DRAX Pinnacle Pellet
Williams Lake, B.C.
Dryer Stacks 1-4
April 14, 2022
Permit 17557

Our Job Number: ME2223-012

Report Author: Matt McCall
McCall Environmental

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May 5, 2022

DRAX
Pinnacle Renewable Energy Inc
1160 South Lakeside Dr.
Williams Lake, B.C.
V2J 6K9

Attention: **Mr. Ian Tencarre**

Reference: **Parameters Tested –** Total Particulate & Cond. Organics
Test Date(s) – April 14, 2022
Permit – PA-17557
McCall File Number – ME2223-012

As requested our firm has performed a series of air emission tests at your facility in Williams Lake BC.

Testing Parameters

Dryer Stacks 1-4
- Total Particulate and Condensable Organics State of Oregon Method

Key Personnel

- Report Generation: Matt McCall 250-542-5118
- Sr Field Tech: Danny Lawrence 250-857-5713
- Field Tech: Dave Brandle and Nick Angus 250-564-9106
- Plant Personnel: Ian Tencarre 250-267-7580

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.

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Matt McCall

Digitally signed by Matt McCall
Date: 2022.05.05 14:27:37 -07'00'

Matt McCall

Summary of Test Results

Dryer Results April 14, 2022

Total Particulate **Average of Triplicate Tests**

Parameter	Stack 1	Stack2	Stack 3	Stack 4	Avg/ Total	Permit
Test Date	April 14/22	April 14/22	April 14/22	April 14/22	N/A	
Gas Temperature (°C)	27.1	37.0	31.3	41.0	34.1	
% Moisture	1.99	3.23	2.48	2.71	2.60	
Velocity (m/sec)	7.62	7.35	7.29	7.23	7.37	
ACFM	47223	45582	45184	44858	182847	
Std. Dry Flow Rate (m^3/sec)	20.12	18.56	18.89	18.14	75.71	90.00
Tot Part. Dry Basis ref. Cond. (mg/m^3)	8.04	13.09	10.41	14.04	11.40	15.00
Front Half Particulate (mg/m^3)	5.69	10.81	6.59	9.13	8.06	
Back Half Condensables (mg/m^3)	2.36	2.28	3.82	4.91	3.34	
Mass Emission Rate (kg/hr)	0.58	0.87	0.71	0.92	3.08	

* Mass Emission Rates (Flow, kg/hr are a total combined value, concentration, temp etc is averaged)

* Standard reference conditions are on a dry basis corrected to 20 deg C and a pressure of 29.92 inches Hg

Discussion Of Test Results

Test results are in compliance with permitted limits.

Last time this sources was tested on March 9, 2022 the total velocity was 83.05 m^3/sec and an average concentration of 15.99 mg/m^3.

These sources are turbulent however are not considered cyclonic and are tested with standard testing methodologies.

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Pinnacle Pellet **April 14/22**
Dryer Stack 1 **Permit Number: RA-17557**
Williams Lake

AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	81 ^{o} F	27 ^{o} C
Moisture Content (by volume):	1.99 %	
Average Stack Gas Velocity:	25.0 ft/sec	7.6 m/sec
Total Actual Gas Flow Rate:	47223 ACFM	
Dry Gas flow Rate at Reference Conditions:	42625 SCFM	20.1 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.004 gr/ft^3	8.04 mg/m^3
Front Half Particulate	0.002 gr/ft^3	5.7 mg/m^3
Back Half Condensibles	0.001 gr/ft^3	2.4 mg/m^3
Mass Emission Rate	1.28 lbs/hr	0.58 kg/hr

SUMMARY OF AIR EMISSION TESTS

TEST 1:

Gas Temperature:	80 ^{o} F	27 ^{o} C
Moisture Content (by volume):	2.2 %	
Average Stack Gas Velocity:	25.1 ft/sec	7.6 m/sec
Total Actual Gas Flow Rate:	47385 ACFM	
Dry Gas flow Rate at Reference Conditions:	42758 SCFM	20.2 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.004 gr/ft^3	8.2 mg/m^3
Front Half Particulate	.003 gr/ft^3	6.5 mg/m^3
Back Half Condensibles	.001 gr/ft^3	1.8 mg/m^3
Mass Emission Rate	1.32 lbs/hr	0.60 kg/hr

TEST 2:

Gas Temperature:	81 ^{o} F	27 ^{o} C
Moisture Content (by volume):	1.8 %	
Average Stack Gas Velocity:	25.0 ft/sec	7.6 m/sec
Total Actual Gas Flow Rate:	47165 ACFM	
Dry Gas flow Rate at Reference Conditions:	42671 SCFM	20.1 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.003 gr/ft^3	7.2 mg/m^3
Front Half Particulate	.002 gr/ft^3	5.4 mg/m^3
Back Half Condensibles	.001 gr/ft^3	1.8 mg/m^3
Mass Emission Rate	1.15 lbs/hr	0.52 kg/hr

TEST 3:

Gas Temperature:	82 ^{o} F	28 ^{o} C
Moisture Content (by volume):	2.0 %	
Average Stack Gas Velocity:	24.9 ft/sec	7.6 m/sec
Total Actual Gas Flow Rate:	47119 ACFM	
Dry Gas flow Rate at Reference Conditions:	42447 SCFM	20.0 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.004 gr/ft^3	8.7 mg/m^3
Front Half Particulate	.002 gr/ft^3	5.2 mg/m^3
Back Half Condensibles	.002 gr/ft^3	3.5 mg/m^3
Mass Emission Rate	1.38 lbs/hr	0.63 kg/hr

DATA FOR TESTS 1 TO 3

Client:	Pinnacle Pellet		
Plant Location:	Williams Lake		
Process:	Dryer Stack 1		
Permit Number:	RA-17557		
Job Number:	ME2223-012		
Pollution Control Permit:	**15.0** mg/m3	22.5	m3/sec
Number of Tests:	**3** tests		
Minutes per Point:	**2.5** minutes		

	TEST 1	TEST 2	TEST 3
Filter Number:	S42	S43	S44
Date of Test:	April 14/22	April 14/22	April 14/22
Start Time:	8:47	9:52	10:55
Stop Time:	9:49	10:54	11:57
On-line Sampling Time:	60	60	60
Testing Personnel:	NA/CB/KS	NA/CB/KS	NA/CB/KS
Sampler Model:	1021	1021	1021
Barometric Pressure("Hg):	28.24	28.24	28.24
Static Pressure("H_2O):	-0.19	-0.19	-0.19
%CO_2:	0.0	0.0	0.0
%O_2:	21.0	21.0	21.0
%CO:	0.0	0.0	0.0
%N_2:	79.0	79.0	79.0
Diameter of Nozzle(inches):	0.300	0.300	0.300
Meter Factor:	0.9981	0.9981	0.9981
Type-S Pitot Tube Coefficient:	0.83829	0.83829	0.83829
Cross Sectional Area of Stack(ft^2):	31.5	31.5	31.5
Impinger Condensate(g):	15	11	13
Weight of Moisture in Silica Gel(g):	4.3	4.5	4.0
Weight of Filter Particulate(g):	0.0016	0.0002	0.0007
Weight of Probe Washings(g):	0.0058	0.0058	0.0052
Weight of Impinger Content Organic(g):	0.0020	0.0020	0.0040
Total Weight of Particulate(g):	0.0094	0.0080	0.0099

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Sampling Data for - *TEST 1*
Pinnacle Pellet
Dryer Stack 1
Williams Lake

April 14/22

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (^{o} F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (^{o} F)	TEMP OUT (^{o} F)			
A-12	0.18	1.64	44	44	79	66.80	1.00
A-11	0.17	1.60	61	56	77	68.47	0.99
A-10	0.17	1.60	65	56	77	70.13	1.03
A-9	0.15	1.42	69	57	77	71.86	1.02
A-8	0.14	1.33	72	60	78	73.48	1.01
A-7	0.15	1.43	74	61	79	75.03	1.02
A-6	0.17	1.62	76	62	80	76.66	0.96
A-5	0.18	1.72	78	65	80	78.29	0.97
A-4	0.18	1.73	81	66	79	80.00	1.03
A-3	0.19	1.83	83	69	80	81.81	1.01
A-2	0.21	2.03	85	70	82	83.65	1.01
A-1	0.20	1.95	87	72	79	85.59	1.02
B-12	0.25	2.44	89	74	80	87.50	1.00
B-11	0.21	2.06	91	76	80	89.61	1.03
B-10	0.21	2.06	93	77	80	91.60	1.02
B-9	0.19	1.87	94	79	80	93.58	1.01
B-8	0.19	1.88	96	81	80	95.45	0.99
B-7	0.18	1.78	96	82	81	97.29	1.03
B-6	0.17	1.69	98	84	80	99.15	1.07
B-5	0.17	1.69	99	85	80	101.05	1.04
B-4	0.18	1.79	100	87	81	102.90	0.95
B-3	0.18	1.79	100	88	83	104.64	0.96
B-2	0.19	1.89	101	88	82	106.40	0.98
B-1	0.20	1.99	103	89	82	108.25	1.01
						110.20	

