

**MANAGING TRU WASTE CERTIFICATION AT MULTIPLE SITES  
THROUGH CENTRALIZATION**

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**ABSTRACT**

This paper discusses the development of the Central Characterization Project (CCP), which was established by the Department of Energy, Carlsbad Field Office (DOE/CBFO) to provide more efficient and cost effective characterization of contact handled (CH) transuranic (TRU) waste using the resources of multiple corporate and national laboratory entities. The following sections detail some of the challenges the CCP has addressed and overcome during deployment of mobile characterization facilities at the generator sites. In addition, the paper addresses the CCP deployment as the initial approach to standardization of the TRU waste characterization and certification process.

The CCP is the first centralized TRU waste characterization and certification project in the DOE complex. The Waste Isolation Pilot Plant (WIPP) Management and Operations (M&O) contractor, Westinghouse TRU Solutions, L.L.C. (WTS), manages the project, with technical support from Los Alamos National Laboratories (LANL) and Sandia National Laboratories (SNL). Two primary subcontractors provide operational support for CCP characterization operations in the field. Collectively, the subcontractors, WTS, LANL, and SNL personnel are all members of the CCP team. Currently, the CCP has deployed Acceptable Knowledge (AK) compilation personnel and characterization equipment at three DOE sites: Savannah River Site

(SRS), Argonne National Laboratories – East (ANLE), and the Nevada Test Site (NTS). Characterization is performed for waste streams delineated by AK. Each site has specific waste stream profiles that result from either the resident processes at each site, or from wastes received from other DOE complex sites.

The CCP is able to provide assistance to small quantity sites (SQSs) that do not possess the facilities, characterization programs, documentation infrastructure, and personnel to perform TRU waste characterization, certification, and transportation. The CCP is also able to assist large quantity sites in increasing their throughput. Mobile strategies have been developed as a way to manage geographic challenges throughout the DOE complex and expedite TRU waste certification for disposal at WIPP. Regardless of the needs of each site, the CCP assures compliance with WIPP requirements by providing standard communication systems, process control systems, interface plans, training, records, waste characterization and certification procedures, and quality assurance (QA) programs. The quality and efficiency of characterization and certification operations are improved by centralization because a single team of qualified personnel uses standardized processes.

The challenges encountered by the CCP are multidimensional, including coordinating diverse infrastructure between waste generator sites and the central characterization project office (CCPO) and tailoring the program to address regulatory concerns at all levels. In order to address these challenges, the CCP develops interface plans at each site to define shared responsibilities and supplement infrastructure where needed. At some SQSs, for example, this may include providing the complete characterization facilities with qualified personnel and instrumentation. In addition to these infrastructure needs, the CCP addresses the regulatory requirements for each site's waste streams through the certification process.

## **INTRODUCTION**

The purpose of central characterization via the CCP is cost effective, accelerated clean-up of both small and large quantity DOE TRU waste generator sites and other TRU waste generating facilities outside the DOE complex. In doing so, shipments of TRU waste from the generator sites to the WIPP is expedited, exposure risk to the public and environment are reduced, and significant taxpayer dollars are saved. The CCP has an important role in the initial standardization efforts of the DOE/CBFO for TRU waste characterization, confirmation, and certification processes.

TRU waste is initially characterized using AK. The TRU waste is delineated into waste streams and the hazardous constituents and radionuclide content of the waste are identified on the basis of the AK collected. After the AK has been compiled and documented, it is confirmed using headspace gas (HSG) sampling and analysis, nondestructive assay (NDA), and nondestructive examination (NDE) or visual examination (VE).

The scope of CCP activities encompasses the initial characterization of the TRU waste using AK, and subsequent confirmation of the AK using mobile characterization facilities, and/or the existing facilities at the sites. The CCP has thus far deployed AK Experts and mobile characterization facilities at three generator sites to certify waste for disposal at WIPP.

