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memorandum

 Carlsbad Field Office
 Carlsbad, New Mexico 88221


DATE: September 17, 2001

REPLY TO
ATTN OF: CBFO:QA:TJR:VW:01-1451:UFC:2300

SUBJECT: Surveillance (S-01-37) of the Battelle Columbus Laboratories
Decommissioning Project (BCLDP)-Remote Handled Waste Characterization

TO: Tom Baillieul, CEMP

On August 28-30, 2001 the Carlsbad Field Office (CBFO) performed surveillance S-01-37 of the Battelle Columbus Laboratories Decommissioning Project (BCLDP) remote handled waste characterization program. A report documenting the results of the surveillance is attached.

Three deficiencies were identified during the surveillance, these were corrected by BCLDP personnel prior to the end of the surveillance. Twelve Observations and six Recommendations were identified during the surveillance. No response to this surveillance reported is required.

If you have any questions or comments concerning the surveillance, please contact me at (505) 234-7311.

Signature on file
 Thomas J. Reese
 Acting Quality Assurance Manager

Attachment

cc: w/attachment

T. Harms, HQ	*ED
K. Watson, CBFO	*ED
L. Chism, CBFO	
C. Gist, CBFO	*ED
R. Nelson, CBFO	*ED
M. Eagle, EPA	*ED
S. Monroe, EPA	*ED
R. Joglekar, EPA	*ED
S. Zappe, NMED	*ED
B. Walker, EEG	*ED
J. Eide, BCLDP	
G. Erikson, BCLDP	*ED
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**U.S. DEPARTMENT OF ENERGY
CARLSBAD FIELD OFFICE**

**SURVEILLANCE REPORT
OF THE
BATTELLE COLUMBUS LABORATORIES DECOMMISSIONING
PROJECT
SURVEILLANCE NUMBER S-01-37**

**August 28 - 30, 2001
Columbus Ohio**



REMOTE HANDLED WASTE CHARACTERIZATION PROGRAM

Prepared by: signature on file

Wayne Ledford
Surveillance Team Leader

Date: _____

Approved for Issue by: signature on file

Thomas J. Reese
Carlsbad Field Office
Acting Quality Assurance Manager

Date: _____

1.0 EXECUTIVE SUMMARY

The purpose of this surveillance was to assess the implementation of the Battelle Columbus Laboratories Decommissioning Project (BCLDP) acceptable knowledge (AK) program as it applies to selected waste attributes. The surveillance was conducted at the Battelle Columbus West Jefferson and King Avenue facilities in Columbus, Ohio on August 28-30, 2001. Activities reviewed included visual examination, radiological characterization, quality assurance and AK information gathering and evaluation.

The surveillance team concluded that the BCLDP has establish a program that can quantify these waste attributes. There were three isolated conditions adverse to quality identified that were corrected during the surveillance. Twelve Observations and six Recommendations were identified during the surveillance and presented to BCLDP management for consideration.

2.0 SCOPE

The purpose of this surveillance was to assess the implementation of the BCLDP acceptable knowledge program as it applies to the following waste attributes:

- Determination of the volume of cellulose, plastic, and rubber (CPR); residual liquids; ferrous metals; and non-ferrous metals
- Determination of the total curie content of the RH-TRU waste
- Determination of the individual activity of radionuclides and the TRU alpha activity of the RH-TRU waste
- Determination of the activity level (e.g. curies per liter) of the RH-TRU waste
- Determination of the surface dose rate of the packaged RH-TRU waste

The following technical program elements related to the characterization of RH-TRU waste were evaluated during the surveillance:

Acceptable knowledge
Radiological characterization

The following quality assurance elements, as they applied to the technical elements, were evaluated during the surveillance:

Organization
Qualification and training
Quality improvement
Document control

Records management
Work processes
Procurement
Assessments
Sample control
Software quality assurance

3.0 SURVEILLANCE PARTICIPANTS

Surveillance Team

Wayne Ledford	Surveillance Team Leader, CTAC
Steve Calvert	Surveillance Team Member, CTAC
Patrick Kelly	Technical Specialist, CTAC
Dick Blauvelt	Technical Specialist, CTAC

Observers

Reinhard Knerr	CBFO/NTP
Clayton Gist	CBFO/NTP
Rajani Joglekar	EPA
Connie Walker	EPA/Trinity Engineering
Ray Wood	EPA/Trinity Engineering
Dave Stuenkel	EPA/Trinity Engineering
Dale Bignell	WTS
Sue Peterman	WTS
Shannon Dettmer	Ohio Department of Health

A list of personnel contacted during the course of the surveillance is provided as Attachment 1 of this report.

