MCEM analysis

M14 Line 2 Run 1
POM | Scrubber: | Date: 2/19/2020 | Filter #: CP

Container No.	ID	Final Weight (g)	Tare Weight (g)	Weight gain (g)	Weight gain (mg)	Acetone wash volume (ml)	Methylene chloride wash volume (ml)
		Aluminum Dish					
1 - Petri	1	2.5311	2.5220	0.0091	9.1		150
2 (Part. Beaker)+2M	2	2.5253	2.5152	0.0101	10.1	120	150
3W	3W	2.5082	2.4987	0.0095	9.5		125
3S	3S	2.5338	2.5295	0.0043	4.3	150.6	122.1
3S converted to ml						191.8	92.6
Totals					33.0	311.8	517.6
					$\sum m_{total}$	$\sum v_{aw}$	$\sum v_{tw}$

Acetone Lot # 070467 — Density of Acetone (mg/ml)		785.0	
Acetone blank Weight (g) and Volume (ml)	0.0001		200
Acetone blank Concentration $c_a = m_a \div (v_a \rho_a)$	6.37E-07		
Less acetone wash blank (mg) (not to exceed 1 mg/l of acetone used) $w_a = c_a \rho_a \sum v_{aw}$		0.16	
Concentration of acetone (mg/l) allowed compared to actual concentration	0.31	0.16	0.50
$MeCl_2$ Lot # 054318 — Density of Methylene Chloride (mg/ml)		1318	
Methylene blank Weight (g) and Volume (ml)	0		200
Methylene Chloride blank Concentration $c_a = m_a \div (v_a \rho_a)$		0.00E+00	
Less methylene chloride wash blank (mg) (not to exceed 1.5 mg/l of methylene chloride used) $w_t = c_t \rho_t \sum v_{tw}$		0.00	
Concentration of methylene chloride (mg/l) allowed compared to actual concentration	0.78	0.00	0.00
Less filter blank (mg) (not to exceed … (mg/filter) F_b		1.2 mg	
MCEM weight (mg) No blank corr. $\sum m_{total}$		33.0 mg	
MCEM weight (g)		0.0330 g	
MCEM wt (mg) minus acetone & MeCl2 blk $\sum m_{total} - w_a - w_t$		32.8 mg	
MCEM weight (mg) blk corr. $m_{MCEM} = \sum m_{total} - w_a - w_t - f_b$		31.6 mg	
MCEM weight (g)		0.0316 g	

Notes:

Filename: M315-2020 Data

Printed
2/20/2020 10:58 AM

Stack Sample Results
Raw Data Averages
METHOD 14 LINE 2

Start Date: 2/19/2020 **Stop Date:** 2/20/2020 **Run #:** 1

Traverse Point	Delta P (in. Water)	Delta H (in. Water)	Meter Temperature (in)	Meter Temperature (out)	Static Pressure (in. Water)	Stack Temperature (Deg. F)
1-1a	0.12	1.50	67	67	-0.56	64
1-1b	0.12	1.50	78	72		70
1-2a	0.15	1.90	79	73	-0.57	73
1-2b	0.15	1.90	79	73		77
1-3a	0.16	2.00	79	73	-0.59	75
1-3b	0.16	2.00	75	75		74
2-1a	0.13	1.65	75	75	-0.56	74
2-1b	0.13	1.65	79	76		73
2-2a	0.15	1.90	77	73	-0.59	70
2-2b	0.15	1.90	80	74		71
2-3a	0.13	1.65	77	75	-0.59	69
2-3b	0.13	1.65	75	73		68
3-1a	0.09	1.10	75	73	-0.55	66
3-1b	0.09	1.10	78	73		69
3-2a	0.14	1.80	76	73	-0.57	65
3-2b	0.14	1.80	73	72		66
3-3a	0.14	1.80	77	73	-0.59	62
3-3b	0.14	1.80	77	73		61
Averages	**0.366** (AVG. SQ.RT.)	**1.700**	**74.8**		**-0.57**	**69.3**

MAGNITUDE 7 METALS, LLC
METHOD 14 DATA
ROOF MONITOR

Run Start Date 2/19/20
Run End Date 2/20/20
Run # 1POM
Run Start Time 10:35 Am
Run End Time 9:50 Am
Probe Tip SN 3248
Avg. Tip Diameter .3259
Delta H **1.91** 2% Moisture
Duct Area = 1.25 sq.ft. (assumed)