Ultimately, the CCP will initiate TRU waste confirmation activities at the WIPP Central Characterization Facility (CCF) pending WIPP Resource Conservation and Recovery Act (RCRA) Permit modification approval by the New Mexico Environment Department (NMED) to allow such activities.

## **DEVELOPMENT OF THE CCP**

### **A Successful Multi-Entity Project**

The development of the CCP utilizes expertise from its varied partnering organizations. DOE/CBFO provides oversight and program management for the effort, while WTS, the M&O contractor for the WIPP repository, supplies project management and operational expertise. The two National Laboratories, LANL and SNL, supply technical and scientific expertise with respect to the waste characterization processes and logistics. WTS and its subcontractors provide waste characterization operations personnel. Mobile waste characterization facilities and instrumentation developed and demonstrated by the DOE, LANL, and its subcontractors are provided to the subcontractors and WTS for use in waste confirmation activities. Finally, TRU waste generator sites, maintaining ownership of the waste to be characterized, subcontract to the CCP for needed characterization and certification activities.

WTS and LANL personnel staff the Central Characterization Project Office (CCPO). Specifically, LANL supplies the Transportation Certification Official (TCO), the Waste Certification Official (WCO), and the AK Experts. WTS supplies the Site Project Manager (SPM) and the Site Project Quality Assurance Officer (SPQAO). The SPM and SPQAO who manage personnel responsible for training, records management, entry of characterization data into the WIPP Waste Information System (WWIS), information management, and document control. The CCPO houses the CCP Records Center and the CCP Training Records Center. WTS also provides a CCP Generator Site Operations team that negotiates written agreements with the host site, provides logistical support for equipment mobilization, and provides operations management support for compliance with the host-site authorization basis, and configuration management.

CCP data generation level (DGL) personnel generate waste characterization data in the field (at the generator sites). These personnel include operators (who generate data or perform independent technical reviews of the data), technical supervisors, facility QA officers, subject matter experts (SME), and on-the-job training (OJT) instructors for each characterization process (see below). DGL personnel are supplied by subcontractors, WTS, and the generator sites.

### **The CCP Field Characterization Processes**

The AK process is used to characterize all waste streams to be disposed at WIPP. AK documentation is compiled into an auditable record to initially characterize the waste, delineate the waste containers into waste streams, and assess whether wastes exhibit toxicity characteristics or are listed wastes. AK may also be obtained to comply with other WIPP Waste

Acceptance Criteria (Reference 1) requirements, such as identification of packaging configurations. The following processes are used by the CCP to confirm AK-based characterization of TRU waste streams:

- **Nondestructive Assay (NDA):** This is the process of obtaining information on the isotopic composition of the waste through radioassay of the waste container. Radioassay techniques are used to determine the radiological characteristics of the waste, including verification of isotopic ratios suggested by AK.
- **Nondestructive Examination (NDE):** This is the process of examining the waste containers using X-ray techniques to determine their physical contents. Also called radiography, real-time radiography (RTR), or digital radiography/ computed tomography (DRCT), radiography is used to verify that the waste physical form matches the waste stream description and that the waste matrix code assigned to the waste container is consistent with AK. Radiography is also used to estimate waste material parameter weights and identify prohibited items in waste containers.
- **Headspace Gas (HSG) sampling and analysis:** This is the process of obtaining and analyzing a sample of gas from the waste container headspace to determine the volatile organic compound (VOC), hydrogen, and methane concentrations in the waste container void volume.
- **Visual Examination (VE):** This is the process of opening individual waste containers and viewing their contents in order to verify the radiography results or as an alternative to radiography to determine the physical contents of the waste container, or to verify the absence of prohibited items.

### **Deployment of the CCP Processes**

The CCP has deployed mobile characterization facilities at the SRS, ANLE, and the NTS. These sites were chosen as highest priority by the DOE/CBFO based on state agreements, closure schedules, and other considerations such as DOE/CBFO initiatives.