4.0 SUMMARY OF SURVEILLANCE RESULTS

Surveillance Activities

Details of surveillance activities, along with the specific objective evidence reviewed and the results of the reviews are contained within the surveillance checklists. The checklists are maintained as QA records.

4.1 Acceptable Knowledge

During the surveillance, the AK record that had been generated by BCLDP was reviewed and interviews with AK personnel were conducted. The surveillance team reviewed the training of personnel who assembled and evaluated the AK information. AK source documentation was reviewed to verify that it was available and that it supported the conclusions that were drawn by the BCLDP

AK personnel. Implementation of the AK procedures was verified. Several randomly selected waste containers were traced through the AK documentation.

Two minor conditions adverse to quality were identified, these were corrected during the surveillance (see CDS 1 and 2). Three observations documenting conditions that, if not corrected, might later escalate into a deficiency were identified also (see Observations 1, 4, and 5).

4.2 Radiological Characterization

BCLDP has documented their technical approach to quantifying the radiological attributes of the waste in document DD-98-04, *Waste Characterization, Classification, and Shipping Technical Support Document*,. This document is currently a draft. During the surveillance DD-98-04 was reviewed and the BCLDP personnel who prepared the document were interviewed. Documents that supported the technical approach used in DD-98-04 were also reviewed. The Battelle Columbus Radioanalytical Laboratory (RAL) was toured and interviews with laboratory personnel were conducted. Radiological "swipe" samples were analyzed by RAL, these samples were used to support the determination of the JN-1 standard radioisotope mix.

Eight observations documenting conditions, that if not corrected, might later escalate into a deficiency were identified (see Observations 3 and 6 through 12).

4.3 Visual Examination

Packaging and visual examination activities were witnessed in Building JN-1. Documentation, including videotapes, generated during previous visual examination activities was reviewed.

One observation documenting a condition that, if not corrected, might later escalate into a deficiency was identified (see Observation 2).

4.4 Quality Assurance

Objective evidence of BCLDP's implementation of their quality assurance program was reviewed during the surveillance. This objective evidence is recorded on the surveillance checklists which are maintained by CBFO as QA records. The results of BCLDP's Independent Programmatic Assessment (IPA) that was performed in April 2001 were reviewed. BCLDP is working on corrective actions for issues identified during this IPA and expects to complete the corrective action by the end of September 2001. Some aspects of BCLDP's program have not been completely implemented. For instance, software quality assurance activities necessary to qualify the codes used in determining the JN-1 standard isotopic mix have not been completed.

One isolated deficiency, only requiring remedial action was identified during the surveillance (see CDS-3).

5.0 DEFICIENCIES, OBSERVATIONS, AND RECOMMENDATIONS

5.1 Corrective Action Requests

There were no Corrective Action Requests issued as a result of this surveillance.

5.2 Corrected During the Surveillance (CDS)

Three isolated conditions adverse to quality, requiring only remedial corrective action, were identified during the surveillance.

CDS-1

Packaging procedure TC-OP-01.4 requires that the waste stream identification number be recorded on the packing log. For drum number BC0009, this information was omitted and therefore the drum was not traceable to the AK record. The document was corrected and this was verified during the surveillance.

CDS-2

The AK procedure TC-AP-03.1, R4, requires that information on the types and quantities of TRU waste material and an assessment of any prohibited items be included in the TRU waste management document, (Ref 5.3.6 and 5.3.7). This information is actually captured in the AK process description reports. A field change was processed and verified during the surveillance to correct TC-AP-03.1.

CDA-3

The receipt inspection information for Teletector 101884 indicated the instrument was out of range. No information on the actions that were taken was available in the procurement documentation reviewed by the surveillance team. All Teletector calibrations for the past year were reviewed by BCLPD. Corrections were made to the receipt inspection forms, all detectors were in calibration. The surveillance team verified that the corrections were properly made.