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Sampling Data for - *TEST 2*
Pinnacle Pellet
Dryer Stack 1
Williams Lake

April 14/22

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (^{o} F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (^{o} F)	TEMP OUT (^{o} F)			
B-12	0.17	1.65	86	85	85	10.85	0.94
B-11	0.17	1.68	93	87	81	12.50	0.99
B-10	0.16	1.59	97	89	80	14.26	1.02
B-9	0.16	1.61	100	92	79	16.02	1.03
B-8	0.15	1.50	100	90	81	17.81	0.98
B-7	0.14	1.41	101	91	80	19.45	1.01
B-6	0.16	1.60	101	91	81	21.10	1.02
B-5	0.17	1.71	103	93	80	22.87	0.96
B-4	0.18	1.81	105	94	80	24.60	0.98
B-3	0.20	2.02	105	94	80	26.42	0.98
B-2	0.21	2.13	107	95	79	28.33	0.98
B-1	0.21	2.13	108	96	79	30.30	1.00
A-12	0.24	2.44	109	97	80	32.31	1.00
A-11	0.22	2.23	110	98	81	34.47	1.04
A-10	0.19	1.93	110	100	81	36.61	0.96
A-9	0.18	1.83	111	100	80	38.46	0.97
A-8	0.18	1.83	111	101	80	40.28	0.98
A-7	0.17	1.73	112	101	80	42.11	0.95
A-6	0.17	1.73	112	101	81	43.85	0.95
A-5	0.18	1.84	113	102	81	45.59	0.97
A-4	0.18	1.84	113	102	81	47.42	0.96
A-3	0.19	1.94	113	102	81	49.23	0.99
A-2	0.20	2.04	114	103	81	51.14	0.98
A-1	0.19	1.94	114	103	81	53.08	1.00
						55.02	

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Sampling Data for - *TEST 3*
Pinnacle Pellet
Dryer Stack 1
Williams Lake

April 14/22

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (^oF)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (^oF)	TEMP OUT (^oF)			
A-12	0.18	1.80	100	99	84	55.38	0.99
A-11	0.17	1.70	104	99	85	57.20	1.01
A-10	0.16	1.61	107	100	85	59.01	0.99
A-9	0.16	1.61	110	101	86	60.75	1.00
A-8	0.14	1.42	112	101	85	62.50	1.04
A-7	0.14	1.42	113	102	83	64.21	1.04
A-6	0.15	1.52	113	102	83	65.93	1.05
A-5	0.16	1.63	113	102	83	67.72	1.03
A-4	0.18	1.83	112	102	83	69.54	1.02
A-3	0.19	1.93	112	103	83	71.45	1.01
A-2	0.21	2.14	111	103	82	73.40	1.02
A-1	0.21	2.13	111	102	82	75.47	1.02
B-12	0.24	2.44	112	102	81	77.53	1.08
B-11	0.23	2.34	112	102	81	79.86	1.02
B-10	0.20	2.04	112	102	80	82.02	1.00
B-9	0.18	1.84	113	102	80	83.99	1.01
B-8	0.18	1.84	113	102	80	85.88	1.01
B-7	0.17	1.74	113	103	81	87.78	0.99
B-6	0.17	1.73	112	102	81	89.58	1.00
B-5	0.17	1.73	112	102	81	91.40	1.00
B-4	0.18	1.84	113	103	80	93.23	1.02
B-3	0.20	2.04	113	103	80	95.15	0.99
B-2	0.19	1.94	114	103	81	97.11	0.98
B-1	0.19	1.94	114	103	81	99.00	0.97
						100.88	

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Pinnacle Pellet
Dryer Stack 1
Pinnacle Pellet

Data for ***TEST 1*** **OVERALL ISOKINETICS - TEST 1 1.007**

Delta P:	**0.183**	**"H_2O**	**Us avg:**	**25.07**	**ft/sec**
Delta H:	**1.785**		**ACFM:**	**47385**	**ft^3/min**
Tm avg:	**538.4**	**^oR**	**SDCFM:**	**42758**	**ft^3/min**
Ts avg:	**539.8**	**^oR**	**Vm std:**	**40.28**	**ft^3**
Bwo:	**0.022**		**Vm corr:**	**43.32**	**ft^3**
Md:	**28.84**		**Vm:**	**43.40**	**ft^3**
Ms:	**28.60**		**MF:**	**0.9981**	
Pb:	**28.24**	**"Hg**	**PCON:**	**8.24**	**mg/m^3**
Pm:	**28.37**	**"Hg**	**ERAT:**	**0.60**	**kg/hr**
Ps:	**28.23**	**"Hg**			

Data for ***TEST 2*** **OVERALL ISOKINETICS - TEST 2 0.986**

Delta P:	**0.181**	**"H_2O**	**Us avg:**	**24.96**	**ft/sec**
Delta H:	**1.840**		**ACFM:**	**47165**	**ft^3/min**
Tm avg:	**561.1**	**^oR**	**SDCFM:**	**42671**	**ft^3/min**
Ts avg:	**540.5**	**^oR**	**Vm std:**	**39.34**	**ft^3**
Bwo:	**0.018**		**Vm corr:**	**44.09**	**ft^3**
Md:	**28.84**		**Vm:**	**44.17**	**ft^3**
Ms:	**28.64**		**MF:**	**0.9981**	
Pb:	**28.24**	**"Hg**	**PCON:**	**7.18**	**mg/m^3**
Pm:	**28.38**	**"Hg**	**ERAT:**	**0.52**	**kg/hr**
Ps:	**28.23**	**"Hg**			

Data for ***TEST 3*** **OVERALL ISOKINETICS - TEST 3 1.011**

Delta P:	**0.180**	**"H_2O**	**Us avg:**	**24.93**	**ft/sec**
Delta H:	**1.842**		**ACFM:**	**47119**	**ft^3/min**
Tm avg:	**566.6**	**^oR**	**SDCFM:**	**42447**	**ft^3/min**
Ts avg:	**542.1**	**^oR**	**Vm std:**	**40.14**	**ft^3**
Bwo:	**0.020**		**Vm corr:**	**45.41**	**ft^3**
Md:	**28.84**		**Vm:**	**45.50**	**ft^3**
Ms:	**28.63**		**MF:**	**0.9981**	
Pb:	**28.24**	**"Hg**	**PCON:**	**8.71**	**mg/m^3**
Pm:	**28.38**	**"Hg**	**ERAT:**	**0.63**	**kg/hr**
Ps:	**28.23**	**"Hg**			

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Pinnacle Pellet **April 14/22**
Dryer Stack 2 **Permit Number: RA-17557**
Williams Lake, BC **AVERAGE OF AIR EMISSION TESTS 1 TO 3**

Gas Temperature:	99 ^{o} F	37 ^{o} C
Moisture Content (by volume):	3.23 %	
Average Stack Gas Velocity:	24.1 ft/sec	7.4 m/sec
Total Actual Gas Flow Rate:	45582 ACFM	
Dry Gas flow Rate at Reference Conditions:	39336 SCFM	18.6 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.006 gr/ft^3	13.09 mg/m^3
Front Half Particulate	0.005 gr/ft^3	10.8 mg/m^3
Back Half Condensibles	0.001 gr/ft^3	2.3 mg/m^3
Mass Emission Rate	1.93 lbs/hr	0.87 kg/hr

SUMMARY OF AIR EMISSION TESTS

TEST 1:

Gas Temperature:	100 ^{o} F	38 ^{o} C
Moisture Content (by volume):	3.3 %	
Average Stack Gas Velocity:	24.1 ft/sec	7.3 m/sec
Total Actual Gas Flow Rate:	45499 ACFM	
Dry Gas flow Rate at Reference Conditions:	39143 SCFM	18.5 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.006 gr/ft^3	14.4 mg/m^3
Front Half Particulate	.005 gr/ft^3	12.5 mg/m^3
Back Half Condensibles	.001 gr/ft^3	2.0 mg/m^3
Mass Emission Rate	2.12 lbs/hr	0.96 kg/hr