***Savannah River Site (SRS):*** The SRS is a large quantity site with its own TRU waste characterization and certification program. The intent of the DOE/CBFO with respect to the CCP's deployment at the SRS was to supplement the SRS' TRU waste characterization capability in order to meet shipment deadlines associated with the DOE's Mound Initiative. Briefly, the Mound Initiative requires that, for every drum equivalent of Mound waste transferred to the SRS (to facilitate Mound site closure), two drum equivalents of SRS waste must be certified for disposal and shipped to WIPP, up to a total of approximately 3,000 drum equivalents of SRS waste. The CCP is currently conducting all characterization processes at the SRS except VE, although the SRS has also provided HSG sampling and analytical support through their own certified TRU waste characterization program.

At the SRS, the CCP characterized a group of approximately 6,000 radioactive waste drums by deploying AK Experts and AK personnel to the SRS to locate and compile AK documentation

into an auditable record and evaluate the information. The CCP AK Experts and personnel determined which containers were most likely to meet the definition of TRU waste. This work was completed in cooperation with the SRS AK Experts working on a companion, non-hazardous waste stream from the same process. CCP AK Experts and personnel then delineated the waste containers into three waste streams, developed a comprehensive candidate container database, assigned the appropriate EPA hazardous waste codes, and identified the radioisotopes and prohibited items present in the waste streams.

The waste investigated was generated at the SRS' FB-Line facility, which has been a defense nuclear materials production facility since 1954. The original facility mission was to process and convert dilute plutonium (Pu) solution into highly purified weapons grade Pu metal. The CH-TRU waste streams resulted from glovebox operations, decontamination, housekeeping, maintenance, and construction activities, with the waste consisting primarily of dry heterogeneous organic and inorganic debris contaminated with solvents and plutonium isotopes, primarily Pu-239. Problems encountered during the AK characterization included the following:

- Logistics of records storage. The SRS WIPP Records Center contained over 15,000 records associated with the waste under investigation. These records were required for ongoing work at both the SRS and at the CCPO; as a result, the SRS and the CCP agreed to keep the auditable AK record at the CCP Records Center, with a copy at the SRS. The exception is TRU waste package data forms (originally completed by generators at the time of packaging), for which only a copy is maintained at the CCP Records Center.
- Radiological characterization. During the AK compilation process, AK Experts discovered that non-weapons-grade material was processed through FB-Line during the time period of waste generation. As a result, the radiological characterization was revised to incorporate this information. Also, available activity information recorded by waste generators and waste management personnel at the time of packaging was problematic due to negative results for activity concentration. These results were probably due to inadequate shielding of counting equipment from the high background in the assay area, which was located on top of an old burial ground. As previously stated, AK experts also determined that a large percentage of the containers were not likely to meet the definition of TRU waste because their activity was less than 100 nCi of TRU isotopes per gram of waste. Such waste is prohibited from disposal at WIPP (Reference 2).
- Determination of a suitable Waste Matrix Code. Waste Matrix Codes are used in the TRU waste program to describe waste physical form. The Waste Analysis Plan (WAP, Reference 2, Attachments B-B6 of the WIPP Hazardous Waste Facility Permit) requires that waste generators assign Waste Matrix Codes to waste on a waste stream basis, but confirm them on a container basis. CCP personnel developed a new Waste Matrix Code definition to adequately describe these heterogeneous debris waste streams, which were not sorted by Item Description Code.

- Prohibited items in drums. AK experts determined that approximately 95 of the more than 6,000 containers under investigation contained prohibited items such as aerosol cans and liquids. The SRS was notified of these containers and they were segregated from the waste to be characterized. The SRS is responsible for the ultimate dispositioning of these containers.
- Reevaluation of confirmation information. AK has been reevaluated due to several different findings from confirmation activities, including the presence of leaded gloves in non-lead waste streams and liquids found in some containers. To correct the former finding, the hazardous waste number D008 for lead was added to all waste streams in keeping with conservative EPA hazardous waste code assignment requirements outlined in the Waste Analysis Plan (WAP) (Reference 2). In the latter case, the source of the problem was determined to be environmental in origin in spite of a 1993-95 dewatering campaign.

