

CHAAP Data Verification

Laboratory and SDG#: Eurofins 280-162622

AECOM Chemist: D. Casagrande

Date Verified: 7/28/2022

AECOM ITR: S. Louie

Guidance: DoD QSM Version 5.1 (January 2017)

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

Applicable Analytical Methods: 8260B, 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8015C

Sample Identification #	Date Collected	Date Received	Matrix	Analysis
G0119-22A	5/19/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
G0121-22A	5/19/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
G0101-22A	5/19/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
G0100-22A	5/19/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
G0122-22A	5/19/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
G0066R-22A	5/19/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
G0024-22A	5/18/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
G0115-22A	5/19/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
G0095-22A	5/19/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
PZ018-22A	5/18/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)

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Sample Identification #	Date Collected	Date Received	Matrix	Analysis
PZ020-22A	5/18/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
G0077-22A	5/18/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
G0069-22A	5/18/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
G0311-22A	5/19/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
G0111-22A	5/19/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
G0123-22A	5/19/2022	5/20/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
SHGW02-22A	5/18/2022	5/20/2022	Water	VOCs (8260B), Nitrate, Nitrite (353.2), MEE (RSK-175), Sulfate (9056A)
SHGW05-22A	5/18/2022	5/20/2022	Water	VOCs (8260B), Nitrate, Nitrite (353.2), MEE (RSK-175), Sulfate (9056A)
G0053-22A	5/18/2022	5/20/2022	Water	VOCs (8260B), Nitrate, Nitrite (353.2), MEE (RSK-175), Sulfate (9056A)
G0069-22A	5/18/2022	5/20/2022	Water	VOCs (8260B), Nitrate, Nitrite (353.2), MEE (RSK-175), Sulfate (9056A), DRO (8015C)
5-18 TB	5/18/2022	5/20/2022	Water	VOCs (8260B)
SHGW04-22A	5/18/2022	5/20/2022	Water	VOCs (8260B), Nitrate, Nitrite (353.2), MEE (RSK-175), Sulfate (9056A), DRO (8015C)
SHGW03-22A	5/18/2022	5/20/2022	Water	VOCs (8260B), Nitrate, Nitrite (353.2), MEE (RSK-175), Sulfate (9056A), DRO (8015C)
SAMW1-22A	5/18/2022	5/20/2022	Water	VOCs (8260B), Nitrate, Nitrite (353.2), MEE (RSK-175), Sulfate (9056A)

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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		

Validator comments in italics.

The SO4/Alk sample container received does not have the sample collection time recorded on the client label. Logged per the COC. PZ020-22A (280-162622-11). *This issue is further discussed in Section 2.0.*

One out of three of the VOA vials received does not have the sample ID recorded on the client label. It was in the same bubble bag as the other two out of three VOA vials. G0311-22A (280-162622-16). This issue is further discussed in Section 2.0.

Method RSK-175:

The method requirement for no headspace was not met. The following volatile sample was analyzed with significant headspace in the sample container(s): PZ020-22A (280-162622-11). Significant headspace is defined as a bubble greater than 6 mm in diameter. *This issue is further discussed in Section 9.0.*

Reanalysis of the following sample was performed outside of the analytical holding time due to the concentration of methane exceeding calibration in the original analysis : G0121-22A (280-162622-2). *This issue is further discussed in Section 9.0.*

Method 8015C:

Surrogate recovery was outside control limits for the following sample: G0069-22A (280-162622-13), SHGW03-22A (280-162622-14), recoveries in samples 280-162622-B-13 and 280-162622-B-14 as well as in the MB and the LCS/LCSD pair. *Original analyses for samples G0069-22A and SHGW03-22A were reported and results qualified as estimated due to low surrogate spike recoveries (J). This issue is further discussed in the ADR report.*

Surrogate recovery was outside control limits for the following sample: (LCS 280-576113/2-A) and (LCSD 280-576113/3-A). n-Octacosane recovered at 40 % Rec. in 320-88166-F-1 and the limits are 60-142 % Rec. n-Octacosane also failed low in the LCS/LCSD as well (46 and 42 % Rec. respectively). Sample is beyond 2x HT.