TEST 2:

Gas Temperature:	99 ^{o} F	37 ^{o} C
Moisture Content (by volume):	2.8 %	
Average Stack Gas Velocity:	24.3 ft/sec	7.4 m/sec
Total Actual Gas Flow Rate:	45845 ACFM	
Dry Gas flow Rate at Reference Conditions:	39731 SCFM	18.8 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.006 gr/ft^3	12.6 mg/m^3
Front Half Particulate	.005 gr/ft^3	10.7 mg/m^3
Back Half Condensibles	.001 gr/ft^3	1.9 mg/m^3
Mass Emission Rate	1.88 lbs/hr	0.85 kg/hr

TEST 3:

Gas Temperature:	97 ^{o} F	36 ^{o} C
Moisture Content (by volume):	3.6 %	
Average Stack Gas Velocity:	24.0 ft/sec	7.3 m/sec
Total Actual Gas Flow Rate:	45403 ACFM	
Dry Gas flow Rate at Reference Conditions:	39135 SCFM	18.5 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.005 gr/ft^3	12.2 mg/m^3
Front Half Particulate	.004 gr/ft^3	9.3 mg/m^3
Back Half Condensibles	.001 gr/ft^3	2.9 mg/m^3
Mass Emission Rate	1.79 lbs/hr	0.81 kg/hr

DATA FOR TESTS 1 TO 3

Client:	**Pinnacle Pellet**	
Plant Location:	**Williams Lake, BC**	
Process:	**Dryer Stack 2**	
Permit Number:	**RA-17557**	
Job Number:		
Pollution Control Permit:	**15.0 mg/m3**	22.5 **m3/sec**
Number of Tests:	**3 tests**	
Minutes per Point:	**2.5 minutes**	

	TEST 1	TEST 2	TEST 3
Filter Number:	S50	S51	S52
Date of Test:	April 14/22	April 14/22	April 14/22
Start Time:	8:50	10:05	11:11
Stop Time:	9:53	11:07	12:13
On-line Sampling Time:	60	60	60
Testing Personnel:	NA/CB/KS	NA/CB/KS	NA/CB/KS
Sampler Model:	955	955	955
Barometric Pressure("Hg):	28.24	28.24	28.24
Static Pressure("H_2O):	-0.16	-0.16	-0.16
%CO_2:	0.0	0.0	0.0
%O_2:	21.0	21.0	21.0
%CO:	0.0	0.0	0.0
%N_2:	79.0	79.0	79.0
Diameter of Nozzle(inches):	0.300	0.300	0.300
Meter Factor:	0.9918	0.9918	0.9918
Type-S Pitot Tube Coefficient:	0.84182	0.84182	0.84182
Cross Sectional Area of Stack(ft^2):	31.5	31.5	31.5
Impinger Condensate(g):	21	18	25
Weight of Moisture in Silica Gel(g):	5.0	4.0	4.0
Weight of Filter Particulate(g):	0.0003	0.0010	0.0004
Weight of Probe Washings(g):	0.0123	0.0100	0.0092
Weight of Impinger Content Organic(g):	0.0020	0.0020	0.0030
Total Weight of Particulate(g):	0.0146	0.0130	0.0126

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Sampling Data for - *TEST 1*

Pinnacle Pellet

Dryer Stack 2

Williams Lake, BC

April 14/22

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (^oF)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (^oF)	TEMP OUT (^oF)			
A-12	0.20	1.63	55	53	100	82.20	0.99
A-11	0.19	1.56	59	53	99	83.94	0.97
A-10	0.16	1.33	66	54	97	85.62	0.93
A-9	0.14	1.17	73	55	98	87.10	1.06
A-8	0.15	1.26	79	61	102	88.69	1.02
A-7	0.15	1.27	85	64	102	90.29	0.94
A-6	0.15	1.28	90	63	99	91.78	0.96
A-5	0.14	1.19	92	65	104	93.31	0.95
A-4	0.14	1.20	93	67	102	94.78	0.98
A-3	0.16	1.36	94	67	103	96.29	0.95
A-2	0.17	1.45	94	67	102	97.86	0.96
A-1	0.16	1.36	94	68	105	99.50	0.97
B-12	0.18	1.55	93	67	99	101.11	0.97
B-11	0.19	1.64	94	69	100	102.81	0.95
B-10	0.19	1.65	102	72	101	104.52	1.06
B-9	0.18	1.58	105	73	98	106.45	0.97
B-8	0.17	1.50	107	75	96	108.19	0.94
B-7	0.16	1.41	108	76	98	109.84	0.96
B-6	0.16	1.41	110	79	99	111.46	1.02
B-5	0.15	1.33	110	81	99	113.20	0.93
B-4	0.16	1.41	111	81	101	114.73	0.98
B-3	0.15	1.33	113	83	100	116.40	1.00
B-2	0.13	1.16	113	84	97	118.06	0.98
B-1	0.14	1.25	113	84	95	119.58	0.98
						121.16	

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 2*

Pinnacle Pellet

Dryer Stack 2

Williams Lake, BC

April 14/22

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
A-12	0.19	1.66	90	84	96	22.19	0.97
A-11	0.18	1.57	95	81	97	23.98	1.03
A-10	0.18	1.56	98	80	102	25.82	0.97
A-9	0.17	1.48	103	80	103	27.55	0.96
A-8	0.16	1.40	107	80	102	29.22	1.05
A-7	0.16	1.41	111	82	101	31.00	0.92
A-6	0.15	1.30	112	84	110	32.57	0.98
A-5	0.15	1.31	114	86	110	34.19	0.98
A-4	0.14	1.25	114	87	98	35.82	0.96
A-3	0.15	1.33	113	87	99	37.37	0.99
A-2	0.18	1.60	112	86	99	39.03	0.98
A-1	0.16	1.42	112	86	99	40.82	0.96
B-12	0.19	1.69	113	86	100	42.48	0.96
B-11	0.19	1.69	114	87	101	44.29	0.96
B-10	0.18	1.60	114	88	100	46.09	0.99
B-9	0.18	1.60	114	88	100	47.91	0.98
B-8	0.17	1.52	113	88	98	49.70	0.98
B-7	0.16	1.41	111	87	102	51.45	0.97
B-6	0.15	1.32	110	88	103	53.12	1.00
B-5	0.15	1.34	111	87	97	54.78	0.97
B-4	0.16	1.44	112	87	91	56.41	1.02
B-3	0.15	1.36	112	87	89	58.18	0.96
B-2	0.14	1.26	111	86	89	59.80	1.02
B-1	0.15	1.36	110	86	88	61.46	0.99
						63.12	

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 3*

Pinnacle Pellet

Dryer Stack 2

Williams Lake, BC

April 14/22

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
A-12	0.2	1.74	87	82	97	64.94	0.99
A-11	0.18	1.58	101	81	101	66.78	1.06
A-10	0.17	1.48	102	81	103	68.67	0.99
A-9	0.15	1.32	104	81	99	70.38	0.97
A-8	0.16	1.41	103	80	97	71.97	0.98
A-7	0.15	1.31	104	80	100	73.63	0.97
A-6	0.15	1.31	103	79	101	75.22	1.00
A-5	0.14	1.23	103	79	98	76.85	1.00
A-4	0.14	1.22	103	78	103	78.43	0.99
A-3	0.15	1.31	103	79	99	79.98	0.99
A-2	0.17	1.48	102	78	100	81.60	1.01
A-1	0.15	1.32	103	77	95	83.35	0.97
B-12	0.18	1.58	102	77	96	84.94	0.98
B-11	0.19	1.67	103	77	97	86.70	0.99
B-10	0.20	1.76	103	78	96	88.52	1.00
B-9	0.19	1.68	103	76	95	90.41	0.98
B-8	0.17	1.50	103	76	93	92.21	0.99
B-7	0.16	1.41	103	76	93	93.94	1.00
B-6	0.15	1.32	102	76	94	95.63	1.02
B-5	0.15	1.32	102	75	95	97.30	0.97
B-4	0.16	1.40	102	75	95	98.89	0.94
B-3	0.14	1.23	102	76	93	100.47	1.08
B-2	0.13	1.14	102	76	94	102.17	1.06
B-1	0.14	1.23	102	76	95	103.78	0.96
						105.29	

