

RL83 DATA VERIFICATION SUMMARY REPORT

for samples collected from CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang and Jim Taylor
Parsons - Austin

INTRODUCTION

The following data verification summary report covers four soil samples and two ampoule samples collected at Camp Stanley Storage Activity (CSSA) under RL83 on January 22 and 23, 2003. The samples in the following Sample Delivery Group (SDG) were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals including barium, chromium, copper, nickel, zinc, mercury, arsenic, cadmium, and zinc:

40475

The only field quality control sample associated with this SDG was one trip blank. No ambient blanks were collected. During the initiation of this project, it was determined that ambient blanks were not necessary due to the absence of a source at these sites.

All samples were collected by Parsons and were analyzed by APPL., Inc. following procedures outlined in the project Statement of Work and AFCEE QAPP, version 3.0.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the AFCEE QAPP, version 3.0. Information reviewed in the data packages includes sample results, laboratory control samples and duplicate (LCS/LCSD), blank results, matrix spike/matrix spike duplicate results (MS/MSD), instrument tuning and calibration reports, case narrative, raw data, cooler receipt checklist, and chain-of-custody (COC) forms. The analyses and findings presented in this report are based on the reviewed information, and whether the guidelines in the AFCEE QAPP, Version 3.0, were met.

SEMI-VOLATILES

General

This SDG consisted of four (4) soil samples and one ampoule sample (B23A-AMP-ORANGE). The soil samples were collected on January 22, 2003, and were analyzed for the full list of SVOCs specified in the AFCEE QAPP, Version 3.0. The ampoule sample was collected on January 23, 2003 and was analyzed by the same method for qualitative purpose.

The SVOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8270C. All samples were prepared and analyzed following the procedures outlined in the AFCEE QAPP within the holding time required by the method. All tentatively identified compounds (TICs) were reviewed and reported. Since AFCEE QAPP does not have guideline of how to calculate the concentration of TICs, lab followed the guideline in USEPA CLP National Functional Guidelines to report concentration under the assumption that the RF equals to 1.0.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the LCS, MS/MSD and the surrogate spikes. Sample CS-B23A-1 was designated for MS/MSD analysis on the chain-of-custody.

All LCS and surrogate spike %Rs were within acceptance.

The %R of MS/MSD was compliant except:

CS-B23A-1

Analyte	MS (%R)	MSD (%R)	Control Limits (%)
2,4-Dimethylphenol	30.5	28.7	35 – 149
3,3'-Dichlorobenzidine	22.2	(27.5)	25 – 175
4-Methylphenol	13.8	12.6	25 - 135

() %R was within the control limits.

“M” flags were applied to all non-compliant results of all four soil samples since they were collected from the same site and have similar matrix.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD and parent/field duplicate (FD) results. Sample CS-B23A-1 was collected in duplicate.

All MS/MSD RPDs were within acceptance criteria. %RPD calculation for parent/FD was not applicable since all results were less than RLs for both parent and FD samples.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining laboratory blank for cross contamination of samples during sample analysis.

All samples in this SDG were analyzed following the COC and the analytical procedures described in the AFCEE QAPP. All field samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met analysis.
- The second source verification criteria were met.
- All internal standard criteria were met.

There was one method blank associated with the SVOC analyses in this SDG. The blank was free of any target SVOCs at or above the RL.

The ampoule sample, B23A-AMP-ORANGE was diluted 576 times before injected into GC/MS. Dimethyl phthalate was identified as the major component in this ampoule and reported as TICs. Since there was not a calibration curve for this compound, the actual concentration can not be determined. For qualitative purpose, there was no quality control parameters associated with this ampoule sample.

Lab also reported all TICs in soil samples.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All semi-volatile results for the samples in this SDG were considered usable. The completeness for the SVOC portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

ICP METALS

General

This SDG consisted of four (4) soil samples. The samples were collected on January 22, 2003 and were analyzed for a reduced list of ICP metals, including barium, chromium, copper, nickel, and zinc.

The ICP metals analyses were performed using USEPA SW846 Method 6010B. All samples were prepared and analyzed following the procedures outlined in the AFCEE QAPP within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD and MS/MSD results. Sample CS-B23A-1 was designated for MS/MSD analysis on the chain-of-custody.

All LCS/LCSD/MS/MSD %Rs were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD, MS/MSD, and parent/FD concentrations. Sample CS-B23A-1 was collected in duplicate.

All LCS/LCSD, MS/MSD and parent/FD RPDs were within acceptance criteria.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

Samples were analyzed following the COC and the analytical procedures described in the AFCEE QAPP. Samples were prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All initial and continuing calibration verification criteria were met.
- All second source verification criteria were met. Initial calibration verification standards were prepared with second source standard.
- All interference check criteria were met.
- The dilution test was analyzed on sample CS-B23A-1. The dilution test was not applicable for chromium, nickel, and zinc because these metals were either not detected above the RL in the sample or in the five-fold diluted sample. The dilution test criteria were met for barium and copper.
- The post digestion spike addition was performed with sample CS-B23A-1. The %R of chromium, nickel, and zinc was acceptable.