Surrogate recovery was outside control limits for the following sample: G0069-22A (280-162622-13), SHGW03-22A (280-162622-14), SHGW04-22A (280-162622-15), (LCS 280-576710/2-A), (LCSD 280-576710/3-A) and (MB 280-576710/1-A). Surrogate spike was made incorrectly (when the surrogate was verified it recovered at about 10% Rec). The target analyte C10-C28 recovered in control in the LCS/LCSD pair demonstrating the extraction procedure was done correctly. These samples are re-extracts where surrogate n-Octacosane failed originally around 40-57% Rec in both batch QC (MB/LCS/LCSD) and 2 of the three client samples. Re-extracted sample results were not reported. Samples were re-extracted outside holding times and surrogate recoveries did not meet criteria. *This issue is further discussed in the ADR report.*

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C10-C28 was detected in method blank MB 280-576113/1-A at a level that was below one half the LOQ. *This issue is further discussed in the ADR report.*

Method 8330A:

The %RPD between the primary and confirmation column exceeded 40% for RDX and HMX for the following samples: G0122-22A (280-162622-5), PZ020-22A (280-162622-11) and G0077-22A (280-162622-12) in preparation batch 280-576154 and analytical batch 280-576310 for method 8330. The results from both columns have been qualified and reported in accordance with the laboratory's QAS. *This issue is further discussed in Section 7.0.*

Surrogate recovery for the following sample in preparation batch 280-576154 and analytical batch 280-576310 for method 8330 was outside the upper control limits: G0111-22A (280-162622-17) and G0123-22A (280-162622-18). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed. Surrogate recovered within control limit in the confirmation instrument. *This issue is further discussed in the ADR report.*

Method 351.2:

Nitrogen, Total Kjeldahl failed the recovery criteria low for the MS of sample PZ020-22AMS (280-162622-11) in batch 280-577123. Nitrogen, Total Kjeldahl failed the recovery criteria low for the MSD of sample PZ020-22AMSD (280-162622-11) in batch 280-577123. *TKN was not detected in associated sample, therefore result is qualified (UJ). This issue is further discussed in the ADR report.*

Method 353.2:

Nitrate Nitrite as N failed the recovery criteria low for the MS of sample SHGW02-22AMS (280-162622-19) in batch 280-577382. Nitrate Nitrite as N failed the recovery criteria low for the MSD of sample SHGW02-22AMSD (280-162622-19) in batch 280-577382. Nitrate Nitrite as N failed the recovery criteria low for the MS of sample G0024-22AMS (280-162622-7) in batch 280-577382. Nitrate Nitrite as N failed the recovery criteria low for the MSD of sample G0024-22AMSD (280-162622-7) in batch 280-577382. *Nitrate Nitrite as N was detected in the associated samples, therefore results qualified (J). This issue is further discussed in the ADR report.*

Method 9034:

Sulfide exceeded the RPD limit for the MSD of sample G0066R-22AMSD (280-162622-6) in batch 280-575993. *Sulfide was not detected in the associated sample, therefore no data are considered affected or qualified. This issue is further discussed in the ADR report.*

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

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	

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The SO4/Alk sample container received does not have the sample collection time recorded on the client label. Logged per the COC. PZ020-22A (280-162622-11). Per the AECOM chemist, the sample was logged via the time on the COC and no qualification of data was required.

The case narrative indicated that a sample was missing the sample ID on the sample label. It was assigned the same sample ID as the other two samples in the associated bubble bag and no qualification of data was required.

3.0 Instrument Performance Check (Tuning)

Method 8260B Instrument Tuning Criteria (Filename)	280-574012/1		
Instrument:	VMS_MS1		
Date of Tuning:	5/5/2022		
	Yes	No	N/A
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundances for each target mass within the required intensity limits listed in Table 4 of SW-846 Method 8260B?	X		

Method 8260B Instrument Tuning Criteria (Filename)	280-576482/1		
Instrument:	VMS_MS1		
Date of Tuning:	5/27/2022		
	Yes	No	N/A
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundances for each target mass within the required intensity limits listed in Table 4 of SW-846 Method 8260B?	X		

4.0 Initial Calibration

Method 8260B Initial Calibration Criteria			
Instrument:	VMS_MS1		
Date of Calibration:	5/5/2022		
	Yes	No	N/A
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

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Method 8330A Initial Calibration Criteria			
Instrument:	CHHPLC X3		
Date of Calibration:	1/4/2022		
	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 $\leq 20\%$?	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

The RSD was met for all target analytes.