MCCALL ENVIRONMENTAL

Pinnacle Pellet
Dryer Stack 2
Pinnacle Pellet

Data for ***TEST 1*** **OVERALL ISOKINETICS - TEST 1 0.976**

Delta P:	**0.161**	**"H_2O**	**Us avg:**	**24.07 ft/sec**
Delta H:	**1.387**		**ACFM:**	**45499 ft^3/min**
Tm avg:	**541.5**	**^oR**	**SDCFM:**	**39143 ft^3/min**
Ts avg:	**559.8**	**^oR**	**Vm std:**	**35.69 ft^3**
Bwo:	**0.033**		**Vm corr:**	**38.64 ft^3**
Md:	**28.84**		**Vm:**	**38.96 ft^3**
Ms:	**28.48**		**MF:**	**0.9918**
Pb:	**28.24**	**"Hg**	**PCON:**	**14.45 mg/m^3**
Pm:	**28.34**	**"Hg**	**ERAT:**	**0.96 kg/hr**
Ps:	**28.23**	**"Hg**		

Data for ***TEST 2*** **OVERALL ISOKINETICS - TEST 2 0.981**

Delta P:	**0.164**	**"H_2O**	**Us avg:**	**24.26 ft/sec**
Delta H:	**1.453**		**ACFM:**	**45845 ft^3/min**
Tm avg:	**557.4**	**^oR**	**SDCFM:**	**39731 ft^3/min**
Ts avg:	**558.9**	**^oR**	**Vm std:**	**36.43 ft^3**
Bwo:	**0.028**		**Vm corr:**	**40.59 ft^3**
Md:	**28.84**		**Vm:**	**40.93 ft^3**
Ms:	**28.54**		**MF:**	**0.9918**
Pb:	**28.24**	**"Hg**	**PCON:**	**12.60 mg/m^3**
Pm:	**28.35**	**"Hg**	**ERAT:**	**0.85 kg/hr**
Ps:	**28.23**	**"Hg**		

Data for ***TEST 3*** **OVERALL ISOKINETICS - TEST 3 0.995**

Delta P:	**0.161**	**"H_2O**	**Us avg:**	**24.02 ft/sec**
Delta H:	**1.415**		**ACFM:**	**45403 ft^3/min**
Tm avg:	**549.9**	**^oR**	**SDCFM:**	**39135 ft^3/min**
Ts avg:	**557.0**	**^oR**	**Vm std:**	**36.40 ft^3**
Bwo:	**0.036**		**Vm corr:**	**40.02 ft^3**
Md:	**28.84**		**Vm:**	**40.35 ft^3**
Ms:	**28.45**		**MF:**	**0.9918**
Pb:	**28.24**	**"Hg**	**PCON:**	**12.22 mg/m^3**
Pm:	**28.34**	**"Hg**	**ERAT:**	**0.81 kg/hr**
Ps:	**28.23**	**"Hg**		

MCCALL ENVIRONMENTAL

Pinnacle Pellet **April 14/22**
Dryer Stack 3 **Permit Number: RA-17557**
Williams Lake

AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	88 ^{o} F	31 ^{o} C
Moisture Content (by volume):	2.48 %	
Average Stack Gas Velocity:	23.9 ft/sec	7.3 m/sec
Total Actual Gas Flow Rate:	45184 ACFM	
Dry Gas flow Rate at Reference Conditions:	40026 SCFM	18.9 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.005 gr/ft^3	10.41 mg/m^3
Front Half Particulate	0.003 gr/ft^3	6.6 mg/m^3
Back Half Condensibles	0.002 gr/ft^3	3.8 mg/m^3
Mass Emission Rate	1.56 lbs/hr	0.71 kg/hr

SUMMARY OF AIR EMISSION TESTS

TEST 1:

Gas Temperature:	89 ^{o} F	31 ^{o} C
Moisture Content (by volume):	2.6 %	
Average Stack Gas Velocity:	23.9 ft/sec	7.3 m/sec
Total Actual Gas Flow Rate:	45217 ACFM	
Dry Gas flow Rate at Reference Conditions:	40003 SCFM	18.9 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.005 gr/ft^3	11.4 mg/m^3
Front Half Particulate	.004 gr/ft^3	8.3 mg/m^3
Back Half Condensibles	.001 gr/ft^3	3.1 mg/m^3
Mass Emission Rate	1.71 lbs/hr	0.78 kg/hr

TEST 2:

Gas Temperature:	86 ^{o} F	30 ^{o} C
Moisture Content (by volume):	2.5 %	
Average Stack Gas Velocity:	23.9 ft/sec	7.3 m/sec
Total Actual Gas Flow Rate:	45210 ACFM	
Dry Gas flow Rate at Reference Conditions:	40248 SCFM	19.0 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.003 gr/ft^3	7.5 mg/m^3
Front Half Particulate	.002 gr/ft^3	4.3 mg/m^3
Back Half Condensibles	.001 gr/ft^3	3.2 mg/m^3
Mass Emission Rate	1.13 lbs/hr	0.51 kg/hr

TEST 3:

Gas Temperature:	91 ^{o} F	33 ^{o} C
Moisture Content (by volume):	2.4 %	
Average Stack Gas Velocity:	23.9 ft/sec	7.3 m/sec
Total Actual Gas Flow Rate:	45124 ACFM	
Dry Gas flow Rate at Reference Conditions:	39829 SCFM	18.8 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.005 gr/ft^3	12.3 mg/m^3
Front Half Particulate	.003 gr/ft^3	7.1 mg/m^3
Back Half Condensibles	.002 gr/ft^3	5.2 mg/m^3
Mass Emission Rate	1.84 lbs/hr	0.83 kg/hr

DATA FOR TESTS 1 TO 3

Client:	**Pinnacle Pellet**	
Plant Location:	**Williams Lake**	
Process:	**Dryer Stack 3**	
Permit Number:	**RA-17557**	
Job Number:		
Pollution Control Permit:	**15.0 mg/m3**	22.5 **m3/sec**
Number of Tests:	**3 tests**	
Minutes per Point:	**2.5 minutes**	

	TEST 1	TEST 2	TEST 3
Filter Number:	S45	S46	S47
Date of Test:	April 14/22	April 14/22	April 14/22
Start Time:	12:24	1:28	2:32
Stop Time:	1:26	2:30	3:34
On-line Sampling Time:	60	60	60
Testing Personnel:	NA/CB/KS	NA/CB/KS	NA/CB/KS
Sampler Model:	1021	1021	1021
Barometric Pressure("Hg):	28.24	28.24	28.24
Static Pressure("H_2O):	-0.15	-0.15	-0.15
%CO_2:	0.0	0.0	0.0
%O_2:	21.0	21.0	21.0
%CO:	0.0	0.0	0.0
%N_2:	79.0	79.0	79.0
Diameter of Nozzle(inches):	0.285	0.285	0.285
Meter Factor:	0.9981	0.9981	0.9981
Type-S Pitot Tube Coefficient:	0.83829	0.83829	0.83829
Cross Sectional Area of Stack(ft^2):	31.5	31.5	31.5
Impinger Condensate(g):	15	14	14
Weight of Moisture in Silica Gel(g):	4.0	4.0	4.0
Weight of Filter Particulate(g):	0.0009	0.0009	0.0002
Weight of Probe Washings(g):	0.0071	0.0032	0.0067
Weight of Impinger Content Organic(g):	0.0030	0.0030	0.0050
Total Weight of Particulate(g):	0.0110	0.0071	0.0119

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 1*

Pinnacle Pellet

Dryer Stack 3

Williams Lake

April 14/22

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP ($^{\circ}$ F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN ($^{\circ}$ F)	TEMP OUT ($^{\circ}$ F)			
A-12	0.21	1.64	86	86	93	1.23	1.03
A-11	0.18	1.42	86	86	87	3.02	0.96
A-10	0.17	1.34	86	86	87	4.57	1.03
A-9	0.16	1.27	88	86	86	6.19	1.02
A-8	0.18	1.43	90	86	88	7.74	0.99
A-7	0.14	1.12	91	86	88	9.34	1.02
A-6	0.13	1.03	92	86	88	10.80	1.04
A-5	0.14	1.11	92	86	88	12.23	1.01
A-4	0.15	1.19	93	86	89	13.67	1.00
A-3	0.16	1.27	93	87	89	15.15	0.99
A-2	0.19	1.51	94	87	90	16.66	0.97
A-1	0.19	1.51	94	87	90	18.28	1.04
B-12	0.16	1.27	94	87	89	20.01	1.01
B-11	0.18	1.43	95	87	90	21.56	0.98
B-10	0.16	1.27	96	88	89	23.16	0.97
B-9	0.17	1.36	97	89	97	24.65	1.05
B-8	0.18	1.44	97	89	97	26.30	0.96
B-7	0.19	1.52	98	90	88	27.86	1.00
B-6	0.20	1.61	99	90	87	29.54	1.02
B-5	0.16	1.29	99	91	86	31.30	0.98
B-4	0.15	1.21	100	92	86	32.82	1.01
B-3	0.13	1.05	101	92	85	34.34	1.09
B-2	0.13	1.05	102	93	85	35.87	1.04
B-1	0.14	1.13	103	93	86	37.33	1.02
						38.81	

