

Smithers Pellet Limited Partnership
Total Particulate Compliance Testing
Dryer Stack 1-4

April 16, 2025
Smithers, BC
Permit 06099

Our Job Number: ME2526-017

Report Author: Matt McCall
McCall Environmental



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May 7, 2025

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, 2025
RA-6099, ME2526-017

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: Dave Brandle, Dan Lawrence 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

Total Particulate		Average of Triplicate Tests				Prev Test	
Parameter	Stack 1	Stack2	Stack 3	Stack 4	Avg/ Comb	Permit	13-Feb-25
Test Date	16-Apr-25	16-Apr-25	16-Apr-25	16-Apr-25	N/A		N/A
Gas Temperature (°C)	25.0	28.3	28.6	29.5	27.8		28.07
% Moisture	1.77	2.47	2.04	1.67	1.99		1.02
Velocity (m/sec)	10.00	9.99	9.69	8.99	9.67		8.89
ACFM	65291	65268	63298	58746	252604		232348
Std. Dry Flow Rate (m³/sec)	28.63	28.10	27.26	25.32	109.32	*132	99.46
Tot Part. Dry Basis ref. Cond. (mg/m³)	11.61	9.55	12.26	9.80	10.82	15.00	8.68
Front Half Particulate (mg/m³)	9.77	7.87	10.59	7.76	9.00		6.51
Back Half Condensibles (mg/m³)	1.84	1.68	1.67	2.04	1.81		2.25
Mass Emission Rate (kg/hr)	1.20	0.97	1.20	0.89	4.26	7.67	3.11

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

* Permitted flow rate is 33.0 m³/sec per stack, combined flow rate of 132

* 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 from the last set of compliance testing was performed in February of 2025. Those results are included in the summary tables above for comparison 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 Renewable Energy Inc
16-Apr-25
Dryer1 Stack 1
Permit Number: RA-6099
Smithers BC
AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	77 ° F	25 ° C
Moisture Content (by volume):	1.77 %	
Average Stack Gas Velocity:	32.8 ft/sec	10.0 m/sec
Total Actual Gas Flow Rate:	65291 ACFM	
Dry Gas flow Rate at Reference Conditions:	60665 SCFM	28.6 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.005 gr/ft ³	11.61 mg/m ³
Front Half Particulate	0.004 gr/ft ³	9.8 mg/m ³
Back Half Condensibles	0.001 gr/ft ³	1.8 mg/m ³
Mass Emission Rate	2.64 lbs/hr	1.20 kg/hr

SUMMARY OF AIR EMISSION TESTS
TEST 1:

Gas Temperature:	76 ° F	24 ° C
Moisture Content (by volume):	1.8 %	
Average Stack Gas Velocity:	32.5 ft/sec	9.9 m/sec
Total Actual Gas Flow Rate:	64786 ACFM	
Dry Gas flow Rate at Reference Conditions:	60284 SCFM	28.5 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.005 gr/ft ³	11.2 mg/m ³
Front Half Particulate	.004 gr/ft ³	9.4 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.9 mg/m ³
Mass Emission Rate	2.53 lbs/hr	1.15 kg/hr

TEST 2:

Gas Temperature:	78 ° F	25 ° C
Moisture Content (by volume):	1.5 %	
Average Stack Gas Velocity:	32.9 ft/sec	10.0 m/sec
Total Actual Gas Flow Rate:	65563 ACFM	
Dry Gas flow Rate at Reference Conditions:	61024 SCFM	28.8 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.005 gr/ft ³	12.5 mg/m ³
Front Half Particulate	.005 gr/ft ³	10.6 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.8 mg/m ³
Mass Emission Rate	2.85 lbs/hr	1.29 kg/hr

TEST 3:

Gas Temperature:	77 ° F	25 ° C
Moisture Content (by volume):	2.0 %	
Average Stack Gas Velocity:	32.9 ft/sec	10.0 m/sec
Total Actual Gas Flow Rate:	65524 ACFM	
Dry Gas flow Rate at Reference Conditions:	60688 SCFM	28.6 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.005 gr/ft ³	11.1 mg/m ³
Front Half Particulate	.004 gr/ft ³	9.3 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.8 mg/m ³
Mass Emission Rate	2.53 lbs/hr	1.15 kg/hr

DATA FOR TESTS 1 TO 3

Client: Pinnacle Renewable Energy Inc
Plant Location: Smithers BC
Process: Dryer1 Stack 1
Permit Number: RA-6099
Job Number: ME2526-017
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
Q28	Q29	Q30
16-Apr-25	16-Apr-25	16-Apr-25
9:29	10:55	12:14
10:32	11:58	13:16
60	60	60
CB/CB	CB/CB	CB/CB
1021	1021	1021
28.80	28.80	28.80
-0.21	-0.21	-0.21
0.0	0.0	0.0
21.0	21.0	21.0
0.0	0.0	0.0
79.0	79.0	79.0
0.255	0.255	0.255
0.9972	0.9972	0.9972
0.84182	0.84182	0.84182
33.18	33.18	33.18
14	11	16
1.0	1.0	1.0
0.0010	0.0009	0.0005
0.0091	0.0106	0.0097
0.0020	0.0020	0.0020
0.0121	0.0135	0.0122

Sampling Data for - *TEST 1*
 Pinnacle Renewable Energy Inc
 Dryer1 Stack 1
 Smithers BC

16-Apr-25

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	0.35	1.64	39	38	76	34.60	0.96
A-11	0.36	1.72	43	45	72	36.20	0.93
A-10	0.34	1.63	46	51	74	37.79	1.06
A-9	0.34	1.62	50	41	76	39.56	0.95
A-8	0.31	1.48	51	43	74	41.14	0.98
A-7	0.32	1.54	51	43	73	42.70	0.94
A-6	0.31	1.50	55	47	73	44.23	1.01
A-5	0.30	1.45	58	48	74	45.86	0.99
A-4	0.29	1.40	59	50	75	47.44	0.96
A-3	0.30	1.47	61	57	75	48.94	0.96
A-2	0.30	1.46	63	52	77	50.48	0.99
A-1	0.29	1.41	64	54	78	52.07	0.97
B-12	0.35	1.71	65	55	78	53.60	0.96
B-11	0.35	1.70	65	55	79	55.26	0.99
B-10	0.36	1.77	69	58	78	56.98	0.99
B-9	0.34	1.68	71	60	78	58.73	1.00
B-8	0.34	1.67	71	60	78	60.45	0.97
B-7	0.33	1.63	72	61	76	62.13	0.97
B-6	0.32	1.59	73	63	76	63.78	1.07
B-5	0.31	1.55	75	64	75	65.59	0.97
B-4	0.29	1.45	76	65	76	67.21	0.99
B-3	0.30	1.50	75	65	76	68.81	0.97
B-2	0.30	1.49	76	67	78	70.40	0.99
B-1	0.18	1.39	76	67	78	72.02	1.09
						73.40	

Sampling Data for - *TEST 2*

16-Apr-25

Pinnacle Renewable Energy Inc

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)			
B-12	0.35	1.72	62	62	76	74.49	0.92
B-11	0.36	1.76	63	62	78	76.10	0.99
B-10	0.35	1.72	66	62	77	77.85	0.98
B-9	0.35	1.72	69	62	78	79.57	0.97
B-8	0.33	1.63	70	62	78	81.28	0.98
B-7	0.33	1.63	71	62	78	82.96	0.96
B-6	0.31	1.54	72	64	77	84.60	0.98
B-5	0.30	1.49	74	65	78	86.23	0.98
B-4	0.29	1.45	75	67	77	87.84	0.96
B-3	0.29	1.45	75	66	76	89.40	0.98
B-2	0.30	1.50	76	67	78	90.98	0.96
B-1	0.29	1.45	78	69	78	92.56	1.01
A-12	0.36	1.80	78	70	78	94.20	0.98
A-11	0.35	1.76	80	71	78	95.97	1.00
A-10	0.36	1.81	82	71	78	97.76	0.98
A-9	0.34	1.71	81	72	78	99.55	0.97
A-8	0.34	1.72	81	72	79	101.27	0.97
A-7	0.33	1.67	82	75	77	102.98	0.99
A-6	0.32	1.63	83	75	76	104.72	1.00
A-5	0.31	1.57	83	77	77	106.45	0.97
A-4	0.30	1.51	83	75	79	108.10	0.99
A-3	0.30	1.51	84	76	80	109.75	1.04
A-2	0.29	1.47	84	77	79	111.48	0.91
A-1	0.28	1.41	84	77	79	112.98	0.93
						114.48	

Sampling Data for - *TEST 3*

16-Apr-25

Pinnacle Renewable Energy Inc

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	0.36	1.84	74	73	77	15.12	1.03
A-11	0.35	1.77	71	70	76	16.97	1.00
A-10	0.35	1.77	72	70	78	18.74	1.02
A-9	0.34	1.73	75	70	75	20.54	1.02
A-8	0.35	1.78	76	71	76	22.32	1.04
A-7	0.33	1.68	78	71	78	24.16	0.93
A-6	0.31	1.58	79	71	78	25.76	1.00
A-5	0.3	1.53	80	72	77	27.43	1.01
A-4	0.29	1.49	82	73	77	29.10	1.02
A-3	0.29	1.49	82	73	77	30.77	1.02
A-2	0.3	1.54	83	75	77	32.44	1.00
A-1	0.29	1.49	84	76	77	34.11	1.01
B-12	0.35	1.81	84	76	77	35.76	0.95
B-11	0.36	1.81	85	76	78	37.46	0.93
B-10	0.34	1.76	86	77	77	39.16	0.96
B-9	0.34	1.76	88	77	78	40.87	0.96
B-8	0.33	1.71	89	79	78	42.58	1.01
B-7	0.32	1.67	91	80	76	44.35	1.01
B-6	0.33	1.73	89	83	76	46.10	0.99
B-5	0.31	1.61	89	83	78	47.85	1.02
B-4	0.30	1.55	89	81	79	49.60	1.00
B-3	0.30	1.56	88	82	78	51.27	1.02
B-2	0.29	1.50	89	82	79	52.98	0.95
B-1	0.28	1.45	90	83	79	54.54	0.98
						56.14	



Pinnacle Renewable Energy Inc
 Dryer1 Stack 1
 Pinnacle Renewable Energy Inc

Data for TEST 1		OVERALL ISOKINETICS - TEST 1		0.986
Delta P:	0.315 "H ₂ O	Us avg:	32.54 ft/sec	
Delta H:	1.560	ACFM:	64786 ft ³ /min	
Tm avg:	518.6 °R	SDCFM:	60284 ft ³ /min	
Ts avg:	536.0 °R	Vm std:	38.07 ft ³	
Bwo:	0.018	Vm corr:	38.69 ft ³	
Md:	28.84	Vm:	38.80 ft ³	
Ms:	28.64	MF:	0.9972	
Pb:	28.80 "Hg	PCON:	11.22 mg/m ³	
Pm:	28.91 "Hg	ERAT:	1.15 kg/hr	
Ps:	28.78 "Hg			

Data for TEST 2		OVERALL ISOKINETICS - TEST 2		0.976
Delta P:	0.322 "H ₂ O	Us avg:	32.93 ft/sec	
Delta H:	1.610	ACFM:	65563 ft ³ /min	
Tm avg:	532.8 °R	SDCFM:	61024 ft ³ /min	
Ts avg:	537.8 °R	Vm std:	38.20 ft ³	
Bwo:	0.015	Vm corr:	39.88 ft ³	
Md:	28.84	Vm:	39.99 ft ³	
Ms:	28.68	MF:	0.9972	
Pb:	28.80 "Hg	PCON:	12.48 mg/m ³	
Pm:	28.92 "Hg	ERAT:	1.29 kg/hr	
Ps:	28.78 "Hg			

