

# CHAAP Data Verification

Laboratory and SDG#: TADenver 280-129830  
 Date Verified: 11/20/2019

AECOM Chemist: Jared DeSadier  
 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, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034

Sample Identification #	Date Collected	Date Received	Matrix	Analysis
EW7-PM23A-1-25	10/16/2019	10/17/2019	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B)
EW7-PM25A-1-25	10/16/2019	10/17/2019	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B)
EW7-PM25B-1-35	10/16/2019	10/17/2019	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A), Sulfide (9034), Alkalinity (2320B)

## 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 laboratory case narrative indicated that some surrogate and MS/MSD recoveries were outside evaluation criteria. These issues are discussed further in the ADR report.

Some explosives ICV and CCV %Ds were outside of evaluation criteria. These issues are discussed further in Sections 4.0 and 5.0.

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	

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### 3.0 Initial Calibration

Method 8330A Initial Calibration Criteria			
<b>Instrument:</b>	CHHPLC X3		
<b>Date of Calibration:</b>	7/1/2019		
	<b>Yes</b>	<b>No</b>	<b>N/A</b>
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			
<b>Instrument:</b>	CHHPLC X3		
<b>Date of Calibration:</b>	7/1/2019		
	<b>Yes</b>	<b>No</b>	<b>N/A</b>
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			
<b>Instrument:</b>	CHHPLC G2 LUNA		
<b>Date of Calibration:</b>	10/25/2019		
	<b>Yes</b>	<b>No</b>	<b>N/A</b>
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

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Method RSK-175 Initial Calibration Criteria			
Instrument:	VGC J		
Date of Calibration:	04/15/2019		
	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 $\leq 25\%$ ?	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

Method 9056A Initial Calibration Criteria			
Instrument:	WC IonChrom10		
Date of Calibration:	10/16/2019		
	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 3		
Date of Calibration:	10/31/2019		
	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:	11/3/2019		
	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 Astoria		
Date of Calibration:	10/28/2019		
	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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Method 9060A Initial Calibration Criteria			
Instrument:	WC_SHI3		
Date of Calibration:	11/4/2019		
	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		

### 4.0 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		
	7/1/2019		
	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:	10250015.D		
Date of Initial Calibration Verification:	CHHPLC_G2-LUNA		
	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 %D for 3-nitrotoluene (33.4%) was outside of evaluation criteria with a high bias. Associated results were nondetect and no qualification of data was required.

Method RSK-175 ICV Criteria (Filename)			
Instrument:	04151911.D		
Date of Initial Calibration Verification:	VGC_J		
	4/15/2019		
	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		

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Method 9056A ICV	WC IonChrom10		
Date of Initial Calibration Verification:	10/16/2019		
	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 3		
Date of Initial Calibration Verification:	10/31/2019		
	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:	11/3/2019		
	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 351.2 ICV Criteria	WC Astoria		
Date of Initial Calibration Verification:	10/28/2019		
	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:	11/4/2019		
	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		

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### 5.0 Continuing Calibration Verification (CCV)

<b>Method 8330A CCV Criteria (Filename)</b>	<b>10240007_9.D</b>		
<b>Instrument:</b>	<b>CHHPLC_X3</b>		
<b>Date of Calibration Verification:</b>	<b>10/24/2019</b>		
	<b>Yes</b>	<b>No</b>	<b>N/A</b>
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		

<b>Method 8330A CCV Criteria (Filename)</b>	<b>10240020_2.D</b>		
<b>Instrument:</b>	<b>CHHPLC_X3</b>		
<b>Date of Calibration Verification:</b>	<b>10/24/2019</b>		
	<b>Yes</b>	<b>No</b>	<b>N/A</b>
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		

<b>Method 8330A CCV Criteria (Filename)</b>	<b>10240033_5.D</b>		
<b>Instrument:</b>	<b>CHHPLC_X3</b>		
<b>Date of Calibration Verification:</b>	<b>10/24/2019</b>		
	<b>Yes</b>	<b>No</b>	<b>N/A</b>
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		

