF debris waste to Waste Stream AERHDM, with the limitations discussed in this report.

When a sufficient number of BDRs documenting radiological contents of these additional 120 containers approved today are generated, EPA will be provided with a list of fully characterized containers as a T2 change. EPA will select a few containers for review to verify that the

additional containers have been characterized using the same scaling factors as those characterized as part of the baseline approval.

5.3 Characterization of Physical Contents

The analysis of the physical characteristics of Waste Stream AERHDM as presented in the EPA Baseline Report does not change with inclusion of the newly-generated waste. ANL-CCP representatives indicate that the newly-generated containers will consist predominantly of inorganic materials consistent with the retrievably-stored drums because the AGHCF process remained relatively unchanged throughout history. The newly-generated waste, however, may contain more metal debris as a result of D&D activities (Reference P378).

EPA did not review any non-destructive examination (visual examination when packaging newly-generated waste) records for these additional containers as objective evidence. When a sufficient number of BDRs documenting the physical contents (waste material parameters) of these additional 120 containers approved today are generated, EPA will be provided with a list of fully characterized containers as a T2 change. From this list EPA will select a few containers for review to verify that the physical contents of these additional containers are sufficiently similar to those characterized as part of the baseline approval. Based on this information and the associated process history, the waste stream has been appropriately assigned with respect to physical characteristics.

5.4 Summary of Evaluation of Additional 120 Drums of Alpha Gamma Hot Cell Wastes

During this T1 evaluation, EPA determined that the additional containers will have the same pedigree as the approved waste stream and that ANL-CCP will use the same radiological characterization process and radionuclide scaling factors as are technically appropriate for use characterizing the AGHCF debris waste portion of the approved waste stream. As a T2 change, ANL-CCP must provide a list of characterized containers, a revised AKSR and supporting source documents, and an updated radiological characterization report to EPA when characterization of a sufficient number of containers to generate 1-2 BDRs has taken place. CBFO should make clear to EPA if any of these documents are unchanged. From this list, EPA may select a few containers for detailed review to verify that the additional containers belong to the approved waste stream.

Findings and Concerns

The EPA Inspection Team did not identify any findings or concerns relative to the inclusion of approximately 120 30-gallon drums of AGHCF debris waste to Waste Stream AERHDM during this T1 change evaluation.

Tiering Changes

The EPA Inspection Team did not identify any tiering changes during this T1 change evaluation.

Conclusion

During this T1 change evaluation, EPA examined the inclusion of approximately 120 30-gallon containers of AGHCF debris wastes to Waste Stream AERHDM. Based on the results of this evaluation, EPA is approving inclusion of approximately 120 30-gallon containers of AGHCF debris wastes to Waste Stream AERHDM. At a future date, as part of a T2 change, EPA will evaluate BDRs to verify that radiological and physical contents of these additional 120 containers approved today exhibit similar waste content attributes as the debris waste approved as part of the baseline approval.

While the baseline and previous T1 changes adding RH waste streams have been container-limited, this approval is not limited to a specific number of AGHCF debris waste containers in Waste Stream AERHDM. ANL-CCP may add containers to the approved ANL RH waste stream, if:

- Additional containers have the same pedigree as the approved waste stream; and
- ANL-CCP can demonstrate that the radiological characterization process, including the radionuclide scaling factors, used for the RH waste stream are technically appropriate for use in the DTC determination or other approved method of the radiological characterization of the additional containers

Any addition of new containers to the approved waste stream must meet the revised ANL-CCP tiering table including the following:

1. EPA notification: When notifying EPA, ANL-CCP must (a) identify the approximate number of additional containers **and** the approximate additional volume of waste, and (b) provide the timeframe for waste generation, characterization, and disposal.
2. Submission of documents: Upon characterization of a sufficient number of containers to generate 1-2 BDRs, ANL-CCP must provide the list of characterized containers, a revised AKSR and supporting source documents, and an updated radiological characterization report to EPA. CBFO should make clear to EPA if any of these documents are unchanged. From this list, EPA may select a few containers for detailed review to verify that the additional containers belong to the approved waste stream.

6.0 SUMMARY OF RESULTS

Findings and Concerns

The EPA Inspection Team did not identify any findings or concerns relative to the inclusion of approximately 120 additional 30-gallon drums of newly-generated AGHCF debris waste to Waste Stream AERHDM during this T1 change evaluation.

Tiering Changes

While the baseline and previous T1 changes adding RH waste streams have been container-limited, this approval is not limited to a specific number of AGHCF debris waste containers in

Waste Stream AERHDM. ANL-CCP may add containers to the approved ANL RH waste stream, if the following conditions apply:

- Additional containers have the same pedigree as the approved waste stream; and
- ANL-CCP can demonstrate that the radiological characterization processes, including the radionuclide scaling factors, used for the RH waste stream are technically appropriate for use in the DTC determination or other approved method of the radiological characterization of the additional containers.

Any addition of new containers to the approved waste stream must meet the revised ANL-CCP tiering table included as Table 1 above, including the following:

1. EPA notification: When notifying EPA, ANL-CCP must (a) identify the approximate number of additional containers **and** the approximate additional volume of waste, and (b) provide the timeframe for waste generation, characterization, and disposal.
2. Submission of documents: Upon characterization of a sufficient number of containers to generate 1-2 BDRs, ANL-CCP must provide the list of characterized containers, a revised AKSR and supporting source documents, and an updated radiological characterization report to EPA. CBFO should make clear to EPA if any of these documents are unchanged. From this list, EPA may select a few containers for a detailed review to verify that the additional containers belong to the approved waste stream.