Line: 1 2 3 ~~East~~ ~~3 West~~ POM

Operators
Zoe Schneider
Alicia Powell

Chemist

Digital meter used **2076**

Initial L.C. @ 15.0 = .012
Final L.C. @ 5.0 = .003

Initial Pitot L.C. = N.L
Final Pitot L.C. = N.L

POINT #	SAMP. TIME Min.	METER VOLUME Cu. Ft.	DELTA P in. H_2O	DELTA H in. H_2O	METER TEMP F IN	METER TEMP F OUT	STATIC PRESS. in. H_2O	STACK TEMP. °F	IMP. TEMP. °F	HOT BOX TEMP. °F	PUMP VAC. in. Hg	SET PT.
1-1	155	566.000	.12	1.50	67	67	-.56	64	60	255	.1	12.59
			.12	1.50	78	72		70	65	256	.1	12.64
1-2	155	666.870	.15	1.90	79	73	-.57	73	64	256	.3	12.59
			.15	1.90	79	73		77	62	255	.2	12.50
1-3	155	783.530	.16	2.00	79	73	-.59	75	64	255	.3	12.54
			.16	2.00	75	75		74	63	255	.3	12.54
2-1	155	901.450	.13	1.65	75	75	-.56	74	63	255	.1	12.54
			.13	1.65	79	76		73	64	255	.1	12.63
2-2	155	7.200	.15	1.90	77	73	-.59	70	62	255	.2	12.64
			.15	1.90	80	74		71	63	255	.2	12.66
2-3	155	124.865	.13	1.65	77	75	-.59	69	63	255	.2	12.69
			.13	1.65	75	73		68	61	255	.2	12.66
3-1	155	231.230	.09	1.10	75	73	-.55	66	61	255	.2	12.71
			.09	1.10	78	73		69	64	255	.10	12.67
3-2	155	319.700	.14	1.80	76	73	-.57	65	63	255	.1	12.75
			.14	1.80	73	72		66	61	255	.2	12.70
3-3	155	429.850	.14	1.80	77	73	-.59	62	62	255	.2	12.83
			.14	1.80	77	73		61	62	255	.2	12.86
FINAL		541.350										
S/N		17791782					**76**	3-7	**2-A**	**2-H**		

Nomograph factor: 12.52

Form: SS M14 Raw Data.xls 9/17/18

MAGNITUDE 7 METALS LLC
METHOD 5 & 14 RAW DATA
ROOF MONITOR

Line: 2 Start Date: 2/19/20 Run: 1POM Filter: CP

PROBE TIP

SN 3248

DIAMETER MEASUREMENT (in.)

1. .3280
2. .3260 ANG
3. .3255
4. .3260 .3259
5. .3260
6. .3265
7. .3250
8. .3245

If previous calibration referenced, circle Yes to document visual inspection.

Out of round max. 0.004 in.

CAL. BY: SS

CALIPER: MITUTOYO S/N 7002015

NORANDA 0.5" THICKNESS STD # 1 .5000

SAMPLER OPERATION

PROBE HEAT SETTING	HEATER BOX SETTING
248 deg. F. +/- 25 deg. F.	165 deg. F. +/- 15 deg. F.
Range: 223 - 273 deg. F.	Range: 150 - 180 deg. F.

PITOT TUBE — Circle to document visual inspection.

SN N7141

Visually inspected? Yes

BAROMETER READING 30.3 (in. Hg)

CORRECTION FACTOR -.14 (in. Hg)

ORIGINAL GASEOUS FLUORIDE SAMPLE VOLUME M315 (liter)

		INITIAL WEIGHT (g)	FINAL WEIGHT (g)
IMPINGER #	+ 200 ml water	800.2	636.0
IMPINGER #	+ 100 ml water	722.9	738.0
IMPINGER #	+ EMPTY	503.3	530.1
IMPINGER #	+ SILICA GEL	1122.5	1194.3
IMPINGER #	+ SILICA GEL		
IMPINGER #	+ SILICA GEL		
IMPINGER #	+ SILICA GEL		
IMPINGER #	+ SILICA GEL		