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 2*

Pinnacle Pellet

Dryer Stack 3

Williams Lake

April 14/22

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
B-12	0.20	1.61	94	93	85	39.66	0.96
B-11	0.19	1.53	95	94	85	41.32	1.01
B-10	0.17	1.37	97	94	86	43.02	0.97
B-9	0.17	1.37	99	95	86	44.57	0.97
B-8	0.16	1.30	100	96	85	46.13	0.97
B-7	0.19	1.54	100	96	85	47.65	1.01
B-6	0.15	1.22	101	96	85	49.36	1.05
B-5	0.15	1.22	101	97	84	50.95	1.00
B-4	0.13	1.06	101	98	84	52.47	1.02
B-3	0.14	1.14	102	98	83	53.91	0.96
B-2	0.17	1.39	102	98	84	55.32	0.94
B-1	0.19	1.54	101	97	86	56.84	1.01
A-12	0.17	1.38	101	97	86	58.56	0.95
A-11	0.17	1.38	101	97	87	60.09	0.96
A-10	0.18	1.46	101	97	87	61.64	1.01
A-9	0.18	1.46	102	97	86	63.31	1.00
A-8	0.20	1.62	102	97	87	64.96	1.00
A-7	0.19	1.54	103	97	88	66.70	1.02
A-6	0.17	1.38	104	97	88	68.44	0.96
A-5	0.15	1.22	104	98	87	69.98	0.95
A-4	0.13	1.06	105	98	87	71.42	0.98
A-3	0.13	1.06	105	98	86	72.81	1.00
A-2	0.14	1.14	106	98	86	74.23	0.96
A-1	0.15	1.22	106	98	86	75.64	1.03
						77.20	

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 3*

Pinnacle Pellet

Dryer Stack 3

Williams Lake

April 14/22

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
A-12	0.19	1.54	98	99	85	77.51	1.05
A-11	0.2	1.62	99	99	87	79.30	1.03
A-10	0.18	1.46	100	99	89	81.10	1.02
A-9	0.17	1.38	102	100	89	82.79	0.97
A-8	0.15	1.21	103	100	90	84.36	1.02
A-7	0.16	1.30	104	100	91	85.90	1.00
A-6	0.18	1.45	104	100	91	87.46	0.97
A-5	0.16	1.29	105	101	92	89.07	0.99
A-4	0.14	1.13	106	101	92	90.62	1.02
A-3	0.13	1.05	107	102	93	92.11	1.02
A-2	0.14	1.13	107	102	93	93.55	1.01
A-1	0.15	1.21	108	102	93	95.03	1.02
B-12	0.16	13.00	109	102	93	96.58	1.02
B-11	0.17	1.38	110	102	93	98.14	1.02
B-10	0.18	1.46	110	103	92	99.79	0.99
B-9	0.19	1.55	111	103	92	101.45	1.03
B-8	0.20	1.63	111	103	91	103.21	1.03
B-7	0.18	1.47	112	103	90	105.03	1.00
B-6	0.18	1.47	112	103	90	106.71	1.03
B-5	0.16	1.31	113	103	90	108.44	1.01
B-4	0.14	1.15	113	104	90	110.04	1.04
B-3	0.13	1.07	113	104	89	111.58	1.01
B-2	0.13	1.07	114	104	90	113.02	1.04
B-1	0.15	1.23	113	104	92	114.50	1.02
						116.06	

MCCALL ENVIRONMENTAL

Pinnacle Pellet
Dryer Stack 3
Pinnacle Pellet

Data for ***TEST 1***

Delta P:	**0.164**	**"H_2O**	**Us avg:**	**23.92**	**ft/sec**
Delta H:	**1.311**		**ACFM:**	**45217**	**ft^3/min**
Tm avg:	**551.3**	**^oR**	**SDCFM:**	**40003**	**ft^3/min**
Ts avg:	**548.7**	**^oR**	**Vm std:**	**34.02**	**ft^3**
Bwo:	**0.026**		**Vm corr:**	**37.51**	**ft^3**
Md:	**28.84**		**Vm:**	**37.58**	**ft^3**
Ms:	**28.56**		**MF:**	**0.9981**	
Pb:	**28.24**	**"Hg**	**PCON:**	**11.42**	**mg/m^3**
Pm:	**28.34**	**"Hg**	**ERAT:**	**0.78**	**kg/hr**
Ps:	**28.23**	**"Hg**			

OVERALL ISOKINETICS - TEST 1 1.009

Data for ***TEST 2***

Delta P:	**0.165**	**"H_2O**	**Us avg:**	**23.92**	**ft/sec**
Delta H:	**1.342**		**ACFM:**	**45210**	**ft^3/min**
Tm avg:	**559.0**	**^oR**	**SDCFM:**	**40248**	**ft^3/min**
Ts avg:	**545.8**	**^oR**	**Vm std:**	**33.52**	**ft^3**
Bwo:	**0.025**		**Vm corr:**	**37.47**	**ft^3**
Md:	**28.84**		**Vm:**	**37.54**	**ft^3**
Ms:	**28.57**		**MF:**	**0.9981**	
Pb:	**28.24**	**"Hg**	**PCON:**	**7.48**	**mg/m^3**
Pm:	**28.34**	**"Hg**	**ERAT:**	**0.51**	**kg/hr**
Ps:	**28.23**	**"Hg**			

OVERALL ISOKINETICS - TEST 2 0.987

Data for ***TEST 3***

Delta P:	**0.163**	**"H_2O**	**Us avg:**	**23.88**	**ft/sec**
Delta H:	**1.815**		**ACFM:**	**45124**	**ft^3/min**
Tm avg:	**564.7**	**^oR**	**SDCFM:**	**39829**	**ft^3/min**
Ts avg:	**550.7**	**^oR**	**Vm std:**	**34.11**	**ft^3**
Bwo:	**0.024**		**Vm corr:**	**38.48**	**ft^3**
Md:	**28.84**		**Vm:**	**38.55**	**ft^3**
Ms:	**28.58**		**MF:**	**0.9981**	
Pb:	**28.24**	**"Hg**	**PCON:**	**12.32**	**mg/m^3**
Pm:	**28.37**	**"Hg**	**ERAT:**	**0.83**	**kg/hr**
Ps:	**28.23**	**"Hg**			

OVERALL ISOKINETICS - TEST 3 1.015

MCCALL ENVIRONMENTAL

Pinnacle Pellet **April 14/22**
Dryer Stack 4 **Permit Number: RA-17557**
Williams Lake

AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	106 ^{o} F	41 ^{o} C
Moisture Content (by volume):	2.71 %	
Average Stack Gas Velocity:	23.7 ft/sec	7.2 m/sec
Total Actual Gas Flow Rate:	44858 ACFM	
Dry Gas flow Rate at Reference Conditions:	38428 SCFM	18.1 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.006 gr/ft^3	14.04 mg/m^3
Front Half Particulate	0.004 gr/ft^3	9.1 mg/m^3
Back Half Condensibles	0.002 gr/ft^3	4.9 mg/m^3
Mass Emission Rate	2.02 lbs/hr	0.92 kg/hr

SUMMARY OF AIR EMISSION TESTS

TEST 1:

Gas Temperature:	107 ^{o} F	42 ^{o} C
Moisture Content (by volume):	2.6 %	
Average Stack Gas Velocity:	23.4 ft/sec	7.1 m/sec
Total Actual Gas Flow Rate:	44143 ACFM	
Dry Gas flow Rate at Reference Conditions:	37748 SCFM	17.8 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.006 gr/ft^3	14.7 mg/m^3
Front Half Particulate	.004 gr/ft^3	9.6 mg/m^3
Back Half Condensibles	.002 gr/ft^3	5.0 mg/m^3
Mass Emission Rate	2.07 lbs/hr	0.94 kg/hr