Data for TEST 3		OVERALL ISOKINETICS - TEST 3		0.995
Delta P:	0.321 "H ₂ O	Us avg:	32.91 ft/sec	
Delta H:	1.650	ACFM:	65524 ft ³ /min	
Tm avg:	539.5 °R	SDCFM:	60688 ft ³ /min	
Ts avg:	537.3 °R	Vm std:	38.70 ft ³	
Bwo:	0.020	Vm corr:	40.91 ft ³	
Md:	28.84	Vm:	41.02 ft ³	
Ms:	28.62	MF:	0.9972	
Pb:	28.80 "Hg	PCON:	11.13 mg/m ³	
Pm:	28.92 "Hg	ERAT:	1.15 kg/hr	
Ps:	28.78 "Hg			

Pinnacle Renewable Energy Inc
16-Apr-25
Dryer1 Stack 2
Permit Number: RA-6099
Smithers BC
AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	83 ° F	28 ° C
Moisture Content (by volume):	2.47 %	
Average Stack Gas Velocity:	32.8 ft/sec	10.0 m/sec
Total Actual Gas Flow Rate:	65268 ACFM	
Dry Gas flow Rate at Reference Conditions:	59550 SCFM	28.1 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.004 gr/ft ³	9.5 mg/m ³
Front Half Particulate	0.003 gr/ft ³	7.9 mg/m ³
Back Half Condensibles	0.001 gr/ft ³	1.7 mg/m ³
Mass Emission Rate	2.13 lbs/hr	0.97 kg/hr

SUMMARY OF AIR EMISSION TESTS
TEST 1:

Gas Temperature:	83 ° F	28 ° C
Moisture Content (by volume):	2.6 %	
Average Stack Gas Velocity:	33.0 ft/sec	10.1 m/sec
Total Actual Gas Flow Rate:	65790 ACFM	
Dry Gas flow Rate at Reference Conditions:	59992 SCFM	28.3 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.004 gr/ft ³	8.7 mg/m ³
Front Half Particulate	.003 gr/ft ³	7.1 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.7 mg/m ³
Mass Emission Rate	1.96 lbs/hr	0.89 kg/hr

TEST 2:

Gas Temperature:	84 ° F	29 ° C
Moisture Content (by volume):	2.5 %	
Average Stack Gas Velocity:	32.8 ft/sec	10.0 m/sec
Total Actual Gas Flow Rate:	65253 ACFM	
Dry Gas flow Rate at Reference Conditions:	59406 SCFM	28.0 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.004 gr/ft ³	9.3 mg/m ³
Front Half Particulate	.003 gr/ft ³	7.6 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.7 mg/m ³
Mass Emission Rate	2.06 lbs/hr	0.94 kg/hr

TEST 3:

Gas Temperature:	83 ° F	28 ° C
Moisture Content (by volume):	2.3 %	
Average Stack Gas Velocity:	32.5 ft/sec	9.9 m/sec
Total Actual Gas Flow Rate:	64762 ACFM	
Dry Gas flow Rate at Reference Conditions:	59252 SCFM	28.0 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.005 gr/ft ³	10.6 mg/m ³
Front Half Particulate	.004 gr/ft ³	9.0 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.7 mg/m ³
Mass Emission Rate	2.36 lbs/hr	1.07 kg/hr

DATA FOR TESTS 1 TO 3

Client: Pinnacle Renewable Energy Inc
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
Q31	Q32	Q33
16-Apr-25	16-Apr-25	16-Apr-25
9:29	10:55	12:17
10:31	11:57	1:19
60	60	60
CB/CB	CB/CB	CB/CB
980	980	980
28.80	28.80	28.80
-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
0.275	0.275	0.275
0.9997	0.9997	0.9997
0.83365	0.83365	0.83365
33.18	33.18	33.18
23	22	20
1.0	1.0	1.0
0.0003	0.0004	0.0003
0.0081	0.0086	0.0105
0.0020	0.0020	0.0020
0.0104	0.0110	0.0128

Sampling Data for - *TEST 1*

16-Apr-25

Pinnacle Renewable Energy Inc

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	0.33	1.60	38	38	85	34.21	0.95
A-11	0.34	1.68	47	39	82	35.95	0.93
A-10	0.33	1.65	55	40	82	37.70	0.94
A-9	0.35	1.75	59	41	83	39.45	0.96
A-8	0.34	1.71	64	42	82	41.31	0.94
A-7	0.32	1.61	66	43	82	43.11	0.96
A-6	0.34	1.73	68	45	81	44.90	0.93
A-5	0.35	1.78	71	46	81	46.69	0.94
A-4	0.33	1.69	73	48	80	48.53	0.92
A-3	0.32	1.64	73	50	82	50.29	0.93
A-2	0.30	1.54	75	51	80	52.05	0.96
A-1	0.26	1.34	77	53	82	53.82	0.91
B-12	0.34	1.75	76	54	83	55.38	0.97
B-11	0.34	1.75	80	55	84	57.28	0.92
B-10	0.33	1.71	80	58	83	59.08	0.91
B-9	0.35	1.81	81	58	84	60.84	0.92
B-8	0.34	1.77	83	59	83	62.69	0.91
B-7	0.34	1.77	84	60	83	64.50	0.97
B-6	0.33	1.72	84	61	82	66.43	0.96
B-5	0.34	1.78	84	63	82	68.31	0.92
B-4	0.32	1.68	86	66	83	70.15	0.94
B-3	0.31	1.62	86	63	84	71.98	0.92
B-2	0.29	1.52	86	64	83	73.73	0.98
B-1	0.29	1.52	85	65	84	75.53	0.98
						77.33	

Sampling Data for - *TEST 2*

16-Apr-25

Pinnacle Renewable Energy Inc

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)			
B-12	0.31	1.56	66	63	84	78.14	0.96
B-11	0.33	1.65	62	61	84	79.94	0.92
B-10	0.34	1.72	72	60	84	81.71	0.95
B-9	0.35	1.77	76	60	85	83.58	0.94
B-8	0.33	1.69	79	61	84	85.45	0.93
B-7	0.32	1.64	80	61	82	87.26	0.95
B-6	0.35	1.79	81	62	83	89.08	0.91
B-5	0.34	1.75	85	62	83	90.91	0.95
B-4	0.31	1.59	85	62	83	92.80	0.99
B-3	0.29	1.49	86	64	83	94.69	0.90
B-2	0.28	1.44	85	65	82	96.36	0.95
B-1	0.25	1.28	85	66	85	98.08	0.97
A-12	0.32	1.65	87	69	85	99.74	0.98
A-11	0.34	1.74	88	67	88	101.65	0.99
A-10	0.33	1.70	89	68	86	103.62	0.94
A-9	0.35	1.81	91	69	84	105.48	0.91
A-8	0.34	1.77	95	69	85	107.33	0.92
A-7	0.33	1.72	92	72	84	109.19	0.93
A-6	0.35	1.83	91	73	83	111.05	0.97
A-5	0.34	1.77	92	71	83	113.04	0.90
A-4	0.32	1.67	94	72	85	114.86	0.98
A-3	0.30	1.56	92	72	85	116.79	0.91
A-2	0.29	1.51	91	73	83	118.52	0.95
A-1	0.28	1.47	91	72	81	120.29	0.99
						122.11	

Sampling Data for - *TEST 3*

16-Apr-25

Pinnacle Renewable Energy Inc

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	0.31	1.60	67	66	83	22.60	0.97
A-11	0.34	1.76	71	65	83	24.43	0.96
A-10	0.35	1.81	78	65	85	26.33	0.94
A-9	0.34	1.78	81	66	82	28.23	0.95
A-8	0.33	1.73	83	66	82	30.13	0.92
A-7	0.34	1.78	84	65	84	31.95	0.98
A-6	0.33	1.73	87	66	83	33.91	0.96
A-5	0.31	1.63	87	67	82	35.80	0.93
A-4	0.29	1.53	88	68	82	37.59	0.92
A-3	0.28	1.48	89	69	82	39.31	0.99
A-2	0.29	1.53	89	70	82	41.13	1.06
A-1	0.28	1.49	90	70	81	43.11	0.97
B-12	0.33	1.75	90	71	81	44.89	0.94
B-11	0.34	1.81	92	71	80	46.76	0.95
B-10	0.35	1.87	94	72	81	48.69	0.95
B-9	0.34	1.81	93	75	82	50.66	0.93
B-8	0.34	1.81	94	74	81	52.55	0.93
B-7	0.33	1.77	95	74	81	54.44	0.98
B-6	0.33	1.77	95	74	81	56.41	0.96
B-5	0.32	1.71	96	75	84	58.34	0.96
B-4	0.30	1.59	96	75	86	60.24	0.97
B-3	0.29	1.55	95	76	84	62.10	0.98
B-2	0.28	1.49	95	77	85	63.94	0.98
B-1	0.26	1.39	96	78	85	65.75	0.99
						67.52	



Pinnacle Renewable Energy Inc
Dryer1 Stack 2
Pinnacle Renewable Energy Inc

Data for **TEST 1**

OVERALL ISOKINETICS - TEST 1 0.941

Delta P:	0.326 "H ₂ O	Us avg:	33.05 ft/sec
Delta H:	1.672	ACFM:	65790 ft ³ /min
Tm avg:	523.0 °R	SDCFM:	59992 ft ³ /min
Ts avg:	542.5 °R	Vm std:	42.07 ft ³
Bwo:	0.026	Vm corr:	43.11 ft ³
Md:	28.84	Vm:	43.12 ft ³
Ms:	28.56	MF:	0.9997
Pb:	28.80 "Hg	PCON:	8.73 mg/m ³
Pm:	28.92 "Hg	ERAT:	0.89 kg/hr
Ps:	28.79 "Hg		

Data for **TEST 2**

OVERALL ISOKINETICS - TEST 2 0.946

Delta P:	0.320 "H ₂ O	Us avg:	32.78 ft/sec
Delta H:	1.649	ACFM:	65253 ft ³ /min
Tm avg:	535.6 °R	SDCFM:	59406 ft ³ /min
Ts avg:	543.9 °R	Vm std:	41.89 ft ³
Bwo:	0.025	Vm corr:	43.96 ft ³
Md:	28.84	Vm:	43.97 ft ³
Ms:	28.57	MF:	0.9997
Pb:	28.80 "Hg	PCON:	9.27 mg/m ³
Pm:	28.92 "Hg	ERAT:	0.94 kg/hr
Ps:	28.79 "Hg		

Data for **TEST 3**

OVERALL ISOKINETICS - TEST 3 0.962

Delta P:	0.316 "H ₂ O	Us avg:	32.53 ft/sec
Delta H:	1.674	ACFM:	64762 ft ³ /min
Tm avg:	539.6 °R	SDCFM:	59252 ft ³ /min
Ts avg:	542.6 °R	Vm std:	42.48 ft ³
Bwo:	0.023	Vm corr:	44.91 ft ³
Md:	28.84	Vm:	44.92 ft ³
Ms:	28.59	MF:	0.9997
Pb:	28.80 "Hg	PCON:	10.64 mg/m ³
Pm:	28.92 "Hg	ERAT:	1.07 kg/hr
Ps:	28.79 "Hg		

Pinnacle Renewable Energy Inc
16-Apr-25
Dryer1 Stack 3
Permit Number: RA-6099
Smithers BC
AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	83 ° F	29 ° C
Moisture Content (by volume):	2.04 %	
Average Stack Gas Velocity:	31.8 ft/sec	9.7 m/sec
Total Actual Gas Flow Rate:	63298 ACFM	
Dry Gas flow Rate at Reference Conditions:	57760 SCFM	27.3 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.005 gr/ft ³	12.3 mg/m ³
Front Half Particulate	0.005 gr/ft ³	10.6 mg/m ³
Back Half Condensibles	0.001 gr/ft ³	1.7 mg/m ³
Mass Emission Rate	2.65 lbs/hr	1.20 kg/hr

SUMMARY OF AIR EMISSION TESTS
TEST 1:

Gas Temperature:	80 ° F	27 ° C
Moisture Content (by volume):	1.7 %	
Average Stack Gas Velocity:	31.4 ft/sec	9.6 m/sec
Total Actual Gas Flow Rate:	62456 ACFM	
Dry Gas flow Rate at Reference Conditions:	57576 SCFM	27.2 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.004 gr/ft ³	10.0 mg/m ³
Front Half Particulate	.004 gr/ft ³	8.3 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.7 mg/m ³
Mass Emission Rate	2.16 lbs/hr	0.98 kg/hr