BALANCE: METTLER PJ6000 SNR K59603 WEIGHED BY: SS

2 Kg Class S-1 Calibration Wt. 2000.0 Balance check must be +/- 0.5 grams.

COMMENTS:

Magnitude 7 Metals

GAS ANALYSIS REPORT

Location Line2

Date 2/19/20

Run 1 Pom

Room C

Analyzed by AP

Run	Time	Percent Carbon Dioxide (CO_2)	Percent Oxygen (O_2)
1	11:45	0.0	20.4
2	11:50	0.0	20.6
3	11:55	0.0	20.3

Potline 2 Roof Exit Velocities and Temperatures

	Manifold (C-66) Averages		Roof Averages	
#REF!	WS (ft/min)	Temp (Deg. F)	WS (ft/min)	Temp (Deg. F)
#REF!				
#REF!	90.7	84.0	87.2	82.5
#REF!				

#REF!	C-51			C-66			C-82		
#REF!	WS	WD	Temp	WS	WD	Temp	WS	WD	Temp
Date/Time	(ft/min)	(Deg.)	(Deg. F	(ft/min)	(Deg.)	(Deg. F	(ft/min)	(Deg.)	(Deg. F)
	_WS_AV	_WD_AV	_TEMP_	_WS_AV	_WD_AV	_TEMP_	_WS_AV	_WD_AV	_TEMP_
Averages:	91.6	159.1	81.3	90.7	147.5	84.0	79.4	161.0	82.1
2/19/20 10:35	88.4	158.1	75.9	91.7	149.5	79.5	80.4	163.6	77.3
2/19/20 10:50	94.2	161.1	77.1	82.7	166.4	78.4	78.7	160.5	76.8
2/19/20 11:05	95.7	157.8	76.5	83.4	157.6	78.4	80.6	155.5	79.2
2/19/20 11:20	104.7	153.7	77.5	80.9	165.3	79.3	76.1	159.9	79.2
2/19/20 11:35	95.6	152.5	78.5	76.0	156.9	80.2	85.7	162.1	79.7
2/19/20 11:50	89.0	152.6	79.4	84.7	154.7	81.7	79.6	153.7	81.3
2/19/20 12:05	96.8	156.4	79.0	86.5	156.8	81.8	71.0	166.4	82.1
2/19/20 12:20	87.7	152.6	80.7	84.4	154.4	82.4	79.3	157.3	82.0
2/19/20 12:35	88.0	156.1	80.8	84.3	163.9	82.3	74.7	158.7	82.6
2/19/20 12:50	89.9	153.3	82.8	78.7	158.3	84.4	71.8	164.1	83.8
2/19/20 13:05	88.5	153.5	83.5	86.0	158.4	85.1	72.0	156.9	84.5
2/19/20 13:20	81.1	160.0	82.7	85.8	158.5	85.2	66.8	160.6	84.8
2/19/20 13:35	90.9	157.7	83.2	84.6	159.4	84.2	68.5	160.7	85.0
2/19/20 13:50	93.2	161.0	85.0	85.5	162.3	85.4	73.1	160.8	84.7
2/19/20 14:05	86.3	153.3	84.8	90.7	151.0	87.6	73.2	156.4	86.3
2/19/20 14:20	89.2	156.1	83.8	94.5	151.2	87.5	75.6	160.7	86.5