The CCP started hot operations/waste confirmation activities at the SRS in May 2001. The waste streams for which the CCP is responsible are CH TRU mixed debris streams (as discussed above). Table I contains the statistics for CCP operations at the SRS from start-up to November 2001.

Table I. Statistics for CCP Operations at the Savannah River Site

CCP Confirmation Process	Date of Analysis of First Container	Total Number of Containers Analyzed as of 11/9/2001	Number of Containers Rejected as of 11/9/2001
Radiography	5/7/2001	582	49
Non-Destructive Assay	5/8/2001	210	9
Headspace Gas Sampling and Analysis	8/28/2001	44	0
Visual Examination	9/5/2001	24	0

Waste confirmation activities conducted at the SRS and the status of these activities for the TRU mixed waste streams under investigation are as follows:

- NDE: The CCP has deployed a mobile RTR system. As indicated in Table I, the CCP has subjected 582 TRU waste containers to RTR. Of those containers, 49 were rejected for failure to comply with the WIPP Waste Acceptance Criteria (WAC, Reference 1). Four containers were rejected due to the presence of sealed containers larger than four liters in volume or due to damaged drum filters or damaged or unvented filters or drum liners. Four containers were rejected due to the presence of WAC-prohibited items, such as unpunctured aerosol cans (three of these four also contained free liquids in excess of the WAC limits). Three containers were rejected because the RTR operator was unable to verify the Waste Matrix Code and/or the waste stream description. Finally, 38 containers were rejected because they contained free liquids in excess of the WAC limits. In addition, RTR operators detected leaded gloves in 16 containers in a waste stream that was not expected to contain lead based on AK information. The RTR data was verified by VE for some of the affected

containers. This resulted in a reevaluation of AK data, assignment of the hazardous waste number for lead to all waste streams, and a new waste stream delineation.

- NDA: The CCP has deployed the Mobile Imaging Passive Neutron / Gamma Energy Analysis (IPAN/GEA) system at the SRS. Data in Table I indicate that the CCP has assayed 210 TRU waste containers. Of those containers, nine were rejected for failure to comply with the WAC (Reference 1) definition of TRU waste (assayed at < 100 nano-Curies per gram). AK data indicated that as many as 50% of the containers might not assay as TRU waste. Data for an additional seven containers are currently undergoing expert analysis that will determine whether or not these containers will be rejected. Finally, 13 containers that exceed the SRS-imposed activity limits for the CCP characterization area (Pad 4) are being staged in a safe manner by the SRS away from Pad 4. These drums were not rejected, but cannot be further characterized by the CCP on Pad 4.
- HSG sampling and analysis: The CCP has deployed a single sample manifold headspace gas system. This system, also known as the Drum Vent System (DVS), automatically penetrates the drum using a specially designed, self-drilling, self-tapping hollow core filter vent. The programming associated with this instrument controls the process that penetrates the drum lid, collects a representative headspace gas sample for gas chromatography / mass spectrometry (GC/MS) analysis. The DVS then installs and seals the filter vent onto the drum lid. SRS has provided supplemental headspace gas sampling and analysis. In the SRS process, headspace gas is collected in Summa canisters and analyzed in a laboratory. To date, the CCP and SRS have processed 44 drums through both systems. As indicated in Table I, none of these 44 containers have been rejected by this process.
- VE: The CCP is utilizing the existing SRS VE facility and personnel for VE. The CCP notifies the SRS of the drums that require VE. The SRS completes the VE process for those drums, and reports the data to the CCP. The SRS has visually examined 24 containers from the CCP waste streams. Of these 24 containers, VE has identified two containers in which items were overlooked by the RTR process (miscertifications according to the WAP). In one case, VE identified free liquids in the waste container that were not identified by RTR because of dense or opaque material blocking the view of the operator. In the other case, VE identified the waste container as belonging to a different waste stream than indicated by RTR.