There was one method blank and several calibration blanks associated with the ICP metals analyses in this SDG. All blanks were free of metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All metal results for the samples in this SDG were considered to be usable. The completeness for the metal portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

MERCURY

General

This SDG consisted of four (4) soil samples. The samples were collected on January 22, 2003 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7471. All samples were prepared and analyzed following the procedures outlined in the AFCEE QAPP within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD and MS/MSD samples. Sample CS-B23A-1 was designated for MS/MSD analysis on the chain-of-custody.

The LCS/LCSD and MS/MSD %Rs were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD, MS/MSD, parent/FD concentrations. Sample CS-B23A-1 was collected in duplicate.

The LCS/LCSD and MS/MSD RPDs were within acceptance criteria. The RPD calculation for parent/FD was not applicable since both parent and FD results were less than the RL.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining laboratory blank for cross contamination of samples during analysis.

All samples in this SDG were analyzed following the COC and the analytical procedures described in the AFCEE QAPP. All samples were prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All initial and continuing calibration verification criteria were met.

- All second source verification criteria were met. The initial calibration verification standard was prepared with a second source standard.

There was one method blank and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

The mercury result for the samples in this SDG was considered to be usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

ARSENIC

General

This SDG consisted of four (4) soil samples. The samples were collected on January 22, 2003 and were analyzed for arsenic.

The arsenic analyses were performed using USEPA SW846 Method 7060A. All samples were prepared and analyzed following the procedures outlined in the AFCEE QAPP within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD and MS/MSD samples. Sample CS-B23A-1 was designated for MS/MSD analysis on the chain-of-custody.

The LCS and LCSD %Rs were within acceptance criteria. %R of MS and MSD was not compliant (50% and 36% respectively). The arsenic result of all soil samples in this SDG was flagged with “M” according to the AFCEE QAPP 3.0.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD, MS/MSD, and parent/FD concentrations.

The RPD of LCS/LCSD and MS/MSD was within acceptance criteria. The RPD of parent/FD was non-compliant (79.5%). Since all data were flagged with “M”, no additional flag is needed.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and

- Examining laboratory blank for cross contamination of samples during analysis.

Samples were analyzed following the COC and the analytical procedures described in the AFCEE QAPP. Samples were prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All initial and continuing calibration verification criteria were met.
- All second source verification criteria were met. The initial calibration verification standard was prepared with a second source standard.
- The dilution test was run with the five fold diluted sample CS-B23A-1 and the result was not compliant (171%D). No flag is needed since all arsenic data in this SDG was “M” flagged due to non-compliant MS/MSD results.
- A recovery test was analyzed on sample CS-B23A-1 and the arsenic recovery met criteria at 98%.

There was one method blank and several calibration blanks associated with the arsenic analyses in this SDG. All blanks were free of arsenic at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

The arsenic result for the samples in this SDG was considered to be usable. The completeness for the arsenic portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

CADMIUM

General

This SDG consisted of four (4) soil samples. The samples were collected on January 22, 2003 and were analyzed for cadmium.

The cadmium analyses were performed using USEPA SW846 Method 7131A. All samples were prepared and analyzed following the procedures outlined in the AFCEE QAPP within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD and MS/MSD results. Sample CS-B23A-1 was designated for MS/MSD analysis on the chain-of-custody.

The LCS/LCSD/MSD %Rs were within acceptance criteria. %R of the MS was not compliant (53%). Cadmium result of all samples in this SDG was flagged with “M” according to the AFCEE QAPP 3.0.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD, MS/MSD, and parent /FD results. Sample CS-B23A-1 was collected in duplicate.

The LCS/LCSD, MS/MSD, and parent/FD RPDs were within acceptance criteria.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining laboratory blank for cross contamination of samples during analysis.

Samples were analyzed following the COC and the analytical procedures described in the AFCEE QAPP. Samples were prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All initial and continuing calibration verification criteria were met.
- All second source verification criteria were met. The initial calibration verification standard was prepared with a second source standard.
- A dilution test was run on sample CS-B23A-1 and had a %D of 15.9%. “J” flags were not applied since there were “M” flags applied due to the non-compliant MS result.
- A recovery test was analyzed on sample CS-B23A-1 and the cadmium recovery met criteria at 98.3%.

There was one method blank and several calibration blanks associated with the cadmium analyses in this SDG. All blanks were free of cadmium at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

The cadmium result for the samples in this SDG was considered to be usable. The completeness for the cadmium portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

LEAD

General

This SDG consisted of four (4) soil samples. The samples were collected on January 22, 2003 and were analyzed for lead.

The lead analyses were performed using USEPA SW846 Method 7421. All samples were prepared and analyzed following the procedures outlined in the AFCEE QAPP within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD and MS/MSD samples. Sample CS-B23A-1 was designated for MS/MSD analysis on the chain-of-custody.

The LCS and LCSD %Rs were within acceptance criteria. The %R of MS and MSD was not within the control limits (0% and 53% respectively). The lead concentration of the parent sample was greater than fifteen times of the spiking concentration. All lead results in this SDG were flagged with “M” according to the AFCEE QAPP 3.0.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD, MS/MSD, and parent/FD concentrations. Sample CS-B23A-1 was collected in duplicate.

