MCEM analysis

Location: L1R3POM Scrubber: Date: 3/31/2020 Filter #: CP

	Aluminum Dish						
Container No.	ID	Final Weight (g)	Tare Weight (g)	Weight gain (g)	Weight gain (mg)	Acetone wash volume (ml)	Methylene chloride wash volume (ml)
1 - Petri	1	2.5510	2.5506	0.0004	0.4		125
2 (Part. Beaker)+2M	2	2.5359	2.5314	0.0045	4.5	180	135
3W	3W	2.5262	2.5249	0.0013	1.3		145
3S	3S	2.5236	2.5213	0.0023	2.3	155.3	138.7
3S converted to ml						197.8	105.2
Totals					8.5	377.8	510.2
					$\sum m_{total}$	$\sum v_{aw}$	$\sum v_{tw}$

Acetone Lot # 231086 Density of Acetone (mg/ml)		785.0	
Acetone blank Weight (g) and Volume (ml)	0		200
Acetone blank Concentration $c_a = m_a \div (v_a \rho_a)$	0.00E+00		
Less acetone wash blank (mg) (not to exceed 1 mg/l of acetone used) $w_a = c_a \rho_a \sum v_{aw}$		0.00	
Concentration of acetone (mg/l) allowed compared to actual concentration	0.38	0.00	0.00
$MeCl_2$ Lot # 174189 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	0.77	0.00	0.00
Less filter blank (mg) (not to exceed … (mg/filter) F_b		1.2 mg	
MCEM weight (mg) No blank corr. $\sum m_{total}$		8.5 mg	
MCEM weight (g)		0.0085 g	
MCEM wt (mg) minus acetone & MeCl2 blk $\sum m_{total} - w_a - w_t$		8.5 mg	
MCEM weight (mg) blk corr. $m_{MCEM} = \sum m_{total} - w_a - w_t - f_b$		7.3 mg	
MCEM weight (g)		0.0073 g	

Notes:

Filename: M315-2020 Data

Printed
4/1/2020 10:54 AM

Stack Sample Results
Raw Data Averages
METHOD 14 LINE 1

Start Date: 3/31/2020 **Stop Date:** 4/1/2020 **Run #:** 3

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	0.11	1.10	62	61	-0.32	67
1-1b	0.10	1.00	73	73		74
1-2a	0.12	1.20	75	72	-0.33	76
1-2b	0.12	1.20	73	72		83
1-3a	0.07	0.70	75	73	-0.32	86
1-3b	0.07	0.70	74	74		90
2-1a	0.13	1.30	72	72	-0.33	90
2-1b	0.13	1.30	75	73		89
2-2a	0.14	1.40	73	72	-0.34	83
2-2b	0.14	1.40	74	73		77
2-3a	0.14	1.40	74	72	-0.36	77
2-3b	0.14	1.40	73	72		75
3-1a	0.12	1.20	73	73	-0.32	72
3-1b	0.12	1.20	72	71		71
3-2a	0.15	1.50	75	74	-0.35	70
3-2b	0.15	1.50	74	74		70
3-3a	0.14	1.40	75	73	-0.36	69
3-3b	0.14	1.40	73	74		70
Averages	**0.350** (AVG. SQ.RT.)	**1.239**	**72.6**		**-0.34**	**77.2**

MAGNITUDE 7 METALS, LLC
METHOD 14 DATA

Run Start Date 3-31-20
Run End Date 4/1/20
Run # 3 PM
Run Start Time 9:00
Run End Time 8:15
Probe Tip SN 3164
Avg. Tip Diameter .3173
Delta H 1.74 2% Moisture
Duct Area = 1.25 sq.ft. (assumed)

Line: 1 2 3 East 3 West
ROOF MONITOR

Operators
Alicia Powell
Zoe Schneider

Chemist

Digital meter used 2161

Initial L.C. @ 15.0 = .014
Final L.C. @ 50 = .003

Initial Pitot L.C. = nil
Final Pitot L.C. = NiL

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	547.745	.11	1.10	62	61	-.32	67	63	255	.4	10.10
			.10	1.00	73	73		74	66	255	.4	10.19
1-2	155	~~639~~ 640.000	.12	1.20	75	72	-.33	76	64	255	.6	10.16
			.12	1.20	73	72		82	62	255	.6	10.03
1-3	155	740.600	.07	.70	75	73	-.32	86	61	255	.1	9.99
			.07	.70	74	74		90	63	255	.1	9.91
2-1	155	815.430	.13	1.30	72	72	-.33	90	61	255	1.0	9.88
			.13	1.30	75	73		89	59	255	1.0	9.93
2-2	155	921.490	.14	1.40	73	72	-.34	83	59	255	1.0	10.01
			.14	1.40	74	73		77	58	255	1.0	10.14
2-3	155	30.200	.14	1.40	74	72	-.36	77	58	255	1.0	10.13
			.14	1.40	73	72		75	58	255	1.0	10.16
3-1	155	138.490	.12	1.20	73	73	-.32	72	58	255	1.0	10.23
			.12	1.20	72	71		71	58	255	1.0	10.22
3-2	155	237.350	.15	1.50	75	74	-.35	70	59	255	1.0	10.30
			.15	1.50	74	74		70	59	255	1.0	10.29
3-3	155	347.700	.14	1.40	75	73	-.36	69	59	255	1.0	10.31
			.14	1.40	73	74		70	59	255	1.0	10.28
FINAL		454.000										
S/N		17791762					61	3-1	1-A	1-H		