<b>Method 8330A CCV Criteria (Filename)</b>	<b>10280064_6.D</b>		
<b>Instrument:</b>	<b>CHHPLC_X</b>		
<b>Date of Calibration Verification:</b>	<b>10/29/2019</b>		
	<b>Yes</b>	<b>No</b>	<b>N/A</b>
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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<b>Method 8330A CCV Criteria (Filename)</b>	<b>10280074_6.D</b>		
<b>Instrument:</b>	<b>CHHPLC_X3</b>		
<b>Date of Calibration Verification:</b>	<b>10/29/2019</b>		
	<b>Yes</b>	<b>No</b>	<b>N/A</b>
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		

<b>Method 8330A CCV Criteria (Filename)</b>	<b>10290023.D</b>		
<b>Instrument:</b>	<b>CHHPLC_G2_LUNA</b>		
<b>Date of Calibration Verification:</b>	<b>10/30/2019</b>		
	<b>Yes</b>	<b>No</b>	<b>N/A</b>
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 %D for 3-nitrotoluene (43.1%) was outside of evaluation criteria with a high bias. Associated results were nondetect and no qualification of data was required.

<b>Method 8330A CCV Criteria (Filename)</b>	<b>10290032.D</b>		
<b>Instrument:</b>	<b>CHHPLC_G2_LUNA</b>		
<b>Date of Calibration Verification:</b>	<b>10/30/2019</b>		
	<b>Yes</b>	<b>No</b>	<b>N/A</b>
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 2-nitrotoluene (-17.9%, low bias) and 3-nitrotoluene (44.7%, high bias) were outside of evaluation criteria. Qualification of data is shown in the table below.

Field ID	Parameter	Analyte	Qualification
EW7-PM23A-1-25	Explosives	2-nitrotoluene	UJ

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<b>Method 8330A CCV Criteria (Filename)</b>	<b>11010007.D</b>		
<b>Instrument:</b>	<b>CHHPLC_G2_LUNA</b>		
<b>Date of Calibration Verification:</b>	<b>11/1/2019</b>		
	<b>Yes</b>	<b>No</b>	<b>N/A</b>
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 %D for 3-nitrotoluene (27.7%) was outside of evaluation criteria with a high bias. Associated results were nondetect and no qualification of data was required.

<b>Method 8330A CCV Criteria (Filename)</b>	<b>11010018.D</b>		
<b>Instrument:</b>	<b>CHHPLC_G2_LUNA</b>		
<b>Date of Calibration Verification:</b>	<b>11/1/2019</b>		
	<b>Yes</b>	<b>No</b>	<b>N/A</b>
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 2-nitrotoluene (-16.3%, low bias) and 3-nitrotoluene (22.5%, high bias) were outside of evaluation criteria. Qualification of data is shown in the table below.

<b>Field ID</b>	<b>Parameter</b>	<b>Analyte</b>	<b>Qualification</b>
EW7-PM25A-1-25	Explosives	2-nitrotoluene	<b>UJ</b>
EW7-PM25B-1-35	Explosives	2-nitrotoluene	<b>UJ</b>

<b>Method RSK-175 CCV Criteria (Filename)</b>	<b>018F1401.D</b>		
<b>Instrument:</b>	<b>VGC J</b>		
<b>Date of Calibration Verification:</b>	<b>10/23/2019</b>		
	<b>Yes</b>	<b>No</b>	<b>N/A</b>
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 %D or %drift for all target compounds $\leq 25\%$ ?	X		



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Method RSK-175 CCV Criteria (Filename)	032F2801.D		
Instrument:	VGC J		
Date of Calibration Verification:	10/23/2019		
	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 $\pm 25\%$ of the true value?	X		

Method 9056A, Instrument: WC_IonChrom10, All CCVs on 11/12/2019	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 3, All CCVs on 10/31/2019	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 11/3/2019	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_Astoria, All CCVs on 10/28/2019	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 9060A, Instrument: WC_SHI3, All CCVs on 11/4/2019	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	

## 6.0 Blank Samples

Blank Criteria	Yes	No	N/A
Were method blanks analyzed with every preparatory batch?	X		
Were target analytes detected $> \frac{1}{2}$ the LOQ and $> \frac{1}{10}$ the amount measured in any sample or $\frac{1}{10}$ the regulatory limit (whichever is greater)?		X	
Were target analytes detected in method, trip or calibration blanks?		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		

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## 8.0 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	

## 9.0 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		