TEST 2:

Gas Temperature:	80 ° F	26 ° C
Moisture Content (by volume):	2.4 %	
Average Stack Gas Velocity:	31.6 ft/sec	9.6 m/sec
Total Actual Gas Flow Rate:	63008 ACFM	
Dry Gas flow Rate at Reference Conditions:	57681 SCFM	27.2 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.006 gr/ft ³	14.5 mg/m ³
Front Half Particulate	.006 gr/ft ³	12.8 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.7 mg/m ³
Mass Emission Rate	3.13 lbs/hr	1.42 kg/hr

TEST 3:

Gas Temperature:	91 ° F	33 ° C
Moisture Content (by volume):	2.1 %	
Average Stack Gas Velocity:	32.4 ft/sec	9.9 m/sec
Total Actual Gas Flow Rate:	64432 ACFM	
Dry Gas flow Rate at Reference Conditions:	58024 SCFM	27.4 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.005 gr/ft ³	12.3 mg/m ³
Front Half Particulate	.005 gr/ft ³	10.6 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.7 mg/m ³
Mass Emission Rate	2.67 lbs/hr	1.21 kg/hr

DATA FOR TESTS 1 TO 3

Client: Pinnacle Renewable Energy Inc
Plant Location: Smithers BC
Process: Dryer1 Stack 3
Permit Number: RA-6099
Job Number: ME2526-017
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
Q86	Q87	Q88
16-Apr-25	16-Apr-25	16-Apr-25
9:28	10:45	12:04
10:34	11:50	13:09
60	60	60
DL/DB	DL/DB	DL/DB
1039	1039	1039
28.70	28.70	28.70
-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
0.275	0.275	0.275
1.0043	1.0043	1.0043
0.83829	0.83829	0.83829
33.18	33.18	33.18
14	21	18
1.0	1.2	1.0
0.0020	0.0018	0.0017
0.0079	0.0136	0.0111
0.0020	0.0020	0.0020
0.0119	0.0174	0.0148

Sampling Data for - *TEST 1*
 Pinnacle Renewable Energy Inc
 Dryer1 Stack 3
 Smithers BC

16-Apr-25

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	0.26	1.15	54	54	84	63.43	0.99
A-11	0.24	1.08	58	55	77	65.10	1.00
A-10	0.22	1.01	71	59	76	66.75	0.98
A-9	0.24	1.10	74	59	78	68.32	0.97
A-8	0.26	1.19	78	60	82	69.95	0.98
A-7	0.27	1.24	82	61	83	71.66	0.97
A-6	0.28	1.30	84	63	81	73.40	0.97
A-5	0.31	1.44	87	65	81	75.17	0.96
A-4	0.34	1.58	91	68	79	77.02	0.95
A-3	0.36	1.70	92	69	77	78.95	0.95
A-2	0.38	1.79	93	71	80	80.96	0.97
A-1	0.38	1.79	94	72	80	83.05	0.96
B-12	0.25	1.18	95	73	81	85.13	1.07
B-11	0.25	1.18	95	74	82	87.02	0.99
B-10	0.24	1.13	98	76	83	88.76	1.00
B-9	0.26	1.23	99	78	83	90.50	0.96
B-8	0.27	1.29	100	79	81	92.23	0.96
B-7	0.27	1.30	101	81	79	94.01	1.04
B-6	0.28	1.34	101	81	80	95.95	0.98
B-5	0.32	1.54	102	82	77	97.80	0.97
B-4	0.33	1.59	102	83	78	99.78	0.98
B-3	0.33	1.60	104	84	78	101.80	0.95
B-2	0.36	1.74	104	85	80	103.76	0.95
B-1	0.35	1.69	105	85	81	105.80	1.02
						107.98	

Sampling Data for - *TEST 2*

16-Apr-25

Pinnacle Renewable Energy Inc

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)			
B-12	0.25	1.15	78	79	90	8.01	1.07
B-11	0.26	1.22	77	80	81	9.86	0.93
B-10	0.23	1.08	78	80	80	11.50	1.03
B-9	0.25	1.18	80	81	80	13.22	1.02
B-8	0.25	1.18	81	81	81	15.00	0.93
B-7	0.28	1.33	86	82	76	16.63	0.98
B-6	0.29	1.40	93	85	76	18.45	0.97
B-5	0.30	1.45	99	84	77	20.30	0.98
B-4	0.33	1.60	103	84	76	22.21	0.98
B-3	0.35	1.71	106	86	74	24.22	0.98
B-2	0.37	1.80	105	87	76	26.30	0.97
B-1	0.37	1.80	106	88	79	28.43	0.95
A-12	0.26	1.27	107	89	78	30.50	1.00
A-11	0.25	1.22	108	90	77	32.33	1.03
A-10	0.25	1.22	108	91	78	34.20	0.94
A-9	0.28	1.36	111	92	82	35.90	0.97
A-8	0.28	1.36	113	93	83	37.76	0.93
A-7	0.28	1.36	114	94	82	39.55	1.07
A-6	0.30	1.46	114	95	82	41.60	0.93
A-5	0.34	1.67	115	97	80	43.45	1.05
A-4	0.35	1.72	115	96	82	45.68	0.99
A-3	0.35	1.72	116	97	82	47.80	0.99
A-2	0.34	1.67	116	97	80	49.93	1.02
A-1	0.34	1.67	116	97	80	52.10	0.97
						54.16	

Sampling Data for - *TEST 3*

16-Apr-25

Pinnacle Renewable Energy Inc

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	0.26	1.22	88	91	90	54.30	1.01
A-11	0.26	1.22	96	93	93	56.12	1.00
A-10	0.24	1.13	97	94	95	57.93	1.01
A-9	0.25	1.18	101	93	94	59.68	0.97
A-8	0.27	1.27	100	93	94	61.40	0.97
A-7	0.28	1.33	103	92	91	63.20	0.97
A-6	0.32	1.52	104	92	91	65.04	1.02
A-5	0.34	1.62	104	92	92	67.10	0.93
A-4	0.34	1.62	105	92	90	69.03	0.97
A-3	0.36	1.72	105	92	90	71.05	0.96
A-2	0.38	1.81	106	93	91	73.12	1.00
A-1	0.35	1.67	106	93	90	75.32	1.01
B-12	0.25	1.19	105	95	90	77.46	0.96
B-11	0.24	1.15	105	94	90	79.18	0.99
B-10	0.25	1.19	106	95	89	80.92	0.99
B-9	0.28	1.34	105	93	89	82.70	1.00
B-8	0.29	1.39	104	94	89	84.60	0.93
B-7	0.32	1.53	105	94	89	86.40	0.98
B-6	0.33	1.58	106	94	89	88.38	0.98
B-5	0.32	1.53	106	94	89	90.40	0.97
B-4	0.36	1.72	106	94	89	92.38	0.98
B-3	0.36	1.72	107	94	89	94.50	0.96
B-2	0.35	1.67	107	94	90	96.57	0.99
B-1	0.34	1.62	106	94	90	98.67	1.01
						100.79	



Pinnacle Renewable Energy Inc
Dryer1 Stack 3
Pinnacle Renewable Energy Inc

Data for **TEST 1**

OVERALL ISOKINETICS - TEST 1 0.979

Delta P:	0.292 "H ₂ O	Us avg:	31.37 ft/sec
Delta H:	1.383	ACFM:	62456 ft ³ /min
Tm avg:	540.9 °R	SDCFM:	57576 ft ³ /min
Ts avg:	540.0 °R	Vm std:	42.05 ft ³
Bwo:	0.017	Vm corr:	44.74 ft ³
Md:	28.84	Vm:	44.55 ft ³
Ms:	28.66	MF:	1.0043
Pb:	28.70 "Hg	PCON:	9.99 mg/m ³
Pm:	28.80 "Hg	ERAT:	0.98 kg/hr
Ps:	28.69 "Hg		

Data for **TEST 2**

OVERALL ISOKINETICS - TEST 2 0.986

Delta P:	0.296 "H ₂ O	Us avg:	31.65 ft/sec
Delta H:	1.442	ACFM:	63008 ft ³ /min
Tm avg:	555.2 °R	SDCFM:	57681 ft ³ /min
Ts avg:	539.7 °R	Vm std:	42.44 ft ³
Bwo:	0.024	Vm corr:	46.35 ft ³
Md:	28.84	Vm:	46.15 ft ³
Ms:	28.58	MF:	1.0043
Pb:	28.70 "Hg	PCON:	14.48 mg/m ³
Pm:	28.81 "Hg	ERAT:	1.42 kg/hr
Ps:	28.69 "Hg		

Data for **TEST 3**

OVERALL ISOKINETICS - TEST 3 0.982

Delta P:	0.304 "H ₂ O	Us avg:	32.37 ft/sec
Delta H:	1.456	ACFM:	64432 ft ³ /min
Tm avg:	558.4 °R	SDCFM:	58024 ft ³ /min
Ts avg:	550.5 °R	Vm std:	42.51 ft ³
Bwo:	0.021	Vm corr:	46.69 ft ³
Md:	28.84	Vm:	46.49 ft ³
Ms:	28.62	MF:	1.0043
Pb:	28.70 "Hg	PCON:	12.30 mg/m ³
Pm:	28.81 "Hg	ERAT:	1.21 kg/hr
Ps:	28.69 "Hg		

Pinnacle Renewable Energy Inc.
16-Apr-25
Dryer1 Stack 4
Permit Number: RA-6099
Smithers BC
AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	85 ° F	29 ° C
Moisture Content (by volume):	1.67 %	
Average Stack Gas Velocity:	29.5 ft/sec	9.0 m/sec
Total Actual Gas Flow Rate:	58746 ACFM	
Dry Gas flow Rate at Reference Conditions:	53660 SCFM	25.3 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.004 gr/ft ³	9.8 mg/m ³
Front Half Particulate	0.003 gr/ft ³	7.8 mg/m ³
Back Half Condensibles	0.001 gr/ft ³	2.0 mg/m ³
Mass Emission Rate	1.97 lbs/hr	0.89 kg/hr

SUMMARY OF AIR EMISSION TESTS
TEST 1:

Gas Temperature:	88 ° F	31 ° C
Moisture Content (by volume):	1.8 %	
Average Stack Gas Velocity:	29.7 ft/sec	9.0 m/sec
Total Actual Gas Flow Rate:	59092 ACFM	
Dry Gas flow Rate at Reference Conditions:	53590 SCFM	25.3 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.004 gr/ft ³	9.3 mg/m ³
Front Half Particulate	.003 gr/ft ³	7.8 mg/m ³
Back Half Condensibles	.001 gr/ft ³	1.5 mg/m ³
Mass Emission Rate	1.87 lbs/hr	0.85 kg/hr

TEST 2:

Gas Temperature:	84 ° F	29 ° C
Moisture Content (by volume):	1.8 %	
Average Stack Gas Velocity:	29.4 ft/sec	9.0 m/sec
Total Actual Gas Flow Rate:	58622 ACFM	
Dry Gas flow Rate at Reference Conditions:	53582 SCFM	25.3 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.004 gr/ft ³	9.5 mg/m ³
Front Half Particulate	.003 gr/ft ³	7.2 mg/m ³
Back Half Condensibles	.001 gr/ft ³	2.3 mg/m ³
Mass Emission Rate	1.91 lbs/hr	0.87 kg/hr

TEST 3:

Gas Temperature:	83 ° F	28 ° C
Moisture Content (by volume):	1.4 %	
Average Stack Gas Velocity:	29.4 ft/sec	9.0 m/sec
Total Actual Gas Flow Rate:	58524 ACFM	
Dry Gas flow Rate at Reference Conditions:	53807 SCFM	25.4 m ³ /sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.005 gr/ft ³	10.5 mg/m ³
Front Half Particulate	.004 gr/ft ³	8.2 mg/m ³
Back Half Condensibles	.001 gr/ft ³	2.3 mg/m ³
Mass Emission Rate	2.12 lbs/hr	0.96 kg/hr

DATA FOR TESTS 1 TO 3

Client: Pinnacle Renewable Energy Inc.
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
Q77	Q84	Q85
16-Apr-25	16-Apr-25	16-Apr-25
9:28	10:50	12:10
10:30	11:52	1:12
60	60	60
DB/DL	DB/DL	DB/DL
955	955	955
28.70	28.70	28.70
-0.14	-0.14	-0.14
0.0	0.0	0.0
21.0	21.0	21.0
0.0	0.0	0.0
79.0	79.0	79.0
0.295	0.295	0.295
0.9994	0.9994	0.9994
0.83867	0.83867	0.83867
33.18	33.18	33.18
17	17	13
1.0	1.0	1.0
0.0005	0.0003	0.0003
0.0098	0.0092	0.0103
0.0020	0.0030	0.0030
0.0123	0.0125	0.0136

Sampling Data for - *TEST 1*

16-Apr-25

Pinnacle Renewable Energy Inc.