The LCS/LCSD and parent/FD RPDs were within acceptance criteria. The %RPD of MS/MSD was not within the control limits (53%).

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining laboratory blank for cross contamination of samples during analysis.

Samples were analyzed following the COC and the analytical procedures described in the AFCEE QAPP. Samples were prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All initial and continuing calibration verification criteria were met.
- All second source verification criteria were met. The initial calibration verification standard was prepared with second source standard.
- A dilution test was run on sample CS-B23A-1. The %D was 8.3%.
- The recovery test was not required.

There was one method blank and several calibration blanks associated with the lead analyses in this SDG. All blanks were free of lead at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

The lead result for the samples in this SDG was considered to be usable. The completeness for the lead portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

VOLATILES

General

This SDG consisted of four (4) soil samples and one ampoule sample (B23A-AMP-YELLOW). The soil samples were collected on January 22, 2003, and were analyzed for the full list of VOCs specified in the AFCEE QAPP, Version 3.0. The ampoule sample was collected on January 23, 2003 and was analyzed by the same method for qualitative purpose.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. All samples were prepared and analyzed following the procedures outlined in the AFCEE QAPP within the holding time required by the method. All tentatively identified compounds (TICs) were reviewed and reported. Since AFCEE QAPP does not have guideline of how to calculate the concentration of TICs, lab followed the guideline in USEPA CLP National Functional Guidelines to report concentration under the assumption that the RF equals to 1.0.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the LCS/LCSD, MS/MSD and the surrogate spikes. Sample CS-B23A-1 was designated for MS/MSD analysis on the chain-of-custody.

There were two analytical batches for soil samples and one analytical batch for the trip blank in this SDG. All LCS/LCSD and surrogate spike %Rs were within acceptance criteria except naphthalene had %R of 136% (control limits of 65%-135%) in the LCSD that was associated with field sample CS-B23A-2. No flag is required according to AFCEE QAPP 3.0.

The %R of MS/MSD was compliant except:

CS-B23A-1

Analyte	MS (%R)	MSD (%R)	Control Limits (%)
1,1,1,2-Tetrachloroethane	109	(108)	62 - 108

1,1,2,2-Tetrachloroethane	148	138	64 - 135
1,2,3-Trichlorobenzene	33.4	34.2	65 – 147
1,2,3-Trichloropropane	184	164	65 – 135
1,2,4-Trichlorobenzene	37.6	39.6	65 - 135
Bromomethane	58.0	55.0	62 - 135
Hexachlorobutadiene	47.6	54.6	65 – 135
Methylene chloride	137	(129)	65 - 135
Naphthalene	45.0	46.6	65 - 135

() %R was within the control limits.

“M” flags were applied to all non-compliant results of all four soil samples since they were collected from the same site and have similar matrix.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD, MS/MSD, and parent/FD results. Sample CS-B23A-1 was collected in duplicate.

All LCS/LCSD and MS/MSD RPDs were within acceptance criteria. %RPD calculation for parent/FD was not applicable since all results were less than RLs for both parent and FD samples.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining field and laboratory blanks for cross contamination of samples during collection or analysis.

All samples in this SDG were analyzed following the COC and the analytical procedures described in the AFCEE QAPP. All field samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- There were three initial calibration curves established. All initial calibration criteria were met analysis.
- Each of the three second source verification criteria were met except (1) vinyl chloride was non-compliant for the one associated with sample CS-B23A-1, CS-B23A-3, and CS-B23A-1 FD and (2) naphthalene associated with sample CS-B23A-2. The vinyl chloride and naphthalene for those samples associated with

each second source verification standard were flagged with “R” according to AFCEE QAPP 3.0. All LCSs were prepared with second source standard.

- The two continuing calibration verification were compliant.
- All internal standard criteria were met.

There were three method blanks and one trip blank associated with the VOC analyses in this SDG. Both TB-1 vials had smaller than pea size of air bubble in it. It is acceptable to proceed the VOC analysis under this condition. All blanks were free of any target VOCs at or above the RL except the method blank associated with the TB-1 had 0.72 ppb of 1,2,3-trichlorobenzene. The RL is 0.5 ppb. TB-1 did not have any 1,2,3-trichlorobenzene detected above the MDL (0.24 ppb), therefore, no flag is required according to AFCEE QAPP 3.0.

The ampoule sample, B23A-AMP-YELLOW was diluted 1000 times before injected into GC/MS. 1-methylpropyl ester acetic acid and propyl ester acetic acid were identified as the two major compounds in the ampoule and reported as TICs. Since there was not a calibration curve for each of these two compounds, the actual concentration can not be determined. For qualitative purpose, there was no quality control parameters associated with this ampoule sample.

Acetone was the only TIC in sample CS-B23A-2. Sample CS-B23A-2 and CS-B23A-3 did not have any TIC reported.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All volatile results for the samples in this SDG were considered usable except few naphthalene and vinyl chloride due to the non-compliant second source calibration verification results. The completeness for the VOC portion of this SDG is 98.3%, which meets the minimum acceptance criteria of 90%.