

**Smithers Pellet Limited Partnership
Smithers, BC
Permit 6099**

April 16, 2024

Our Job Number: ME2425-013

Report Author: Matt McCall
McCall Environmental



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April 30, 2024

Smithers Pellet Limited Partnership
1723 Dahlie Rd
PO Box 699
Smithers BC
V0J 2N0

Attention: Joel Martens/Wayne Kooy
RE: Air Emission Testing April 16, 2024
RA-6099, ME2425-013

As requested our firm provided a series of air emission tests at your facility in Smithers, B.C. The purpose of these tests was to satisfy testing requirements as stated in your permit RA-6099.

Testing Parameters

- Total Particulate and Condensable Organics (4 Sources)
 - o State of Oregon Method

Key Personnel

- Report Generation: Matt McCall 250-542-5118
- Sr Field Tech: David Brandle 250-301-5712
- Plant Personnel: Joel Martens 250-847-1431

All stacks have been examined for cyclonic flow and determined to be tested as laminar in nature.

Test results are summarized immediately following this cover letter.

Lab analysis for condensable organic fractions was carried out by Element Labs in Surrey, B.C. A copy of their report is included in the Appendix of this report.

If you have any questions or concerns please don't hesitate to contact us at your earliest convenience.

Sincerely,

MCCALL ENVIRONMENTAL

Matt McCall

Summary of Test Results

Parameter	Average of Triplicate Tests					Permit	Prev Test
	Stack 1	Stack2	Stack 3	Stack 4	Average/ Comb		Apr 26-27/23
Test Date	16-Apr-24	16-Apr-24	16-Apr-24	16-Apr-24	N/A		N/A
Gas Temperature (°C)	29.9	32.4	34.0	36.7	33.3		33.41
% Moisture	1.83	2.40	2.65	2.24	2.28		2.68
Velocity (m/sec)	9.60	10.06	10.01	10.37	10.01		9.41
ACFM	62703	65699	65384	67717	261503		245914
Std. Dry Flow Rate (m ³ /sec)	27.19	28.08	27.73	28.59	111.59	33.00	101.94
Tot Part. Dry Basis ref. Cond. (mg/m ³)	84.33	85.55	33.90	87.28	72.86	15.00	6.85
Front Half Particulate (mg/m ³)	82.73	83.75	32.35	82.60	70.36		4.87
Back Half Condensibles (mg/m ³)	1.60	1.79	1.55	4.69	2.41		2.03
Mass Emission Rate (kg/hr)	8.25	8.65	3.38	8.98	29.26	7.67	2.51

* Note: ACFM, m³/sec, and kg/hr, (in bold), are combined as opposed to averaged.

* Standard reference conditions are on a dry basis, 20 deg C and pressure at sea level 29.92 inches Hg.

**Average Total Particulate across the four stacks is weighted against individual stack flow

Discussion of Test Results

Test results are outside of permit. The last time these sources were tested was in April of 2023. Test results are included in the summary table above for comparative purposes.

Field personnel didn't notice any abnormalities during testing. To the best of our knowledge the plant was operating normally during testing.

Plant production data is included in this report.

All stacks are non-cyclonic and are tested with standard testing methodology.

**Pinnacle Pellet
 Dryer1 Stack 1
 Smithers BC**

16-Apr-24

Permit Number: RA-6099

AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	86 ° F	30 ° C
Moisture Content (by volume):	1.83 %	
Average Stack Gas Velocity:	31.5 ft/sec	9.6 m/sec
Total Actual Gas Flow Rate:	62703 ACFM	
Dry Gas flow Rate at Reference Conditions:	57604 SCFM	27.2 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.037 gr/ft ³	84.33 mg/m ³
Front Half Particulate	0.036 gr/ft ³	82.7 mg/m ³
Back Half Condensibles	0.001 gr/ft ³	1.6 mg/m ³
Mass Emission Rate	18.19 lbs/hr	8.25 kg/hr

SUMMARY OF AIR EMISSION TESTS

TEST 1:

Gas Temperature:	86 ° F	30 ° C
Moisture Content (by volume):	2.1 %	
Average Stack Gas Velocity:	31.5 ft/sec	9.6 m/sec
Total Actual Gas Flow Rate:	62807 ACFM	
Dry Gas flow Rate at Reference Conditions:	57528 SCFM	27.1 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.036 gr/ft ³	82.8 mg/m ³
Front Half Particulate	.035 gr/ft ³	81.2 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.6 mg/m ³
Mass Emission Rate	17.83 lbs/hr	8.09 kg/hr

TEST 2:

Gas Temperature:	86 ° F	30 ° C
Moisture Content (by volume):	1.5 %	
Average Stack Gas Velocity:	31.4 ft/sec	9.6 m/sec
Total Actual Gas Flow Rate:	62416 ACFM	
Dry Gas flow Rate at Reference Conditions:	57533 SCFM	27.2 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.037 gr/ft ³	84.3 mg/m ³
Front Half Particulate	.036 gr/ft ³	82.7 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.6 mg/m ³
Mass Emission Rate	18.17 lbs/hr	8.24 kg/hr

TEST 3:

Gas Temperature:	85 ° F	30 ° C
Moisture Content (by volume):	1.9 %	
Average Stack Gas Velocity:	31.6 ft/sec	9.6 m/sec
Total Actual Gas Flow Rate:	62887 ACFM	
Dry Gas flow Rate at Reference Conditions:	57752 SCFM	27.3 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.038 gr/ft ³	85.9 mg/m ³
Front Half Particulate	.037 gr/ft ³	84.3 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.6 mg/m ³
Mass Emission Rate	18.58 lbs/hr	8.43 kg/hr

DATA FOR TESTS 1 TO 3

Client: Pinnacle Pellet
Plant Location: Smithers BC
Process: Dryer1 Stack 1
Permit Number: RA-6099
Job Number: ME2425-013
Pollution Control Permit: 15.0 mg/m3 49.5 m3/sec
Number of Tests: 3 tests
Minutes per Point: 2.5 minutes

Filter Number:
Date of Test:
Start Time:
Stop Time:
On-line Sampling Time:
Testing Personnel:
Sampler Model:
Barometric Pressure("Hg):
Static Pressure("H₂O):
%CO₂:
%O₂:
%CO:
%N₂:
Diameter of Nozzle(inches):
Meter Factor:
Type-S Pitot Tube Coefficient:
Cross Sectional Area of Stack(ft²):
Impinger Condensate(g):
Weight of Moisture in Silica Gel(g):
Weight of Filter Particulate(g):
Weight of Probe Washings(g):
Weight of Impinger Content Organic(g):
Total Weight of Particulate(g):

TEST 1	TEST 2	TEST 3
I48	I49	I50
16-Apr-24	16-Apr-24	16-Apr-24
8:44	9:55	11:06
9:46	10:57	12:08
60	60	60
NA/CB	NA/CB	NA/CB
980	980	980
28.96	28.96	28.96
-0.20	-0.20	-0.20
0.0	0.0	0.0
21.0	21.0	21.0
0.0	0.0	0.0
79.0	79.0	79.0
0.280	0.280	0.280
1.0027	1.0027	1.0027
0.84182	0.84182	0.84182
33.18	33.18	33.18
18	12	17
1.8	1.9	1.9
0.0008	0.0003	0.0001
0.1005	0.1023	0.1072
0.0020	0.0020	0.0020
0.1033	0.1046	0.1093

Sampling Data for - TEST 1
Pinnacle Pellet
Dryer1 Stack 1
Smithers BC

16-Apr-24

SAMPLE POINT	VELOCITY HEAD ("H ₂ O)	ORIFICE PRESSURE ("H ₂ O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft ³)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
A-12	0.28	1.48	45	45	89	33.10	1.04
A-11	0.27	1.44	49	45	88	34.95	1.01
A-10	0.27	1.45	55	46	89	36.73	1.01
A-9	0.28	1.51	58	48	88	38.51	0.99
A-8	0.28	1.52	62	49	87	40.30	1.00
A-7	0.29	1.58	65	50	87	42.11	0.98
A-6	0.29	1.59	69	51	86	43.93	0.97
A-5	0.30	1.65	71	52	86	45.74	0.95
A-4	0.31	1.71	73	52	85	47.55	0.98
A-3	0.31	1.72	74	54	85	49.46	0.98
A-2	0.30	1.66	75	55	86	51.37	0.97
A-1	0.30	1.66	76	56	86	53.24	0.99
B-12	0.28	1.56	77	57	86	55.14	1.00
B-11	0.27	1.51	79	58	86	57.00	0.96
B-10	0.28	1.56	80	59	87	58.76	0.99
B-9	0.29	1.63	82	61	86	60.60	0.96
B-8	0.30	1.69	83	63	86	62.43	0.99
B-7	0.30	1.69	85	64	86	64.35	0.99
B-6	0.31	1.75	85	65	85	66.29	1.01
B-5	0.31	1.76	86	66	85	68.30	1.01
B-4	0.30	1.70	86	66	85	70.32	0.98
B-3	0.30	1.71	87	67	84	72.25	1.01
B-2	0.29	1.65	88	68	84	74.24	1.01
B-1	0.29	1.65	89	68	85	76.19	1.00
						78.12	

Sampling Data for - TEST 2
Pinnacle Pellet
Dryer1 Stack 1
Smithers BC

16-Apr-24

SAMPLE POINT	VELOCITY HEAD ("H ₂ O)	ORIFICE PRESSURE ("H ₂ O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft ³)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
B-12	0.28	1.57	72	72	86	78.61	0.99
B-11	0.27	1.52	78	72	85	80.47	0.99
B-10	0.28	1.59	84	73	86	82.31	0.99
B-9	0.28	1.60	89	73	86	84.20	0.98
B-8	0.29	1.66	90	74	86	86.09	0.99
B-7	0.29	1.66	91	74	86	88.02	0.99
B-6	0.29	1.66	92	74	86	89.96	0.97
B-5	0.30	1.72	93	75	86	91.87	0.95
B-4	0.31	1.78	93	76	87	93.77	0.97
B-3	0.30	1.72	94	76	87	95.74	0.98
B-2	0.29	1.67	95	76	86	97.69	0.99
B-1	0.29	1.67	96	77	86	99.64	1.01
A-12	0.27	1.56	96	77	85	101.63	0.98
A-11	0.28	1.62	97	78	85	103.50	0.99
A-10	0.28	1.62	98	78	85	105.42	0.99
A-9	0.29	1.68	99	79	85	107.35	0.99
A-8	0.29	1.68	100	80	86	109.32	1.00
A-7	0.30	1.74	100	81	86	111.30	0.98
A-6	0.31	1.80	101	81	87	113.28	0.96
A-5	0.31	1.80	102	82	87	115.25	0.99
A-4	0.29	1.69	103	82	87	117.29	0.98
A-3	0.29	1.69	104	83	86	119.24	1.00
A-2	0.28	1.64	104	83	86	121.24	0.98
A-1	0.27	1.58	105	84	86	123.16	1.00
						125.10	

Sampling Data for - TEST 3

16-Apr-24

Pinnacle Pellet

Dryer1 Stack 1

Smithers BC

SAMPLE POINT	VELOCITY HEAD ("H ₂ O)	ORIFICE PRESSURE ("H ₂ O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft ³)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
A-12	0.27	1.58	86	86	86	26.75	0.98
A-11	0.28	1.66	95	88	85	28.61	0.99
A-10	0.29	1.73	98	89	84	30.55	1.00
A-9	0.29	1.73	100	89	84	32.54	0.99
A-8	0.3	1.79	101	89	85	34.51	1.01
A-7	0.31	1.85	103	90	85	36.57	1.02
A-6	0.31	1.86	104	90	85	38.68	1.04
A-5	0.3	1.80	104	89	84	40.84	1.00
A-4	0.3	1.80	105	90	85	42.87	1.00
A-3	0.3	1.80	105	90	85	44.91	1.02
A-2	0.29	1.74	105	89	85	46.99	0.97
A-1	0.29	1.74	105	89	85	48.94	0.99
B-12	0.27	1.61	104	89	86	50.93	1.00
B-11	0.28	1.67	105	90	86	52.86	0.99
B-10	0.30	1.79	105	90	86	54.82	1.02
B-9	0.31	1.85	104	89	86	56.90	1.03
B-8	0.30	1.79	104	89	86	59.02	1.03
B-7	0.30	1.79	104	89	86	61.11	1.03
B-6	0.31	1.86	105	89	85	63.20	1.02
B-5	0.30	1.80	105	90	85	65.32	1.03
B-4	0.29	1.73	105	90	86	67.41	0.99
B-3	0.28	1.67	105	90	86	69.40	0.99
B-2	0.28	1.67	105	90	87	71.36	0.99
B-1	0.28	1.67	106	90	87	73.31	1.01
						75.30	



Pinnacle Pellet
 Dryer1 Stack 1
 Pinnacle Pellet

Data for <i>TEST 1</i>		OVERALL ISOKINETICS - TEST 1 0.991	
Delta P:	0.292 "H ₂ O	Us avg:	31.55 ft/sec
Delta H:	1.618	ACFM:	62807 ft ³ /min
Tm avg:	525.5 °R	SDCFM:	57528 ft ³ /min
Ts avg:	546.1 °R	Vm std:	44.08 ft ³
Bwo:	0.021	Vm corr:	45.14 ft ³
Md:	28.84	Vm:	45.02 ft ³
Ms:	28.62	MF:	1.0027
Pb:	28.96 "Hg	PCON:	82.76 mg/m ³
Pm:	29.08 "Hg	ERAT:	8.09 kg/hr
Ps:	28.95 "Hg		