Method 8330A Initial Calibration Criteria			
Instrument:	CHHPLC X3		
Date of Calibration:	1/5/2022		
	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 $\leq 20\%$?	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 X5		
Date of Calibration:	3/2/2022		
	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 $\leq 20\%$?	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

The RSD was met for all target analytes.

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Method 8330A Initial Calibration Criteria			
Instrument:	CHHPLC_X5		
Date of Calibration:	3/3/2022		
	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 $\leq 20\%$?	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 RSK-175 Initial Calibration Criteria			
Instrument:	VGC_J		
Date of Calibration:	9/24/2021		
	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 $\leq 25\%$?			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

%RSD was not provided for methane; however, the r2 was met.

Verification Criteria for DRO instrument SGC_U2a on 5/9/2022			
	Yes	No	N/A
Was at least a 5-point calibration completed for all analytes prior to sample analysis?	X		
Option 1: RSD for each analyte $\leq 20\%$?			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 $r^2 \geq 0.99$?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

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Method 9056A Initial Calibration Criteria			
Instrument:	WC_IonChrom13		
Date of Calibration:	5/16/2022		
	Yes	No	N/A
Was a minimum of three standards and a calibration blank used for ICAL?	X		
Was $r^2 \geq 0.99$?	X		

Method 350.1 Initial Calibration Criteria			
Instrument:	WC_Alp 4		
Date of Calibration:	6/8/2022		
	Yes	No	N/A
Was a minimum of three standards and a calibration blank used for ICAL?	X		
Was $r^2 \geq 0.99$?	X		

Method 350.1 Initial Calibration Criteria			
Instrument:	WC_SKALAR_01		
Date of Calibration:	6/8/2022		
	Yes	No	N/A
Was a minimum of three standards and a calibration blank used for ICAL?	X		
Was $r^2 \geq 0.99$?	X		

Method 353.2 Initial Calibration Criteria			
Instrument:	WC_Alp 2		
Date of Calibration:	6/7/2022		
	Yes	No	N/A
Was a minimum of three standards and a calibration blank used for ICAL?	X		
Was $r^2 \geq 0.99$?	X		

Method 351.2 Initial Calibration Criteria			
Instrument:	WC_GAL1		
Date of Calibration:	6/1/2022		
	Yes	No	N/A
Was a minimum of three standards and a calibration blank used for ICAL?	X		
Was $r^2 \geq 0.99$?	X		

Method 9060A Initial Calibration Criteria			
Instrument:	WC_SHI3		
Date of Calibration:	5/26/2022		
	Yes	No	N/A
Was a minimum of three standards and a calibration blank used for ICAL?	X		
Was $r^2 \geq 0.99$?	X		

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5.0 Initial Calibration Verification [(ICV) Second Source]

Method 8260B ICV Criteria (Filename)	280-574014/44		
Instrument:	VMS MS1		
Date of Initial Calibration Verification:	5/5/2022		
	Yes	No	N/A
Was the ICV analyzed after each calibration?	X		
Were all reported analytes within $\pm 20\%$ of true value?	X		

Method 8330A ICV Criteria (Filename)	280-562503/20		
Instrument:	CHHPLC X3		
Date of Initial Calibration Verification:	1/4/2022		
	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)	280-562503/38		
Instrument:	CHHPLC X3		
Date of Initial Calibration Verification:	1/5/2022		
	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)	280-567560/19		
Instrument:	CHHPLC X5		
Date of Initial Calibration Verification:	3/3/2022		
	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)	280-567560/28		
Instrument:	CHHPLC X5		
Date of Initial Calibration Verification:	3/3/2022		
	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		