***Argonne National Laboratory – East (ANLE):*** ANLE is a small quantity site. The CCP is providing all characterization processes at this site, with the exception of AK compilation.

- AK: ANLE has supplied a draft AK summary report for 466 CH-TRU waste containers to the CCP. Of these, 351 are non-mixed debris, 28 are mixed debris, and 87 are mixed homogeneous solids. The CCP AK Experts are responsible for finalizing this AK report, ensuring that the ANLE AK meets WIPP requirements, and reevaluating and updating the AK as needed during CCP confirmation activities.

- NDA: The CCP has deployed the subcontractor-operated mobile Active Passive Neutron Examination Assay (APNEA) System and the Waste Inspection Tomography (WIT) Non-Destructive Assay trailer.
- NDE: The CCP has deployed the mobile Waste Inspection Tomography (WIT) trailer that includes x-ray examination using Digital Radiography (DR) and Computed Tomography (CT).
- HSG sampling and analysis: The CCP has deployed a LANL-developed on-line integrated headspace gas sampling and analysis system. This system will be operated by WTS personnel and consists of an automated manifold with GC/MS and GC/ thermal conductivity detector (GC/TCD) detection capabilities.
- VE: The CCP has deployed the LANL-developed, WTS-operated Mobile Visual Examination and Repackaging (MOVER) facility. The MOVER system contains a glovebox and is designed to provide VE and repackaging activities for TRU waste drums to verify radiography. MOVER may also be used to repackage waste drums so that they do not exceed wattage limits or to remove prohibited items.

**Nevada Test Site (NTS):** The NTS is also a small quantity site. The CCP is providing all characterization processes except for VE.

- AK: NTS has supplied draft AK summary reports for 1,675 TRU waste containers to the CCP. The CCP AK Experts are responsible for finalizing these AK reports and ensuring that the NTS AK meets WIPP requirements. CCP AK Experts will also update the AK as needed during CCP confirmation activities. The NTS has supplied AK personnel to assist the CCP.
- NDA: The CCP has deployed the subcontractor-operated Mobile Segmented Gamma Scanner (SGS) System to determine the radionuclide content of the waste.
- NDE: The CCP has deployed the subcontractor-operated mobile RTR system.
- HSG sampling and analysis: The CCP has deployed a single sample manifold headspace gas system similar to the DVS system described for the SRS.

VE: The NTS will provide the VE facility and personnel under the CCP TRU Waste Characterization Quality Assurance Project Plan (QAPjP, Reference 3). NTS has already begun repackaging some waste originally generated at Lawrence Livermore National Laboratory (LLNL).

## **CHALLENGES ENCOUNTERED BY THE CCP**

The CCP team has encountered challenges during all stages of program development and implementation. Challenges were encountered from the documentation of the technical, quality, and compliance programs on paper, through implementation of hot operations in the field.

## **Is the CCP a “Generator Site”?**

As in any developing process, the CCP encountered many challenges during program development. Typically, the first document to be written and submitted for a new waste characterization program is the Quality Assurance Project Plan (QAPjP). This plan flows down the requirements of the WIPP WAP (Reference 2). One strategy for the CCP QAPjP (Reference 3), Revision 0, involved the inclusion of the following text: "...CCP is considered a generator site with one exception; the CCP does not generate or own the waste it is characterizing." This statement was inserted because the WAP (Reference 2) requires that "generator sites" characterize the waste. Therefore, if the CCP were considered a "generator site," the DOE/CBFO could characterize any of their DOE complex TRU waste by the CCP.