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	0.25	2.05	53	53	87	85.24	1.03
A-11	0.25	2.03	56	41	86	87.21	1.01
A-10	0.26	2.12	57	42	86	89.12	1.01
A-9	0.26	2.12	58	43	86	91.07	1.01
A-8	0.27	2.20	59	44	87	93.03	1.02
A-7	0.27	2.22	64	45	87	95.05	1.01
A-6	0.28	2.31	70	56	87	97.06	0.99
A-5	0.26	2.16	74	48	86	99.09	1.02
A-4	0.26	2.17	77	49	86	101.11	1.02
A-3	0.25	2.10	79	51	85	103.14	1.02
A-2	0.24	2.02	81	52	85	105.13	1.02
A-1	0.24	2.02	82	53	89	107.10	1.01
B-12	0.24	2.01	83	54	89	109.04	1.05
B-11	0.25	2.10	84	55	90	111.06	1.04
B-10	0.25	2.10	85	56	90	113.10	1.02
B-9	0.25	2.10	86	57	90	115.11	1.00
B-8	0.26	2.20	89	58	90	117.09	1.01
B-7	0.27	2.30	91	61	90	119.12	0.99
B-6	0.27	2.30	92	62	90	121.17	1.01
B-5	0.27	2.30	94	63	90	123.26	1.00
B-4	0.26	2.22	94	64	90	125.34	0.99
B-3	0.26	2.23	95	65	91	127.35	1.01
B-2	0.26	2.23	95	66	91	129.40	0.99
B-1	0.24	2.05	96	67	91	131.42	1.01
						133.40	

Sampling Data for - *TEST 2*
 Pinnacle Renewable Energy Inc.
 Dryer1 Stack 4
 Smithers BC

16-Apr-25

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	0.24	2.01	60	62	83	33.63	1.03
B-11	0.25	2.12	68	65	82	35.60	0.96
B-10	0.25	2.12	74	65	82	37.48	0.98
B-9	0.26	2.24	87	65	83	39.42	1.01
B-8	0.27	2.33	90	66	83	41.47	0.99
B-7	0.27	2.33	90	67	84	43.54	1.00
B-6	0.26	2.25	91	68	85	45.62	1.01
B-5	0.26	2.25	92	69	86	47.68	1.00
B-4	0.26	2.26	95	70	84	49.74	1.01
B-3	0.25	2.19	98	71	83	51.82	1.01
B-2	0.24	2.10	99	72	83	53.87	1.02
B-1	0.24	2.11	100	73	83	55.90	1.05
A-12	0.25	2.19	101	74	85	58.00	1.02
A-11	0.25	2.19	101	75	86	60.08	1.01
A-10	0.25	2.19	102	76	86	62.14	1.02
A-9	0.26	2.28	103	77	86	64.22	1.00
A-8	0.26	2.30	103	78	84	66.31	1.00
A-7	0.27	2.39	104	79	84	68.40	1.00
A-6	0.28	2.48	105	79	84	70.53	1.00
A-5	0.26	2.30	106	80	84	72.71	1.06
A-4	0.25	2.22	106	80	84	74.94	1.01
A-3	0.25	2.22	107	81	84	77.02	0.99
A-2	0.25	2.22	107	83	83	79.06	0.99
A-1	0.24	2.13	108	84	84	81.11	1.00
						83.15	

Sampling Data for - *TEST 3*

16-Apr-25

Pinnacle Renewable Energy Inc.

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	0.25	2.14	72	70	82	83.33	1.01
A-11	0.25	2.17	86	73	83	85.34	1.00
A-10	0.25	2.17	88	74	83	87.35	0.96
A-9	0.26	2.25	94	75	85	89.30	1.00
A-8	0.26	2.27	97	75	85	91.37	0.97
A-7	0.27	2.36	98	75	85	93.38	0.99
A-6	0.26	2.27	99	76	86	95.48	0.98
A-5	0.26	2.27	101	76	87	97.53	1.00
A-4	0.25	2.19	102	76	86	99.62	1.01
A-3	0.25	2.20	102	77	86	101.68	1.00
A-2	0.25	2.20	102	78	87	103.73	1.00
A-1	0.24	2.11	102	78	84	105.79	1.00
B-12	0.25	2.21	102	79	84	107.80	0.99
B-11	0.25	2.21	103	80	83	109.83	1.00
B-10	0.25	2.21	104	80	83	111.90	1.00
B-9	0.26	2.32	104	81	80	113.96	0.99
B-8	0.26	2.32	105	81	81	116.06	1.00
B-7	0.27	2.42	106	82	79	118.17	0.98
B-6	0.27	2.42	107	83	80	120.28	0.98
B-5	0.26	2.33	107	83	79	122.39	1.00
B-4	0.26	2.33	107	84	79	124.51	1.00
B-3	0.25	2.24	108	84	80	126.64	0.95
B-2	0.25	2.24	108	84	80	128.63	0.95
B-1	0.24	2.15	109	84	81	130.61	0.96
						132.58	



Pinnacle Renewable Energy Inc.
Dryer1 Stack 4
Pinnacle Renewable Energy Inc.

Data for <i>TEST 1</i>		OVERALL ISOKINETICS - TEST 1		1.012
Delta P:	0.257 "H ₂ O	Us avg:	29.68 ft/sec	
Delta H:	2.153	ACFM:	59092 ft ³ /min	
Tm avg:	526.6 °R	SDCFM:	53590 ft ³ /min	
Ts avg:	548.3 °R	Vm std:	46.54 ft ³	
Bwo:	0.018	Vm corr:	48.13 ft ³	
Md:	28.84	Vm:	48.16 ft ³	
Ms:	28.65	MF:	0.9994	
Pb:	28.70 "Hg	PCON:	9.33 mg/m ³	
Pm:	28.86 "Hg	ERAT:	0.85 kg/hr	
Ps:	28.69 "Hg			

Data for <i>TEST 2</i>		OVERALL ISOKINETICS - TEST 2		1.007
Delta P:	0.255 "H ₂ O	Us avg:	29.45 ft/sec	
Delta H:	2.226	ACFM:	58622 ft ³ /min	
Tm avg:	544.5 °R	SDCFM:	53582 ft ³ /min	
Ts avg:	544.0 °R	Vm std:	46.30 ft ³	
Bwo:	0.018	Vm corr:	49.49 ft ³	
Md:	28.84	Vm:	49.52 ft ³	
Ms:	28.65	MF:	0.9994	
Pb:	28.70 "Hg	PCON:	9.53 mg/m ³	
Pm:	28.86 "Hg	ERAT:	0.87 kg/hr	
Ps:	28.69 "Hg			

Data for <i>TEST 3</i>		OVERALL ISOKINETICS - TEST 3		0.988
Delta P:	0.255 "H ₂ O	Us avg:	29.40 ft/sec	
Delta H:	2.250	ACFM:	58524 ft ³ /min	
Tm avg:	549.6 °R	SDCFM:	53807 ft ³ /min	
Ts avg:	542.8 °R	Vm std:	45.62 ft ³	
Bwo:	0.014	Vm corr:	49.22 ft ³	
Md:	28.84	Vm:	49.25 ft ³	
Ms:	28.69	MF:	0.9994	
Pb:	28.70 "Hg	PCON:	10.53 mg/m ³	
Pm:	28.87 "Hg	ERAT:	0.96 kg/hr	
Ps:	28.69 "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)

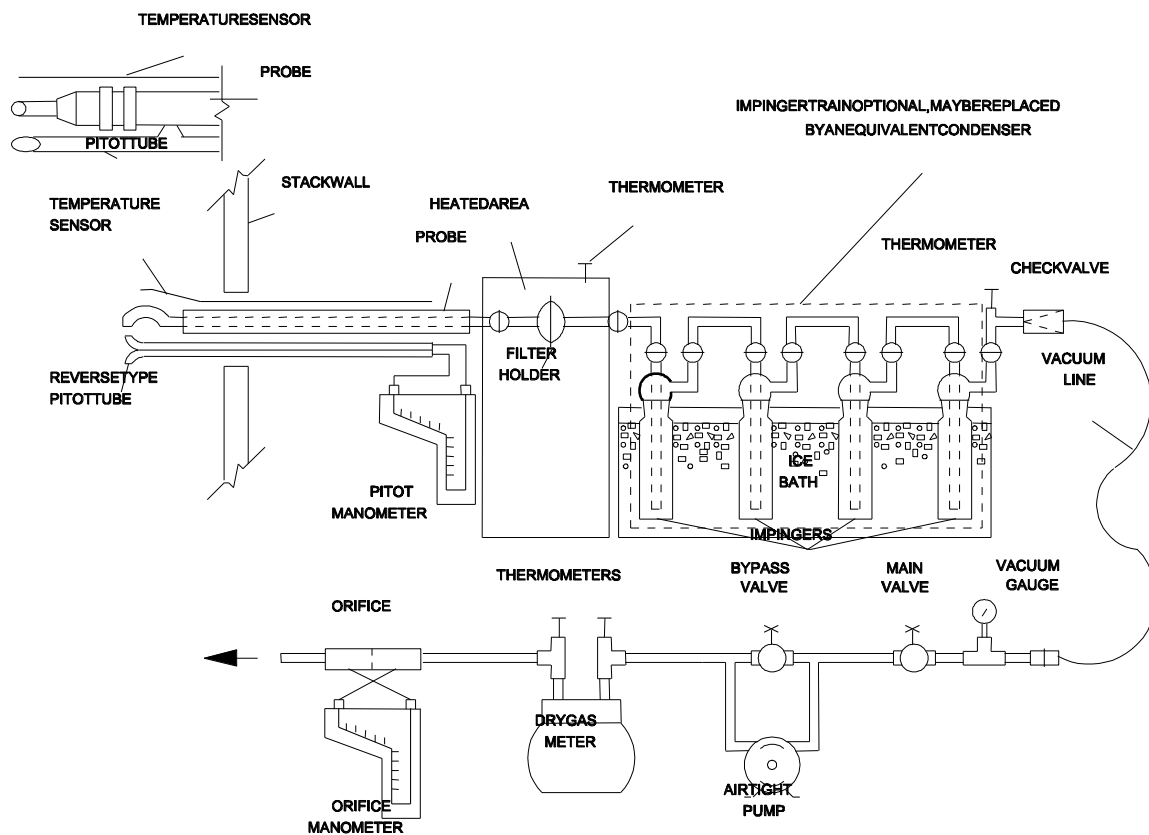
O₂, CO₂, and CO were found using either Fuji Analytical Analyzer by means of infrared and paramagnetic technology (EPA 3A) or by fyrite (EPA Method 3).