TEST 2:

Gas Temperature:	106 ^{o} F	41 ^{o} C
Moisture Content (by volume):	2.6 %	
Average Stack Gas Velocity:	23.9 ft/sec	7.3 m/sec
Total Actual Gas Flow Rate:	45262 ACFM	
Dry Gas flow Rate at Reference Conditions:	38775 SCFM	18.3 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.006 gr/ft^3	13.7 mg/m^3
Front Half Particulate	.004 gr/ft^3	8.8 mg/m^3
Back Half Condensibles	.002 gr/ft^3	4.9 mg/m^3
Mass Emission Rate	1.99 lbs/hr	0.90 kg/hr

TEST 3:

Gas Temperature:	104 ^{o} F	40 ^{o} C
Moisture Content (by volume):	2.9 %	
Average Stack Gas Velocity:	23.9 ft/sec	7.3 m/sec
Total Actual Gas Flow Rate:	45170 ACFM	
Dry Gas flow Rate at Reference Conditions:	38761 SCFM	18.3 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.006 gr/ft^3	13.8 mg/m^3
Front Half Particulate	.004 gr/ft^3	9.0 mg/m^3
Back Half Condensibles	.002 gr/ft^3	4.8 mg/m^3
Mass Emission Rate	2.00 lbs/hr	0.91 kg/hr

DATA FOR TESTS 1 TO 3

Client:	Pinnacle Pellet		
Plant Location:	Williams Lake		
Process:	Dryer Stack 4		
Permit Number:	RA-17557		
Job Number:	ME2223-012		
Pollution Control Permit:	**15.0** **mg/m3**	22.5	**m3/sec**
Number of Tests:	**3** **tests**		
Minutes per Point:	**2.5** **minutes**		

	TEST 1	TEST 2	TEST 3
Filter Number:	S53	S54	S55
Date of Test:	April 14/22	April 14/22	April 14/22
Start Time:	12:31	1:36	2:40
Stop Time:	1:33	2:38	3:42
On-line Sampling Time:	60	60	60
Testing Personnel:	NA/CB/KS	NA/CB/KS	NA/CB/KS
Sampler Model:	955	955	955
Barometric Pressure("Hg):	28.24	28.24	28.24
Static Pressure("H_2O):	-0.15	-0.15	-0.15
%CO_2:	0.0	0.0	0.0
%O_2:	21.0	21.0	21.0
%CO:	0.0	0.0	0.0
%N_2:	79.0	79.0	79.0
Diameter of Nozzle(inches):	0.300	0.300	0.300
Meter Factor:	0.9918	0.9918	0.9918
Type-S Pitot Tube Coefficient:	0.84182	0.84182	0.84182
Cross Sectional Area of Stack(ft^2):	31.5	31.5	31.5
Impinger Condensate(g):	17	17	19
Weight of Moisture in Silica Gel(g):	3.0	3.5	4.5
Weight of Filter Particulate(g):	0.0006	0.0008	0.0008
Weight of Probe Washings(g):	0.0090	0.0082	0.0085
Weight of Impinger Content Organic(g):	0.0050	0.0050	0.0050
Total Weight of Particulate(g):	0.0146	0.0140	0.0143

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 1*
Pinnacle Pellet
Dryer Stack 4
Williams Lake

April 14/22

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (^{o} F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (^{o} F)	TEMP OUT (^{o} F)			
A-12	0.19	1.57	63	66	104	6.70	1.05
A-11	0.18	1.49	76	67	111	8.54	0.95
A-10	0.18	1.50	82	67	111	10.18	0.99
A-9	0.15	1.25	86	67	110	11.90	0.99
A-8	0.12	1.00	87	66	110	13.47	1.02
A-7	0.12	1.00	88	66	110	14.92	0.97
A-6	0.12	1.00	89	66	110	16.30	0.98
A-5	0.13	1.09	91	67	110	17.70	0.98
A-4	0.14	1.18	92	67	110	19.16	1.00
A-3	0.14	1.18	93	67	107	20.70	0.99
A-2	0.15	1.27	94	67	106	22.23	1.06
A-1	0.15	1.27	95	68	107	23.94	0.98
B-12	0.14	1.18	95	68	108	25.52	1.02
B-11	0.15	1.27	95	68	108	27.10	1.00
B-10	0.15	1.27	95	69	108	28.70	1.00
B-9	0.16	1.36	96	69	108	30.30	0.97
B-8	0.15	1.28	96	70	105	31.92	0.97
B-7	0.15	1.28	96	70	106	33.48	1.06
B-6	0.14	1.19	96	70	106	35.19	1.04
B-5	0.14	1.20	97	70	104	36.81	0.95
B-4	0.13	1.11	97	70	106	38.30	0.96
B-3	0.15	1.28	97	70	105	39.75	1.00
B-2	0.18	1.54	97	71	104	41.37	0.99
B-1	0.20	1.72	98	71	103	43.13	1.00
						45.00	

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 2*
Pinnacle Pellet
Dryer Stack 4
Williams Lake

April 14/22

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (^{o} F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (^{o} F)	TEMP OUT (^{o} F)			
A-12	0.20	1.62	71	67	119	46.40	1.00
A-11	0.19	1.59	87	68	112	48.19	0.96
A-10	0.19	1.60	90	68	108	49.91	1.00
A-9	0.16	1.35	92	68	107	51.71	1.00
A-8	0.13	1.10	92	68	106	53.37	1.00
A-7	0.13	1.10	93	69	105	54.86	0.97
A-6	0.12	1.02	94	69	104	56.32	1.04
A-5	0.14	1.19	95	69	105	57.82	0.99
A-4	0.15	1.28	95	69	105	59.37	1.02
A-3	0.14	1.20	96	70	104	61.02	1.05
A-2	0.16	1.37	97	70	102	62.66	1.01
A-1	0.15	1.28	97	71	107	64.35	0.99
B-12	0.15	1.27	97	71	110	65.95	1.01
B-11	0.16	1.36	98	71	110	67.57	0.98
B-10	0.16	1.36	99	72	108	69.21	1.00
B-9	0.17	1.46	99	72	104	70.88	0.96
B-8	0.16	1.38	99	74	104	72.54	0.99
B-7	0.16	1.38	99	73	103	74.20	0.98
B-6	0.15	1.29	99	73	104	75.84	1.03
B-5	0.15	1.29	98	73	106	77.52	0.96
B-4	0.14	1.20	98	72	105	79.08	1.02
B-3	0.16	1.37	98	72	105	80.68	1.00
B-2	0.18	1.54	98	72	105	82.35	0.96
B-1	0.20	1.71	98	72	105	84.05	1.02
						85.95	

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 3*
Pinnacle Pellet
Dryer Stack 4
Williams Lake

April 14/22

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (^oF)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (^oF)	TEMP OUT (^oF)			
A-12	0.19	1.60	82	70	104	87.34	1.05
A-11	0.2	1.69	90	71	109	89.21	1.08
A-10	0.18	1.52	93	71	109	91.20	1.03
A-9	0.17	1.44	95	71	110	93.00	1.04
A-8	0.12	1.02	96	71	107	94.77	0.95
A-7	0.13	1.11	96	71	105	96.14	0.94
A-6	0.13	1.11	96	71	103	97.55	0.98
A-5	0.15	1.29	97	71	101	99.02	0.98
A-4	0.16	1.37	97	71	105	100.61	0.98
A-3	0.14	1.20	98	71	105	102.24	0.97
A-2	0.17	1.46	99	72	102	103.76	1.04
A-1	0.15	1.29	99	72	101	105.56	1.03
B-12	0.14	1.21	99	72	100	107.24	1.02
B-11	0.15	1.30	101	72	100	108.84	1.01
B-10	0.16	1.39	102	73	100	110.48	1.06
B-9	0.17	1.48	103	72	100	112.26	1.06
B-8	0.16	1.39	104	73	99	114.10	1.05
B-7	0.15	1.31	104	73	99	115.87	0.98
B-6	0.15	1.30	103	73	101	117.47	0.96
B-5	0.14	1.21	104	73	104	119.04	0.97
B-4	0.14	1.21	104	74	104	120.57	0.98
B-3	0.16	1.38	104	74	104	122.12	1.04
B-2	0.19	1.64	105	75	105	123.87	0.98
B-1	0.20	1.72	105	75	107	125.66	1.04
						127.62	