The regulator considered this interpretation of "generator site," inconsistent with the intent of the WAP (Reference 2). Working with the regulator to understand their concerns, CBFO and WTS developed a path forward to allow the CCP to be subcontracted by the waste generator sites to characterize the waste. The details of the subcontract are spelled out in a Statement of Work (SOW, See Reference 4 for an example). The waste generator site retains “cradle-to-grave” responsibility for the waste characterization performed by the CCP.

## **The CCP Tailored Quality Assurance (QA) Program**

The CCP team considered several approaches to the development and implementation of the CCP QA program. These were to:

- Use the existing WTS QA program,
- Develop an entirely new QA program independent of the existing WTS QA program, or
- Develop a "hybrid" QA program, in which some WTS QA functions are utilized and the remaining functions are developed based on the specific needs of the CCP.

The CCP team evaluated existing WTS QA programs and resources and decided, due to the innovative nature and rapidly developing schedule of the CCP, that a tailored hybrid QA program would be most efficient over the long term, and less likely to adversely impact the WTS QA program and personnel over the short term. To that end, the CCP developed a hybrid program that utilizes elements of existing WTS QA processes, but developed its own data validation and verification, nonconformance, and corrective action processes, and incorporated the functions of the SPQAO. The CCP utilizes WTS procurement, inspection services, qualified suppliers list, and independent audit functions with interfaces that are defined in the CCP Quality Assurance Administrative Program (CCP-PO-008, Reference 5).

## **Sharing the Wealth**

One of the most important priorities for a developing program is to have the human resources available where needed. This presented a unique problem within the CCP because within one year, it became necessary for the CCP team to staff three field locations and a project office that was capable of supporting the field operations. Because of the complexity of the tasks in the field and at the project office and the rigors of regulatory compliance and the QA programs, a

considerable effort was required. Eventually, all CCP team members were able to hire the personnel that were needed (and continue to do so) to complete their respective work scopes.

The CCP drew upon its team members to supply qualified personnel for all positions within the CCP. The CCP project office headcount has increased as follows: National Certification Team - 20, Quality Assurance - 7, Project Support - 5, Generator Site Operations - 6. The subcontractors have also increased CCP data generation level staff appropriately. WTS has increased its Characterization Operations staff (for operation of the MOVER and headspace gas instrument deployed at ANLE) to eight persons. With the exception of a few project office positions, all CCP team members were able to provide qualified individuals, and the CCP training team continues to ensure that all CCP personnel are trained as appropriate for their positions.

### **Communication**

*At the SRS:* Since the initial deployment of CCP mobile characterization facilities and personnel to the SRS, the CCP and the SRS have established close communication. The two have ~~and~~ worked to improve that communication and the transfer of data between the two projects. Adequate communications are vital for the CCP and the SRS because the two characterization projects characterize containers from the same waste stream in order to meet deadlines associated with the DOE's Mound Initiative.

The working relationship between the SRS and CCP waste characterization projects has been established by contract. Consequently, all work performed at the SRS by the CCP is under the direct control of the SRS Subcontract Technical Representative (STR). Further, the SOW (Reference 4) and the CCP/SRS Interface Document (CCP-PO-004, Reference 6) define the relationship such that the CCP is working for and at the direction of the SRS. The SRS STR ensures work performed by the CCP does not adversely affect the SRS TRU waste characterization project. The SRS STR's concurrence is required on several submittals prepared by the CCP, such as the waste stream profile form, the AK Summary report, and the CCP/SRS Interface Document (CCP-PO-004, Reference 6). The CCP ensures that the SRS STR has adequate information to assess any potential impact of the CCP to the SRS characterization project by providing additional information such as semi-annual trending summary reports, miscertification reports, and biannual waste material parameter weight comparison reports.

