

CHAAP Data Verification

Laboratory and SDG#: TADenver 280-129619

AECOM Chemist: Jared DeSadier

Date Verified: 10/28/2019

AECOM ITR: Jeff Aust

Guidance: DoD QSM Version 5.1 (January 2017)

Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)

Applicable Analytical Methods: 8330A

Sample Identification #	Date Collected	Date Received	Matrix	Analysis
OS001-DP01-25	10/14/2019	10/15/2019	Water	Explosives (8330A)
OS001-DP01-35	10/14/2019	10/15/2019	Water	Explosives (8330A)
OS001-DP01-45	10/14/2019	10/15/2019	Water	Explosives (8330A)
OS001-DP01-501	10/14/2019	10/15/2019	Water	Explosives (8330A)

1.0 Laboratory Case Narrative \ Cooler Receipt Form

Verification Criteria	Yes	No	N/A
Were any DoD QSM deviations noted in the laboratory case narrative?	X		
Were DoD QSM corrective actions followed if deviations were noted?	X		
Were any issues noted in the cooler receipt form?	X		

The RPD between the primary and confirmation column for some explosives was above evaluation criteria for some samples. This issue is discussed further in Section 9.0. Some surrogate and MS/MSD recoveries were outside of evaluation criteria. These issues are discussed further in the ADR report.

The cooler receipt form indicated a discrepancy between the COC and some sample labels. This issue is discussed further in Section 2.0.

No other issues were noted in the case narrative or cooler receipt form.

2.0 Sample Documentation

Verification Criteria	Yes	No
Were all samples documented correctly on the chain-of-custody (COC) and samples labels?		X
Were all sample identifications (IDs) documented correctly on sample labels?		X
Did samples listed on COCs match the sample labels?		X
Were samples relinquished properly on the COC?	X	

The cooler receipt form indicated a discrepancy between the COC and some sample labels. Per the URS chemist, the samples were logged via the COC and no qualification of data was required.

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3.0 Holding Time

Verification Criteria	Yes	No	N/A
Were all samples extracted/analyzed within holding time?	X		
Were samples outside holding time extracted/analyzed < 2x holding time?			X
Were samples outside holding time extracted/analyzed > 2x holding time?			X

4.0 Initial Calibration

Method 8330A Initial Calibration Criteria			
Instrument:	CHHPLC_X3		
Date of Calibration:	7/1/2019		
	Yes	No	N/A
Was at least a five point calibration completed for all analytes prior to sample analysis and one option below?	X		
Option 1: RSD for each analyte $\leq 15\%$?	X		
Option 2: If linear least squares regression was used was the $r^2 \geq 0.99$?			X
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

Method 8330A Initial Calibration Criteria			
Instrument:	CHHPLC_G2_ LUNA		
Date of Calibration:	10/14/2019		
	Yes	No	N/A
Was at least a five point calibration completed for all analytes prior to sample analysis and one option below?	X		
Option 1: RSD for each analyte $\leq 15\%$?	X		
Option 2: If linear least squares regression was used was the $r^2 \geq 0.99$?	X		
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

Method 8330A Initial Calibration Criteria			
Instrument:	CHHPLC_G2_ LUNA		
Date of Calibration:	10/24/2019		
	Yes	No	N/A
Was at least a five point calibration completed for all analytes prior to sample analysis and one option below?	X		
Option 1: RSD for each analyte $\leq 15\%$?	X		
Option 2: If linear least squares regression was used was the $r^2 \geq 0.99$?	X		
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$?	X		

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Method 8330A Initial Calibration Criteria			
Instrument:	CHHPLC_G2_LUNA		
Date of Calibration:	10/24/2019		
	Yes	No	N/A
If non-linear regression was used were 6 points used for second order and 7 points for third order?	X		

5.0 Initial Calibration Verification [(ICV) Second Source]

Method 8330A ICV Criteria (Filename)			
Instrument:	07010015.D		
Date of Initial Calibration Verification:	CHHPLC X3		
	7/1/2019		
	Yes	No	N/A
Was the ICV analyzed after each calibration?	X		
Was the ICV for all analytes within $\pm 15\%$ of the true value?	X		

Method 8330A ICV Criteria (Filename)			
Instrument:	07010033.D		
Date of Initial Calibration Verification:	CHHPLC X3		
	7/2/2019		
	Yes	No	N/A
Was the ICV analyzed after each calibration?	X		
Was the ICV for all analytes within $\pm 15\%$ of the true value?	X		

Method 8330A ICV Criteria (Filename)			
Instrument:	10140015.D		
Date of Initial Calibration Verification:	CHHPLC X3		
	10/14/2019		
	Yes	No	N/A
Was the ICV analyzed after each calibration?	X		
Was the ICV for all analytes within $\pm 15\%$ of the true value?	X		

Method 8330A ICV Criteria (Filename)			
Instrument:	10240015.D		
Date of Initial Calibration Verification:	CHHPLC X3		
	10/25/2019		
	Yes	No	N/A
Was the ICV analyzed after each calibration?	X		
Was the ICV for all analytes within $\pm 15\%$ of the true value?	X		

The %Ds for nitrobenzene (22.2%), 1,3-dinitrobenzene (17.7%), nitroglycerin (18.4%), 2,4,6-trinitrotoluene (17.1%), and PETN (15.1%) were above evaluation criteria. Qualification of data is shown in the table below.