MCCALL ENVIRONMENTAL

Pinnacle Pellet
Dryer Stack 4
Pinnacle Pellet

Data for ***TEST 1*** **OVERALL ISOKINETICS - TEST 1 0.997**

Delta P:	**0.150**	**"H_2O**	**Us avg:**	**23.36 ft/sec**
Delta H:	**1.270**		**ACFM:**	**44143 ft^3/min**
Tm avg:	**539.8**	**^oR**	**SDCFM:**	**37748 ft^3/min**
Ts avg:	**567.4**	**^oR**	**Vm std:**	**35.19 ft^3**
Bwo:	**0.026**		**Vm corr:**	**37.99 ft^3**
Md:	**28.84**		**Vm:**	**38.30 ft^3**
Ms:	**28.56**		**MF:**	**0.9918**
Pb:	**28.24**	**"Hg**	**PCON:**	**14.65 mg/m^3**
Pm:	**28.33**	**"Hg**	**ERAT:**	**0.94 kg/hr**
Ps:	**28.23**	**"Hg**		

Data for ***TEST 2*** **OVERALL ISOKINETICS - TEST 2 0.998**

Delta P:	**0.158**	**"H_2O**	**Us avg:**	**23.95 ft/sec**
Delta H:	**1.346**		**ACFM:**	**45262 ft^3/min**
Tm avg:	**542.8**	**^oR**	**SDCFM:**	**38775 ft^3/min**
Ts avg:	**566.4**	**^oR**	**Vm std:**	**36.14 ft^3**
Bwo:	**0.026**		**Vm corr:**	**39.23 ft^3**
Md:	**28.84**		**Vm:**	**39.55 ft^3**
Ms:	**28.56**		**MF:**	**0.9918**
Pb:	**28.24**	**"Hg**	**PCON:**	**13.68 mg/m^3**
Pm:	**28.34**	**"Hg**	**ERAT:**	**0.90 kg/hr**
Ps:	**28.23**	**"Hg**		

Data for ***TEST 3*** **OVERALL ISOKINETICS - TEST 3 1.009**

Delta P:	**0.158**	**"H_2O**	**Us avg:**	**23.90 ft/sec**
Delta H:	**1.360**		**ACFM:**	**45170 ft^3/min**
Tm avg:	**545.6**	**^oR**	**SDCFM:**	**38761 ft^3/min**
Ts avg:	**563.5**	**^oR**	**Vm std:**	**36.62 ft^3**
Bwo:	**0.029**		**Vm corr:**	**39.95 ft^3**
Md:	**28.84**		**Vm:**	**40.28 ft^3**
Ms:	**28.52**		**MF:**	**0.9918**
Pb:	**28.24**	**"Hg**	**PCON:**	**13.79 mg/m^3**
Pm:	**28.34**	**"Hg**	**ERAT:**	**0.91 kg/hr**
Ps:	**28.23**	**"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.

O_2, CO_2, CO (where applicable)

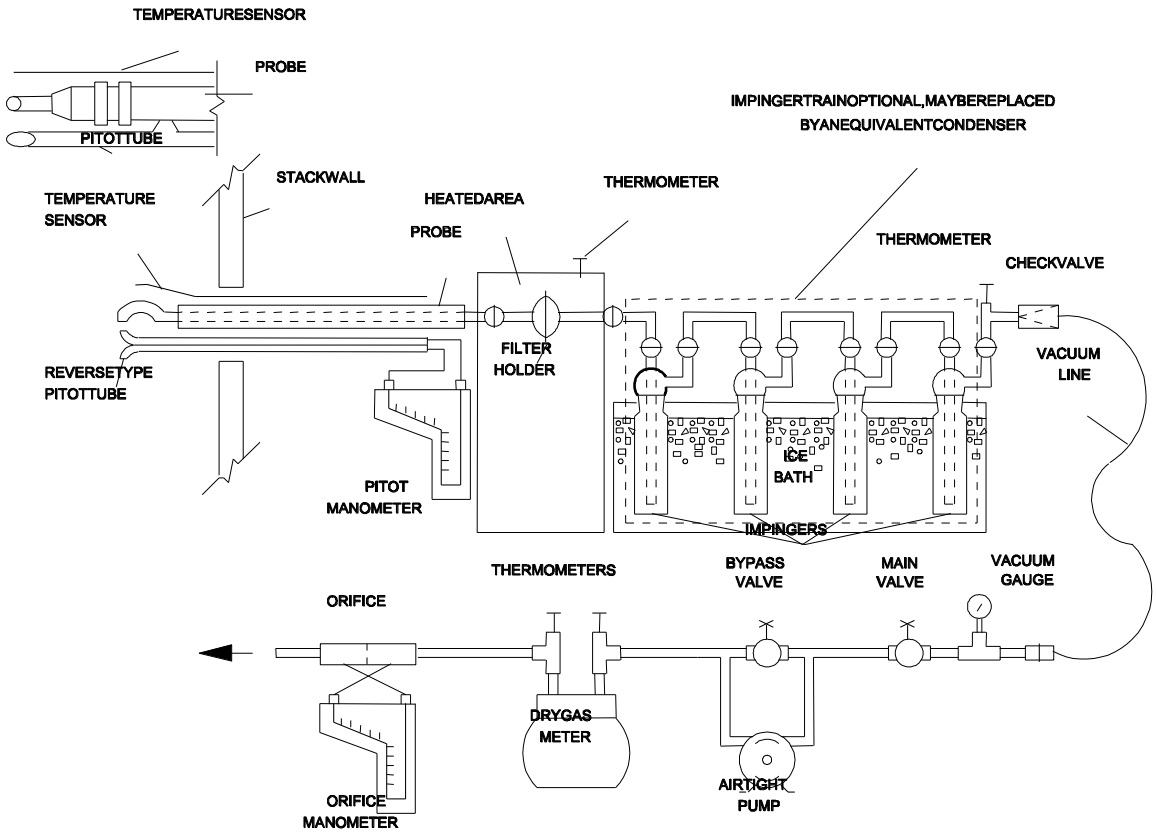
O_2, CO_2, and CO were found using either Fuji Analytical Analyzer by means of infrared and paramagnetic technology (EPA 3A) or by fyrite (EPA Method 3).

NOx (where applicable)

NOx was found using and API Model 252 NOx 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

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 = l, 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, l8.0 g/g-mole (l8.0 lb/lb-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 [(mmHg)(m^3)]/[(°K)(g-mole)] {2l.85 [(in. Hg)(ft^3)]/[(°R)(lb-mole)]}.
T_m = Absolute average DGM temperature (see Figure 5-2), °K (°R).
T_s = Absolute average stack gas temperature (see Figure 5-2), °K (°R).
T_{std} = Standard absolute temperature, 293°K (528°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_20 (in. H_20).
ρ_a = Density of acetone, mg/ml (see label on bottle).
ρ_w = Density of water, 0.9982 g/ml (0.00220l lb/ml).
θ = Total sampling time, min.
θ_l = 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.
l3.6 = Specific gravity of mercury.
60 = Sec/min.
l00 = 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-l.

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

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

where:

K_l = 0.3858 °K/mm Hg for metric units,

= l7.64 °R/in. Hg for English units.

NOTE: Equation 5-l 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-l must be modified as follows:

(a) Case I. No component changes made during sampling run. In this case, replace V_m in Equation 5-l 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-l 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.

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

where:

K_2 = 0.00l333 m^3/ml for metric units,

= 0.04707 ft^3/ml for English units.

Moisture Content.

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

Acetone Blank Concentration.

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

Acetone Wash Blank.

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

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

Particulate Concentration.

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

Conversion Factors:

From	To	Multiply by
scf	m^3	0.02832
g/ft^3	gr/ft^3	l5.43
g/ft^3	lb/ft^3	2.205×10^{-3}
g/ft^3	g/m^3	35.3l

Isokinetic Variation.

Calculation from Raw Data.

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

where:

K_3 = 0.003454 [(mm Hg)(m^3)]/[(ml)(°K)] for metric units,

= 0.002669 [(in. Hg)(ft^3)]/[(ml)(°R)] for English units.

Calculation from Intermediate Values.

$$I = \frac{100\, T_s\, V_{m(std)}\, P_{std}}{60\, T_{std}\, v_s\, \theta\, A_n\, P_s\, (1 - B_{ws})} = \frac{K_4\, T_s\, V_{m(std)}}{P_s\, v_s\, A_n\, \theta (1 - B_{ws})} \qquad \text{Eq.5-8}$$

where:

K_4 = 4.320 for metric units,

= 0.09450 for English units.