Data for <i>TEST 2</i>		OVERALL ISOKINETICS - TEST 2 0.985	
Delta P:	0.289 "H ₂ O	Us avg:	31.35 ft/sec
Delta H:	1.663	ACFM:	62416 ft ³ /min
Tm avg:	546.2 °R	SDCFM:	57533 ft ³ /min
Ts avg:	546.0 °R	Vm std:	43.80 ft ³
Bwo:	0.015	Vm corr:	46.62 ft ³
Md:	28.84	Vm:	46.49 ft ³
Ms:	28.68	MF:	1.0027
Pb:	28.96 "Hg	PCON:	84.33 mg/m ³
Pm:	29.08 "Hg	ERAT:	8.24 kg/hr
Ps:	28.95 "Hg		

Data for <i>TEST 3</i>		OVERALL ISOKINETICS - TEST 3 1.006	
Delta P:	0.293 "H ₂ O	Us avg:	31.59 ft/sec
Delta H:	1.749	ACFM:	62887 ft ³ /min
Tm avg:	556.1 °R	SDCFM:	57752 ft ³ /min
Ts avg:	545.4 °R	Vm std:	44.94 ft ³
Bwo:	0.019	Vm corr:	48.68 ft ³
Md:	28.84	Vm:	48.55 ft ³
Ms:	28.63	MF:	1.0027
Pb:	28.96 "Hg	PCON:	85.89 mg/m ³
Pm:	29.09 "Hg	ERAT:	8.43 kg/hr
Ps:	28.95 "Hg		

**Pinnacle Pellet
 Dryer1 Stack 2
 Smithers BC**

16-Apr-24

Permit Number: RA-6099

AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	90 ° F	32 ° C
Moisture Content (by volume):	2.40 %	
Average Stack Gas Velocity:	33.0 ft/sec	10.1 m/sec
Total Actual Gas Flow Rate:	65699 ACFM	
Dry Gas flow Rate at Reference Conditions:	59506 SCFM	28.1 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.037 gr/ft ³	85.5 mg/m ³
Front Half Particulate	0.037 gr/ft ³	83.8 mg/m ³
Back Half Condensibles	0.001 gr/ft ³	1.8 mg/m ³
Mass Emission Rate	19.06 lbs/hr	8.65 kg/hr

SUMMARY OF AIR EMISSION TESTS

TEST 1:

Gas Temperature:	90 ° F	32 ° C
Moisture Content (by volume):	2.3 %	
Average Stack Gas Velocity:	33.1 ft/sec	10.1 m/sec
Total Actual Gas Flow Rate:	65938 ACFM	
Dry Gas flow Rate at Reference Conditions:	59849 SCFM	28.2 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.032 gr/ft ³	72.2 mg/m ³
Front Half Particulate	.031 gr/ft ³	70.4 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.8 mg/m ³
Mass Emission Rate	16.18 lbs/hr	7.34 kg/hr

TEST 2:

Gas Temperature:	90 ° F	32 ° C
Moisture Content (by volume):	3.1 %	
Average Stack Gas Velocity:	33.1 ft/sec	10.1 m/sec
Total Actual Gas Flow Rate:	65866 ACFM	
Dry Gas flow Rate at Reference Conditions:	59288 SCFM	28.0 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.035 gr/ft ³	80.6 mg/m ³
Front Half Particulate	.034 gr/ft ³	78.9 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.8 mg/m ³
Mass Emission Rate	17.91 lbs/hr	8.12 kg/hr

TEST 3:

Gas Temperature:	91 ° F	33 ° C
Moisture Content (by volume):	1.8 %	
Average Stack Gas Velocity:	32.8 ft/sec	10.0 m/sec
Total Actual Gas Flow Rate:	65294 ACFM	
Dry Gas flow Rate at Reference Conditions:	59381 SCFM	28.0 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.045 gr/ft ³	103.8 mg/m ³
Front Half Particulate	.045 gr/ft ³	102.0 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.8 mg/m ³
Mass Emission Rate	23.09 lbs/hr	10.47 kg/hr

DATA FOR TESTS 1 TO 3

Client: Pinnacle Pellet
Plant Location: Smithers BC
Process: Dryer1 Stack 2
Permit Number: RA-6099
Job Number:
Pollution Control Permit: 15.0 mg/m3 49.5 m3/sec
Number of Tests: 3 tests
Minutes per Point: 2.5 minutes

Filter Number:
Date of Test:
Start Time:
Stop Time:
On-line Sampling Time:
Testing Personnel:
Sampler Model:
Barometric Pressure("Hg):
Static Pressure("H₂O):
%CO₂:
%O₂:
%CO:
%N₂:
Diameter of Nozzle(inches):
Meter Factor:
Type-S Pitot Tube Coefficient:
Cross Sectional Area of Stack(ft²):
Impinger Condensate(g):
Weight of Moisture in Silica Gel(g):
Weight of Filter Particulate(g):
Weight of Probe Washings(g):
Weight of Impinger Content Organic(g):
Total Weight of Particulate(g):

TEST 1	TEST 2	TEST 3
I61	I78	I79
16-Apr-24	16-Apr-24	16-Apr-24
8:48	10:04	11:15
9:50	11:06	12:17
60	60	60
NA/CB	NA/CB	NA/CB
1021	1021	1021
28.96	28.96	28.96
-0.23	-0.23	-0.23
0.0	0.0	0.0
21.0	21.0	21.0
0.0	0.0	0.0
79.0	79.0	79.0
0.260	0.260	0.260
1.0175	1.0175	1.0175
0.83829	0.83829	0.83829
33.18	33.18	33.18
18	25	13
2.1	1.7	2.2
0.0002	0.0003	0.0003
0.0789	0.0887	0.1114
0.0020	0.0020	0.0020
0.0811	0.0910	0.1137

Sampling Data for - *TEST 1*
 Pinnacle Pellet
 Dryer1 Stack 2
 Smithers BC

16-Apr-24

SAMPLE POINT	VELOCITY HEAD ("H ₂ O)	ORIFICE PRESSURE ("H ₂ O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft ³)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
A-12	0.28	1.43	48	48	87	80.37	0.98
A-11	0.27	1.37	52	46	88	81.86	0.96
A-10	0.29	1.48	55	50	89	83.29	0.99
A-9	0.30	1.54	58	49	89	84.83	1.01
A-8	0.30	1.55	63	50	89	86.42	1.00
A-7	0.31	1.61	65	52	89	88.01	0.98
A-6	0.31	1.61	67	54	90	89.60	1.01
A-5	0.33	1.72	70	56	89	91.24	1.09
A-4	0.33	1.74	73	61	89	93.08	0.96
A-3	0.36	1.90	74	59	88	94.71	0.95
A-2	0.38	2.01	78	60	89	96.40	0.96
A-1	0.38	2.02	81	63	89	98.15	1.01
B-12	0.27	1.44	83	65	90	100.01	1.07
B-11	0.28	1.49	80	67	90	101.67	0.97
B-10	0.29	1.55	82	68	90	103.21	1.04
B-9	0.31	1.66	85	70	89	104.89	0.96
B-8	0.31	1.67	86	72	89	106.50	1.06
B-7	0.32	1.73	87	74	89	108.29	0.97
B-6	0.36	1.94	88	75	90	109.95	0.97
B-5	0.35	1.89	89	76	92	111.71	0.97
B-4	0.34	1.83	89	76	91	113.46	0.99
B-3	0.36	1.95	90	77	91	115.22	0.95
B-2	0.36	1.95	91	79	92	116.96	0.98
B-1	0.35	1.89	92	80	93	118.76	1.04
						120.63	

Sampling Data for - TEST 2
Pinnacle Pellet
Dryer1 Stack 2
Smithers BC

16-Apr-24

SAMPLE POINT	VELOCITY HEAD ("H ₂ O)	ORIFICE PRESSURE ("H ₂ O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft ³)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
B-12	0.27	1.44	78	78	92	21.27	1.03
B-11	0.28	1.51	82	80	91	22.87	1.00
B-10	0.28	1.51	84	80	91	24.47	0.99
B-9	0.30	1.63	87	84	92	26.05	0.97
B-8	0.33	1.79	90	85	92	27.66	0.93
B-7	0.35	1.91	92	82	89	29.29	1.05
B-6	0.30	2.08	95	83	90	31.18	1.08
B-5	0.36	1.98	97	86	89	32.99	1.02
B-4	0.35	1.93	98	88	89	34.88	1.05
B-3	0.35	1.93	100	87	91	36.79	0.97
B-2	0.36	1.99	101	88	90	38.55	0.97
B-1	0.35	1.95	103	92	89	40.35	1.01
A-12	0.28	1.56	104	92	90	42.20	1.01
A-11	0.29	1.62	105	93	90	43.87	0.98
A-10	0.30	1.67	105	94	90	45.52	0.99
A-9	0.30	1.68	106	95	90	47.22	1.00
A-8	0.34	1.90	106	96	90	48.93	1.01
A-7	0.36	2.01	107	96	90	50.77	1.03
A-6	0.34	1.91	107	97	89	52.70	1.03
A-5	0.34	1.91	108	97	89	54.59	1.04
A-4	0.32	1.80	109	98	89	56.49	1.03
A-3	0.32	1.80	111	98	90	58.32	1.02
A-2	0.31	1.75	112	98	90	60.13	1.00
A-1	0.31	1.75	112	99	90	61.88	0.99
						63.62	

Sampling Data for - TEST 3

16-Apr-24

 Pinnacle Pellet
 Dryer1 Stack 2
 Smithers BC

SAMPLE POINT	VELOCITY HEAD ("H ₂ O)	ORIFICE PRESSURE ("H ₂ O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft ³)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
A-12	0.3	1.63	97	97	92	63.88	0.95
A-11	0.27	1.48	95	95	90	65.51	1.00
A-10	0.28	1.53	94	94	89	67.14	1.00
A-9	0.29	1.59	94	94	89	68.80	0.93
A-8	0.29	1.60	95	95	88	70.36	1.04
A-7	0.31	1.70	95	95	89	72.11	0.96
A-6	0.32	1.76	96	96	90	73.78	0.93
A-5	0.32	1.76	96	96	91	75.42	0.94
A-4	0.33	1.81	96	96	93	77.08	0.92
A-3	0.35	1.92	96	97	92	78.73	1.01
A-2	0.37	2.03	97	96	91	80.59	0.96
A-1	0.38	2.09	96	97	90	82.41	1.01
B-12	0.26	1.43	97	97	91	84.36	1.01
B-11	0.27	1.48	97	97	92	85.98	0.98
B-10	0.28	1.54	97	98	92	87.57	1.02
B-9	0.29	1.60	98	98	91	89.26	0.99
B-8	0.30	1.65	98	99	92	90.94	1.02
B-7	0.31	1.71	99	99	93	92.69	0.95
B-6	0.33	1.82	99	100	93	94.35	0.92
B-5	0.35	1.93	100	100	93	96.02	0.98
B-4	0.35	1.93	100	100	92	97.84	0.98
B-3	0.36	1.98	100	100	94	99.67	0.97
B-2	0.35	1.93	101	101	94	101.50	1.01
B-1	0.32	1.77	102	102	93	103.38	0.99
						105.15	



Pinnacle Pellet
 Dryer1 Stack 2
 Pinnacle Pellet

Data for **TEST 1**

OVERALL ISOKINETICS - TEST 1 0.995

Delta P:	0.322 "H ₂ O	Us avg:	33.12 ft/sec
Delta H:	1.707	ACFM:	65938 ft ³ /min
Tm avg:	529.9 °R	SDCFM:	59849 ft ³ /min
Ts avg:	549.6 °R	Vm std:	39.68 ft ³
Bwo:	0.023	Vm corr:	40.96 ft ³
Md:	28.84	Vm:	40.26 ft ³
Ms:	28.59	MF:	1.0175
Pb:	28.96 "Hg	PCON:	72.17 mg/m ³
Pm:	29.09 "Hg	ERAT:	7.34 kg/hr
Ps:	28.94 "Hg		

Data for **TEST 2**

OVERALL ISOKINETICS - TEST 2 1.008

Delta P:	0.320 "H ₂ O	Us avg:	33.08 ft/sec
Delta H:	1.792	ACFM:	65866 ft ³ /min
Tm avg:	555.1 °R	SDCFM:	59288 ft ³ /min
Ts avg:	550.1 °R	Vm std:	39.85 ft ³
Bwo:	0.031	Vm corr:	43.09 ft ³
Md:	28.84	Vm:	42.35 ft ³
Ms:	28.51	MF:	1.0175
Pb:	28.96 "Hg	PCON:	80.64 mg/m ³
Pm:	29.09 "Hg	ERAT:	8.12 kg/hr
Ps:	28.94 "Hg		

Data for **TEST 3**

OVERALL ISOKINETICS - TEST 3 0.977

Delta P:	0.315 "H ₂ O	Us avg:	32.80 ft/sec
Delta H:	1.736	ACFM:	65294 ft ³ /min
Tm avg:	557.4 °R	SDCFM:	59381 ft ³ /min
Ts avg:	551.4 °R	Vm std:	38.67 ft ³
Bwo:	0.018	Vm corr:	41.99 ft ³
Md:	28.84	Vm:	41.27 ft ³
Ms:	28.64	MF:	1.0175
Pb:	28.96 "Hg	PCON:	103.83 mg/m ³
Pm:	29.09 "Hg	ERAT:	10.48 kg/hr
Ps:	28.94 "Hg		

**Pinnacle Pellet
 Dryer1 Stack 3
 Smithers BC**

16-Apr-24

Permit Number: RA-6099

AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	93 ° F	34 ° C
Moisture Content (by volume):	2.65 %	
Average Stack Gas Velocity:	32.8 ft/sec	10.0 m/sec
Total Actual Gas Flow Rate:	65384 ACFM	
Dry Gas flow Rate at Reference Conditions:	58753 SCFM	27.7 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.015 gr/ft ³	33.9 mg/m ³
Front Half Particulate	0.014 gr/ft ³	32.4 mg/m ³
Back Half Condensibles	0.001 gr/ft ³	1.6 mg/m ³
Mass Emission Rate	7.46 lbs/hr	3.38 kg/hr

SUMMARY OF AIR EMISSION TESTS

TEST 1:

Gas Temperature:	93 ° F	34 ° C
Moisture Content (by volume):	2.6 %	
Average Stack Gas Velocity:	32.9 ft/sec	10.0 m/sec
Total Actual Gas Flow Rate:	65478 ACFM	
Dry Gas flow Rate at Reference Conditions:	58926 SCFM	27.8 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.009 gr/ft ³	21.5 mg/m ³
Front Half Particulate	.009 gr/ft ³	19.9 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.6 mg/m ³
Mass Emission Rate	4.75 lbs/hr	2.15 kg/hr

TEST 2:

Gas Temperature:	94 ° F	34 ° C
Moisture Content (by volume):	2.7 %	
Average Stack Gas Velocity:	32.8 ft/sec	10.0 m/sec
Total Actual Gas Flow Rate:	65375 ACFM	
Dry Gas flow Rate at Reference Conditions:	58676 SCFM	27.7 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.015 gr/ft ³	35.5 mg/m ³
Front Half Particulate	.015 gr/ft ³	33.9 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.5 mg/m ³
Mass Emission Rate	7.79 lbs/hr	3.53 kg/hr

TEST 3:

Gas Temperature:	93 ° F	34 ° C
Moisture Content (by volume):	2.7 %	
Average Stack Gas Velocity:	32.8 ft/sec	10.0 m/sec
Total Actual Gas Flow Rate:	65298 ACFM	
Dry Gas flow Rate at Reference Conditions:	58657 SCFM	27.7 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.020 gr/ft ³	44.8 mg/m ³
Front Half Particulate	.019 gr/ft ³	43.2 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.6 mg/m ³
Mass Emission Rate	9.83 lbs/hr	4.46 kg/hr

DATA FOR TESTS 1 TO 3

Client: Pinnacle Pellet
Plant Location: Smithers BC
Process: Dryer1 Stack 3
Permit Number: RA-6099
Job Number:
Pollution Control Permit: 15.0 mg/m3 49.5 m3/sec
Number of Tests: 3 tests
Minutes per Point: 2.5 minutes

Filter Number:
Date of Test:
Start Time:
Stop Time:
On-line Sampling Time:
Testing Personnel:
Sampler Model:
Barometric Pressure("Hg):
Static Pressure("H₂O):
%CO₂:
%O₂:
%CO:
%N₂:
Diameter of Nozzle(inches):
Meter Factor:
Type-S Pitot Tube Coefficient:
Cross Sectional Area of Stack(ft²):
Impinger Condensate(g):
Weight of Moisture in Silica Gel(g):
Weight of Filter Particulate(g):
Weight of Probe Washings(g):
Weight of Impinger Content Organic(g):
Total Weight of Particulate(g):

TEST 1	TEST 2	TEST 3
I80	I81	I82
16-Apr-24	16-Apr-24	16-Apr-24
12:28	13:38	14:50
13:30	14:40	15:52
60	60	60
CB/NA	CB/NA	CB/NA
980	980	980
28.96	28.96	28.96
-0.27	-0.27	-0.27
0.0	0.0	0.0
21.0	21.0	21.0
0.0	0.0	0.0
79.0	79.0	79.0
0.280	0.280	0.280
1.0027	1.0027	1.0027
0.84182	0.84182	0.84182
33.18	33.18	33.18
24	25	25
1.7	1.5	1.8
0.0009	0.0013	0.0002
0.0247	0.0425	0.0555
0.0020	0.0020	0.0020
0.0276	0.0458	0.0577

Sampling Data for - TEST 1
Pinnacle Pellet
Dryer1 Stack 3
Smithers BC

16-Apr-24

SAMPLE POINT	VELOCITY HEAD ("H ₂ O)	ORIFICE PRESSURE ("H ₂ O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft ³)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
A-12	0.33	1.82	72	72	90	76.30	1.02
A-11	0.32	1.77	75	71	90	78.37	1.01
A-10	0.33	1.83	79	71	91	80.39	1.01
A-9	0.32	1.78	84	71	92	82.45	1.01
A-8	0.30	1.67	86	71	92	84.47	0.97
A-7	0.30	1.67	88	72	93	86.35	0.97
A-6	0.31	1.73	89	72	92	88.25	0.99
A-5	0.31	1.73	89	72	93	90.21	0.98
A-4	0.32	1.79	90	73	93	92.16	1.02
A-3	0.33	1.85	91	73	93	94.22	1.01
A-2	0.32	1.80	91	74	92	96.30	1.02
A-1	0.29	1.63	92	74	92	98.37	0.97
B-12	0.33	1.85	93	75	93	100.24	0.99
B-11	0.32	1.80	94	75	93	102.28	0.99
B-10	0.32	1.80	94	76	94	104.30	1.01
B-9	0.31	1.74	95	76	94	106.36	0.99
B-8	0.30	1.68	95	76	95	108.35	0.98
B-7	0.30	1.69	96	76	94	110.28	0.98
B-6	0.30	1.69	97	77	94	112.22	1.00
B-5	0.31	1.75	97	77	94	114.20	1.02
B-4	0.33	1.87	98	77	93	116.24	0.98
B-3	0.31	1.75	98	78	93	118.28	0.98
B-2	0.30	1.70	98	78	93	120.25	0.97
B-1	0.29	1.64	99	78	93	122.17	0.99
						124.09	

Sampling Data for - TEST 2
Pinnacle Pellet
Dryer1 Stack 3
Smithers BC

16-Apr-24

SAMPLE POINT	VELOCITY HEAD ("H ₂ O)	ORIFICE PRESSURE ("H ₂ O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft ³)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
B-12	0.33	1.83	78	76	94	24.57	1.02
B-11	0.32	1.78	81	77	94	26.65	1.01
B-10	0.33	1.83	83	78	95	28.68	1.02
B-9	0.31	1.73	86	78	95	30.77	0.99
B-8	0.31	1.73	87	79	95	32.74	0.98
B-7	0.30	1.68	88	80	94	34.70	0.99
B-6	0.30	1.68	89	80	95	36.64	0.98
B-5	0.31	1.73	89	79	95	38.56	1.01
B-4	0.31	1.73	90	80	96	40.57	1.02
B-3	0.32	1.80	91	80	94	42.60	1.02
B-2	0.31	1.74	91	81	94	44.68	1.02
B-1	0.28	1.58	92	81	93	46.73	0.99
A-12	0.29	1.64	93	81	93	48.62	1.01
A-11	0.31	1.75	95	81	93	50.58	1.02
A-10	0.31	1.76	96	81	93	52.63	1.03
A-9	0.33	1.88	97	81	92	54.70	1.00
A-8	0.34	1.93	98	82	93	56.78	1.01
A-7	0.32	1.82	98	82	93	58.91	1.02
A-6	0.30	1.70	99	83	94	61.00	0.95
A-5	0.30	1.70	100	83	94	62.89	1.02
A-4	0.31	1.77	101	83	94	64.92	1.01
A-3	0.32	1.83	101	84	93	66.97	0.98
A-2	0.30	1.71	102	84	93	68.99	1.00
A-1	0.30	1.71	102	85	94	70.98	1.03
						73.03	

Sampling Data for - TEST 3

16-Apr-24

Pinnacle Pellet

Dryer1 Stack 3

Smithers BC

SAMPLE POINT	VELOCITY HEAD ("H ₂ O)	ORIFICE PRESSURE ("H ₂ O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft ³)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
A-12	0.32	1.77	83	83	91	73.33	1.02
A-11	0.33	1.83	86	84	92	75.39	1.01
A-10	0.33	1.83	89	84	93	77.47	1.01
A-9	0.32	1.79	95	85	93	79.55	0.98
A-8	0.3	1.68	98	85	92	81.56	1.02
A-7	0.31	1.74	101	85	92	83.60	1.01
A-6	0.31	1.75	102	86	92	85.65	1.02
A-5	0.3	1.70	103	86	91	87.72	1.03
A-4	0.3	1.69	103	86	93	89.78	1.02
A-3	0.32	1.80	104	87	93	91.83	0.98
A-2	0.32	1.80	104	87	94	93.87	1.01
A-1	0.3	1.69	105	87	95	95.95	0.98
B-12	0.29	1.63	105	88	95	97.91	0.97
B-11	0.30	1.69	105	88	95	99.82	1.03
B-10	0.31	1.75	106	88	94	101.88	1.01
B-9	0.31	1.75	106	88	94	103.94	1.02
B-8	0.33	1.86	106	89	94	106.02	1.01
B-7	0.33	1.86	105	89	94	108.15	1.01
B-6	0.32	1.81	106	89	94	110.28	1.00
B-5	0.31	1.76	106	90	93	112.36	1.01
B-4	0.31	1.76	107	90	93	114.43	1.01
B-3	0.30	1.70	107	91	93	116.50	0.99
B-2	0.29	1.64	107	91	94	118.49	0.98
B-1	0.29	1.64	106	91	93	120.44	0.98
						122.39	



Pinnacle Pellet
 Dryer1 Stack 3
 Pinnacle Pellet

Data for <i>TEST 1</i>		OVERALL ISOKINETICS - TEST 1 0.995	
Delta P:	0.312 "H ₂ O	Us avg:	32.89 ft/sec
Delta H:	1.751	ACFM:	65478 ft ³ /min
Tm avg:	542.6 °R	SDCFM:	58926 ft ³ /min
Ts avg:	552.8 °R	Vm std:	45.33 ft ³
Bwo:	0.026	Vm corr:	47.92 ft ³
Md:	28.84	Vm:	47.79 ft ³
Ms:	28.56	MF:	1.0027
Pb:	28.96 "Hg	PCON:	21.50 mg/m ³
Pm:	29.09 "Hg	ERAT:	2.15 kg/hr
Ps:	28.94 "Hg		

Data for <i>TEST 2</i>		OVERALL ISOKINETICS - TEST 2 1.006	
Delta P:	0.311 "H ₂ O	Us avg:	32.84 ft/sec
Delta H:	1.752	ACFM:	65375 ft ³ /min
Tm avg:	546.8 °R	SDCFM:	58676 ft ³ /min
Ts avg:	553.9 °R	Vm std:	45.62 ft ³
Bwo:	0.027	Vm corr:	48.59 ft ³
Md:	28.84	Vm:	48.46 ft ³
Ms:	28.55	MF:	1.0027
Pb:	28.96 "Hg	PCON:	35.46 mg/m ³
Pm:	29.09 "Hg	ERAT:	3.53 kg/hr
Ps:	28.94 "Hg		

Data for <i>TEST 3</i>		OVERALL ISOKINETICS - TEST 3 1.004	
Delta P:	0.310 "H ₂ O	Us avg:	32.80 ft/sec
Delta H:	1.747	ACFM:	65298 ft ³ /min
Tm avg:	554.6 °R	SDCFM:	58657 ft ³ /min
Ts avg:	553.2 °R	Vm std:	45.53 ft ³
Bwo:	0.027	Vm corr:	49.19 ft ³
Md:	28.84	Vm:	49.06 ft ³
Ms:	28.55	MF:	1.0027
Pb:	28.96 "Hg	PCON:	44.75 mg/m ³
Pm:	29.09 "Hg	ERAT:	4.46 kg/hr
Ps:	28.94 "Hg		

**Pinnacle Pellet
 Dryer1 Stack 4
 Smithers BC**

16-Apr-24

Permit Number: RA-6099

AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	98 ° F	37 ° C
Moisture Content (by volume):	2.24 %	
Average Stack Gas Velocity:	34.0 ft/sec	10.4 m/sec
Total Actual Gas Flow Rate:	67717 ACFM	
Dry Gas flow Rate at Reference Conditions:	60586 SCFM	28.6 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.038 gr/ft ³	87.3 mg/m ³
Front Half Particulate	0.036 gr/ft ³	82.6 mg/m ³
Back Half Condensibles	0.002 gr/ft ³	4.7 mg/m ³
Mass Emission Rate	19.80 lbs/hr	8.98 kg/hr

SUMMARY OF AIR EMISSION TESTS

TEST 1:

Gas Temperature:	99 ° F	37 ° C
Moisture Content (by volume):	2.4 %	
Average Stack Gas Velocity:	34.2 ft/sec	10.4 m/sec
Total Actual Gas Flow Rate:	67997 ACFM	
Dry Gas flow Rate at Reference Conditions:	60695 SCFM	28.6 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.031 gr/ft ³	72.0 mg/m ³
Front Half Particulate	.030 gr/ft ³	69.4 mg/m ³
Back Half Condensibles	.001 gr/ft ³	2.6 mg/m ³
Mass Emission Rate	16.38 lbs/hr	7.43 kg/hr

TEST 2:

Gas Temperature:	99 ° F	37 ° C
Moisture Content (by volume):	1.6 %	
Average Stack Gas Velocity:	33.9 ft/sec	10.3 m/sec
Total Actual Gas Flow Rate:	67390 ACFM	
Dry Gas flow Rate at Reference Conditions:	60600 SCFM	28.6 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.038 gr/ft ³	87.6 mg/m ³
Front Half Particulate	.037 gr/ft ³	84.1 mg/m ³
Back Half Condensibles	.002 gr/ft ³	3.5 mg/m ³
Mass Emission Rate	19.88 lbs/hr	9.02 kg/hr

TEST 3:

Gas Temperature:	97 ° F	36 ° C
Moisture Content (by volume):	2.7 %	
Average Stack Gas Velocity:	34.0 ft/sec	10.4 m/sec
Total Actual Gas Flow Rate:	67764 ACFM	
Dry Gas flow Rate at Reference Conditions:	60463 SCFM	28.5 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.045 gr/ft ³	102.2 mg/m ³
Front Half Particulate	.041 gr/ft ³	94.3 mg/m ³
Back Half Condensibles	.003 gr/ft ³	7.9 mg/m ³
Mass Emission Rate	23.15 lbs/hr	10.50 kg/hr

DATA FOR TESTS 1 TO 3

Client: Pinnacle Pellet
Plant Location: Smithers BC
Process: Dryer1 Stack 4
Permit Number: RA-6099
Job Number:
Pollution Control Permit: 15.0 mg/m3 49.5 m3/sec
Number of Tests: 3 tests
Minutes per Point: 2.5 minutes