Nomograph factor: 10.21

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

Magnitude 7 Metals LLC

GAS ANALYSIS REPORT

Location Line 1

Date 3-31-20

Run 3PM

Room B

Analyzed by AP

Run	Time	Percent Carbon Dioxide (CO_2)	Percent Oxygen (O_2)
1	11:30	0.00	21.0
2	11:35	0.00	21.0
3	11:40	0.00	20.9

MAGNITUDE 7 METALS LLC
METHOD 14 RAW DATA

Line: 1 Start Date: 3/31/20 Run: 3 PDM Filter: CP

PITOT TUBE — Circle to document visual inspection.

SN D 754 ~~455~~

Visually inspected? Yes

PROBE TIP

SN 3164

DIAMETER MEASUREMENT (in.)

1.
2. ~~.356~~
3. ~~.357~~
4.
5. .3173
6. .358
7.
8.

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

Out of round max. 0.004 in.

CAL. BY: —

CALIPER: MITUTOYO S/N 7002015

NORANDA 0.5" THICKNESS STD # 1 —

SAMPLER OPERATION

PROBE HEAT SETTING	HEATER BOX SETTING
248 deg. F. +/- 25 deg. F.	For Method 13
Range: 223 - 273 deg. F.	165 deg. F. +/- 15 deg. F.
	Range: 150 - 180 deg. F.
	For Method 315
	248 deg. F. +/- 25 deg. F.
	Range: 223 - 273 deg. F.

BAROMETER READING 29.89 (in. Hg)

CORRECTION FACTOR -.14 (in. Hg)

For Method 13 only:

ORIGINAL GASEOUS FLUORIDE SAMPLE VOLUME _____ (liter)

		INITIAL WEIGHT	FINAL WEIGHT
IMPINGER #	+ 200 ml water	836.2	708.9
IMPINGER #	+ 100 ml water	744.5	805.9
IMPINGER #	+ EMPTY	632.7	667.4
IMPINGER #	+ SILICA GEL	1137.3	1204.0
IMPINGER #	+ SILICA GEL		
IMPINGER #	+ SILICA GEL		

BALANCE: METTLER PJ6000 SNR K59603 WEIGHED BY: JS

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

COMMENTS:

Form: Impinger Report M14.xlsx 2/19/20

Potline 1 Roof Exit Velocities and Temperatures

	Manifold (B-66) Averages		Roof Averages	
3/31/2020 9:00	WS (ft/min)	Temp (Deg. F)	WS (ft/min)	Temp (Deg. F)
4/1/2020 08:15	123.6	84.6	132.3	82.5