5.3 Observations

Observations document marginally acceptable conditions that, if not controlled, might later escalate into a deficiency. Observations are not

deficiencies and do not require a response. There were twelve observations identified during the surveillance.

Observation 1

Building JN-1 Acceptable Knowledge Document, TCP-98-03, Section 3.2.3, does not list all the radionuclides from *Waste Characterization, Classification, and Shipping Technical Support Document*, DD-98-04, draft. TCP-98-03 does not adequately explain where the isotopic ratio information is located.

Observation 2

The waste packaging procedure TC-OP-01.4 does not identify non-mixed hazardous waste as a prohibited item.

Observation 3

BCLDP is obtaining and analyzing swipe samples to confirm AK on the isotopic mix. BCLDP does not have a sampling plan or procedure to control this activity. The plan for continued collection and analysis of swipe samples to confirm AK should be formalized.

Observation 4

BCLDP should ensure that the AK record includes all swipe sample data, including those that are *not* included in the 69 samples used to support the JN-1 standard development.

Observation 5

All visual examination records, including videotapes, should be included and/or referenced in the AK record.

Observation 6

The origin of all data used for the determination of the JN-1 Standard Mix in *Waste Characterization, Classification, and Shipping Technical Support Document*, DD-98-04, draft, should be specified, i.e., whether the data were obtained from alpha or gamma spectrometry, beta counting, or ORIGEN analyses.

Observation 7

The technical approach outlined in *Waste Characterization, Classification, and Shipping Technical Support Document*, DD-98-04, draft, for

determining the JN Standard Mix is the most important single element related to the characterization of BCLDP RH TRU wastes. This is a complex process and includes data from several sources. The document should provide an expanded section that provides a stronger treatment of the conceptual basis for the approach, including the decision making process used to select the data, e.g., using alpha data versus gamma data.

Observation 8

The technical basis for the assumption that the activity levels and isotopic compositions of the swipes are representative of fixed contamination and the actual wastes should be presented in detail in *Waste Characterization, Classification, and Shipping Technical Support Document, DD-98-04, draft.*

Observation 9

Uncertainty is not adequately addressed in *Waste Characterization, Classification, and Shipping Technical Support Document, DD-98-04, draft.*

Observation 10

The locations of the swipe samples should be examined with regard to representativeness to ensure that the swipe locations are not merely locations of convenience.

Observation 11

The process for performing the modeling required to determine the JN-1 standard isotopic mix and the dose to curie conversion needs to be documented to include the required inputs and outputs, the review of modeling results, the required qualification and training, and the identification and disposition of the records that will be generated.

Observation 12

A justification, demonstrating that Latin Hypercube Sampling is the proper choice for sampling and that the assumption of a lognormal distribution is appropriate, should be incorporated into the BCLDP documentation.

5.4 Recommendations

Recommendation 1

The defense vs. non-defense commingled argument should be reviewed to ensure that it is as clear as possible. This is particularly important because waste that was originally non-defense (before it was commingled with defense waste) comprises the majority of the BCLDP RH waste.

Recommendation 2

Waste Characterization, Classification, and Shipping Technical Support Document, DD-98-04, draft, addresses both TRU and low level waste. Isolating TRU activities into a separate document is recommended.

Recommendation 3

The AK Source Document Log and the TRU Drum Inventory Report contain substantive AK information that is particularly useful in traceability activities. It is recommended that these documents be controlled.

Recommendation 4

It is recommended that a flow diagram or roadmap be included in the TRU Waste Management Document (TCP-98-03) to describe the flow of AK information from the AK source documents through the development of the WSPF and the AK confirmation summary report. This documentation will assist in demonstrating the auditability and traceability of AK information.