Filter Number:
Date of Test:
Start Time:
Stop Time:
On-line Sampling Time:
Testing Personnel:
Sampler Model:
Barometric Pressure("Hg):
Static Pressure("H₂O):
%CO₂:
%O₂:
%CO:
%N₂:
Diameter of Nozzle(inches):
Meter Factor:
Type-S Pitot Tube Coefficient:
Cross Sectional Area of Stack(ft²):
Impinger Condensate(g):
Weight of Moisture in Silica Gel(g):
Weight of Filter Particulate(g):
Weight of Probe Washings(g):
Weight of Impinger Content Organic(g):
Total Weight of Particulate(g):

TEST 1	TEST 2	TEST 3
I83	I84	I85
16-Apr-24	16-Apr-24	16-Apr-24
12:47	13:56	15:06
13:49	14:58	16:08
60	60	60
CB/NA	CB/NA	CB/NA
1021	1021	1021
28.96	28.96	28.96
-0.22	-0.22	-0.22
0.0	0.0	0.0
21.0	21.0	21.0
0.0	0.0	0.0
79.0	79.0	79.0
0.260	0.260	0.260
1.0175	1.0175	1.0175
0.83829	0.83829	0.83829
33.18	33.18	33.18
19	12	22
2.0	2.1	1.9
0.0009	0.0011	0.0025
0.0797	0.0943	0.1043
0.0030	0.0040	0.0090
0.0836	0.0994	0.1158

Sampling Data for - TEST 1
Pinnacle Pellet
Dryer1 Stack 4
Smithers BC

16-Apr-24

SAMPLE POINT	VELOCITY HEAD ("H ₂ O)	ORIFICE PRESSURE ("H ₂ O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft ³)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
A-12	0.31	1.63	74	74	98	6.00	1.00
A-11	0.34	1.81	75	74	92	7.65	0.99
A-10	0.35	1.86	78	76	96	9.38	1.00
A-9	0.36	1.92	82	75	96	11.16	1.00
A-8	0.34	1.81	84	76	95	12.96	1.00
A-7	0.33	1.76	86	77	96	14.71	1.06
A-6	0.35	1.87	88	77	96	16.55	1.00
A-5	0.34	1.82	89	78	98	18.34	1.01
A-4	0.35	1.87	90	78	98	20.13	1.00
A-3	0.35	1.87	90	78	99	21.92	1.02
A-2	0.32	1.71	91	79	99	23.75	1.07
A-1	0.29	1.55	92	79	100	25.58	1.02
B-12	0.32	1.72	91	80	100	27.25	1.00
B-11	0.33	1.76	92	80	101	28.96	0.99
B-10	0.35	1.87	93	81	101	30.69	0.97
B-9	0.35	1.87	94	82	101	32.44	1.02
B-8	0.34	1.82	94	82	101	34.27	0.99
B-7	0.36	1.93	95	83	100	36.03	0.99
B-6	0.34	1.83	96	84	99	37.85	0.98
B-5	0.34	1.84	96	85	99	39.60	1.02
B-4	0.35	1.88	97	84	101	41.43	1.04
B-3	0.35	1.88	97	85	102	43.31	1.03
B-2	0.32	1.73	98	86	101	45.18	1.04
B-1	0.30	1.62	98	86	101	46.99	1.05
						48.76	

Sampling Data for - TEST 2
Pinnacle Pellet
Dryer1 Stack 4
Smithers BC

16-Apr-24

SAMPLE POINT	VELOCITY HEAD ("H ₂ O)	ORIFICE PRESSURE ("H ₂ O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft ³)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
B-12	0.30	1.63	92	92	98	49.50	0.97
B-11	0.33	1.79	95	92	98	51.14	0.92
B-10	0.34	1.85	98	92	99	52.77	0.94
B-9	0.36	1.96	99	92	99	54.48	0.96
B-8	0.35	1.91	99	92	98	56.27	0.97
B-7	0.34	1.86	100	92	98	58.05	1.01
B-6	0.35	1.91	100	92	99	59.89	0.96
B-5	0.35	1.91	101	92	99	61.65	0.97
B-4	0.33	1.80	102	92	99	63.44	0.98
B-3	0.32	1.74	102	92	100	65.20	1.06
B-2	0.30	1.64	103	93	100	67.06	1.05
B-1	0.29	1.58	103	93	100	68.85	1.05
A-12	0.31	1.69	103	93	100	70.61	1.05
A-11	0.34	1.86	104	93	100	72.43	0.98
A-10	0.35	1.92	104	93	98	74.22	0.96
A-9	0.35	1.93	104	94	98	76.00	1.00
A-8	0.35	1.92	105	94	98	77.86	0.99
A-7	0.36	1.98	106	94	99	79.69	0.97
A-6	0.33	1.65	105	95	98	81.52	0.99
A-5	0.34	1.87	106	95	99	83.31	1.01
A-4	0.34	1.87	106	95	99	85.15	1.00
A-3	0.32	1.77	107	96	98	86.98	0.98
A-2	0.31	1.71	107	96	98	88.73	1.02
A-1	0.30	1.66	108	97	98	90.52	1.03
						92.30	

Sampling Data for - TEST 3

16-Apr-24

 Pinnacle Pellet
 Dryer1 Stack 4
 Smithers BC

SAMPLE POINT	VELOCITY HEAD ("H ₂ O)	ORIFICE PRESSURE ("H ₂ O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft ³)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
A-12	0.32	1.78	96	98	99	93.16	1.04
A-11	0.34	1.89	98	96	97	94.97	0.99
A-10	0.34	1.90	99	95	96	96.75	0.99
A-9	0.36	2.02	100	95	95	98.54	0.99
A-8	0.35	1.96	101	96	95	100.38	0.96
A-7	0.34	1.90	102	96	96	102.15	1.00
A-6	0.33	1.85	103	96	96	103.96	1.02
A-5	0.35	1.96	104	97	96	105.78	0.97
A-4	0.34	1.92	105	97	95	107.57	0.96
A-3	0.34	1.91	105	98	96	109.32	0.99
A-2	0.31	1.82	106	98	96	111.12	1.02
A-1	0.3	1.68	106	99	97	112.90	1.06
B-12	0.33	1.86	106	99	97	114.71	1.01
B-11	0.33	1.86	107	100	98	116.52	1.01
B-10	0.35	1.96	106	99	99	118.34	0.96
B-9	0.36	2.02	107	99	98	120.12	1.00
B-8	0.35	1.97	108	100	98	121.99	0.97
B-7	0.35	1.97	108	100	97	123.78	0.94
B-6	0.33	1.86	108	100	97	125.53	0.98
B-5	0.32	1.80	108	99	97	127.30	1.04
B-4	0.33	1.87	109	100	96	129.15	0.96
B-3	0.30	1.70	110	101	97	130.88	0.95
B-2	0.33	1.87	109	101	97	132.51	1.03
B-1	0.34	1.92	109	100	98	134.37	0.98
						136.16	



Pinnacle Pellet
 Dryer1 Stack 4
 Pinnacle Pellet

Data for TEST 1		OVERALL ISOKINETICS - TEST 1 1.013	
Delta P:	0.336 "H₂O	Us avg:	34.16 ft/sec
Delta H:	1.801	ACFM:	67997 ft³/min
Tm avg:	545.0 °R	SDCFM:	60695 ft³/min
Ts avg:	558.8 °R	Vm std:	40.99 ft³
Bwo:	0.024	Vm corr:	43.51 ft³
Md:	28.84	Vm:	42.76 ft³
Ms:	28.58	MF:	1.0175
Pb:	28.96 "Hg	PCON:	72.03 mg/m³
Pm:	29.09 "Hg	ERAT:	7.43 kg/hr
Ps:	28.94 "Hg		

Data for TEST 2		OVERALL ISOKINETICS - TEST 2 0.993	
Delta P:	0.331 "H₂O	Us avg:	33.85 ft/sec
Delta H:	1.809	ACFM:	67390 ft³/min
Tm avg:	557.9 °R	SDCFM:	60600 ft³/min
Ts avg:	558.8 °R	Vm std:	40.07 ft³
Bwo:	0.016	Vm corr:	43.55 ft³
Md:	28.84	Vm:	42.80 ft³
Ms:	28.66	MF:	1.0175
Pb:	28.96 "Hg	PCON:	87.59 mg/m³
Pm:	29.09 "Hg	ERAT:	9.02 kg/hr
Ps:	28.94 "Hg		

Data for TEST 3		OVERALL ISOKINETICS - TEST 3 0.993	
Delta P:	0.335 "H₂O	Us avg:	34.04 ft/sec
Delta H:	1.885	ACFM:	67764 ft³/min
Tm avg:	561.6 °R	SDCFM:	60463 ft³/min
Ts avg:	556.8 °R	Vm std:	40.00 ft³
Bwo:	0.027	Vm corr:	43.75 ft³
Md:	28.84	Vm:	43.00 ft³
Ms:	28.54	MF:	1.0175
Pb:	28.96 "Hg	PCON:	102.23 mg/m³
Pm:	29.10 "Hg	ERAT:	10.50 kg/hr
Ps:	28.94 "Hg		

Air Emission Monitoring Procedure **State Of Oregon Method 7**

Particulate Sampling (Napp-Baldwin Model 31 Sampler)

Particulate sampling and gas velocity measurements were conducted using a Napp-Baldwin Model 31 stack sampler in accordance with the methods specified in State of Oregon Method 7 (See Figure 1). The State of Oregon Method 7 sampling train is a modified Method 5 sample train with the addition of a non heated filter in-between the third and fourth impinger.

The air discharge was sampled isokinetically at the centroid of a series of equal area segments across the duct or stack. The stack gas velocity and temperature were recorded during the sample collection period with a calibrated pitot tube and thermocouple mounted on the sampling probe. The sample was delivered from the probe to a cyclone and a filter holder containing a 110mm Type A glass fiber filter. The gas sample was then drawn in through a series of four glass impingers which condensed and absorbed the water from the gas. A leakless vacuum pump carried the sampled gas through a dry gas test meter where the volume, temperature, and pressure were measured; and finally through a flow indicating orifice which allowed for the rapid adjustment to isokinetic sampling rates.

At the end of each test, the probe interior, cyclone and connecting tubing from the probe to the filter housing were rinsed with distilled water and acetone. These washings were evaporated to dryness and the resulting solids were weighed. The weight of the cyclone flask and the filter was used together with the weight of solids in the washings to calculate the filterable particulate concentration. The moisture content of the stack gas was determined from the quantity of water condensed in the impingers and absorbed in the silica gel.

Condensable Organics are collected in the impinger train and a rinsing procedure is employed utilizing solvents such as Hexane or Methylene Chloride in between tests. The rinsings and condensate are forwarded to a laboratory accredited to perform the analysis in accordance with the method and a copy of that report is included in the Appendix of any report issued.

O₂, CO₂, CO (where applicable)

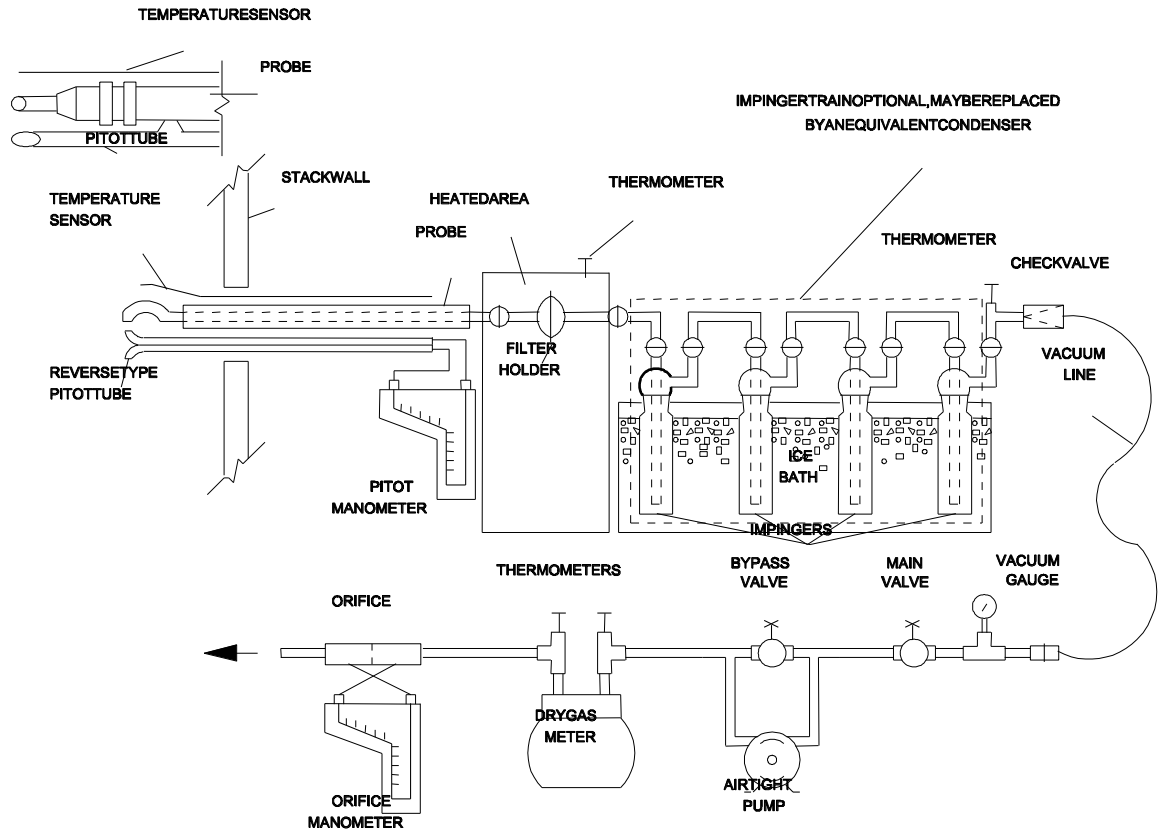
O₂, CO₂, and CO were found using either Fuji Analytical Analyzer by means of infrared and paramagnetic technology (EPA 3A) or by fyrite (EPA Method 3).