2/19/20 14:35	95.1	155.9	86.6	88.5	156.5	89.3	68.9	155.8	86.1
2/19/20 14:50	88.4	156.6	85.3	84.0	143.5	89.4	75.1	157.7	87.6
2/19/20 15:05	88.1	158.9	85.4	85.1	149.0	89.5	69.7	160.8	87.8
2/19/20 15:20	99.6	159.2	86.4	92.6	157.5	89.6	84.8	169.7	88.3
2/19/20 15:35	95.0	155.5	86.3	86.4	149.2	89.8	78.3	163.0	87.2
2/19/20 15:50	91.3	149.5	84.7	90.5	149.2	89.9	76.9	172.8	87.7
2/19/20 16:05	99.9	152.5	85.6	86.2	152.6	89.8	72.0	172.5	87.5
2/19/20 16:20	90.9	156.3	85.4	80.6	154.4	89.7	76.5	160.9	87.9
2/19/20 16:35	89.4	156.3	85.3	82.9	149.7	89.6	76.5	162.8	87.9
2/19/20 16:50	93.7	159.2	86.4	81.7	148.0	90.4	82.8	169.2	87.9
2/19/20 17:05	103.5	157.0	86.5	77.5	139.5	90.5	85.8	157.4	89.0
2/19/20 17:20	98.0	160.2	86.6	82.1	144.1	90.6	77.3	157.3	87.3
2/19/20 17:35	93.8	154.9	85.9	78.1	142.4	89.4	79.8	167.2	87.7
2/19/20 17:50	95.5	156.9	86.9	81.8	142.4	90.0	74.3	161.1	86.0
2/19/20 18:05	94.6	158.1	86.4	75.1	143.2	89.5	82.1	165.4	87.0
2/19/20 18:20	87.6	156.8	85.2	77.6	148.3	88.8	76.1	157.9	85.9
2/19/20 18:35	96.1	161.7	86.0	81.5	143.7	88.7	78.6	161.4	85.9
2/19/20 18:50	96.3	158.0	85.5	80.6	143.8	88.7	74.9	161.5	85.9
2/19/20 19:05	98.2	158.3	85.4	89.3	147.8	88.2	70.1	160.2	85.2
2/19/20 19:20	79.3	155.3	84.3	99.4	159.2	87.6	71.8	171.4	84.5
2/19/20 19:35	80.1	160.7	83.8	97.3	150.7	87.6	68.3	168.1	84.5
2/19/20 19:50	84.4	156.2	83.2	92.5	149.6	86.9	66.3	168.4	85.0
2/19/20 20:05	80.5	157.0	83.8	104.9	153.1	87.6	77.6	168.7	84.1
2/19/20 20:20	82.4	157.8	83.3	97.8	161.1	87.4	70.1	171.6	84.1
2/19/20 20:35	82.6	151.1	83.3	99.4	157.5	86.8	69.9	176.6	83.3
2/19/20 20:50	88.2	154.5	83.3	102.2	155.2	86.8	77.4	168.7	83.1
2/19/20 21:05	83.4	146.8	82.8	94.8	156.4	86.2	71.8	173.6	83.6
2/19/20 21:20	86.7	147.0	82.8	104.3	161.1	85.6	78.7	172.8	83.1
2/19/20 21:35	96.2	152.5	83.5	113.4	160.9	86.2	76.6	171.3	82.5
2/19/20 21:50	92.2	153.9	83.5	109.1	153.9	86.2	80.8	167.2	82.4