3/31/2020 9:00	B-51			B-66			B-82		
4/1/2020 8:15	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:	110.2	221.4	82.9	123.6	212.7	84.6	163.3	208.8	79.9
3/31/20 9:00	96.4	227.1	76.9	119.3	224.0	79.6	147.8	212.7	74.0
3/31/20 9:15	91.8	228.3	77.7	135.0	218.7	81.1	116.2	212.4	74.1
3/31/20 9:30	98.4	228.6	77.8	134.9	224.5	82.7	112.2	215.2	74.9
3/31/20 9:45	91.2	231.2	77.9	128.7	227.2	84.0	128.0	213.8	76.9
3/31/20 10:00	93.0	226.8	77.6	132.4	223.9	83.4	108.2	218.9	75.4
3/31/20 10:15	107.5	219.4	77.8	142.3	222.2	82.3	124.8	216.5	75.3
3/31/20 10:30	109.0	222.1	78.7	136.5	217.5	82.4	144.4	208.6	76.2
3/31/20 10:45	116.8	217.8	80.2	133.3	218.9	82.5	139.5	207.1	77.9
3/31/20 11:00	104.8	220.6	77.1	142.5	211.2	80.7	149.9	212.4	75.6
3/31/20 11:15	121.0	217.2	79.7	130.8	218.6	81.3	161.7	206.5	76.5
3/31/20 11:30	120.2	212.6	79.8	138.7	208.1	80.0	169.8	200.9	76.4
3/31/20 11:45	93.8	227.1	81.5	129.6	216.4	83.6	133.5	211.2	77.5
3/31/20 12:00	125.1	214.5	84.4	132.1	219.6	82.2	151.8	205.2	78.3
3/31/20 12:15	129.6	220.4	82.7	126.5	215.5	79.8	164.7	199.3	78.3
3/31/20 12:30	106.0	222.8	80.9	124.8	219.1	83.4	131.8	212.6	78.3
3/31/20 12:45	99.1	218.0	84.4	123.8	218.3	86.9	125.7	208.3	79.4
3/31/20 13:00	106.0	215.2	85.8	132.3	219.2	83.9	136.0	213.9	77.7
3/31/20 13:15	96.2	220.2	83.0	126.6	217.6	86.6	123.0	209.5	81.7
3/31/20 13:30	94.8	220.3	83.4	120.8	224.2	86.6	123.3	211.9	81.8
3/31/20 13:45	97.7	226.0	86.3	145.5	225.5	86.6	116.7	219.5	80.0
3/31/20 14:00	106.3	218.7	87.5	124.9	222.5	87.4	156.2	214.7	81.1
3/31/20 14:15	98.1	228.6	88.8	137.4	220.8	89.6	124.8	213.5	81.6
3/31/20 14:30	97.9	225.2	89.8	137.2	228.3	90.4	103.6	221.1	81.7
3/31/20 14:45	92.2	225.3	88.6	143.7	226.5	91.3	109.1	214.4	83.3
3/31/20 15:00	97.9	222.3	89.6	143.5	225.3	91.4	109.0	211.6	83.4
3/31/20 15:15	95.1	214.7	89.2	137.8	218.4	92.4	121.6	209.3	85.3
3/31/20 15:30	104.4	220.7	90.7	135.5	221.8	93.2	113.9	217.9	85.4
3/31/20 15:45	104.3	211.7	92.7	133.3	218.0	95.1	115.9	210.6	86.1
3/31/20 16:00	102.5	223.7	91.7	136.7	222.7	94.1	102.1	214.6	84.8
3/31/20 16:15	107.1	221.0	90.8	136.0	214.9	94.8	107.0	209.4	87.0
3/31/20 16:30	101.0	223.5	91.3	140.3	223.0	95.7	101.0	214.9	86.3
3/31/20 16:45	99.9	229.9	91.2	141.2	224.4	95.3	89.5	213.9	86.3
3/31/20 17:00	99.9	225.2	92.2	138.1	224.3	95.3	108.6	219.4	85.4
3/31/20 17:15	94.1	225.2	92.4	140.3	224.2	95.4	107.3	214.8	86.4
3/31/20 17:30	97.1	225.1	91.9	135.3	224.0	94.2	105.2	214.6	87.0
3/31/20 17:45	92.9	230.0	91.9	139.2	225.8	95.2	113.1	214.5	87.1
3/31/20 18:00	99.4	226.5	93.1	136.2	222.0	94.3	120.3	217.9	85.9
3/31/20 18:15	95.1	228.3	92.1	127.6	222.1	93.3	140.6	214.7	86.1
3/31/20 18:30	98.7	225.2	90.8	141.4	222.2	92.6	123.8	220.2	85.7
3/31/20 18:45	98.8	229.2	90.2	119.7	225.3	91.2	156.9	215.5	87.5
3/31/20 19:00	88.9	227.7	89.7	122.5	218.4	92.6	165.7	209.7	88.1
3/31/20 19:15	91.5	228.5	89.6	132.6	221.9	92.1	172.7	211.2	87.9
3/31/20 19:30	85.7	233.4	88.6	123.7	218.6	91.5	172.9	205.6	87.7
3/31/20 19:45	91.8	231.2	88.5	140.8	214.9	91.5	165.4	205.8	85.8
3/31/20 20:00	92.8	227.9	88.8	127.9	217.6	90.4	185.5	201.2	84.8
3/31/20 20:15	111.9	217.9	88.3	121.6	214.4	89.4	200.7	198.8	84.7