NO_x (where applicable)

NO_x was found using and API Model 252 NO_x analyzer that utilizes chemiluminescent technology. Stack gas was Samples were taken over a minimum period of three hours.

VOC's (where applicable)

Hydrocarbons were measured in accordance with EPA method 25A. Samples were drawn in one hour test runs using a total hydrocarbon analyzer that utilizes Flame Ionization Technology.



Modified EPA Method 5 Diagram (State of Oregon Method 7)- Figure 1

GENERAL CALCULATIONS

Carry out calculations, retaining at least one extra decimal figure beyond that of the acquired data. Round off figures after the final calculation. Other forms of the equations may be used as long as they give equivalent results.

Nomenclature.

- A_n = Cross-sectional area of nozzle, m^2 (ft^2).
- B_{ws} = Water vapor in the gas stream, proportion by volume.
- C_a = Acetone blank residue concentration, mg/g .
- c_s = Concentration of particulate matter in stack gas, dry basis, corrected to standard conditions, $g/dscm$ ($g/dscf$).
- I = Percent of isokinetic sampling.
- L_a = Maximum acceptable leakage rate for either a pretest leak check or for a leak check following a component change; equal to $0.00057 m^3/min$ ($0.02 cfm$) or 4 percent of the average sampling rate, whichever is less.
- L_i = Individual leakage rate observed during the leak check conducted prior to the " i^{th} " component change ($i = 1, 2, 3...n$), m^3/min (cfm).
- L_p = Leakage rate observed during the post-test leak check, m^3/min (cfm).
- m_a = Mass of residue of acetone after evaporation, mg .
- m_n = Total amount of particulate matter collected, mg .
- M_w = Molecular weight of water, $18.0 g/g\text{-mole}$ ($18.0 lb/lb\text{-mole}$).
- P_{bar} = Barometric pressure at the sampling site, $mm\ Hg$ ($in. Hg$).
- P_s = Absolute stack gas pressure, $mm\ Hg$ ($in. Hg$).
- P_{std} = Standard absolute pressure, $760\ mm\ Hg$ ($29.92\ in. Hg$).
- R = Ideal gas constant, $0.06236 \frac{[(mmHg)(m^3)]}{[(^{\circ}K)(g\text{-mole})]}$
 $\{21.85 \frac{[(in. Hg)(ft^3)]}{[(^{\circ}R)(lb\text{-mole})]}\}$.
- T_m = Absolute average DGM temperature (see Figure 5-2), $^{\circ}K$ ($^{\circ}R$).
- T_s = Absolute average stack gas temperature (see Figure 5-2), $^{\circ}K$ ($^{\circ}R$).
- T_{std} = Standard absolute temperature, $293^{\circ}K$ ($528^{\circ}R$).
- V_a = Volume of acetone blank, ml .
- V_{aw} = Volume of acetone used in wash, ml .
- V_{lc} = Total volume liquid collected in impingers and silica gel (see Figure 5-3), ml .
- V_m = Volume of gas sample as measured by dry gas meter, dcm (dcf).
- $V_{m(std)}$ = Volume of gas sample measured by the dry gas meter, corrected to standard conditions, $dscm$ ($dscf$).
- $V_{w(std)}$ = Volume of water vapor in the gas sample, corrected to standard conditions, scm (scf).
- v_s = Stack gas velocity, calculated by Method 2, Equation 2-9, using data obtained from Method 5, m/sec (ft/sec).
- W_a = Weight of residue in acetone wash, mg .
- Y = Dry gas meter calibration factor.
- ΔH = Average pressure differential across the orifice meter (see Figure 5-2), $mm\ H_2O$ ($in. H_2O$).
- ρ_a = Density of acetone, mg/ml (see label on bottle).
- ρ_w = Density of water, $0.9982\ g/ml$ ($0.002201\ lb/ml$).
- θ = Total sampling time, min .
- θ_1 = Sampling time interval, from the beginning of a run until the first component change, min .
- θ_i = Sampling time interval, between two successive component changes, beginning with the interval between the first and second changes, min .
- θ_p = Sampling time interval, from the final (n^{th}) component change until the end of the sampling run, min .
- 13.6 = Specific gravity of mercury.
- 60 = Sec/min.
- 100 = Conversion to percent.

Average Dry Gas Meter Temperature and Average Orifice Pressure Drop.

Dry Gas Volume. Correct the sample volume measured by the dry gas meter to standard conditions (20°C, 760 mm Hg or 68°F, 29.92 in. Hg) by using Equation 5-1.

$$V_{m(\text{std})} = V_m Y \left(\frac{T_{\text{std}}}{T_m} \right) \left[\frac{P_{\text{bar}} + \frac{\Delta H}{13.6}}{P_{\text{std}}} \right]$$

$$= K_1 V_m Y \frac{P_{\text{bar}} + \left(\frac{\Delta H}{13.6} \right)}{T_m}$$

Eq. 5-1

where:

$$K_1 = 0.3858 \text{ }^\circ\text{K/mm Hg for metric units,}$$

$$= 17.64 \text{ }^\circ\text{R/in. Hg for English units.}$$

NOTE: Equation 5-1 can be used as written unless leakage rate observed during any of the mandatory leak checks (i.e., the post-test leak check or leak checks conducted prior to component changes) exceeds L_a . If L_p or L_i exceeds L_a , Equation 5-1 must be modified as follows:

(a) Case I. No component changes made during sampling run. In this case, replace V_m in Equation 5-1 with the expression:

$$[V_m - (L_p - L_a) \theta]$$

(b) Case II. One or more component changes made during the sampling run. In this case, replace V_m in Equation 5-1 by the expression:

$$\left[V_m - (L_1 - L_a) \theta_1 - \sum_{i=2}^n (L_i - L_a) \theta_i - (L_p - L_a) \theta_p \right]$$

and substitute only for those leakage rates (L_i or L_p) which exceed L_a .

Volume of Water Vapor.

$$V_{w(\text{std})} = \frac{V_{lc} \rho_w R T_{\text{std}}}{M_w P_{\text{std}}} = K_2 V_{lc}$$

Eq. 5-2

where:

$$K_2 = 0.001333 \text{ m}^3/\text{ml for metric units,}$$

$$= 0.04707 \text{ ft}^3/\text{ml for English units.}$$

Moisture Content.

$$B_{ws} = \frac{V_{w(\text{std})}}{V_{m(\text{std})} + V_{w(\text{std})}} \quad \text{Eq. 5-3}$$

Acetone Blank Concentration.

$$C_a = \frac{m_a}{V_a \rho_a} \quad \text{Eq. 5-4}$$

Acetone Wash Blank.

$$W_a = C_a V_{aw} \rho_a \quad \text{Eq. 5-5}$$

Total Particulate Weight. Determine the total particulate matter catch from the sum of the weights obtained from Containers 1 and 2 less the acetone blank (see Figure 5-3).

Particulate Concentration.

$$C_s = (0.001 \text{ g/mg})(m_n / V_{m(\text{std})}) \quad \text{Eq. 5-6}$$

Conversion Factors:

<u>From</u>	<u>To</u>	<u>Multiply by</u>
scf	m ³	0.02832
g/ft ³	gr/ft ³	15.43
g/ft ³	lb/ft ³	2.205 x 10 ⁻³
g/ft ³	g/m ³	35.31

Isokinetic Variation.

Calculation from Raw Data.

$$I = \frac{100 T_s [K_3 V_{1c} + (V_m Y / T_m)(P_{\text{bar}} + \Delta H / 13.6)]}{60 \theta V_s P_s A_n} \quad \text{Eq. 5-7}$$

where:

$$\begin{aligned} K_3 &= 0.003454 [(\text{mm Hg})(\text{m}^3)]/[(\text{ml})(^\circ\text{K})] \text{ for metric units,} \\ &= 0.002669 [(\text{in. Hg})(\text{ft}^3)]/[(\text{ml})(^\circ\text{R})] \text{ for English units.} \end{aligned}$$

Calculation from Intermediate Values.

$$I = \frac{100 T_s V_{m(\text{std})} P_{\text{std}}}{60 T_{\text{std}} v_s \theta A_n P_s (1 - B_{\text{ws}})} \quad \text{Eq.5-8}$$

$$= \frac{K_4 T_s V_{m(\text{std})}}{P_s v_s A_n \theta (1 - B_{\text{ws}})}$$

where:

$K_4 = 4.320$ for metric units,

$= 0.09450$ for English units.

Acceptable Results. If 90 percent $\leq I \leq 110$ percent, the results are acceptable. If the PM results are low in comparison to the standard, and "I" is over 110 percent or less than 90 percent, the Administrator may opt to accept the results. Citation 4 in the Bibliography may be used to make acceptability judgments. If "I" is judged to unacceptable, reject the results, and repeat the test.

Average Stack Gas Velocity.

$$v_s = K_p C_p (\sqrt{\Delta p})_{\text{avg}} \sqrt{\frac{T_{s(\text{avg})}}{P_s M_s}}$$

Average Stack Gas Dry Volumetric Flow Rate.

$$Q_{\text{sd}} = 3,600(1 - B_{\text{ws}}) v_s A \frac{T_{\text{std}}}{T_{s(\text{avg})}} \frac{P_s}{P_{\text{std}}}$$

where:

- A = Cross-sectional area of stack, m² (ft²).
- B_{ws} = Water vapor in the gas stream (from Method 5 or Reference Method 4), proportion by volume.
- C_p = Pitot tube coefficient, dimensionless.
- K_p = Pitot tube constant,
- M_d = Molecular weight of stack gas, dry basis (see Section 3.6), g/gmole (lb/lb-mole).
- M_s = Molecular weight of stack gas, wet basis, g/g-mole (lb/lb-mole).

$$= M_d (1 - B_{\text{ws}}) + 18.0 B_{\text{ws}} \quad \text{Eq. 2-5}$$

- P_{bar} = Barometric pressure at measurement site, mm Hg (in. Hg).
- P_g = Stack static pressure, mm Hg (in. Hg).
- P_s = Absolute stack pressure, mm Hg (in. Hg),

$$= P_{\text{bar}} + P_g$$

- P_{std} = Standard absolute pressure, 760 mm Hg (29.92 in. Hg).
- Q_{sd} = Dry volumetric stack gas flow rate corrected to standard conditions, dsm³/hr (dscf/hr).
- t_s = Stack temperature, °C (°F).
- T_s = Absolute stack temperature, °K (°R).

Calibration Certificate for S-Type Pitot Tube

Date: 10-Jan-24 Barometric Pressure ("Hg): 29.9
Pitot I.D.: **107** Wind Tunnel Temperature ($^{\circ}$ F): 66.0
Nozzle: 0.250

Wind Velocity (ft/sec)	Ref.Pitot ("H ₂ O)	S-Type Pitot ("H ₂ O)	Pitot Factor
11.72	0.03161	0.04242	0.85459
26.28	0.15880	0.22190	0.83748
42.45	0.41433	0.57741	0.83863
58.04	0.77446	1.06033	0.84609
82.87	1.57900	2.18794	0.84102
98.54	2.23250	3.15269	0.83309

Average= 0.84182

Note: The new pitot tip should be installed so that the serial number engraved is aligned directly into the gas stream.

Calibrating Technician Signature:



Calibration Certificate for S-Type Pitot Tube

Date: 10-Jan-24 *Barometric Pressure ("Hg):* 30.05
Pitot I.D.: **140** *Wind Tunnel Temperature (°F):* 70.0
Nozzle: 0.250

<i>Wind Velocity (ft/sec)</i>	<i>Ref.Pitot ("H₂O)</i>	<i>S-Type Pitot ("H₂O)</i>	<i>Pitot Factor</i>
13.96	0.04470	0.05733	0.87412
19.79	0.08982	0.12082	0.85361
42.36	0.41144	0.58576	0.82971
59.59	0.81441	1.17118	0.82555
80.40	1.48260	2.12088	0.82773
101.66	2.37016	3.46311	0.81901

Average= 0.83829

Note: The new pitot tip should be installed so that the serial number engraved is aligned directly into the gas stream.

Calibrating Technician Signature:



**CALIBRATION CERTIFICATE
DRY GAS METER**

DATE: 10-Jan-24

CONSOLE MANUF.: NAPP MODEL 31

CONSOLE I.D.: C-980

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	64.0	64.0	64.0
P=Pres. Differential at WTM ("Hg)	0.0883	0.1471	0.2133
Pb= Atmospheric Pressure ("Hg)	27.95	27.95	27.95
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.6006	0.6006	0.6006
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	90.0	90.0	97.0
To= Dry Test Meter Outlet Temp. (oF.)	75.0	74.0	76.0
Ri= Initial Dry Test volume (ft3)	82.34	75.42	88.32
Rf= Final Dry Test Volume (ft3)	87.31	80.35	93.33
Vi= Initial Wet Test Volume (ft3)	0.0	0.0	0.0
Vf= Final Wet Test Volume (ft3)	5.000	5.000	5.000
Pw= Pb - (^P/13.59) "Hg	27.8617	27.8029	27.7367
Pd= Pb + (^H/13.59) "Hg	28.0236	28.0972	28.1708
Tw= Ta +460 (oR.)	524.0	524.0	524.0
Td= [(Ti + To)/2] + 460 (oR.)	542.5	542.0	546.5
Bw= Pv/Pb ("Hg)	0.0215	0.0215	0.0215
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
ated Y Value)(WTMF)	1.0054	1.0078	0.9950
Y (MEAN)(WTMF) =	1.0027		

N.R. MCCALL & ASSOCIATES LTD.