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Method RSK-175 ICV Criteria (Filename)	280-550959/13		
Instrument:	VGC J		
Date of Initial Calibration Verification:	9/24/2021		
	Yes	No	N/A
Was the ICV analyzed after each calibration?	X		
Was the ICV for all analytes within $\pm 25\%$ of the true value?	X		

Verification Criteria for DRO instrument SGC_U2a on 5/9/2022 15:39	Yes	No
Was the ICV analyzed daily, before sample analysis?		X
Were all reported analytes within $\pm 20\%$ of the true value?	X	

The ICV was analyzed after the ICAL analyses. A CCVRT is analyzed daily, before sample analysis. No data are considered qualified or affected.

Method 9056A ICV	WC IonChrom13		
Date of Initial Calibration Verification:	5/16/2022		
	Yes	No	N/A
Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis?	X		
Was the ICV for all analytes within $\pm 10\%$ of the true value?	X		

Method 350.1 ICV Criteria	WC Alp 4		
Date of Initial Calibration Verification:	6/8/2022		
	Yes	No	N/A
Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis?	X		
Was the ICV for all analytes within $\pm 10\%$ of the true value?	X		

Method 350.1 ICV Criteria	WC SKALAR_01		
Date of Initial Calibration Verification:	6/9/2022		
	Yes	No	N/A
Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis?	X		
Was the ICV for all analytes within $\pm 10\%$ of the true value?	X		

Method 353.2 ICV Criteria	WC Alp 2		
Date of Initial Calibration Verification:	6/7/2022		
	Yes	No	N/A
Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis?	X		
Was the ICV for all analytes within $\pm 10\%$ of the true value?	X		

CHAAP Data Verification

Laboratory and SDG#: Eurofins 280-162622

AECOM Chemist: D. Casagrande

Date Verified: 7/28/2022

AECOM ITR: S. Louie

Guidance: DoD QSM Version 5.1 (January 2017)

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

Applicable Analytical Methods: 8260B, 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8015C

Method 351.2 ICV Criteria	WC_GAL1		
Date of Initial Calibration Verification:	6/1/2022		
	Yes	No	N/A
Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis?	X		
Was the ICV for all analytes within $\pm 10\%$ of the true value?	X		

Method 9060A ICV Criteria	WC_SHI3		
Date of Initial Calibration Verification:	5/31/2022		
	Yes	No	N/A
Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis?	X		
Was the ICV for all analytes within $\pm 10\%$ of the true value?	X		

6.0 Continuing Calibration Verification (CCV)

Method 8260B Beginning CCV Criteria (Filename)	280-576482/2		
Method 8260B Ending CCV Criteria (Filename)	280-576482/33		
Instrument:	VMS_MS1		
Date of Calibration Verification:	5/27/2022		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Were all reported analytes and surrogates within $\pm 20\%$ of true value?	X		
Were all reported analytes and surrogates within $\pm 50\%$ of true value for the end of analytical batch CCV?	X		

The CCVs were met for all target analytes.

Method 8330A CCV Criteria (Filename)	280-576310/7,9		
Instrument:	CHHPLC X3		
Date of Calibration Verification:	5/26/2022		
	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		

CHAAP Data Verification

Laboratory and SDG#: Eurofins 280-162622

AECOM Chemist: D. Casagrande

Date Verified: 7/28/2022

AECOM ITR: S. Louie

Guidance: DoD QSM Version 5.1 (January 2017)

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

Applicable Analytical Methods: 8260B, 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8015C

Method 8330A CCV Criteria (Filename)	280-576310/21-22		
Instrument:	CHHPLC X3		
Date of Calibration Verification:	5/26/2022		
	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)	280-576310/33-34		
Instrument:	CHHPLC X3		
Date of Calibration Verification:	5/27/2022		
	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)	280-576448/7-8		
Instrument:	CHHPLC X5		
Date of Calibration Verification:	5/27/2022		
	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)	280-576448/20-21		
Instrument:	CHHPLC X5		
Date of Calibration Verification:	5/28/2022		
	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 CCVs were met for all target analytes.