3/31/2020 9:00	B-51			B-66			B-82		
4/1/2020 8:15	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)
3/31/20 20:30	95.8	226.6	87.0	145.4	210.6	90.4	196.2	206.1	82.4
3/31/20 20:45	83.7	223.7	86.4	140.9	200.7	91.0	185.2	203.5	82.3
3/31/20 21:00	123.8	211.2	88.3	128.5	210.5	87.2	208.0	206.6	82.3
3/31/20 21:15	120.5	214.3	87.7	123.4	215.1	88.0	199.4	206.5	82.8
3/31/20 21:30	106.2	210.8	87.6	129.4	212.4	86.9	181.1	208.7	81.5
3/31/20 21:45	136.4	212.1	89.7	126.3	217.3	84.8	224.6	205.4	82.8
3/31/20 22:00	129.3	212.2	88.5	117.8	212.2	85.9	226.3	204.0	84.1
3/31/20 22:15	124.7	209.3	88.0	126.2	213.4	86.0	194.7	208.0	82.4
3/31/20 22:30	108.4	211.8	86.8	126.3	207.9	87.8	158.6	214.6	78.9
3/31/20 22:45	137.5	213.1	87.7	122.8	211.9	83.6	188.8	206.3	80.5
3/31/20 23:00	124.8	215.7	84.6	116.9	206.1	85.7	210.1	197.8	82.5
3/31/20 23:15	135.1	217.6	82.7	98.6	194.3	85.8	224.0	200.5	82.6
3/31/20 23:30	125.3	221.8	81.6	97.3	196.8	84.2	221.8	204.5	82.2
3/31/20 23:45	143.4	217.7	82.8	105.9	193.2	83.1	203.9	206.3	81.5
4/1/20 0:00	139.1	219.6	81.2	93.1	200.5	81.7	184.8	209.6	80.7
4/1/20 0:15	130.8	220.6	79.4	98.2	191.0	81.7	194.1	206.2	81.1
4/1/20 0:30	120.5	221.4	78.6	106.3	196.8	81.8	230.6	202.7	81.7
4/1/20 0:45	121.9	219.5	78.5	116.9	196.8	81.3	215.1	204.4	80.5
4/1/20 1:00	108.7	226.1	77.5	107.3	199.9	81.2	178.0	208.4	80.0
4/1/20 1:15	119.1	221.0	76.6	108.7	203.0	79.7	181.8	210.1	79.0
4/1/20 1:30	129.0	215.5	76.7	108.1	199.6	79.7	214.8	203.1	79.1
4/1/20 1:45	130.4	215.7	77.3	98.4	195.9	79.8	208.9	203.0	79.1
4/1/20 2:00	120.6	220.4	76.2	106.1	197.1	79.9	216.0	205.5	79.1
4/1/20 2:15	123.0	219.0	75.7	99.9	202.7	79.3	202.5	205.6	78.5
4/1/20 2:30	129.5	217.3	75.7	101.3	194.3	78.0	201.1	205.7	77.8
4/1/20 2:45	129.5	218.4	75.6	97.5	199.1	77.6	179.1	210.7	76.8
4/1/20 3:00	124.6	216.6	74.9	95.5	194.7	77.8	198.9	207.3	77.2
4/1/20 3:15	135.4	216.7	75.4	109.3	199.8	78.5	213.8	202.1	77.7
4/1/20 3:30	136.7	216.9	77.8	108.6	196.5	76.4	216.8	203.2	76.5
4/1/20 3:45	140.0	215.7	77.9	105.4	199.3	75.4	187.4	210.7	75.1
4/1/20 4:00	137.5	214.9	76.9	98.4	196.1	75.5	192.1	209.4	75.7
4/1/20 4:15	130.3	216.3	76.8	103.4	191.8	76.5	213.1	203.3	76.2
4/1/20 4:30	127.5	214.3	76.1	99.3	195.6	75.7	191.0	206.8	75.0
4/1/20 4:45	125.4	219.4	74.5	105.8	187.3	75.6	203.2	207.1	75.0
4/1/20 5:00	138.5	212.2	77.3	121.1	203.3	75.5	198.6	204.8	74.4
4/1/20 5:15	134.3	214.0	77.7	121.3	204.3	77.5	182.3	200.9	73.1
4/1/20 5:30	121.3	212.5	77.2	125.2	209.1	77.5	172.4	203.0	72.9
4/1/20 5:45	113.3	214.3	77.1	114.0	207.2	78.6	169.2	204.8	72.6
4/1/20 6:00	91.0	227.0	76.6	116.4	207.4	79.3	178.8	202.7	73.8
4/1/20 6:15	94.8	224.9	76.6	127.4	207.6	79.9	166.7	202.4	72.6
4/1/20 6:30	88.1	230.3	78.0	121.8	216.7	78.6	170.1	203.6	73.9
4/1/20 6:45	94.5	230.6	77.9	121.1	218.8	79.5	169.0	208.5	74.3
4/1/20 7:00	103.5	229.2	78.6	124.3	220.8	78.8	166.6	208.8	74.2
4/1/20 7:15	102.1	229.1	78.6	127.4	220.9	78.9	164.3	206.7	74.1
4/1/20 7:30	103.5	228.9	78.6	122.7	220.9	78.5	163.4	206.8	74.1
4/1/20 7:45	104.4	228.7	78.7	125.5	219.3	78.4	161.7	207.6	73.3
4/1/20 8:00	90.3	228.6	77.3	121.2	216.5	78.9	174.9	206.8	74.4
4/1/20 8:15	78.0	232.6	74.0	121.0	223.8	79.4	161.3	205.5	75.2