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.

$$\begin{aligned} V_{m(\text{std})} &= V_m Y \left(\frac{T_{\text{std}}}{T_m} \right) \left[\frac{P_{\text{bar}} + \frac{\Delta H}{13.6}}{P_{\text{std}}} \right] \\ &= K_1 V_m Y \frac{P_{\text{bar}} + \left(\frac{\Delta H}{13.6} \right)}{T_m} \end{aligned} \quad \text{Eq. 5-1}$$

where:

$$\begin{aligned} K_1 &= 0.3858 \text{ }^\circ\text{K/mm Hg for metric units,} \\ &= 17.64 \text{ }^\circ\text{R/in. Hg for English units.} \end{aligned}$$

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.

$$V_{w(\text{std})} = \frac{V_{lc} \rho_w R T_{\text{std}}}{M_w P_{\text{std}}} = K_2 V_{lc} \quad \text{Eq. 5-2}$$

where:

$$\begin{aligned} K_2 &= 0.001333 \text{ m}^3/\text{ml for metric units,} \\ &= 0.04707 \text{ ft}^3/\text{ml for English units.} \end{aligned}$$

Moisture Content.

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

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.

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

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.**

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

where:

$$K_3 = 0.003454 [(\text{mm Hg})(\text{m}^3)]/[(\text{ml})(^\circ\text{K})] \text{ for metric units,}$$

$$= 0.002669 [(\text{in. Hg})(\text{ft}^3)]/[(\text{ml})(^\circ\text{R})] \text{ for English units.}$$

Calculation from Intermediate Values.

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

$$= \frac{K_4 T_s V_{m(std)}}{P_s v_s A_n \theta (1 - B_{ws})}$$
Eq. 5-8

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.

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

Average Stack Gas Dry Volumetric Flow Rate.

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

where:

A	=	Cross-sectional area of stack, m ² (ft ²).
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).

$$= M_d (1 - B_{ws}) + 18.0 B_{ws}$$
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),

$$= P_{bar} + P_g$$

P _{std}	=	Standard absolute pressure, 760 mm Hg (29.92 in. Hg).
Q _{sd}	=	Dry volumetric stack gas flow rate corrected to standard conditions, dsm ³ /hr (dscf/hr).
t _s	=	Stack temperature, °C (°F).
T _s	=	Absolute stack temperature, °K (°R).

Calibration Certificate for S-Type Pitot Tube

Date: 12-Jan-25 *Barometric Pressure ("Hg):* 29.9
Pitot I.D.: **107** *Wind Tunnel Temperature (^oF):* 66.0
Nozzle: 0.250

<i>Wind Velocity (ft/sec)</i>	<i>Ref.Pitot ("H₂O)</i>	<i>S-Type Pitot ("H₂O)</i>	<i>Pitot Factor</i>
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: 12-Jan-25 *Barometric Pressure ("Hg):* 29.78
Pitot I.D.: **200** *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>
17.53	0.06982	0.10114	0.82249
41.78	0.39667	0.56684	0.82817
50.67	0.58346	0.81271	0.83883
60.32	0.82699	1.14880	0.83997
86.08	1.68407	2.38761	0.83144
101.99	2.36401	3.27573	0.84102

Average= 0.83365

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: 12-Jan-25 *Barometric Pressure ("Hg):* 30.05
Pitot I.D.: **140** *Wind Tunnel Temperature (^oF):* 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 for S-Type Pitot Tube

Date: 12-Jan-25 *Barometric Pressure ("Hg):* 29.78
Pitot I.D.: **217** *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>
13.51	0.04147	0.05467	0.86230
19.93	0.09031	0.12262	0.84962
41.60	0.39339	0.54073	0.84442
62.13	0.87726	1.25293	0.82840
79.94	1.45249	2.09036	0.82524
101.14	2.32467	3.37170	0.82204

Average= 0.83867

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: 12-Jan-25

CONSOLE MANUF.: NAPP MODEL 31

CONSOLE I.D.: C-1021

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	69.8	69.8	69.8
P=Pres. Differential at WTM ("Hg)	0.0691	0.1250	0.1839
Pb= Atmospheric Pressure ("Hg)	28.60	28.60	28.60
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.7142	0.7142	0.7142
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	82.0	81.0	84.0
To= Dry Test Meter Outlet Temp. (oF.)	75.0	75.0	76.0
Ri= Initial Dry Test volume (ft3)	63.95	57.10	69.85
Rf= Final Dry Test Volume (ft3)	68.83	61.98	74.75
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	28.5309	28.4750	28.4161
Pd= Pb + (^H/13.59) "Hg	28.6736	28.7472	28.8208
Tw= Ta +460 (oR.)	529.8	529.8	529.8
Td= [(Ti + To)/2] + 460 (oR.)	538.5	538.0	540.0
Bw= Pv/Pb ("Hg)	0.0250	0.0250	0.0250
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
(Calculated Y Value)(WTMF)	1.0025	0.9970	0.9920
Y (MEAN)(WTMF) =	0.9972		

MCCALL ENVIRONMENTAL

Calibrating Technician Signature:



ORIFICE METER CALIBRATION

DATE: 12-Jan-25

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	28.6	28.6	28.6
Y=gas meter factor	1.0025	1.0025	0.9970
Delta H=	0.5	1	1.5
Ri=int. gas meter vol.	75.6	85.6	88.33
Rf=final gas meter vol.	77.5	88.26	91.64
min. samp	5	5	5
$Q_m = Y(R_f - R_i) / \Delta T (FT^3 / MIN)$	0.38095	0.53333	0.660014
To=meter outlet Temp (oF)	75	75	77
Tm=meter out temp. (oR)	535	535	537
$P_m = P_b + \Delta H$	28.636792	28.673584	28.710375
$SQRT(T_m / P_m * H / M_d)$	0.5678687	0.8025723	0.9841506
Ko=orifice const.	0.6708417	0.6645258	0.6706433

Ko MEAN = 0.6686703

$K_o * 4 * 144 = 385.15407$

McCALL ENVIRONMENTAL LTD.



Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: 12-Jan-25

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	28.6	28.6	28.6
Y=gas meter factor	0.997	0.9920	0.9920
Delta H=	2	2.5	3
Ri=int. gas meter vol.	95.91	99.8	104.2
Rf=final gas meter vol.	99.72	104.11	108.97
min. samp	5	5	5
$Q_m = Y(R_f - R_i) / \sqrt{T(FT^3/MIN)}$	0.759714	0.855104	0.946368
To=meter outlet Temp (oF)	77	78	78
Tm=meter out temp. (oR)	537	538	538
$P_m = P_b + \Delta H$	28.747167	28.783959	28.820751
$SQRT(T_m / P_m * H / M_d)$	1.1356718	1.2700889	1.3904243
Ko=orifice const.	0.6689556	0.6732631	0.6806325

Ko MEAN = 0.6742837

$K_o * 4 * 144 = 388.38743$

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:



CALIBRATION CERTIFICATE DRY GAS METER

DATE: 13-Jan-25

CONSOLE MANUF.: NAPP MODEL 31

CONSOLE I.D.: C-980

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	69.8	69.8	69.8
P=Pres. Differential at WTM ("Hg)	0.0809	0.1471	0.2060
Pb= Atmospheric Pressure ("Hg)	28.60	28.60	28.60
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.7142	0.7142	0.7142
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	88.0	90.0	94.0
To= Dry Test Meter Outlet Temp. (oF.)	77.0	77.0	77.0
Ri= Initial Dry Test volume (ft3)	28.84	21.97	34.72
Rf= Final Dry Test Volume (ft3)	33.73	26.88	39.67
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	28.5191	28.4529	28.3940
Pd= Pb + (^H/13.59) "Hg	28.6736	28.7472	28.8208
Tw= Ta +460 (oR.)	529.8	529.8	529.8
Td= [(Ti + To)/2] + 460 (oR.)	542.5	543.5	545.5
Bw= Pv/Pb ("Hg)	0.0250	0.0250	0.0250
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
ated Y Value)(WTMF)	1.0074	1.0003	0.9913
Y (MEAN)(WTMF) =	0.9997		

N.R. MCCALL & ASSOCIATES LTD.

Calibrating Technician Signature:



ORIFICE METER CALIBRATION

DATE: Jan 13 2025

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	28.6	28.6	28.6
Y=gas meter factor	1.0074	1.0074	1.0003
Delta H=	0.5	1	1.5
Ri=int. gas meter vol.	45.54	48.3	52
Rf=final gas meter vol.	47.62	51.35	55.7
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.4190784	0.614514	0.740222
To=meter outlet Temp (oF)	77	77	77
Tm=meter out temp. (oR)	537	537	537
Pm=Pb + ^H	28.636792	28.6735835	28.7103753
SQRT(Tm/Pm*H/Md)	0.5689292	0.804071	0.98415064
Ko=orifice const.	0.7366091	0.76425341	0.75214299

Ko MEAN = 0.7510018

Ko*4*144= 432.57705

McCALL ENVIRONMENTAL LTD.



Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: Jan 13 2025

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	28.6	28.6	28.6
Y=gas meter factor	1.0003	0.9913	0.9913
Delta H=	2	2.5	3
Ri=int. gas meter vol.	56.3	61.5	66.8
Rf=final gas meter vol.	60.48	66.18	71.9
min. samp	5	5	5
$Q_m = Y(R_f - R_i) / \Delta T (FT^3 / MIN)$	0.8362508	0.9278568	1.011126
Tm=meter out temp. (oF)	76	77	78
Tm=meter out temp. (oR.)	536	537	538
$P_m = P_b + \Delta H$	28.747167	28.783959	28.820751
$SQRT(T_m / P_m * H / M_d)$	1.1346139	1.268908	1.3904243
Ko=orifice const.	0.7370356	0.7312247	0.7272068

Ko MEAN = 0.7318223

$Ko * 4 * 144 = 421.52966$

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:



**CALIBRATION CERTIFICATE
DRY GAS METER**

DATE: 13-Jan-25

CONSOLE MANUF.: NAPP MODEL 31

CONSOLE I.D.: C-955

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	68.0	68.0	68.0
P=Pres. Differential at WTM ("Hg)	0.0699	0.0868	0.1766
Pb= Atmospheric Pressure ("Hg)	28.35	28.35	28.35
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.6900	0.6900	0.6900
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	80.0	79.0	82.0
To= Dry Test Meter Outlet Temp. (oF.)	68.0	67.0	72.0
Ri= Initial Dry Test volume (ft3)	6.69	99.87	13.53
Rf= Final Dry Test Volume (ft3)	11.54	104.76	18.40
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	28.2801	28.2632	28.1734
Pd= Pb + (^H/13.59) "Hg	28.4236	28.4972	28.5708
Tw= Ta +460 (oR.)	528.0	528.0	528.0
Td= [(Ti + To)/2] + 460 (oR.)	534.0	533.0	537.0
Bw= Pv/Pb ("Hg)	0.0243	0.0243	0.0243
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
(Calculated Y Value)(WTMF)	1.0042	0.9910	0.9968
Y (MEAN)(WTMF) =	0.9973		

MCCALL ENVIRONMENTAL

Calibrating Technician Signature:



ORIFICE METER CALIBRATION

DATE: 13-Jan-25

CONSOLE I.D. C-955

	RUN 1	RUN 2	RUN 3
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	28.35	28.35	28.35
Y=gas meter factor	1.0042	1.0042	0.9910
Delta H=	0.5	1	1.5
Ri=int. gas meter vol.	21.3	24.1	27.2
Rf=final gas meter vol.	23.17	26.81	30.56
min. samp	5	5	5
$Q_m = Y(R_f - R_i) / \Delta T (FT^3 / MIN)$	0.375571	0.544276	0.665952
To=meter outlet Temp (oF)	71	71	72
Tm=meter out temp. (oR)	531	531	532
$P_m = P_b + \Delta H$	28.38679	28.42358	28.46038
$SQRT(T_m / P_m * H / M_d)$	0.568228	0.803075	0.983851
Ko=orifice const.	0.660951	0.67774	0.676883

Ko MEAN : 0.671858

$K_o * 4 * 144 = 386.9903$

McCALL ENVIRONMENTAL LTD.



Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: 13-Jan-25

CONSOLE I.D. C-955

	RUN 4	RUN 5	RUN 6
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	28.35	28.35	28.35
Y=gas meter factor	0.991	0.9968	0.9968
Delta H=	2	2.5	3
Ri=int. gas meter vol.	31.1	35.5	40.6
Rf=final gas meter vol.	34.98	39.78	45.3
min. samp	5	5	5
$Q_m=Y(R_f-R_i)/^AT(FT3/MIN)$	0.769016	0.853261	0.936992
Tm=meter out temp. (oF)	72	74	74
Tm=meter out temp. (oR.)	532	534	534
$P_m=P_b + ^H$	28.49717	28.53396	28.57075
$SQRT(T_m/P_m*H/M_d)$	1.13532	1.27089	1.391293
Ko=orifice const.	0.677356	0.671389	0.673468

Ko MEAN : 0.674071

$Ko*4*144=$ 388.2649

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:



CALIBRATION CERTIFICATE DRY GAS METER

DATE: 13-Jan-25

CONSOLE MANUF.: NAPP MODEL 31

CONSOLE I.D.: C-1039

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	69.8	69.8	69.8
P=Pres. Differential at WTM ("Hg)	0.0883	0.1618	0.2428
Pb= Atmospheric Pressure ("Hg)	28.35	28.35	28.35
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.7142	0.7142	0.7142
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	96.0	98.0	104.0
To= Dry Test Meter Outlet Temp. (oF.)	81.0	77.0	85.0
Ri= Initial Dry Test volume (ft3)	69.98	63.92	78.89
Rf= Final Dry Test Volume (ft3)	74.83	68.88	83.92
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	28.2617	28.1882	28.1072
Pd= Pb + (^H/13.59) "Hg	28.4236	28.4972	28.5708
Tw= Ta +460 (oR.)	529.8	529.8	529.8
Td= [(Ti + To)/2] + 460 (oR.)	548.5	547.5	554.5
Bw= Pv/Pb ("Hg)	0.0252	0.0252	0.0252
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
lated Y Value)(WTMF)	1.0264	0.9967	0.9899

Y (MEAN)(WTMF) = 1.0043

MCCALL ENVIRONMENTAL

Calibrating Technician Signature:



ORIFICE METER CALIBRATION

DATE: 13-Jan-25

CONSOLE I.D. C-1039

	RUN 1	RUN 2	RUN 3
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	28.35	28.35	28.35
Y=gas meter factor	1.0264	1.0264	0.9967
Delta H=	0.5	1	1.5
Ri=int. gas meter vol.	85.1	87.7	91.5
Rf=final gas meter vol.	87.38	90.93	95.43
min. samp	5	5	5
$Q_m=Y(R_f-R_i)/^{\circ}T(FT^3/MIN)$	0.4680384	0.6630544	0.7834062
Tm=meter out temp. (oF)	86	87	89
Tm=meter out temp. (oR.)	546	547	549
$P_m=P_b + ^{\circ}H$	28.386792	28.423584	28.460375
$SQRT(T_m/P_m*H/M_d)$	0.5761976	0.8150842	0.9994469
Ko=orifice const.	0.8122881	0.8134796	0.7838397

Ko MEAN = 0.8032025

$K_o^4*144=$ 462.64462

McCALL ENVIRONMENTAL

Calibrating Technician Signature:



ORIFICE METER CALIBRATION

DATE: 13-Jan-25

CONSOLE I.D. C-1039

	RUN 4	RUN 5	RUN 6
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	28.35	28.35	28.35
Y=gas meter factor	0.9967	0.9899	0.9899
Delta H=	2	2.5	3
Ri=int. gas meter vol.	95.8	101.1	106.6
Rf=final gas meter vol.	100.32	106.17	112.16
min. samp	5	5	5
$Q_m = Y(R_f - R_i) / \Delta T (FT^3/MIN)$	0.9010168	1.0037586	1.1007688
Tm=meter out temp. (oF)	89	89	90
Tm=meter out temp. (oR.)	549	549	550
$P_m = P_b + \Delta H$	28.497167	28.533959	28.570751
$SQRT(T_m / P_m * H / M_d)$	1.1533167	1.2886157	1.4119827
Ko=orifice const.	0.7812397	0.7789434	0.7795908

Ko MEAN = 0.7799246

$K_o^4 * 144 = 449.23659$

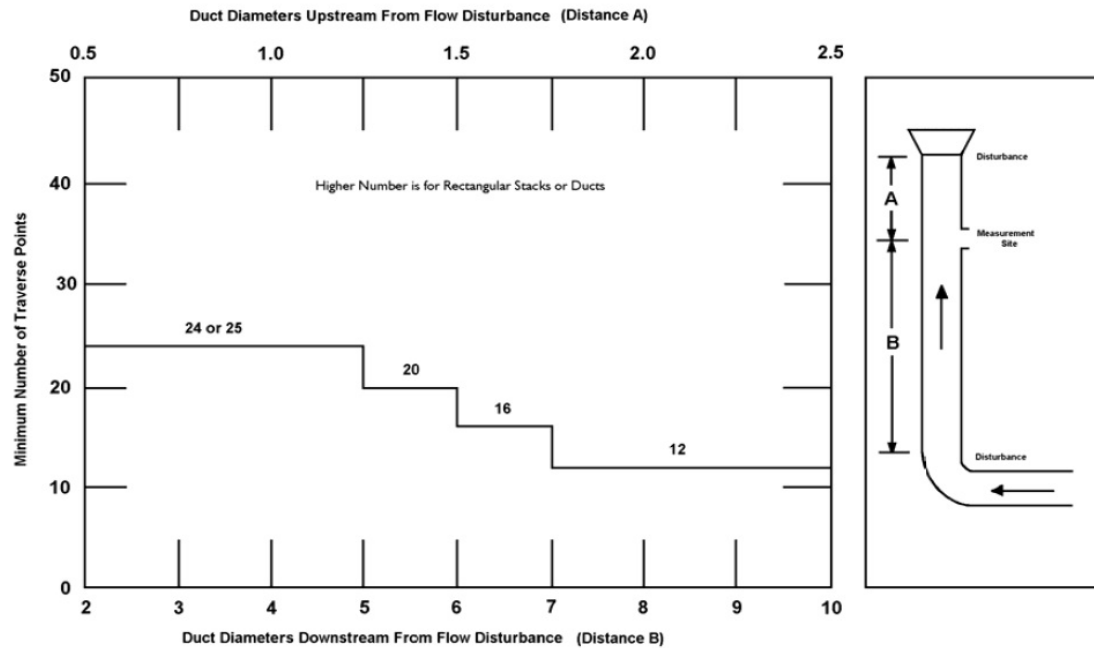
McCALL ENVIRONMENTAL



Calibrating Technician Signature:



Site Diagram & Sample Point Selection



Client: [Pinnacle Pellet Smithers](#)
 Source: [Dryer Stacks 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°

Analytical Report

Bill To: McCall Environmental 6733 Buchanan Road Coldstream, BC, Canada V1B 3C5	Project ID: Project Name: Drax Smithers/Drax Burns Lake	Lot ID: 1809066
Attn: Accounts Payable	Project Location:	Control Number:
Sampled By:	LSD:	Date Received: Apr 23, 2025
Company:	P.O.:	Date Reported: Apr 25, 2025
	Proj. Acct. code:	Report Number: 3129156
		Report Type: Final Report

		Reference Number	1809066-1	1809066-2	1809066-3
		Sample Date	Apr 16, 2025	Apr 16, 2025	Apr 16, 2025
		Sample Time	NA	NA	NA
		Sample Location			
		Sample Description	Drax Smithers / Dryer Stack 1 Test 1 F-28 / 18.6 °C	Drax Smithers / Dryer Stack 1 Test 2 F-29 / 18.6 °C	Drax Smithers / Dryer Stack 1 Test 3 F-30 / 18.6 °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	301	294	302
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/Drax Burns Lake	Lot ID: 1809066
Attn: Accounts Payable	Project Location:	Control Number:
Sampled By:	LSD:	Date Received: Apr 23, 2025
Company:	P.O.:	Date Reported: Apr 25, 2025
	Proj. Acct. code:	Report Number: 3129156
		Report Type: Final Report

		Reference Number	1809066-4	1809066-5	1809066-6
		Sample Date	Apr 16, 2025	Apr 16, 2025	Apr 16, 2025
		Sample Time	NA	NA	NA
		Sample Location			
		Sample Description	Drax Smithers / Dryer Stack 2 Test 1 F-31 / 18.6 °C	Drax Smithers / Dryer Stack 2 Test 2 F-32 / 18.6 °C	Drax Smithers / Dryer Stack 2 Test 3 F-33 / 18.6 °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	310	314	327
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/Drax Burns Lake	Lot ID: 1809066
Attn: Accounts Payable	Project Location:	Control Number:
Sampled By:	LSD:	Date Received: Apr 23, 2025
Company:	P.O.:	Date Reported: Apr 25, 2025
	Proj. Acct. code:	Report Number: 3129156
		Report Type: Final Report

		Reference Number	1809066-7	1809066-8	1809066-9
		Sample Date	Apr 16, 2025	Apr 16, 2025	Apr 16, 2025
		Sample Time	NA	NA	NA
		Sample Location			
		Sample Description	Drax Smithers / Dryer Stack 3 Test 1 F-86 / 18.6 °C	Drax Smithers / Dryer Stack 3 Test 2 F-87 / 18.6 °C	Drax Smithers / Dryer Stack 3 Test 3 F-88 / 18.6 °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	311	312	308
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/Drax Burns Lake Project Location: LSD: P.O.: Proj. Acct. code:	Lot ID: 1809066 Control Number: Date Received: Apr 23, 2025 Date Reported: Apr 25, 2025 Report Number: 3129156 Report Type: Final Report
Attn: Accounts Payable Sampled By: Company:		

		Reference Number	1809066-10	1809066-11	1809066-12
		Sample Date	Apr 16, 2025	Apr 16, 2025	Apr 16, 2025
		Sample Time	NA	NA	NA
		Sample Location			
		Sample Description	Drax Smithers / Dryer Stack 4 Test 1 F-77 / 18.6 °C	Drax Smithers / Dryer Stack 4 Test 2 F-84 / 18.6 °C	Drax Smithers / Dryer Stack 4 Test 3 F-85 / 18.6 °C
		Matrix	Water	Water	Water
Analyte	Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents					
Oil and Grease	Total	mg/sample	<2	3	3
Volume	Sample volume	mL	305	311	303
pH adjustment	required prior to O&G extraction		Yes	Yes	Yes



Smithers Pellet Limited Partnership

Production rate during stack test (April 16, 2025)

16.6 MT/hr

Average for the previous calendar month

15.6 MT/hr

90th percentile production rate

18.1 MT/hr

Average hourly dryer exit temperature during testing:

Included in report

Client Name: Wax Smithers
 Process: Dryer Stack
 Test Number: 1
 Date: April 16 2015
 Start Time: 9:29
 Finish Time: 10:22
 Starting Vol.: 300 mL
 Final Vol.: 314
 Flask: Q28
 Console: 1021
 Stack Diameter: _____

BP 28.86
 DN 0.255
 CP 0.4182
 MF 0.9972
 Moist. 2%
 PM 28.91
 AS ~
 Ko 0.6686
 Pitot 10.7
 Port ~
 Static -0.21
 PS 28.78

CO ₂	O ₂	CO	N ₂
0	20.9		
0	20.9		
0	20.9		
0	20.9		

Personnel: CS CS

Leakage Rate @ 15 inches

Load:

Duct Diameters

Up-Stream

Duct Diameters

Downstream

Mean Yaw Angle

Start: 0.05 Finish: 0.07

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	0.35	1.64	39	38	76	24.66	0	270	Iced	0
11	0.36	1.77	43	45	72	36.20				2.5
10	0.34	1.63	46	51	74	37.79				5
9	0.34	1.62	50	41	76	39.56				7.5
8	0.31	1.48	51	43	74	41.14				10
7	0.32	1.54	51	43	73	42.70				12.5
6	0.31	1.50	55	47	73	44.23	2			15
5	0.30	1.45	58	48	74	45.86				17.5
4	0.29	1.40	59	50	75	47.44				20
3	0.30	1.47	61	57	75	48.94				22.5
2	0.30	1.46	63	52	77	50.48				25
1	0.29	1.41	64	54	78	52.01				27.5
B12	0.35	1.71	65	55	78	53.60	2			30
11	0.35	1.70	65	55	79	55.26				32.5
10	0.36	1.77	69	58	78	56.98				35
9	0.34	1.68	71	60	78	58.73				37.5
8	0.34	1.67	71	60	78	60.45				40
7	0.33	1.63	72	61	76	62.13				42.5
6	0.32	1.59	73	63	76	63.78	2			45
5	0.31	1.55	75	64	75	65.50				47.5
4	0.29	1.45	76	65	76	67.21				50
3	0.30	1.50	75	65	76	68.81				52.5
2	0.30	1.49	76	67	78	70.40				55
1	0.28	1.39	76	67	78	72.02				57.5
						73.90	2			60