Recommendation 5

The study performed using swipe samples and the ORIGEN2 code, to determine the JN-1 standard isotopic mix should include or reference additional information, and this information should be available in the AK record either through individual references or the generation of a single supporting reference that presents the following:

- Fuel shipment information, including the fuel origin and the mass of fuel
- The type of fuel (uranium, plutonium) and the enrichment
- Estimates of burnup and power history

- The time between irradiation of fuel and processing in JN-1
- A description of what was done to the fuel in JN-1
- A description of how much of the fuel was used in JN-1 and the disposition of unused portions
- A description of the sampling and analysis strategy for the selection of the 69 samples, including the criteria, the location of samples, a description of any other swipe data available but not included in the study, etc. BCLDP should clarify why the specific sample locations/sample dates were selected and why any older samples (which would have been more representative of the potential contamination that could be present in the hot cells at the time when specific activities were performed) were not used in establishing the standard mix .
- A documented comparison of the JN-1 standard isotopic mix with any additional historical AK information as further justification for accuracy of the isotopic mix. BCLDP should clarify why no other data were considered (e.g. actual experimental data from the various programs, shipping records information, etc).
- All sampling and analysis data pertinent to the standard mix development.

Recommendation 6

Building JN-1 Acceptable Knowledge Document, TCP-98-03 should include more historical radionuclide information. The document includes only the information presented in *Waste Characterization, Classification, and Shipping Technical Support Document*, DD-98-04, draft, but does not include sample/shipment-specific information or examples which support the generalized assumption that fuel grade material (only) was accepted. TCP-98-03 should be revised to include this additional information.

6.0 CONCLUSIONS

BCLDP has established a program that can quantify the five waste attributes in the scope of the surveillance. The following activities need to be completed by BCLDP:

- Document DD-98-04, *Waste Characterization, Classification, and Shipping Technical Support Document*, needs to be finalized. This document is in draft.

- The software used for the development of the dose to curie document needs to be qualified per the CBFO QAPD. BCLDP is currently pursuing qualification of this software.
- BCLDP needs to proceduralize the process for performing the calculations used to establish the JN-1 standard mix. When the software is qualified per the CBFO QAPD, BCLDP will be able to perform the final calculations to determine the JN-1 isotopic standard mix. This calculation needs to be performed in a controlled and traceable manner.

BCLDP has established a quality assurance program that complies with the CBFO QAPD. BCLDP needs to complete the corrective actions for the 27 deficiencies identified in the Independent Programmatic Assessment performed April 9-12, 2001. BCLDP needs to ensure that quality affecting activities are proceduralized as the project moves forward.

7.0 ATTACHMENT

Attachment 1: Personnel Contacted During the Surveillance

PERSONNEL CONTACTED DURING SURVEILLANCE S-01-37

PERSONNEL CONTACTED				
NAME	ORG/TITLE	PRE-SURVEILLANCE MEETING	CONTACTED DURING SURVEILLANCE	POST SURVEILLANCE MEETING
Addison, Howard	BCLDP/VE Operator		X	
Armentrout, Jerry	BCLDP/VE Operator		X	
Baillieul, Tom	DOE/Project Director			X
Baruth, Ruth	BCLDP/Training and Records Manager		X	
Biedscheid, Jennifer	IT Corporation/Project Engineer	X	X	X
Burgoon, David Alford	BCLDP/Technical Group Leader		X	
Davis, Sheree	DOE/Program Analyst	X		
Eide, James	BCLDP/Site Project Manager	X	X	X
Erikson, Gordon	BCLDP/DDO Quality Manager	X	X	X
Farnung, Gretchen	BCLDP/RAL Manager	X	X	X
Friedman, Robert	BCLDP/Quality Specialist	X		
Gantos, Goe	BCLDP/Program Manager			X

PERSONNEL CONTACTED DURING SURVEILLANCE S-01-37

PERSONNEL CONTACTED				
NAME	ORG/TITLE	PRE-SURVEILLANCE MEETING	CONTACTED DURING SURVEILLANCE	POST SURVEILLANCE MEETING
Garber, David	BCLDP/TRU Waste Program Manager	X	X	X
Jensen, Craig	BCLDP/TRU Waste Technical Advisor	X	X	X
Mawalkar, Sanjay	BCLDP/Sr. Research Scientist		X	
McKenzie, Rhoda	BCLDP Training/Data Analyst		X	
Peters, Kevin	Wastren/AK Expert	X	X	X
Skapik, Catherine	BCLDP/Research Scientist		X	
Taylor, Rob	BCLDP/Consultant		X	
Weaver, Patrick	BCLDP/Field Operations Manager	X		X