Calibrating Technician Signature:



ORIFICE METER CALIBRATION

DATE: January 10 /2024

CONSOLE I.D. C-980

	RUN 1	RUN 2	RUN 3
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	27.95	27.95	27.95
Y=gas meter factor	1.0054	1.0054	1.0078
Delta H=	0.5	1	1.5
Ri=int. gas meter vol.	94.3	97.2	0.8
Rf=final gas meter vol.	96.47	100.33	4.62
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.4363436	0.6293804	0.7699592
To=meter outlet Temp (oF)	75	76	77
Tm=meter out temp. (oR)	535	536	537
Pm=Pb + ^H	27.986792	28.0235835	28.0603753
SQRT(Tm/Pm*H/Md)	0.5744253	0.812585	0.99548398
Ko=orifice const.	0.7596176	0.774541	0.77345213

Ko MEAN = 0.7692036

Ko*4*144= 443.06127

McCALL ENVIRONMENTAL LTD.



Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: January 10 /2024

CONSOLE I.D. C-980

	RUN 4	RUN 5	RUN 6
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	27.95	27.95	27.95
Y=gas meter factor	1.0078	0.995	0.995
Delta H=	2	2.5	3
Ri=int. gas meter vol.	5.5	10.9	16.2
Rf=final gas meter vol.	9.87	15.72	21.51
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.8808172	0.95918	1.05669
Tm=meter out temp. (oF)	77	77	78
Tm=meter out temp. (oR.)	537	537	538
Pm=Pb + ^H	28.097167	28.133959	28.170751
SQRT(Tm/Pm*H/Md)	1.148733	1.2834825	1.4063739
Ko=orifice const.	0.7667728	0.7473261	0.7513578

Ko MEAN = 0.7551522

Ko*4*144= 434.96768

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:



**CALIBRATION CERTIFICATE
DRY GAS METER**

DATE: 09-Jan-24
 CONSOLE MANUF.: NAPP MODEL 31
 CONSOLE I.D.: C-1021

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	64.0	64.0	64.0
P=Pres. Differential at WTM ("Hg)	0.0669	0.1250	0.1839
Pb= Atmospheric Pressure ("Hg)	27.90	27.90	27.90
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.6006	0.6006	0.6006
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	81.0	83.0	86.0
To= Dry Test Meter Outlet Temp. (oF.)	72.0	69.0	70.0
Ri= Initial Dry Test volume (ft3)	73.67	66.93	80.43
Rf= Final Dry Test Volume (ft3)	78.52	71.76	85.27
Vi= Initial Wet Test Volume (ft3)	0.0	0.0	0.0
Vf= Final Wet Test Volume (ft3)	5.000	5.000	5.000
Pw= Pb - (^P/13.59) "Hg	27.8331	27.7750	27.7161
Pd= Pb + (^H/13.59) "Hg	27.9736	28.0472	28.1208
Tw= Ta +460 (oR.)	524.0	524.0	524.0
Td= [(Ti + To)/2] + 460 (oR.)	536.5	536.0	538.0
Bw= Pv/Pb ("Hg)	0.0215	0.0215	0.0215
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
(Calculated Y Value)(WTMF)	1.0196	1.0181	1.0149
Y (MEAN)(WTMF) =	1.0175		

MCCALL ENVIRONMENTAL

Calibrating Technician Signature:



ORIFICE METER CALIBRATION

DATE: 09-Jan-24

CONSOLE I.D. C-1021

	RUN 1	RUN 2	RUN 3
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	27.9	27.9	27.9
Y=gas meter factor	1.0196	1.0196	1.0181
Delta H=	0.5	1	1.5
Ri=int. gas meter vol.	91.2	93.6	97
Rf=final gas meter vol.	93.05	96.23	100.22
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.377252	0.5363096	0.6556564
To=meter outlet Temp (oF)	69	69	69
Tm=meter out temp. (oR)	529	529	529
Pm=Pb + ^H	27.936792	27.973584	28.010375
SQRT(Tm/Pm*H/Md)	0.5717061	0.8079826	0.9889225
Ko=orifice const.	0.6598705	0.6637638	0.6630008

Ko MEAN = 0.6622117

Ko*4*144= 381.43394

McCALL ENVIRONMENTAL LTD.



Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: 09-Jan-24

CONSOLE I.D. C-1021

	RUN 4	RUN 5	RUN 6
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	27.9	27.9	27.9
Y=gas meter factor	1.0181	1.0149	1.0149
Delta H=	2	2.5	3
Ri=int. gas meter vol.	1.1	5.7	10.5
Rf=final gas meter vol.	4.8	9.88	15.1
min. samp	5	5	5
$Q_m = Y(R_f - R_i) / \sqrt{T(FT^3/MIN)}$	0.753394	0.8484564	0.933708
To=meter outlet Temp (oF)	69	69	70
Tm=meter out temp. (oR)	529	529	530
$P_m = P_b + \Delta H$	28.047167	28.083959	28.120751
$SQRT(T_m / P_m * H / M_d)$	1.1411601	1.2750198	1.3971188
Ko=orifice const.	0.6602001	0.6654457	0.6683096

Ko MEAN = 0.6646518

$Ko * 4 * 144 = 382.83944$

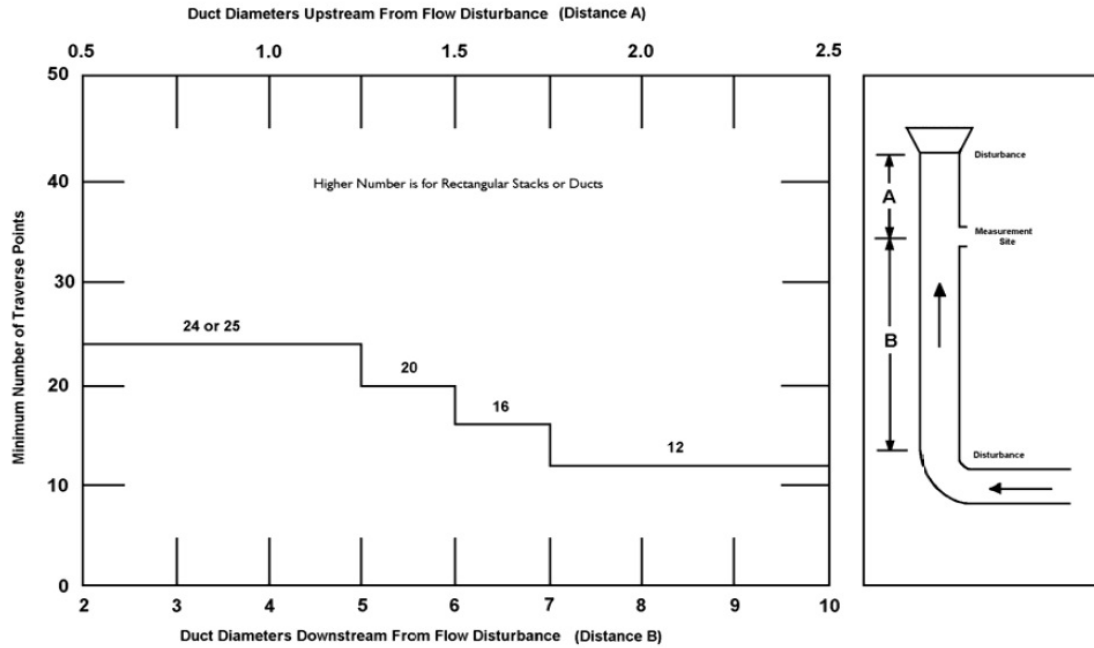
McCALL ENVIRONMENTAL LTD.



Calibrating Technician Signature:



Site Diagram & Sample Point Selection



Client: Pinnacle Pellet Smithers
 Source: Dryer Stackls 1-4
 Pollution Abatement Equipment:
 Duct Diameters Up (A): >2
 Duct Diameters Down (B): 4
 Area of Stack (ft): 33.18
 Stack Diameter (in): 78
 Zero (in): 4
 Number of Points: 24

Traverse Points (in):	
PT-1	1.64
PT-2	5.22
PT-3	9.21
PT-4	13.8
PT-5	19.5
PT-6	27.69
PT-7	50.31
PT-8	58.5
PT-9	64.19
PT-10	68.8
PT-11	70.7
PT-12	76.36

Cyclonic Angle: 5°



Smithers Pellet Limited Partnership

Production rate during stack test (April 16, 2024)

16.3 MT/hr

Average for the previous calendar month

15.2 MT/hr

90th percentile production rate

18.5 MT/hr

Average hourly dryer exit temperature during testing:

Included in report

Client Name: Drax Smelters
 Process: Dryer Stack 1
 Test Number: 1
 Date: Apr. 16/24
 Start Time: 844
 Finish Time: 946
 Starting Vol.: 300
 Final Vol.: 318
 Flask: I48
 Console: 980
 Stack Diameter: _____

BP 28.96
 DN 0.280
 CP 0.84182
 MF 1.0027
 Moist. 2%
 PM 29.07
 AS _____
 Ko 0.7551
 Pitot 107
 Port _____
 Static -0.20
 PS 28.95

CO ₂	O ₂	C	N ₂
0	21		

Duct Diameters
Up-Stream

 Duct Diameters
Downstream

 Mean Yaw Angle

 Start: .001 Finish: .003

Personnel: NA/CB
 Leakage Rate @ 15 inches

 Load: _____

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.28	1.48	45	45	89	33.10	3	270	10ED	
11	.27	1.44	49	45	88	34.95		↓	↓	
10	.27	1.45	55	46	89	36.73				
9	.28	1.51	58	48	88	38.51		↓	↓	
8	.28	1.52	62	49	87	40.30				
7	.29	1.58	68	50	87	42.11	3			
6	.29	1.59	69	51	86	43.93				
5	.30	1.65	71	52	86	45.74				
4	.31	1.71	73	52	85	47.55				
3	.31	1.72	74	54	85	49.46				
2	.30	1.66	75	55	86	51.37	3			
1	.30	1.66	76	56	86	53.24				
B-12	.28	1.56	77	57	86	55.14				
11	.27	1.51	79	58	86	57.00				
10	.28	1.56	80	59	87	58.76				
9	.29	1.63	82	61	86	60.60	4			
8	.30	1.69	83	63	86	62.43				
7	.30	1.69	85	64	86	64.35				
6	.31	1.75	85	65	85	66.29				
5	.31	1.76	86	66	85	68.30				
4	.30	1.70	86	66	85	70.32	4			
3	.30	1.71	87	67	84	72.25				
2	.29	1.65	88	68	84	74.24				
1	.29	1.65	89	68	85	76.19				
						78.12				

Client Name: Drax
Smithers
 Process: Dryer Stack 1
 Test Number: 2
 Date: Apr. 14/24
 Start Time: 951
 Finish Time: 1053
 Starting Vol.: 300
 Final Vol.: 312
 Flask: I49
 Console: 980
 Stack Diameter

BP 28.96
 DN 0.280
 CP 0.84182
 MF 1.0027
 Moist. 2%
 PM 29.07
 AS
 Ko 0.7551
 Pitot 107
 Port
 Static -0.20
 PS 28.95

CO ₂	O ₂	CO	N ₂
0	21		

Duct Diameters
Up-Stream
 Duct Diameters
Downstream
 Mean Yaw Angle
 Start: -002 Finish: 002

Personnel: NA/CB
 Leakage Rate @ 15 inches

Load:

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.28	1.57	72	72	86	78.61	3	276	ICED	
11	.27	1.52	78	72	85	80.47		↓	↓	
10	.28	1.59	84	73	86	82.31				
9	.28	1.60	89	73	86	84.20				
8	.29	1.66	90	74	86	86.09				
7	.29	1.66	91	74	86	88.02				
6	.29	1.66	92	74	86	89.96	3			
5	.30	1.72	93	75	86	91.87				
4	.31	1.78	93	76	87	93.77				
3	.30	1.72	94	76	87	95.74				
2	.29	1.67	95	76	86	97.69				
1	.29	1.67	96	77	86	99.64				
B-12	.27	1.56	96	77	85	101.63				
11	.28	1.62	97	78	85	103.50				
10	.28	1.62	98	78	85	105.42	3			
9	.29	1.68	99	79	85	107.35				
8	.29	1.68	100	80	86	109.32				
7	.30	1.74	100	81	86	111.30				
6	.31	1.80	101	81	87	113.28				
5	.31	1.80	102	82	87	115.25				
4	.29	1.69	103	82	87	117.29				
3	.29	1.69	104	83	86	119.24	3			
2	.28	1.64	104	83	86	121.24				
1	.27	1.58	105	84	86	123.16				
						125.10				

Client Name: Drax
Smithers
 Process: Dryer Stack 1
 Test Number: 3
 Date: Apr. 16/24
 Start Time 1102
 Finish Time 1204
 Starting Vol. 300
 Final Vol. 317
 Flask: I50
 Console: 980
 Stack Diameter

BP 28.96
 DN 0.280
 CP 0.84182
 MF 1.0027
 Moist. 1%
 PM 29.07
 AS
 Ko 0.7551
 Pitot 107
 Port
 Static -0.20
 PS 28.95

CO ₂	O ₂	CO	N ₂
0	21		

Duct Diameters
 Up-Stream

Duct Diameters
 Downstream

Personnel: NA/CB

Mean Yaw Angle

Leakage Rate @ 15 inches

Start: .002 Finish: .002

Load:

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.27	1.58	86	86	86	26.75	3	270	ICEP	
11	.28	1.66	95	88	85	28.61		↓	↓	
10	.29	1.73	98	89	84	30.55				
9	.29	1.73	100	89	84	32.54				
8	.30	1.79	101	89	85	34.51				
7	.31	1.85	103	90	85	36.57				
6	.31	1.86	104	90	85	38.68				
5	.30	1.80	104	89	84	40.84	3			
4	.30	1.80	105	90	85	42.87				
3	.30	1.80	105	90	85	44.91				
2	.29	1.74	105	89	85	46.99				
1	.29	1.74	105	89	85	48.94				
B-12	.27	1.61	104	89	86	50.93				
11	.28	1.67	105	90	86	52.86				
10	.30	1.79	105	90	86	54.82	4			
9	.31	1.85	104	89	86	56.90				
8	.30	1.79	104	89	86	59.02				
7	.30	1.79	104	89	86	61.11				
6	.31	1.86	105	89	85	63.20				
5	.30	1.80	105	90	85	65.32				
4	.29	1.73	105	90	86	67.41				
3	.28	1.67	105	90	86	69.40	4			
2	.28	1.67	105	90	87	71.36				
1	.28	1.67	106	90	87	73.31				
						75.30				