The CCP/SRS Interface Document (CCP-PO-004, Reference 6) clarifies roles and responsibilities for the special case where both programs are working from the same container inventory. The approach divides the existing waste stream into separate waste stream lots based on which characterization project is processing the containers. Where both of the projects are processing drums from the same container inventory, the following communications, data transfers, and actions apply:

- Each program issues its own AK Summary Report to describe the container inventory. Any differences between the two summaries are resolved by the SRS STR, as assisted by the Site Project Manager (SPM) of each characterization project.

- As containers are retrieved from storage, they are assigned to one of the programs by the SRS STR via written correspondence.
- Each program characterizes and certifies the containers assigned to it. This work includes all reconciliation activities.
- During characterization or reconciliation activities where AK deficiencies are identified with either program, the SRS STR ensures the other characterization project's SPM is notified. The SPMs then develops appropriate corrective actions.
- Each program will prepare a waste stream profile form for the containers it has processed.
- On a waste stream lot basis, the CCP SPM provides data such as the data quality objective reconciliation, a cross-reference of containers to batch data reports, and the HSG Summary Data Report, to the SRS STR.
- On a waste stream lot basis, the SRS STR requests the SRS SPM to review the waste stream lot documentation and compares it to the SRS waste stream characterization data.

The CCP/SRS Interface Document (CCP-PO-004, Reference 6) ensures the appropriate communication and exchange of data collected by both the CCP and SRS TRU waste characterization projects.

*At ANLE and NTS:* The CCP has developed interface documents (CCP-PO-007 and CCP-PO-009) and agreements with ANLE and NTS. These documents to delineate the responsibilities of the waste generator and the CCP. They also facilitate communication and the exchange of data collected by the CCP and site TRU waste characterization projects. These interfaces are still being developed and will be implemented to the extent experienced at the SRS as work progress as at each site.

### **Site Logistics**

The CCP typically utilizes the waste generator site's job control and lock-out-tag-out processes, health protection and radiation control technicians, and drum handling personnel. The CCP complies with the generator site's safety authorization bases and the site's requirements for subcontractors to work on their premises.

CCP field operations at the SRS are located on "Pad 4." This covered pad houses the CCP mobile characterization facilities. Some of the waste that is awaiting characterization is also staged on Pad 4. In order to comply with the SRS requirements and authorization bases, some changes were made to the CCP mobile facilities, including installing alarm systems on CCP trailers for various hazards such as fire or radiation, and installing extra shielding on the NDA trailer. CCP personnel working at the SRS also participate in site-specific and/or facility-specific training for CCP personnel, such as SRS General Employee (GET) training.

At ANLE (Reference 7), the generator site will provide TRU waste containers to the CCP for waste characterization and certification and ship waste to WIPP with assistance from the CCP. The CCP is responsible for characterization and certification of waste provided by ANL-E including NDA, NDE, HSG sampling and analysis, VE, project and generator level data review,

and validation and verification. CCP will also be responsible for ensuring that the waste approved for disposal is documented in an approved waste stream profile form. CCP has set up mobile characterization activities in an area approved by the ANLE Waste Management Operations Manager and is preparing for hot operations.

At NTS (Reference 8), the CCP will be contracted by Bechtel Nevada (BN) to provide TRU waste characterization, certification, and transportation services to NTS. In accordance with the SOW, BN maintains overall responsibility for and oversight of the characterization and certification of their waste for disposal at the WIPP. The current plan is that the CCP will provide the following services: NDE, NDA, HSG sampling and analysis, and data generation level and project level reviews. These services will comply with WIPP RCRA permit requirements, including those pertaining to disposal and transportation, under a comprehensive QA program that meets the requirements defined in the WIPP Quality Assurance Program Document (Reference 10). BN will perform VE as a QC check on radiography under the CCP TRU waste characterization project to be approved by DOE/CBFO. As a contractor to BN, the CCP accepts the VE batch data reports through data generation level validation as being in accordance with the CCP QAPjP. The CCP will certify waste in accordance with the certification authority to be granted by DOE/CBFO upon successful completion of a certification audit. BN is responsible for reporting conditions or concerns that have or may have safety, health, quality assurance, security, operational, or environmental implications.