#REF!	C-51			C-66			C-82		
#REF!	WS	WD	Temp	WS	WD	Temp	WS	WD	Temp
Date/Time	(ft/min)	(Deg.)	(Deg. F	(ft/min)	(Deg.)	(Deg. F	(ft/min)	(Deg.)	(Deg. F)
2/19/20 22:05	84.3	164.2	84.4	100.8	160.7	86.2	73.2	165.2	82.3
2/19/20 22:20	86.6	155.1	83.5	101.0	153.3	86.2	68.2	165.2	82.8
2/19/20 22:35	91.4	159.8	83.6	103.4	155.0	86.2	77.8	168.9	81.7
2/19/20 22:50	87.2	157.0	83.7	97.6	149.7	86.2	74.1	160.6	81.8
2/19/20 23:05	79.4	160.0	82.7	98.8	150.0	86.2	74.2	162.9	82.9
2/19/20 23:20	87.4	159.8	84.2	90.2	145.4	86.3	66.7	158.6	82.9
2/19/20 23:35	88.7	152.3	83.5	97.3	141.9	85.6	64.9	150.8	83.3
2/19/20 23:50	86.2	156.4	82.4	101.6	136.6	84.5	71.9	159.9	84.0
2/20/20 0:05	88.9	153.9	83.7	93.1	142.2	84.5	76.3	157.2	84.0
2/20/20 0:20	84.8	165.6	83.4	96.0	141.1	85.4	81.4	158.8	83.6
2/20/20 0:35	80.1	165.8	83.5	98.6	142.8	85.5	76.9	161.7	82.8
2/20/20 0:50	88.0	165.9	83.6	101.6	144.5	85.6	76.7	161.7	82.3
2/20/20 1:05	83.7	158.0	82.2	96.3	141.8	85.1	79.6	166.2	82.3
2/20/20 1:20	87.3	154.8	81.0	95.1	141.7	83.6	74.0	160.1	82.3
2/20/20 1:35	82.4	159.1	81.7	100.3	141.6	84.3	72.6	161.2	82.3
2/20/20 1:50	84.8	157.0	81.6	94.2	140.1	84.2	82.5	165.2	81.7
2/20/20 2:05	90.0	161.4	81.1	91.8	135.8	84.1	83.9	163.4	81.8
2/20/20 2:20	88.1	164.1	81.1	89.1	139.8	83.4	89.4	153.8	81.4
2/20/20 2:35	90.8	163.2	80.3	90.4	137.9	83.2	89.2	154.1	80.7
2/20/20 2:50	83.9	167.6	80.4	93.1	139.0	82.7	95.0	151.6	80.8
2/20/20 3:05	88.4	163.7	80.5	99.0	145.2	83.7	92.8	153.2	80.1
2/20/20 3:20	90.7	162.8	80.0	96.7	138.6	83.3	83.2	156.9	80.9
2/20/20 3:35	90.9	164.7	79.1	91.1	140.7	81.9	100.6	152.7	80.7
2/20/20 3:50	92.5	164.8	80.1	96.2	145.8	82.3	101.2	152.8	79.5
2/20/20 4:05	93.9	161.7	80.2	92.6	140.9	82.2	89.0	162.2	79.6
2/20/20 4:20	92.5	158.7	78.7	84.3	137.6	80.9	89.3	165.3	79.6
2/20/20 4:35	96.5	158.4	78.8	89.9	142.6	80.9	81.3	161.8	78.9
2/20/20 4:50	98.3	164.4	78.0	79.5	135.2	80.9	90.4	154.3	79.1
2/20/20 5:05	98.6	160.6	78.1	91.5	139.8	80.9	74.2	161.4	79.2
2/20/20 5:20	103.4	162.9	78.7	90.1	138.6	80.7	85.5	156.1	78.0
2/20/20 5:35	89.3	166.8	78.5	87.2	141.6	80.2	88.9	149.1	77.9
2/20/20 5:50	98.7	163.6	78.0	85.8	141.9	80.8	99.1	148.9	77.9
2/20/20 6:05	101.2	165.3	78.1	91.5	144.0	79.8	88.4	152.2	77.1
2/20/20 6:20	94.6	168.7	78.7	93.2	141.7	81.3	94.6	151.0	77.0
2/20/20 6:35	92.5	167.8	77.6	89.1	139.4	81.3	93.6	147.5	76.9
2/20/20 6:50	99.7	167.0	77.7	85.5	141.0	80.3	89.0	155.6	76.8
2/20/20 7:05	106.5	164.5	77.9	85.8	142.0	80.3	88.8	153.8	76.7
2/20/20 7:20	100.8	161.5	76.3	86.1	141.9	78.2	79.7	155.7	76.2
2/20/20 7:35	99.4	163.6	76.1	91.9	144.5	77.1	92.7	152.6	76.2
2/20/20 7:50	106.6	159.5	75.9	94.5	146.8	77.1	92.6	157.5	76.2
2/20/20 8:05	96.2	164.0	75.1	88.2	140.2	77.2	76.8	157.8	76.1
2/20/20 8:20	87.0	166.1	73.1	97.2	136.4	74.8	88.2	161.7	76.6
2/20/20 8:35	91.6	164.2	74.4	95.5	137.2	76.2	74.1	169.1	76.6
2/20/20 8:50	96.2	166.7	73.7	92.6	135.1	76.3	77.5	163.4	76.5
2/20/20 9:05	96.2	166.7	73.7	92.6	135.1	76.5	77.5	163.4	76.5
2/20/20 9:20	92.8	163.9	72.7	91.5	141.1	75.5	82.0	156.4	76.4
2/20/20 9:35	100.9	158.4	70.1	93.4	136.8	72.4	87.3	161.5	76.9
2/20/20 9:50	96.2	160.8	73.5	88.8	139.8	76.0	77.8	165.9	77.4