CHAAP Data Verification

Laboratory and SDG#: Eurofins 280-162622

AECOM Chemist: D. Casagrande

Date Verified: 7/28/2022

AECOM ITR: S. Louie

Guidance: DoD QSM Version 5.1 (January 2017)

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

Applicable Analytical Methods: 8260B, 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8015C

Method 8330A CCV Criteria (Filename)	280-576448/32-33		
Instrument:	CHHPLC X5		
Date of Calibration Verification:	5/28/2022		
	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 CCVs were met for all target analytes.

Method RSK-175 CCVRT Criteria (Filename)	280-576662/2		
Instrument:	VGC_J		
Date of Calibration Verification:	6/1/2022		
	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 $\pm 25\%$ of the true value?	X		

Method RSK-175 CCV Criteria (Filename)	280-576662/46		
Instrument:	VGC_J		
Date of Calibration Verification:	6/1/2022		
	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 $\pm 25\%$ of the true value?	X		

Method RSK-175 CCV Criteria (Filename)	280-576662/58		
Instrument:	VGC_J		
Date of Calibration Verification:	6/1/2022		
	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 $\pm 25\%$ of the true value?	X		

CHAAP Data Verification

Laboratory and SDG#: Eurofins 280-162622

AECOM Chemist: D. Casagrande

Date Verified: 7/28/2022

AECOM ITR: S. Louie

Guidance: DoD QSM Version 5.1 (January 2017)

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

Applicable Analytical Methods: 8260B, 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8015C

Method RSK-175 CCVRT Criteria (Filename)	280-576768/2		
Instrument:	VGC J		
Date of Calibration Verification:	6/1/2022		
	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 $\pm 25\%$ of the true value?	X		

Method RSK-175 CCV Criteria (Filename)	280-576768/58		
Instrument:	VGC J		
Date of Calibration Verification:	6/1/2022		
	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 $\pm 25\%$ of the true value?	X		

Method RSK-175 CCV Criteria (Filename)	280-576768/75		
Instrument:	VGC J		
Date of Calibration Verification:	6/1/2022		
	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 $\pm 25\%$ of the true value?	X		

Method RSK-175 CCV Criteria (Filename)	280-576768/87		
Instrument:	VGC J		
Date of Calibration Verification:	6/1/2022		
	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 $\pm 25\%$ of the true value?	X		

CHAAP Data Verification

Laboratory and SDG#: Eurofins 280-162622

AECOM Chemist: D. Casagrande

Date Verified: 7/28/2022

AECOM ITR: S. Louie

Guidance: DoD QSM Version 5.1 (January 2017)

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

Applicable Analytical Methods: 8260B, 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8015C

Method RSK-175 CCV Criteria (Filename)	280-576907/2		
Instrument:	VGC J		
Date of Calibration Verification:	6/2/2022		
	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 $\pm 25\%$ of the true value?	X		

Method RSK-175 CCV Criteria (Filename)	280-576907/17		
Instrument:	VGC J		
Date of Calibration Verification:	6/2/2022		
	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 $\pm 25\%$ of the true value?	X		

Method RSK-175 CCV Criteria (Filename)	280-576907/28		
Instrument:	VGC J		
Date of Calibration Verification:	6/2/2022		
	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 $\pm 25\%$ of the true value?	X		

Method RSK-175 CCVRT Criteria (Filename)	280-577087/2		
Instrument:	VGC J		
Date of Calibration Verification:	6/3/2022		
	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 $\pm 25\%$ of the true value?	X		

CHAAP Data Verification

Laboratory and SDG#: Eurofins 280-162622

AECOM Chemist: D. Casagrande

Date Verified: 7/28/2022

AECOM ITR: S. Louie

Guidance: DoD QSM Version 5.1 (January 2017)

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

Applicable Analytical Methods: 8260B, 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8015C

Method RSK-175 CCV Criteria (Filename)	280-577087/17		
Instrument:	VGC J		
Date of Calibration Verification:	6/3/2022		
	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 $\pm 25\%$ of the true value?	X		

Verification Criteria for DRO instrument SGC_U2a on 5/30/2022-5/31/2022	Yes	No
Was the CCVRT analyzed daily before sample analysis?	X	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	X	
Were all reported analytes within $\pm 20\%$ of true value?	X	