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Sample ID	Analysis	Analyte	Qualifications
OS001-DP01-25	Explosives	2,4,6-trinitrotoluene	J
OS001-DP01-35	Explosives	2,4,6-trinitrotoluene	J
OS001-DP01-501	Explosives	2,4,6-trinitrotoluene	J

6.0 Continuing Calibration Verification (CCV)

Method 8330A CCV Criteria (Filename)	10170008_10.D		
Instrument:	CHHPLC_X3		
Date of Calibration Verification:	10/17/2019		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within $\pm 15\%$ of the true value?	X		

Method 8330A CCV Criteria (Filename)	10170021_3		
Instrument:	CHHPLC_X3		
Date of Calibration Verification:	10/17/2019		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within $\pm 15\%$ of the true value?	X		

Method 8330A CCV Criteria (Filename)	10170034_6		
Instrument:	CHHPLC_X3		
Date of Calibration Verification:	10/18/2019		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within $\pm 15\%$ of the true value?	X		

Method 8330A CCV Criteria (Filename)	10180022.D		
Instrument:	CHHPLC_G2_LUNA		
Date of Calibration Verification:	10/18/2019		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within $\pm 15\%$ of the true value?		X	

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The %D for tetryl (19.8%) was outside of evaluation criteria. The RFs indicated a high bias and all associated tetryl results were nondetect. No qualification of data was required.

Method 8330A CCV Criteria (Filename)	10180033.D		
Instrument:	CHHPLC_G2_LUNA		
Date of Calibration Verification:	10/19/2019		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within $\pm 15\%$ of the true value?		X	

The %Ds for 4-amino-2,6-dinitrotoluene (21.5%), and 2,6-dinitrotoluene (18.5%) were outside evaluation criteria with a high bias. The %D for 4-nitrotoluene (-19.4%) was outside of evaluation criteria with a low bias. Qualification of data is shown in the table below.

Sample ID	Analysis	Analyte	Qualifications
OS001-DP01-45	Explosives	4-nitrotoluene	UJ

Method 8330A CCV Criteria (Filename)	10210007_9.D		
Instrument:	CHHPLC_X3		
Date of Calibration Verification:	10/21/2019		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within $\pm 15\%$ of the true value?	X		

Method 8330A CCV Criteria (Filename)	10210020_2.D		
Instrument:	CHHPLC_X3		
Date of Calibration Verification:	10/21/2019		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within $\pm 15\%$ of the true value?	X		

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Method 8330A CCV Criteria (Filename)	10240026.D		
Instrument:	CHHPLC_G2_LUNA		
Date of Calibration Verification:	10/25/2019		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within $\pm 15\%$ of the true value?		X	

The %Ds for HMX (-18.4%), 2,6-dinitrotoluene (-17.8%) and tetryl (115.3%) were outside of evaluation criteria. Qualification of data is shown in the table below.

Sample ID	Analysis	Analyte	Qualifications
OS001-DP01-25	Explosives	tetryl	UJ
OS001-DP01-25	Explosives	2,6-trinitrotoluene	UJ
OS001-DP01-35	Explosives	tetryl	UJ
OS001-DP01-35	Explosives	2,6-trinitrotoluene	UJ
OS001-DP01-45	Explosives	tetryl	UJ
OS001-DP01-45	Explosives	2,6-trinitrotoluene	UJ
OS001-DP01-501	Explosives	tetryl	UJ
OS001-DP01-501	Explosives	2,6-trinitrotoluene	UJ
OS001-DP01-25	Explosives	HMX	UJ
OS001-DP01-35	Explosives	HMX	UJ
OS001-DP01-45	Explosives	HMX	UJ
OS001-DP01-501	Explosives	HMX	UJ

7.0 Field Duplicate Samples

Field Duplicate Criteria	Yes	No	N/A
Were field duplicate samples collected for this SDG? (if yes, list below)	X		
Were parent sample / field duplicate RPDs $\leq 30\%$ for water samples and $\leq 50\%$ for soils for analytes that had concentrations $> 5x$ the LOQ?	X		
Were the differences between the parent sample / field duplicate $< 2x$ the LOQ for analytes that had concentrations $< 5x$ the LOQ?	X		

Parent Sample ID	Duplicate Sample ID
OS001-DP01-35	OS001-DP01-501

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8.0 Sensitivity

Sensitivity Criteria	Yes	No	N/A
Was the laboratory sensitivity consistent with project (QAPP) requirements?	X		
Did all analytes meet sensitivity requirements?	X		

9.0 Additional Qualifications

Additional Qualification Criteria	Yes	No	N/A
Were common laboratory contaminants detected?		X	
Was professional judgment used to qualify data (if yes, list below)	X		

The RPD between the primary and confirmation column for some explosives was above evaluation criteria. Qualification of data is shown in the table below.

Sample ID	Analysis	Analyte	RPD	Qualifications
OS001-DP01-35	Explosives	2-amino-4,6-dinitrotoluene	49.2	J
OS001-DP01-501	Explosives	1,3,5-trinitrobenzene	50.4	J
OS001-DP01-501	Explosives	2,4,6-trinitrotoluene	43.3	J

10.0 Completeness

Completeness Criteria	Yes	No	N/A
Were any data rejected during the verification process?		X	
Were any samples lost, broken, or in any other manner in not verified?		X	
Were samples analyses requested performed, the correct analyte lists used and correct sample preparation and analyses methods and units utilized?	X		