Client Name: Drax
Smithers
 Process: Dryer Stack 1
 Test Number: 2
 Date: April 16 2025
 Start Time: 10:55
 Finish Time: 11:58
 Starting Vol.: 300 mL
 Final Vol.: 311 mL
 Flask: Q2A
 Console: 1021
 Stack Diameter

BP 28.80
 DN 0.255
 CP 0.84182
 MF 0.9972
 Moist. 2%
 PM 28.91
 AS ~
 Ko 0.0086
 Pitot 107
 Port ~
 Static -0.21
 PS 28.78

CO ₂	O ₂	CO	N ₂
0	20.9		
0	20.9		
0	20.9		
0	20.9		

Personnel: AB/CM

Leakage Rate @ 15 inches

Load:

Duct Diameters

Up-Stream

Duct Diameters

Downstream

Mean Yaw Angle

Start: 0.06 Finish: 0.08

✓ Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A 12	0.35	1.72	62	62	76	74.49	0	270	Feed	0
11	0.36	1.76	63	62	78	76.10				2.5
10	0.35	1.72	60	62	77	77.85				5
9	0.35	1.72	67	62	78	79.57				7.5
8	0.33	1.63	70	62	78	81.28				10
7	0.33	1.63	71	62	78	82.96				12.5
6	0.31	1.54	72	64	77	84.60	2			15
5	0.30	1.49	74	65	78	86.23				17.5
4	0.29	1.45	75	67	77	87.84				20
3	0.29	1.45	75	66	76	89.40				22.5
2	0.30	1.50	76	67	78	90.98				25
1	0.29	1.45	78	69	78	92.56				27.5
B 12	0.36	1.80	78	70	78	94.20	2			30
11	0.35	1.76	80	71	78	95.97				32.5
10	0.36	1.81	82	71	78	97.76				35
9	0.34	1.71	81	72	78	99.55				37.5
8	0.34	1.72	81	72	79	101.27				40
7	0.33	1.67	82	75	77	102.98				42.5
6	0.32	1.63	83	75	76	104.72	2			45
5	0.31	1.57	83	77	77	106.45				47.5
4	0.30	1.51	83	75	79	108.10				50
3	0.30	1.51	84	76	80	109.75				52.5
2	0.29	1.47	84	77	79	111.48				55
1	0.28	1.41	84	77	79	112.98				57.5
						114.48	2			60

Client Name: Vrax Smithers
 Process: Dryer Stack 1
 Test Number: 3
 Date: Apr. 11/16/2025
 Start Time: 12:17 PM
 Finish Time: 1:16
 Starting Vol.: 300 mL
 Final Vol.: 316
 Flask: Q30
 Console: 1021
 Stack Diameter: _____

BP 28.80
 DN 0.255
 CP 0.84182
 MF 0.8972
 Moist. 1%
 PM 28.91
 AS ~
 Ko 0.6686
 Pitot 107
 Port ~
 Static -0.21
 PS 28.78

CO ₂	O ₂	CO	N ₂
0	20.9		
0	20.9		
0	20.9		
0	20.9		

Personnel: AD/AD

Leakage Rate @ 15 inches

Load:

Duct Diameters

Up-Stream

Duct Diameters

Downstream

Mean Yaw Angle

Start: 0.04

Finish: 0.06

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A 12	0.36	1.84	74	73	77	15.12	0	270	Ice	0
11	0.35	1.77	71	70	76	16.97				2.5
10	0.35	1.77	72	70	78	18.74				5
9	0.34	1.73	75	70	75	20.54				7.5
8	0.35	1.78	76	71	76	22.32				10
7	0.33	1.68	78	71	78	24.10				12.5
6	0.31	1.58	79	71	78	25.76	2			15
5	0.30	1.53	80	72	77	27.43				17.5
4	0.29	1.49	82	73	77	29.10				20
3	0.29	1.49	82	73	77	30.77				22.5
2	0.30	1.54	83	75	77	32.44				25
1	0.28	1.49	84	76	77	34.11	1			27.5
B 12	0.35	1.81	84	76	77	35.76	2			30
11	0.36	1.81	85	76	78	37.46				32.5
10	0.34	1.76	86	77	77	39.16				35
9	0.34	1.76	88	77	78	40.87				37.5
8	0.33	1.71	89	79	78	42.58				40
7	0.32	1.67	91	80	76	44.35				42.5
6	0.33	1.73	89	83	70	46.10	2			45
5	0.31	1.61	89	83	78	47.85				47.5
4	0.30	1.55	89	81	79	49.60				50
3	0.30	1.56	88	82	78	51.27				52.5
2	0.29	1.50	89	82	79	52.98				55
1	0.28	1.45	90	83	79	54.54				57.5
						56.14	2	↓	↓	60

Client Name: Dray Smithers
 Process: Dryer Stack 2
 Test Number: 1
 Date: Apr 16 2025
 Start Time: 9:29
 Finish Time: 10:31
 Starting Vol.: 300
 Final Vol.: 323 mL
 Flask: Q31
 Console: 980
 Stack Diameter: _____

BP 28.80
 DN 0.275
 CP 1.83365
 MF 0.9997
 Moist. 20%
 PM 28.91
 AS _____
 Ko 0.7510
 Pitot 200
 Port _____
 Static -0.20
 PS 28.78

CO ₂	O ₂	CO	N ₂
0	20.9		
0	20.9		
0	20.9		
0	20.9		

Duct Diameters

Up-Stream

Duct Diameters

Downstream

Personnel: CR ch

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	0.33	1.60	38	38	85	34.21	1	270	100	
11	0.34	1.68	47	39	82	35.95				
10	0.32	1.65	55	40	82	37.70				
9	0.35	1.75	59	41	83	39.45				
8	0.34	1.71	64	42	82	41.31				
7	0.32	1.61	66	43	82	43.11				
6	0.34	1.73	68	45	81	44.90	2			
5	0.35	1.78	71	46	81	46.69				
4	0.35	1.69	73	48	80	48.53				
3	0.32	1.64	73	50	82	50.29				
2	0.30	1.54	75	51	80	52.05				
1	0.26	1.34	77	53	82	53.82				
B12	0.34	1.75	76	54	83	55.38	2			
11	0.34	1.75	80	55	84	57.28				
10	0.33	1.71	80	58	83	59.00				
9	0.35	1.81	81	58	84	60.84				
8	0.34	1.77	83	59	83	62.69				
7	0.34	1.77	84	60	83	64.50				
6	0.33	1.72	84	61	82	66.43	2			
5	0.34	1.78	84	63	82	68.31				
4	0.32	1.68	86	66	83	70.15				
3	0.31	1.62	86	63	84	71.98				
2	0.20	1.52	86	64	83	73.73				
1	0.20	1.52	85	65	84	75.53				
						77.33				

Client Name: DCA
Smithers
 Process: Dryer Stack 2
 Test Number: 2
 Date: Apr 16 2025
 Start Time 1055
 Finish Time 1157
 Starting Vol. 300
 Final Vol. 322ml
 Flask: Q32
 Console: 980
 Stack Diameter

BP 28.80
 DN 275
 CP 83365
 MF 9997
 Moist. 3%
 PM 28.91
 AS
 Ko 7510
 Pitot 200
 Port
 Static -20
 PS 28.78

CO ₂	O ₂	CO	N ₂
0	20.9		
0	20.9		
0	20.9		
0	20.9		

Duct Diameters

Up-Stream

Duct Diameters

Downstream

Personnel: CB CB

Mean Yaw Angle

Leakage Rate @ 15 inches

Start: 1006 Finish: 1009

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	1.56	66	63	84	79.14	0	270	Lead	
11	.33	1.65	67	61	84	79.94				
10	.34	1.72	72	60	84	81.71				
9	.35	1.77	76	60	85	83.58				
8	.33	1.69	79	61	84	85.45				
7	.37	1.64	80	61	82	87.26				
6	.35	1.79	81	62	83	89.08	2			
5	.34	1.75	85	62	83	90.91				
4	.31	1.59	85	62	83	92.80				
3	.29	1.49	86	64	83	94.69				
2	.28	1.44	85	65	82	96.36				
1	.25	1.28	85	66	85	98.08				
B12	.32	1.65	87	69	85	99.74	1			
11	.34	1.74	88	67	88	101.65				
10	.33	1.70	89	68	86	103.62				
9	.35	1.81	91	69	84	105.48				
8	.34	1.77	95	69	85	107.33				
7	.33	1.72	92	72	84	109.19				
6	.35	1.83	91	73	83	111.05	1			
5	.34	1.77	92	71	83	113.04				
4	.32	1.67	94	72	85	114.86				
3	.30	1.56	92	72	85	116.79				
2	.29	1.51	91	73	83	118.52				
1	.28	1.47	91	72	81	120.29				
						122.11				

Client Name: Drax
Smithers
 Process: Dryer stack?
 Test Number: 3
 Date: Apr 16 2025
 Start Time 12:17
 Finish Time 11:19
 Starting Vol. 300
 Final Vol. 320
 Flask: Q33
 Console: 980
 Stack Diameter

BP 28.80
 DN .275
 CP .83365
 MF .9997
 Moist. 2%
 PM 28.91
 AS
 Ko .7510
 Pitot 200
 Port
 Static -.20
 PS 28.78

CO ₂	O ₂	CO	N ₂
0	20.9		
0	20.9		
0	20.9		
0	20.9		

Duct Diameters

Up-Stream

Duct Diameters

Downstream

Personnel: CB CB

Mean Yaw Angle

Leakage Rate @ 15 inches

Start: 0.05 Finish: 0.07

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	1.60	67	66	83	22.60	0	270	Iced	
11	.34	1.76	71	65	83	24.43				
10	.35	1.81	78	65	85	26.33				
9	.34	1.78	81	66	82	28.23				
8	.33	1.73	83	66	82	30.13				
7	.34	1.78	84	65	84	31.95				
6	.33	1.73	87	66	83	33.91	1			
5	.31	1.63	87	67	82	35.80				
4	.29	1.53	88	68	82	37.59				
3	.28	1.48	89	69	82	39.31				
2	.29	1.53	89	70	82	41.13				
1	.28	1.49	90	70	81	43.11				
B12	.33	1.75	90	71	81	44.89	1			
11	.34	1.81	92	71	80	46.76				
10	.35	1.87	94	72	81	48.69				
9	.34	1.81	93	75	82	50.66				
8	.34	1.81	94	74	81	52.55				
7	.33	1.77	95	74	81	54.44				
6	.33	1.77	95	74	81	56.41	2			
5	.32	1.71	96	75	84	58.34				
4	.30	1.59	96	75	86	60.24				
3	.29	1.55	95	76	84	62.10				
2	.28	1.49	95	77	85	63.94				
1	.26	1.39	96	78	85	65.75				
						67.52	2			

Client Name: Pumucke, R. / 1stBP 28.70DN 275CP 83829MF 1.0043Moist. .02PM 28.81

AS

Ko 8032Pitot 140

Port

Static -1.20PS 28.69Process: DAIRY STACK 3Test Number: 1Date: APRIL 16/25Start Time 9:28Finish Time 10:34Starting Vol. 300Final Vol. 314Flask: Q-80Console: C-1039