Conclusions

During this T1 change evaluation, EPA examined the inclusion of approximately 120 30-gallon drums of AGHCF debris waste to Waste Stream AERHDM. Based on the results of this evaluation, EPA is approving inclusion of approximately 120 new 30-gallon containers drums to Waste Stream AERHDM. When available, as objective evidence, EPA will review DTC and VE BDRs for a few EPA-selected containers from this population.

ATTACHMENT A

APPROVAL SUMMARY FOR ANL RH WASTE CHARACTERIZATION PROGRAM

Specific ANL RH Approval	Date	EPA Docket Number
ANL RH Baseline Approval	January 2007	A-98-49; II-A4-73
Tier 1 Change – Approval of WIPP Waste Information System	January 2007	A-98-49; II-A4-74
Tier 1 Change – Approval of Visual Examination for Newly-Generated Waste	June 2008	A-98-49; II-A4-102
Tier 1 Change – Addition of K-Wing Debris Waste to Waste Stream AERHDM	September 2010	A-98-49; II-A4-132

ATTACHMENT B

LIST OF DOCUMENTS REVIEWED BY EPA DURING T1 EVALUATION

CCP-AK-ANLE-500 Central Characterization Project Acceptable Knowledge Summary Report For Argonne Remote-Handled Debris Waste, Waste Stream: AERHDM, Revision 3, May 8, 2008

CCP-AK-ANLE-500 Central Characterization Project Acceptable Knowledge Summary Report For Argonne Remote-Handled Debris Waste, Waste Stream: AERHDM, Revision 5, January 14, 2010

CCP-AK-ANLE-501, Central Characterization Project Remote-Handled Transuranic Radiological Characterization Technical Report for Remote-Handled Transuranic Debris Waste From Argonne National Laboratory-East, Revision 2, May 10, 2010

CCP-AK-ANLE-502, Central Characterization Project RH TRU Waste Certification Plan for 40 CFR Part 194 Compliance and Confirmation Test Plan for ANL RH Waste Stream: AERHDM, Revision 2, Draft A, 2010

CCP-AK-ANL-505A, Central Characterization Project Sampling and Analysis Plan for Argonne Remote Handled Debris Waste, Waste Stream AERHDM, Revision 0, December 9, 2009

CCP-TP-005, *CCP Acceptable Knowledge Documentation*, Carlsbad, New Mexico, Washington TRU Solutions, LLC

CCP-TP-512, Rev. 3, Attachment 7, CCP Remote-Handled Waste Sampling Attachment 7 - Site Project Manager Radiochemistry or ICP-MS Analytical Batch Data Report Checklist BDR No. 7, TRUA50, May 14, 2010

Inter-Office Correspondence from I. S. Quintana to CCP Records Custodian, RE: Transmittal of Waste Stream Profile Form, Attachment 4, for Remote-Handled Waste Stream AEHRDM at the Argonne National Laboratory, July 23, 2008

Inter-Office Correspondence, from C. M. Gomez to M. Sensibaugh, Acceptable Knowledge Accuracy Report, Argonne National Laboratory, Waste Stream Number AERHDM, Lots 1-5, May 13, 2010

Memorandum to Hillari Neeley and Irene Quintana, CCP SPMs, from Kevin Peters, CCP AKE, RE: Addition of 10 Containers to Waste Stream AERHDM, March 10, 2009

Memorandum to Hillari Neeley, CCP SPM, from Kevin Peters, CCP AKE, RE: Addition of 2 Containers to Waste Stream AERHDM, March 10, 2010

Memorandum to Hillari Neeley, CCP SPM, from Kevin Peters, CCP AKE, RE: Addition of 5 Containers to Waste Stream AERHDM, March 22, 2010

Memorandum to Hillari Neeley and Irene Quintana, CCP SPMs, from Kevin Peters, CCP AKE RE: Addition of 15 Containers to Waste Stream AERHDM, April 16, 2009

Memorandum to Irene Quintana, CCP SPM, from Kevin Peters, CCP AKE, RE: Addition of 6 Containers to Waste Stream AERHDM, May 20, 2008

Memorandum to Hillari Neeley and Irene Quintana, CCP SPM, from Kevin Peters, CCP AKE, RE: Addition of 2 Containers to Waste Stream AERHDM, Date: June 27, 2008

Memorandum to Hillari Neeley and Irene Quintana, CCP SPMs, from Kevin Peters, CCP AKE, RE: Addition of 9 Containers to Waste Stream AERHDM, September 14, 2009

RH Tiering of TRU Waste Characterization Processes Implemented by CCP at ANL (Based on EPA Baseline Inspection No. EPA-ANL-CCP-RH-9.06-8) Docket No. A-98-49; II-A4-73, August 2008

C006, Interview with Larry Neimark re: AGHCF samples, applicable programs, defense relationship to materials, and commingling of waste, ROC-C6, Cheryl Schultz, July 17, 2001

DR023, Waste Stream AERHDM Volume Projection Corrections, K. J. Peters, June 23, 2010.

P344, Analysis of Spent Nuclear Fuel Sample A/G 574B2 (Limerick Reactor) to Determine Selected Isotopes and Estimate Fuel Burnup, N/A, D. G. Graczyk, April 2003.

P349, ANL Calculational Methodologies for Determining Spent Nuclear Fuel Source Term, ANL/RA/CP-101396, R. D. McKnight, April 06, 2000

P378, Argonne National Laboratory-East Building 212 Energy Technology Division Alpha-Gamma Hot Cell Facility Preliminary Decontamination and Decommissioning Plan, HFS-003, T. S. Bray, October 08, 2003

P602, Analysis of Three Mile Island and Quad Cities Spent Nuclear Fuel Samples, N/A, Stephen F. Wolf, Delbert L. Bowers and James C. Cunnane, April 28, 1999