Verification Criteria for DRO instrument SGC_U2a on 6/3/2022	Yes	No
Was the CCVRT analyzed daily before sample analysis?	X	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	X	
Were all reported analytes within $\pm 20\%$ of true value?	X	

Method 9056A, Instrument: WC IonChrom13, All CCVs on 6/1/2022-6/2/2022	Yes	No
Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence?	X	
Were the CCVs for all analytes within $\pm 10\%$ of the true value?	X	

Method 9056A, Instrument: WC IonChrom13, All CCVs on 6/2/2022-6/3/2022	Yes	No
Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence?	X	
Were the CCVs for all analytes within $\pm 10\%$ of the true value?	X	

Method 350.1, Instrument: WC Alp 4, All CCVs on 6/8/2022	Yes	No
Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence?	X	
Were the CCVs for all analytes within $\pm 10\%$ of the true value?	X	

Method 350.1, Instrument: WC SKALAR_01, All CCVs on 6/9/2022	Yes	No
Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence?	X	
Were the CCVs for all analytes within $\pm 10\%$ of the true value?	X	

Method 353.2, Instrument: WC Alp 2, All CCVs on 6/7/2022	Yes	No
Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence?	X	
Were the CCVs for all analytes within $\pm 10\%$ of the true value?	X	

Method 351.2, Instrument: WC GAL1, All CCVs on 6/1/2022	Yes	No
Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence?	X	
Were the CCVs for all analytes within $\pm 10\%$ of the true value?	X	

CHAAP Data Verification

Laboratory and SDG#: Eurofins 280-162622

AECOM Chemist: D. Casagrande

Date Verified: 7/28/2022

AECOM ITR: S. Louie

Guidance: DoD QSM Version 5.1 (January 2017)

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

Applicable Analytical Methods: 8260B, 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8015C

Method 9060A, Instrument: WC SHI3, All CCVs on 5/31/2022	Yes	No
Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence?	X	
Were the CCVs for all analytes within $\pm 10\%$ of the true value?	X	

Method 2320B, Instrument: WC AT4, All CCVs on 5/26/2022	Yes	No
Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence?	X	
Were the CCVs for all analytes within $\pm 10\%$ of the true value?	X	

7.0 Sensitivity

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

8.0 Internal Standard (IS) Recoveries

Method 8260B Criteria	Yes	No	N/A
Were internal standards spiked for all samples and standards?	X		
Were internal standard areas within -50% to + 100% of the ICAL midpoint standard area?	X		
Were retention time ± 30 seconds from the retention time of the midpoint standard of the ICAL?	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 method requirement for no headspace was not met. The following volatile sample was analyzed with significant headspace in the sample container(s): PZ020-22A (280-162622-11). Significant headspace is defined as a bubble greater than 6 mm in diameter. The non-detect result for Methane is qualified as potential low bias reporting limit (UJ).

Sample ID	Analysis	Analyte	Qualification
PZ020-22A	RSK-175	Methane	UJ

CHAAP Data Verification

Laboratory and SDG#: Eurofins 280-162622

AECOM Chemist: D. Casagrande

Date Verified: 7/28/2022

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Guidance: DoD QSM Version 5.1 (January 2017)

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

Applicable Analytical Methods: 8260B, 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8015C

Reanalysis of the following sample was performed outside of the analytical holding time due to the concentration of methane exceeding calibration in the original analysis : G0121-22A (280-162622-2). The methane result is qualified (J) due to holding time exceedances.

Sample ID	Analysis	Analyte	Qualification
G0121-22A	RSK-175	Methane	J

The RPD between the primary and confirmation column for some explosives were above evaluation criteria. Qualification of data is shown in the table below; results were reported from primary column unless otherwise noted.

Sample ID	Analysis	Analyte	RPD	Qual
G0122-22A	Explosives	RDX	67.3	J
PZ020-22A	Explosives	RDX	64.8	J
G0077-22A	Explosives	HMX	40.5	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 requested sample analyses performed, the correct analyte lists used, and correct sample preparation and analyses methods and units utilized?	X		