Stack Diameter

CO ₂	O ₂	CO	N ₂

Duct Diameters

Up-Stream

Duct Diameters

Downstream

Personnel: DL DB

Mean Yaw Angle

Leakage Rate @ 15 inches

Start: .004Finish: .006

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	.26	1.15	54	54	84	63.43	5	245	1000	
11	.24	1.08	58	55	77	65.10				
10	.22	1.01	71	59	76	66.75				
9	.24	1.10	74	59	78	68.32				
8	.26	1.19	78	60	82	69.95	4			
7	.27	1.24	82	61	83	71.66				
6	.28	1.30	84	63	81	73.40				
5	.31	1.44	87	65	81	75.17				
4	.34	1.58	91	68	79	77.02	4			
3	.36	1.70	92	69	77	78.95				
2	.38	1.79	93	71	80	80.96				
1	.38	1.79	94	72	80	83.05				
B-12	.25	1.18	95	73	81	85.13	4			
11	.25	1.18	95	74	82	87.02				
10	.24	1.13	98	76	83	88.76				
9	.26	1.23	99	78	83	90.50				
8	.27	1.29	100	79	81	92.23				
7	.27	1.30	101	81	79	94.01	5			
6	.28	1.34	101	81	80	95.95				
5	.32	1.54	102	82	77	97.80				
4	.33	1.59	102	83	78	99.78				
3	.33	1.60	104	84	78	101.80	5			
2	.36	1.74	104	85	80	103.76				
1	.35	1.69	105	85	81	105.80				
						107.98				

Client Name: P. PELLETProcess: DAYTON ST. 3Test Number: 2Date: APRIL 16/25Start Time: 10:45Finish Time: 11:50Starting Vol. 300Final Vol. 321Flask: Q-87Console: 1039

Stack Diameter

BP 28.70DN 275CP 83829MF 1.0043Moist. 02PM 28.81

AS

Ko 8032Pitot 140

Port

Static -20PS 28.69

CO ₂	O ₂	CO	N ₂

Personnel: DR DB

Leakage Rate @ 15 inches

Load:

Duct Diameters

Up-Stream

Duct Diameters

Downstream

Mean Yaw Angle

Start: 003Finish: 005

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.25	1.15	78	79	90	8.01	4	250	1050	
11	.26	1.22	77	80	81	9.86				
10	.23	1.08	78	80	80	11.50				
9	.25	1.18	80	81	80	13.22				
8	.25	1.18	81	81	81	15.00	4			
7	.28	1.33	86	82	76	16.63				
6	.29	1.40	93	85	76	18.45				
5	.30	1.45	99	84	77	20.30				
4	.33	1.60	103	84	76	22.21	4			
3	.35	1.71	106	86	74	24.22				
2	.37	1.80	105	87	76	26.30				
1	.37	1.80	106	88	79	28.43				
B-12	.26	1.27	107	89	78	30.50				
11	.25	1.22	108	90	77	32.33	5			
10	.25	1.22	108	91	78	34.20				
9	.28	1.36	111	92	82	35.90				
8	.28	1.36	113	93	83	37.76				
7	.28	1.36	114	94	82	39.55				
6	.30	1.46	114	95	82	41.60	6			
5	.34	1.67	115	97	80	43.45				
4	.35	1.72	115	96	82	45.68				
3	.35	1.72	116	97	82	47.80				
2	.34	1.67	116	97	80	49.93				
1	.34	1.67	116	97	80	52.10	5			
						54.16				

Client Name: P. PELLETBP 28.70Process: Dryer St. 3DN .275Test Number: 3CP .83829Date: April 16/25MF 1.0043Start Time 12:04Moist. .02Finish Time 1:09PM 28.81Starting Vol. 300

AS

Final Vol. 318Ko .8032Flask: Q-88Pitot 140Console: 1039

Port

Stack Diameter

Static -.20PS 28.69

CO ₂	O ₂	CO	N ₂

Duct Diameters

Up-Stream

Duct Diameters

Downstream

Personnel: DL JB

Mean Yaw Angle

Leakage Rate @ 15 inches

Start:

Finish:

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	.24	1.22	88	91	90	54.30	4	250	100	
11	.26	1.22	96	93	93	56.12				
10	.24	1.13	97	94	95	57.93				
9	.25	1.18	101	93	94	59.68	4			
8	.27	1.27	100	93	94	61.40				
7	.28	1.33	103	92	91	63.20				
6	.32	1.52	104	92	91	65.04	4			
5	.34	1.62	104	92	92	67.10				
4	.34	1.62	105	92	90	69.03				
3	.36	1.72	105	92	90	71.05	5			
2	.38	1.81	106	93	91	73.12				
1	.35	1.67	106	93	90	75.32				
B-12	.25	1.19	105	95	90	77.46				
11	.24	1.15	105	94	90	79.18	5			
10	.25	1.19	106	95	89	80.92				
9	.28	1.34	105	93	89	82.70				
8	.29	1.39	104	94	89	84.60				
7	.32	1.53	105	94	89	86.40	5			
6	.33	1.58	106	94	89	88.38				
5	.32	1.53	106	94	89	90.40				
4	.36	1.72	106	94	89	92.38				
3	.36	1.72	107	94	89	94.50	5			
2	.35	1.67	107	94	90	96.57				
1	.34	1.62	106	94	90	98.67				
						100.79				

Client Name: Pinnacle Pellet
Smithers
 Process: Dryer stack 4
 Test Number: 1
 Date: April 16/25
 Start Time: 9:28
 Finish Time: 10:30
 Starting Vol.: 300
 Final Vol.: 317
 Flask: 77
 Console: 455
 Stack Diameter:

BP 28.70
 DN 295
 CP 83.807
 MF 9994
 Moist. .02
 PM 28.81
 AS
 Ko .6785
 Pitot 217
 Port
 Static -.14
 PS 28.69

CO ₂	O ₂	CO	N ₂
0	21		

Duct Diameters

Up-Stream

Duct Diameters

Downstream

Personnel: DL DB

Mean Yaw Angle

Leakage Rate @ 15 inches

Start: .006

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	.25	2.05	53	53	87	85.24	3	270	111.1	
11	.25	2.03	56	41	86	87.21				
10	.26	2.12	57	42	86	89.12				
9	.26	2.12	58	43	86	91.07				
8	.27	2.20	59	44	87	93.03				
7	.27	2.22	64	45	87	95.05				
6	.28	2.31	70	46	87	97.06				
5	.26	2.16	74	48	86	99.09				
4	.26	2.17	77	49	86	101.11				
3	.25	2.10	79	51	85	103.14				
2	.24	2.02	81	52	85	105.13				
1	.24	2.02	82	53	89	107.10				
B-12	.24	2.01	83	54	89	109.04				
11	.25	2.10	84	55	90	111.06				
10	.25	2.10	85	56	90	113.10				
9	.25	2.10	86	57	90	115.11				
8	.26	2.20	89	58	90	117.09				
7	.27	2.30	91	61	90	119.12				
6	.27	2.30	92	62	90	121.17				
5	.27	2.30	94	63	90	123.26				
4	.26	2.22	94	64	90	125.34				
3	.26	2.23	95	65	91	127.35				
2	.26	2.23	95	66	91	129.40				
1	.24	2.05	96	67	91	131.42				
						133.40				

Client Name: Pinnacle/Kellogg
Smithers
 Process: Dryer Stack 4
 Test Number: 2
 Date: April 16/25
 Start Time: 10:50
 Finish Time: 11:52
 Starting Vol.: 300
 Final Vol.: 317
 Flask: Q-84
 Console: C-955
 Stack Diameter: _____

BP 28.70
 DN .295
 CP .83867
 MF .90714
 Moist. .02
 PM 28.81
 AS _____
 Ko .6785
 Pitot 217
 Port _____
 Static -.14
 PS 28.69

CO ₂	O ₂	CO	N ₂
0	21		

Duct Diameters

Up-Stream

Duct Diameters

Downstream

Personnel: DB/RL

Mean Yaw Angle

Leakage Rate @ 15 inches

Start: -004 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
A-12	.24	2.01	60	62	83	33.63	0	270	ICEP	
11	.25	2.12	68	65	82	35.60	1			
10	.25	2.12	74	65	82	37.48	2			
9	.26	2.24	87	65	83	39.48	2			
8	.27	2.33	90	66	83	41.47	2			
7	.27	2.33	90	67	84	43.54	3			
6	.26	2.25	91	68	85	45.62	3			
5	.26	2.25	92	69	86	47.68	3			
4	.26	2.26	95	70	84	49.74	3			
3	.25	2.19	98	71	83	51.82	3			
2	.24	2.10	99	72	83	53.87	3			
1	.24	2.11	100	73	83	55.90	3			
B-12	.25	2.19	101	74	85	58.00				
11	.25	2.19	101	75	86	60.08				
10	.25	2.19	102	76	86	62.14				
9	.26	2.28	103	77	86	64.28				
8	.26	2.30	103	78	84	66.31				
7	.27	2.39	104	79	84	68.40				
6	.28	2.48	105	79	84	70.53				
5	.26	2.30	106	80	84	72.71				
4	.25	2.22	106	80	84	74.94				
3	.25	2.22	107	81	84	77.02				
2	.25	2.22	107	83	83	79.06				
1	.24	2.13	108	84	84	81.11		270	ICEP	
						83.15				

Client Name: Innacle Reflet
Smithers
 Process: Dryer Stack 4
 Test Number: 3
 Date: April 16/25
 Start Time: 12:10
 Finish Time: 1:12
 Starting Vol.: 300
 Final Vol.: 33
 Flask: B-85
 Console: C-953
 Stack Diameter: _____

BP 28.70
 DN .295
 CP .83867
 MF .9994
 Moist. _____
 PM 28.81
 AS _____
 Ko .6705
 Pitot 2.17
 Port _____
 Static -.14
 PS 28.69

CO ₂	O ₂	CO	N ₂
0	21		

Duct Diameters

Up-Stream

Duct Diameters

Downstream

Personnel: DB/DL

Mean Yaw Angle

Leakage Rate @ 15 inches

Start: _____

Finish: _____

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	.25	2.14	72	70	82	83.33				
11	.25	2.17	86	73	83	85.34				
10	.25	2.17	88	74	83	87.35				
9	.26	2.25	94	75	85	89.30				
8	.26	2.27	97	75	85	91.37				
7	.27	2.36	98	75	85	93.38				
6	.26	2.27	99	76	86	95.48				
5	.26	2.27	101	76	87	97.53				
4	.25	2.19	102	76	86	99.62				
3	.25	2.20	102	77	86	101.68				
2	.25	2.20	102	78	87	103.73				
1	.24	2.11	102	78	84	105.79				
B-12	.25	2.21	102	79	84	107.80				
11	.25	2.21	103	80	83	109.83				
10	.25	2.21	104	80	83	111.90				
9	.26	2.32	104	81	80	113.96				
8	.26	2.32	105	81	81	116.06				
7	.27	2.42	106	82	79	118.17				
6	.27	2.42	107	83	80	120.28				
5	.26	2.33	107	83	79	122.39				
4	.26	2.33	107	84	79	124.51				
3	.25	2.24	108	84	80	126.64				
2	.25	2.24	108	84	80	128.63				
1	.24	2.15	109	84	81	130.61				
						132.58				



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


DEAN


REGISTRAR

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY



MOUNT ROYAL COLLEGE

Faculty of Continuing Education and Extension

David Brandle

has successfully completed

The program of studies and is awarded the certificate in

STACK SAMPLING

May 3 – May 7, 2004

May, 2004
Date

Doreen Brandle
Dean
Faculty of Continuing Education and Extension

MOUNT ROYAL UNIVERSITY

70

Faculty of Continuing Education and Extension

Daniel Lawrence

has successfully completed

Stack Sampling
Certificate of Completion

35 Hours / 2022

October 2022

Date



Dean

Faculty of Continuing Education and Extension

MOUNT ROYAL UNIVERSITY

Faculty of Continuing Education and Extension

Chris Bodden

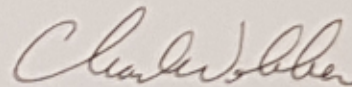
has successfully completed

Stack Sampling Seminar

35 Hours / 2017

June 23, 2017

Date



Dean

Faculty of Continuing Education and Extension