### **Audit Logistics**

Negotiation of audit locations (site or CCPO) and logistics can be complicated when sites and the CCP share responsibilities, records maintenance, badging and training requirements, resolution of discrepancies between site AK information and CCP confirmation data, and time constraints. At the SRS, CCP characterization and certification activities were coordinated with existing site schedules to allow for CCP program evaluations and audits by DOE/CBFO and other regulatory agencies according to their availability. CCP team members and SRS personnel devoted the necessary resources to accomplish the recent successful completion of a DOE/CBFO certification audit of the CCP at the SRS. It is anticipated that this strategy will also work well for the CCP at the ANLE and NTS sites, which have program evaluations and DOE/CBFO audits scheduled for early 2002.

### **LOOKING AHEAD TO STANDARDIZATION**

The CCP deployment may be considered the initial approach to standardization of the TRU waste characterization and certification process. Indeed, the CCP is utilizing the LANL-developed, prototype mobile systems for HSG sampling and analysis and VE. The DOE/CBFO is considering these systems for use via a standardization initiative. Future goals include assisting the DOE/CBFO in their standardization initiative by deploying additional characterization equipment such as NDA and NDE mobile facilities under consideration for standardization. As part of this goal, the CCP may also participate in the DOE/CBFO Mobile/Modular Deployment Project. This project will utilize standard technologies (instrumentation and methods) for HSG, NDE, NDA, and VE and incorporate them into a consolidated modular framework. The DOE/CBFO anticipates deployment of six such systems across the United States to accelerate

clean up of DOE complex sites. Additionally, the CCP is developing an electronic system called "eQA." When implemented, eQA will provide increased confidence and capability for the regulator to access the CCP databases (such as personnel qualification and training, CCP documents, characterization and certification data, status of characterization operations, etc.). This will allow the regulator to observe CCP activities on a "real time" basis via the eQA on-line.

## CONCLUSIONS

The CCP was established by the DOE/CBFO to provide more efficient and lower cost TRU waste certification. Characterization and certification operations are improved as a result of centralization because a single team of qualified personnel is used and the processes are standardized. The CCP team has faced several challenges, from initial staffing of project offices and development of the program documents, through deployment and setup of mobile waste characterization facilities at the generator sites, to hot operations at the SRS.

Based on regulator input, the CCP adjusted its initial approach of acting as a "waste generator site" to subcontracting to actual generator sites, which now retain the responsibility for waste characterization. The CCP successfully met the unique challenge at the SRS in coordinating communications and data transfer between the SRS and CCP TRU waste characterization projects so that they can both characterize containers from the same waste streams. Similar coordination efforts are underway at the ANLE and NTS sites, although the sharing of waste streams is not anticipated at these sites.

The CCP is the first centralized waste characterization and certification project in the DOE complex and possesses several strengths. Through centralization, the CCP's primary strength, the DOE and the generator sites will realize significant savings through centralized TRU waste characterization, certification and transportation activities (Reference 9). Also, the CCP is capable of providing assistance to small quantity sites that do not possess the facilities and personnel to perform TRU waste characterization, certification, and transportation. However, the CCP is also able to assist large quantity sites in increasing their throughput. Another CCP strength is that, as a centralized yet mobile project, it is in a unique position to assist the DOE/CBFO in its standardization and mobile/modular efforts. Finally, the CCP is effective in the compliance and quality assurance areas. Regardless of the needs of each site, the CCP works to assure compliance with WIPP requirements by providing standard communication systems, process control systems, interface plans, training, records, and QA programs.

The CCP passed the DOE/CBFO certification audit for SRS operations in October 2001. Certification of the CCP for its SRS operations is now pending regulator approval of the DOE/CBFO final audit report. Future successes are expected at ANLE and NTS in the form of completing operational readiness reviews and successful certification audits of the CCP at these sites.

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