Client Name: Drax
Smithers
 Process: dryer stack 2
 Test Number: 1
 Date: Apr. 16/24
 Start Time: 848
 Finish Time: 950
 Starting Vol.: 300
 Final Vol.: 318
 Flask: I61
 Console: 1021
 Stack Diameter

BP 28.96
 DN 0.260
 CP 0.83829
 MF 1.0175
 Moist. 2%
 PM 29.07
 AS
 Ko 0.6646
 Pitot 140
 Port
 Static -0.23
 PS 28.94

CO ₂	O ₂	CO	N ₂
0	21		
0	21		
0	21		
0	21		

Duct Diameters
 Up-Stream
 Duct Diameters
 Downstream
 Mean Yaw Angle

Personnel: NA/CB

Leakage Rate @ 15 inches Start: .001 Finish: .001

Load:

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.28	1.43	48	48	87	80.37	2	270	ICED	
11	.27	1.37	52	46	88	81.86				
10	.29	1.48	55	50	89	83.29				
9	.30	1.54	58	49	89	84.83				
8	.30	1.55	63	50	89	86.42				
7	.31	1.61	65	52	89	88.01				
6	.31	1.61	68	54	90	89.60	2			
5	.33	1.72	70	56	89	91.24				
4	.33	1.74	73	61	89	93.08				
3	.36	1.90	74	59	88	94.71				
2	.38	2.01	78	60	89	96.40				
1	.38	2.02	81	63	89	98.15				
B-12	.27	1.44	83	65	90	100.01	2			
11	.28	1.49	80	67	90	101.67				
10	.29	1.55	82	68	90	103.21				
9	.31	1.66	85	70	89	104.89				
8	.31	1.67	86	72	89	106.50				
7	.32	1.73	87	74	89	108.29				
6	.36	1.94	88	75	90	109.95	2			
5	.35	1.89	89	76	90	111.71				
4	.34	1.83	89	76	91	113.46				
3	.36	1.95	90	77	91	115.22				
2	.30	1.95	91	79	92	116.96				
1	.35	1.89	92	80	93	118.76				
						120.63				

Client Name: Drax
Smithers
 Process: Dryer Stack 2
 Test Number: 2
 Date: Apr. 16/24
 Start Time: 1004
 Finish Time: 1106
 Starting Vol.: 300
 Final Vol.: 325
 Flask: I 78
 Console: 1021
 Stack Diameter: _____

BP 28.96
 DN 0.260
 CP 2.83829
 MF 1.0175
 Moist. 2%
 PM 29.07
 AS _____
 Ko 0.6446
 Pitot 140
 Port _____
 Static -0.23
 PS 28.94

CO ₂	O ₂	CO	N ₂
0	21		
0	21		
0	21		
0	21		

Duct Diameters
 Up-Stream _____
 Duct Diameters
 Downstream _____
 Mean Yaw Angle _____

Personnel: NA/CB

Leakage Rate @ 15 inches _____

Start: .005 Finish: .007

Load: _____

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.27	1.44	78	78	92	21.27	2	270	iced	
11	.28	1.51	82	80	91	22.87				
10	.28	1.51	84	80	91	24.47				
9	.30	1.63	87	84	92	26.05				
8	.33	1.79	90	85	92	27.66				
7	.35	1.91	92	82	89	29.29				
6	.38	2.08	95	83	90	31.10	1			
5	.36	1.98	97	86	89	32.99				
4	.35	1.93	98	88	89	34.88				
3	.35	1.93	100	87	91	36.79				
2	.36	1.99	101	88	90	38.55				
1	.35	1.95	103	92	89	40.35				
B-12	.28	1.56	104	92	90	42.20	1			
11	.29	1.62	105	93	90	43.87				
10	.30	1.67	105	94	90	45.52				
9	.30	1.68	106	95	90	47.22				
8	.34	1.90	106	96	90	48.93				
7	.36	2.01	107	96	89	50.77				
6	.34	1.91	107	97	89	52.70	1			
5	.34	1.91	108	97	89	54.59				
4	.32	1.80	109	98	89	56.49				
3	.32	1.80	111	98	90	58.32				
2	.31	1.75	112	98	90	60.13				
1	.31	1.75	112	99	90	61.88				
						63.62				

Client Name: Drax
Smithers
 Process: Dryer Stack 2
 Test Number: 13
 Date: April 16 2024
 Start Time: 1115
 Finish Time: 1217
 Starting Vol.: 300
 Final Vol.: 313
 Flask: I79
 Console: 1021
 Stack Diameter: _____

BP 28.96
 DN .760
 CP .83829
 MF 1,0175
 Moist. 3%
 PM 2907
 AS _____
 Ko .6646
 Pitot 140
 Port _____
 Static -123
 PS 2894

CO ₂	O ₂	CO	N ₂
0	21		
0	21		
0	21		
0	21		

Duct Diameters
Up-Stream

 Duct Diameters
Downstream

Personnel: CB NA

Mean Yaw Angle

Leakage Rate @ 15 inches

Start: .002 Finish: .004

Load:

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	.30	1.63	97	97	92	63.88	1	270	iced	
11	.27	1.48	100	95	90	65.51				
10	.28	1.53	101	94	89	67.14		↓	↓	
9	.29	1.59	103	94	89	68.80		↓	↓	
8	.29	1.60	104	95	88	70.36				
7	.31	1.70	105	95	89	72.11				
6	.32	1.76	106	96	90	73.78	1			
5	.32	1.76	107	96	91	75.42				
4	.33	1.81	107	96	93	77.08				
3	.35	1.92	108	97	92	78.73				
2	.37	2.03	107	96	91	80.59				
1	.38	2.09	108	97	90	82.41				
B12	.26	1.43	108	97	91	84.36	1			
11	.27	1.48	109	97	92	85.98				
10	.28	1.54	109	98	92	87.57				
9	.29	1.60	110	98	91	89.26				
8	.30	1.65	110	99	92	90.94				
7	.31	1.71	110	99	93	92.69				
6	.33	1.82	111	100	93	94.35	2			
5	.35	1.93	111	100	93	96.02				
4	.35	1.93	112	100	92	97.84				
3	.36	1.98	112	100	94	99.67				
2	.35	1.93	113	101	94	101.50				
1	.37	1.77	115	102	93	103.38				
						105.15				

Client Name: Drax
Smithers
 Process: Dryer Stack 3
 Test Number: 1
 Date: Apr. 16/24
 Start Time 12:28
 Finish Time 1:30
 Starting Vol. 300
 Final Vol. 324
 Flask: I80
 Console: 980
 Stack Diameter

BP 28.96
 DN 0.280
 CP 0.84182
 MF 1.0027
 Moist. 2%
 PM 29.07
 AS
 Ko 0.7551
 Pitot 107
 Port
 Static -0.27
 PS 28.96

CO ₂	O ₂	CO	N ₂
0	21		

Duct Diameters
 Up-Stream

Duct Diameters
 Downstream

Personnel: NA/CB

Mean Yaw Angle

Leakage Rate @ 15 inches

Start: .003 Finish: .002

Load:

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.33	1.82	72	72	90	76.30		270	ICED	
11	.32	1.77	75	71	90	78.37	4	↓	↓	
10	.33	1.83	79	71	91	80.39				
9	.32	1.78	84	71	92	82.45				
8	.30	1.67	86	71	92	84.47				
7	.30	1.67	88	72	93	86.35				
6	.31	1.73	89	72	92	88.25				
5	.31	1.73	89	72	93	90.21	4			
4	.32	1.79	90	73	93	92.16				
3	.33	1.85	91	73	93	94.22				
2	.32	1.80	91	74	92	96.30				
1	.29	1.63	92	74	92	98.37				
B-12	.33	1.85	93	75	93	100.24				
11	.32	1.80	94	75	93	102.28				
10	.32	1.80	94	76	94	104.30	4			
9	.31	1.74	95	76	94	106.36				
8	.30	1.68	95	76	95	108.35				
7	.30	1.69	96	76	94	110.28				
6	.30	1.69	97	77	94	112.22				
5	.31	1.75	97	77	94	114.20				
4	.33	1.87	98	77	93	116.24	4			
3	.31	1.75	98	78	93	118.28				
2	.30	1.70	98	78	93	120.25				
1	.29	1.64	99	78	93	122.17				
						124.09				

Client Name: Drax
Smithers
 Process: Dryer Stack 3
 Test Number: 2
 Date: Apr 16/24
 Start Time 138
 Finish Time 240
 Starting Vol. 300
 Final Vol. 325
 Flask: I81
 Console: 980
 Stack Diameter _____

BP 28.96
 DN 0.280
 CP 0.84182
 MF 1.0027
 Moist. 2%
 PM 29.07
 AS _____
 Ko 0.7551
 Pitot 107
 Port _____
 Static -0.27
 PS 28.96

CO ₂	O ₂	CO	N ₂
0	21		

Duct Diameters
 Up-Stream _____

Duct Diameters
 Downstream _____

Personnel: NA / CB

Mean Yaw Angle _____

Leakage Rate @ 15 inches _____

Start: .003 Finish: .000

Load: _____

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.33	1.83	78	76	94	24.57	4	270	ICED	
11	.32	1.78	81	77	94	26.65				
10	.33	1.83	83	78	95	28.68		↓	↓	
9	.31	1.73	86	78	95	30.77				
8	.31	1.73	87	79	95	32.74				
7	.30	1.68	88	80	94	34.70				
6	.30	1.68	89	80	95	36.64	4			
5	.31	1.73	89	79	95	38.56				
4	.31	1.73	90	80	96	40.57				
3	.32	1.80	91	80	94	42.60				
2	.31	1.74	91	81	94	44.68				
1	.28	1.58	92	81	93	46.73	5			
B-12	.29	1.64	93	81	93	48.62				
11	.31	1.75	95	81	93	50.58				
10	.31	1.76	96	81	93	52.63				
9	.33	1.88	97	82	92	54.70				
8	.34	1.93	98	82	93	56.78				
7	.32	1.82	98	83	93	58.91				
6	.30	1.70	99	83	94	61.06				
5	.30	1.70	100	83	94	62.89				
4	.31	1.77	101	84	94	64.92	5			
3	.32	1.83	101	84	93	66.97				
2	.30	1.71	102	85	93	68.99				
1	.30	1.71	102	85	94	70.98				
						73.03				

Client Name: Drax
Smithers
 Process: Dryer Stack 3
 Test Number: 3
 Date: Apr. 16/24
 Start Time: 250
 Finish Time: 352
 Starting Vol.: 300
 Final Vol.: 325
 Flask: I82
 Console: 980
 Stack Diameter

BP 28.96
 DN 0.280
 CP 0.84182
 MF 1.0027
 Moist. 3%
 PM 29.07
 AS
 Ko 0.7551
 Pitot 107
 Port
 Static -0.27
 PS 28.96

CO ₂	O ₂	CO	N ₂
0	21		

Duct Diameters
 Up-Stream
 Duct Diameters
 Downstream

Personnel: NA/CB

Mean Yaw Angle

Leakage Rate @ 15 inches Start: .004 Finish: .003

Load:

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.32	1.77	83	83	91	73.33	4	270	ICED	
11	.33	1.83	86	84	92	75.39		↓	↓	
10	.33	1.83	89	84	93	77.47		↓	↓	
9	.32	1.79	95	85	93	79.55				
8	.30	1.68	98	85	92	81.56				
7	.31	1.74	101	85	92	83.60				
6	.31	1.75	102	86	92	85.65				
5	.30	1.70	103	86	91	87.72				
4	.30	1.69	103	86	93	89.78	4			
3	.32	1.80	104	87	93	91.83				
2	.32	1.80	104	87	94	93.87				
1	.30	1.69	105	87	95	95.95				
B-12	.29	1.63	105	88	95	97.91				
11	.30	1.69	105	88	95	99.82				
10	.31	1.75	106	88	94	101.88				
9	.31	1.75	106	88	94	103.94				
8	.33	1.86	106	89	94	106.02	4			
7	.33	1.86	105	89	94	108.15				
6	.32	1.81	106	89	94	110.28				
5	.31	1.76	106	90	93	112.36				
4	.31	1.76	107	90	93	114.43				
3	.30	1.70	107	91	93	116.50	5			
2	.29	1.64	107	91	94	118.49				
1	.29	1.64	106	91	93	120.44				
						122.39				

Client Name: Draft Smithers
 Process: Draft Stack 4
 Test Number: 1
 Date: April 16 2024
 Start Time: 1247
 Finish Time: 149
 Starting Vol.: 300
 Final Vol.: 319
 Flask: 783
 Console: 1021
 Stack Diameter: _____

BP 28.96
 DN 0.260
 CP .83829
 MF 1.0175
 Moist. 2%
 PM 29.07
 AS _____
 Ko .6646
 Pitot 140
 Port _____
 Static -0.22
 PS 28.94

CO ₂	O ₂	CO	N ₂
0	21		
0	21		
0	21		
0	21		

Duct Diameters
Up-Stream

 Duct Diameters
Downstream

Personnel: CB NA

Mean Yaw Angle

Leakage Rate @ 15 inches

Start: 007 Finish: _____

Load:

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	.31	1.63	74	74	98	6.00	1	270	iced	
11	.34	1.81	75	74	92	7.65				
10	.35	1.86	78	76	96	9.38				
9	.36	1.92	82	75	96	11.16				
8	.34	1.81	84	76	95	12.96				
7	.33	1.76	86	77	96	14.71	1			
6	.35	1.87	88	77	96	16.55				
5	.34	1.82	89	78	98	18.34				
4	.35	1.87	90	78	98	20.13				
3	.35	1.87	90	78	99	21.92				
2	.32	1.71	91	79	99	23.75				
	.29	1.55	92	79	100	25.58				
B12	.32	1.72	91	80	100	27.25	1			
11	.33	1.76	92	80	101	28.96				
10	.35	1.87	93	81	101	30.69				
9	.35	1.87	94	82	101	32.44				
8	.34	1.82	94	82	101	34.27				
7	.36	1.93	95	83	100	36.03				
6	.34	1.83	96	84	99	37.85	1			
5	.34	1.84	96	85	99	39.60				
4	.35	1.88	97	84	101	41.43				
3	.35	1.88	97	85	102	43.31				
2	.32	1.73	98	86	101	45.18				
1	.30	1.62	98	86	101	46.99				
						48.76				

Client Name: Draft
Smithers
 Process: Dryer Stack 4
 Test Number: 2
 Date: April 16 2024
 Start Time: 156
 Finish Time: 258
 Starting Vol.: 300
 Final Vol.: 312
 Flask: 184
 Console: 1021
 Stack Diameter: _____

BP 28.96
 DN .280
 CP -.83829
 MF 1.0175
 Moist. 2%
 PM 29.07
 AS _____
 Ko 16646
 Pitot 140
 Port _____
 Static -122
 PS 28.94

CO ₂	O ₂	CO	N ₂
0	21		
0	21		
0	21		
0	21		

Duct Diameters
 Up-Stream _____
 Duct Diameters
 Downstream _____
 Mean Yaw Angle _____

Personnel: CB NA

Leakage Rate @ 15 inches Start: 1010 Finish: 1012

Load: _____

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	.30	1.63	92	92	98	49.50	2	270	100	
11	.33	1.79	95	92	98	51.14				
10	.34	1.85	98	92	99	52.77				
9	.36	1.96	99	92	99	54.48				
8	.35	1.91	99	92	98	56.27				
7	.34	1.86	100	92	98	58.05				
6	.35	1.91	100	92	99	59.89	2			
5	.35	1.91	101	92	99	61.65				
4	.33	1.80	102	92	99	63.44				
3	.32	1.74	102	92	100	65.20				
2	.30	1.64	103	93	100	67.06				
1	.29	1.58	103	93	100	68.85				
B12	.31	1.69	103	93	100	70.61	2			
11	.34	1.86	104	93	100	72.43				
10	.35	1.92	104	93	98	74.22				
9	.35	1.93	104	94	98	76.00				
8	.35	1.92	105	94	98	77.86				
7	.36	1.98	106	94	99	79.69				
6	.33	1.65	105	95	98	81.52	2			
5	.34	1.87	106	95	99	83.31				
4	.34	1.87	106	95	99	85.15				
3	.32	1.77	107	96	98	86.98				
2	.31	1.71	107	96	98	88.73				
1	.30	1.66	108	97	98	90.52				
						92.30				

Client Name: Delta Smithers
 Process: Dryer Stack 4
 Test Number: 3
 Date: April 16 2024
 Start Time: 306
 Finish Time: 408
 Starting Vol.: 300
 Final Vol.: 322
 Flask: 785
 Console: 1021
 Stack Diameter: _____

BP 28.96
 DN 1260
 CP .83829
 MF 1.0175
 Moist. 1%
 PM 29.07
 AS _____
 Ko .6646
 Pitot 140
 Port _____
 Static -.22
 PS 28.94

CO ₂	O ₂	CO	N ₂
0	21		
0	21		
0	21		
0	21		

Duct Diameters
 Up-Stream _____

Duct Diameters
 Downstream _____

Personnel: CB NA

Mean Yaw Angle _____

Leakage Rate @ 15 inches _____ Start: .008 Finish: .006

Load: _____

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	.32	1.78	96	98	99	93.16	2	270	162	
11	.34	1.89	98	96	97	94.97				
10	.34	1.90	99	95	96	96.75				
9	.36	2.02	100	95	95	98.54				
8	.35	1.96	101	96	95	100.38				
7	.34	1.90	102	96	96	102.15				
6	.33	1.85	103	96	96	103.96	2			
5	.35	1.96	104	97	96	105.78				
4	.34	1.92	105	97	95	107.57				
3	.34	1.91	105	98	96	109.32				
2	.31	1.82	106	98	96	111.12				
1	.30	1.68	106	99	97	112.90				
B12	.33	1.86	106	99	97	114.71	1			
11	.33	1.86	107	100	98	116.52				
10	.35	1.96	106	99	99	118.34				
9	.36	2.02	107	99	98	120.12				
8	.35	1.97	108	100	98	121.99				
7	.35	1.97	108	100	97	123.78				
6	.33	1.86	108	100	97	125.53	1			
5	.32	1.80	108	99	97	127.30				
4	.33	1.87	109	100	96	129.15				
3	.30	1.70	110	101	97	130.88				
2	.33	1.87	109	101	97	132.51				
1	.34	1.92	109	100	98	134.37				
						136.16				

Report Transmission Cover Page

Bill To: McCall Environmental 6733 Buchanan Road Coldstream, BC, Canada V1B 3C5	Project ID: Project Name: Drax Smithers Project Location: LSD: P.O.:	Lot ID: 1725866 Control Number: Date Received: Apr 18, 2024 Date Reported: Apr 22, 2024 Report Number: 2994222 Report Type: Final Report
Attn: Accounts Payable Sampled By: Company: McCall	Proj. Acct. code:	

Contact	Company	Address
Accounts Payable	McCall Environmental	6733 Buchanan Road Coldstream, BC V1B 3C5 Phone: (250) 542-5118 Fax: Email: invoicing@mccallenvironmental.net
<u>Delivery</u>	<u>Format</u>	<u>Deliverables</u>
Email - Merge	PDF	COC / Invoice
Matt McCall	McCall Environmental	6733 Buchanan Road Coldstream, BC V1B 3C5 Phone: (250) 542-5118 Fax: Email: matt@mccallenvironmental.net
<u>Delivery</u>	<u>Format</u>	<u>Deliverables</u>
Email - Merge	PDF	COA / COC
Email - Merge	PDF	COC / Test Report

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Analytical Report

Bill To: McCall Environmental 6733 Buchanan Road Coldstream, BC, Canada V1B 3C5	Project ID: Project Name: Drax Smithers Project Location: LSD: P.O.:	Lot ID: 1725866 Control Number: Date Received: Apr 18, 2024 Date Reported: Apr 22, 2024 Report Number: 2994222 Report Type: Final Report
Attn: Accounts Payable Sampled By: Company: McCall	Proj. Acct. code:	

Reference Number	1725866-1	1725866-2	1725866-3
Sample Date	Apr 16, 2024	Apr 16, 2024	Apr 16, 2024
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Filters I48 / Dryer Stack 1 Test 1 / 11.3 °C	Filters I49 / Dryer Stack 1 Test 2 / 11.3 °C	Filters I50 / Dryer Stack 1 Test 3 / 11.3 °C
Matrix	Water	Water	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents					
Oil and Grease	Total	mg/sample	<2	<2	<2
Volume	Sample volume	mL	314	307	310
pH adjustment	required prior to O&G extraction		Yes	Yes	Yes

Analytical Report

Bill To: McCall Environmental 6733 Buchanan Road Coldstream, BC, Canada V1B 3C5	Project ID: Project Name: Drax Smithers Project Location: LSD: P.O.:	Lot ID: 1725866 Control Number: Date Received: Apr 18, 2024 Date Reported: Apr 22, 2024 Report Number: 2994222 Report Type: Final Report
Attn: Accounts Payable Sampled By: Company: McCall	Proj. Acct. code:	

Reference Number	1725866-4	1725866-5	1725866-6
Sample Date	Apr 16, 2024	Apr 16, 2024	Apr 16, 2024
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Filters I61 / Dryer Stack 2 Test 1 / 11.3 °C	Filters I78 / Dryer Stack 2 Test 2 / 11.3 °C	Filters I79 / Dryer Stack 2 Test 3 / 11.3 °C
Matrix	Water	Water	Water


Analyte	Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents					
Oil and Grease	Total	mg/sample	<2	<2	2
Volume	Sample volume	mL	319	324	310
pH adjustment	required prior to O&G extraction		Yes	Yes	Yes

Analytical Report

Bill To: McCall Environmental 6733 Buchanan Road Coldstream, BC, Canada V1B 3C5	Project ID: Project Name: Drax Smithers Project Location: LSD: P.O.:	Lot ID: 1725866 Control Number: Date Received: Apr 18, 2024 Date Reported: Apr 22, 2024 Report Number: 2994222 Report Type: Final Report
Attn: Accounts Payable Sampled By: Company: McCall	Proj. Acct. code:	

Reference Number 1725866-7
Sample Date Apr 16, 2024
Sample Time NA
Sample Location
Sample Description Water Blank / 11.3
 °C
Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents					
Oil and Grease	Total	mg/sample	<2		2
Volume	Sample volume	mL	273		
pH adjustment	required prior to O&G extraction		Yes		

Approved by: 
 Rachel Eden, B. Sc.
 Operations Manager

Report Transmission Cover Page

Bill To: McCall Environmental 6733 Buchanan Road Coldstream, BC, Canada V1B 3C5	Project ID: Project Name: Drax Smithers Project Location: LSD: P.O.:	Lot ID: 1725867 Control Number: Date Received: Apr 18, 2024 Date Reported: Apr 22, 2024 Report Number: 2994224 Report Type: Final Report
Attn: Accounts Payable Sampled By: Company: McCall	Proj. Acct. code:	

Contact	Company	Address
Accounts Payable	McCall Environmental	6733 Buchanan Road Coldstream, BC V1B 3C5 Phone: (250) 542-5118 Fax: Email: invoicing@mccallenvironmental.net
<u>Delivery</u>	<u>Format</u>	<u>Deliverables</u>
Email - Merge	PDF	COC / Invoice
Matt McCall	McCall Environmental	6733 Buchanan Road Coldstream, BC V1B 3C5 Phone: (250) 542-5118 Fax: Email: matt@mccallenvironmental.net
<u>Delivery</u>	<u>Format</u>	<u>Deliverables</u>
Email - Merge	PDF	COA / COC
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Analytical Report

Bill To: McCall Environmental 6733 Buchanan Road Coldstream, BC, Canada V1B 3C5	Project ID: Project Name: Drax Smithers Project Location: LSD: P.O.:	Lot ID: 1725867 Control Number: Date Received: Apr 18, 2024 Date Reported: Apr 22, 2024 Report Number: 2994224 Report Type: Final Report
Attn: Accounts Payable Sampled By: Company: McCall	Proj. Acct. code:	


Reference Number	1725867-1	1725867-2	1725867-3
Sample Date	Apr 16, 2024	Apr 16, 2024	Apr 16, 2024
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Filters I / Dryer Stack 3 Test 1 / 11.1 °C	Filters I / Dryer Stack 3 Test 2 / 11.1 °C	Filters I / Dryer Stack 3 Test 3 / 11.1 °C
Matrix	Water	Water	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents					
Oil and Grease	Total	mg/sample	<2	<2	<2
Volume	Sample volume	mL	317	321	326
pH adjustment	required prior to O&G extraction		Yes	Yes	Yes

Analytical Report

Bill To: McCall Environmental 6733 Buchanan Road Coldstream, BC, Canada V1B 3C5	Project ID: Project Name: Drax Smithers Project Location: LSD: P.O.:	Lot ID: 1725867 Control Number: Date Received: Apr 18, 2024 Date Reported: Apr 22, 2024 Report Number: 2994224 Report Type: Final Report
Attn: Accounts Payable Sampled By: Company: McCall	Proj. Acct. code:	

	Reference Number	1725867-4	1725867-5	1725867-6	
	Sample Date	Apr 16, 2024	Apr 16, 2024	Apr 16, 2024	
	Sample Time	NA	NA	NA	
	Sample Location				
	Sample Description	Filters I / Dryer Stack 4 Test 1 / 11.1 °C	Filters I / Dryer Stack 4 Test 2 / 11.1 °C	Filters I / Dryer Stack 4 Test 3 / 11.1 °C	
	Matrix	Water	Water	Water	
Analyte	Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents					
Oil and Grease	Total	mg/sample	3	4	9
Volume	Sample volume	mL	315	311	319
pH adjustment	required prior to O&G extraction	Yes	Yes	Yes	

Approved by: 
 Rachel Eden, B. Sc.
 Operations Manager

Methodology and Notes

Bill To: McCall Environmental 6733 Buchanan Road Coldstream, BC, Canada V1B 3C5	Project ID: Project Name: Drax Smithers Project Location: LSD: P.O.:	Lot ID: 1725867 Control Number: Date Received: Apr 18, 2024 Date Reported: Apr 22, 2024 Report Number: 2994224 Report Type: Final Report
Attn: Accounts Payable Sampled By: Company: McCall	Proj. Acct. code:	

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Oil and Grease in water (VAN)	BCELM	* Oil & Grease in Water - Direct Hexane Extraction (2023), Oil & Grease <i>* Reference Method Modified</i>	Apr 18, 2024	Element Vancouver

References

BCELM B.C. Environmental Laboratory Manual

Please direct any inquiries regarding this report to our Client Services group.
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This is to verify that
Matthew McCall
has successfully completed
a course of study in
Source Testing for Particulates
(35 hours)

Endorsed by
The B.C. Ministry of Environment

Dated at Burnaby, British Columbia, Canada
December 14, 1990


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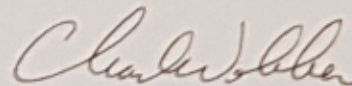
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Stack Sampling Seminar

35 Hours / 2017

June 23, 2017

Date



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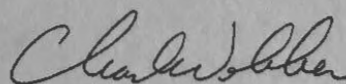
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Stack Sampling Seminar

35 Hours / 2017

June 23, 2017

Date



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