Acceptable Results. If 90 percent ≤ I ≤ ll0 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).

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

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),

$$= P_{bar} + P_g$$

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: 10-Jan-22 *Barometric Pressure ("Hg):* 30.05

Pitot I.D.: **140** *Wind Tunnel Temperature (^{O}F):* 70.0

Nozzle: 0.250

Wind Velocity (ft/sec)	*Ref.Pitot ("H_2O)*	*S-Type Pitot ("H_2O)*	*Pitot Factor*
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: 10-Jan-22 *Barometric Pressure ("Hg):* 29.9

Pitot I.D.: **107** *Wind Tunnel Temperature (^{O}F):* 66.0

Nozzle: 0.250

Wind Velocity (ft/sec)	*Ref.Pitot ("H_2O)*	*S-Type Pitot ("H_2O)*	*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
DRY GAS METER

DATE: 05-Jan-22

CONSOLE MANUF.: NAPP MODEL 31

CONSOLE I.D.: C-955

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	64.4	64.4	64.4
P=Pres. Differential at WTM ("Hg)	0.0676	0.1177	0.1692
Pb= Atmospheric Pressure ("Hg)	28.60	28.60	28.60
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.6220	0.6220	0.6220
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	93.0	90.0	98.0
To= Dry Test Meter Outlet Temp. (oF.)	73.0	72.0	74.0
Ri= Initial Dry Test volume (ft3)	64.68	58.67	70.77
Rf= Final Dry Test Volume (ft3)	69.73	63.66	75.80
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	28.5324	28.4823	28.4308
Pd= Pb + (^H/13.59) "Hg	28.6736	28.7472	28.8208
Tw= Ta +460 (oR.)	524.4	524.4	524.4
Td= [(Ti + To)/2] + 460 (oR.)	543.0	541.0	546.0
Bw= Pv/Pb ("Hg)	0.0217	0.0217	0.0217
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
(Calculated Y Value)(WTMF)	0.9902	0.9941	0.9910

Y (MEAN)(WTMF) = 0.9918

MCCALL ENVIRONMENTAL

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: 05-Jan-22

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	28.6	28.6	28.6
Y=gas meter factor	0.9902	0.9902	0.9941
Delta H=	0.5	1	1.5
Ri=int. gas meter vol.	79.61	83.67	88.83
Rf=final gas meter vol.	81.66	86.46	92.21
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.405982	0.552532	0.672012
To=meter outlet Temp (oF)	74	74	71
Tm=meter out temp. (oR)	534	534	531
Pm=Pb + ^H	28.63679	28.67358	28.71038
SQRT(Tm/Pm*H/Md)	0.567338	0.801822	0.978637
Ko=orifice const.	0.715591	0.689095	0.686681

Ko MEAN : 0.697123

Ko*4*144= 401.5426

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: 05-Jan-22

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	28.6	28.6	28.6
Y=gas meter factor	0.9941	0.991	0.991
Delta H=	2	2.5	3
Ri=int. gas meter vol.	92.6	97	1.7
Rf=final gas meter vol.	96.45	101.25	6.33
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.765457	0.84235	0.917666
Tm=meter out temp. (oF)	70	73	75
Tm=meter out temp. (oR.)	530	533	535
Pm=Pb + ^H	28.74717	28.78396	28.82075
SQRT(Tm/Pm*H/Md)	1.128246	1.264173	1.386542
Ko=orifice const.	0.678449	0.666325	0.661838

Ko MEAN : 0.66887

Ko*4*144= 385.2694

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:

CALIBRATION CERTIFICATE
DRY GAS METER

DATE: 04-Jan-22

CONSOLE MANUF.: NAPP MODEL 31

CONSOLE I.D.: C-1021

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	66.2	66.2	66.2
P=Pres. Differential at WTM ("Hg)	0.0625	0.1177	0.1692
Pb= Atmospheric Pressure ("Hg)	28.30	28.30	28.30
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.6439	0.6439	0.6439
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	88.0	88.0	99.0
To= Dry Test Meter Outlet Temp. (oF.)	79.0	76.0	86.0
Ri= Initial Dry Test volume (ft3)	44.77	37.85	55.79
Rf= Final Dry Test Volume (ft3)	49.76	42.79	60.84
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	28.2375	28.1823	28.1308
Pd= Pb + (^H/13.59) "Hg	28.3736	28.4472	28.5208
Tw= Ta +460 (oR.)	526.2	526.2	526.2
Td= [(Ti + To)/2] + 460 (oR.)	543.5	542.0	552.5
Bw= Pv/Pb ("Hg)	0.0228	0.0228	0.0228
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
(Calculated Y Value)(WTMF)	0.9987	1.0015	0.9942

Y (MEAN)(WTMF) = 0.9981

MCCALL ENVIRONMENTAL

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: 04-Jan-22

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	28.3	28.3	28.3
Y=gas meter factor	0.9987	0.9987	1.0015
Delta H=	0.5	1	1.5
Ri=int. gas meter vol.	89.51	92.1	95.14
Rf=final gas meter vol.	91.51	94.76	98.4
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.39948	0.5313084	0.652978
To=meter outlet Temp (oF)	90	89	89
Tm=meter out temp. (oR)	550	549	549
Pm=Pb + ^H	28.336792	28.373584	28.410375
SQRT(Tm/Pm*H/Md)	0.5788143	0.8172921	1.000326
Ko=orifice const.	0.6901695	0.6500838	0.6527652

Ko MEAN = 0.6643395

Ko*4*144= 382.65957

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: 04-Jan-22

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	28.3	28.3	28.3
Y=gas meter factor	1.0015	0.9942	0.9942
Delta H=	2	2.5	3
Ri=int. gas meter vol.	98.8	3.4	8.5
Rf=final gas meter vol.	102.6	7.63	13.16
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.76114	0.8410932	0.9265944
To=meter outlet Temp (oF)	90	90	91
Tm=meter out temp. (oR)	550	550	551
Pm=Pb + ^H	28.447167	28.483959	28.520751
SQRT(Tm/Pm*H/Md)	1.1553806	1.2909203	1.414504
Ko=orifice const.	0.6587786	0.6515454	0.6550666

Ko MEAN = 0.6551302

Ko*4*144= 377.35501

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:

BCIT

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 UNIVERSITY

Faculty of Continuing Education and Extension

Nicholas Angus

has successfully completed

Stack Sampling Seminar

35 Hours / 2017

June 23, 2017

Date

Dean
Faculty of Continuing Education and Extension

MOUNT ROYAL
UNIVERSITY
1910

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V3S 8P8, Canada

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Analytical Report

Bill To: McCall Environmental
6733 Buchanan Road
Coldstream, BC, Canada
V1B 3C5
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name: Pinnacle Pellet
Project Location: Williams Lake
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1565958**
Control Number:
Date Received: Apr 20, 2022
Date Reported: Apr 26, 2022
Report Number: 2739410

Reference Number	1565958-1	1565958-2	1565958-3
Sample Date	Apr 14, 2022	Apr 14, 2022	Apr 14, 2022
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Dryer Stack 1 / Test 1 / S42	Dryer Stack 1 / Test 2 / S43	Dryer Stack 1 / Test 3 / S44
Matrix	Water	Water	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Oil and Grease	Total	mg/sample	<2	<2	4	2
Volume	Sample volume	mL	330	320	320	
pH adjustment	required prior to O&G extraction		Yes	Yes	Yes	

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Analytical Report

Bill To: McCall Environmental
6733 Buchanan Road
Coldstream, BC, Canada
V1B 3C5
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name: Pinnacle Pellet
Project Location: Williams Lake
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1565958**
Control Number:
Date Received: Apr 20, 2022
Date Reported: Apr 26, 2022
Report Number: 2739410

Reference Number	1565958-4	1565958-5	1565958-6
Sample Date	Apr 14, 2022	Apr 14, 2022	Apr 14, 2022
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Dryer Stack 2 / Test 1 / S50	Dryer Stack 2 / Test 2 / S51	Dryer Stack 2 / Test 3 / S52
Matrix	Water	Water	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Oil and Grease	Total	mg/sample	<2	<2	3	2
Volume	Sample volume	mL	340	330	330	
pH adjustment	required prior to O&G extraction		Yes	Yes	Yes	

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Analytical Report

Bill To: McCall Environmental
6733 Buchanan Road
Coldstream, BC, Canada
V1B 3C5
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name: Pinnacle Pellet
Project Location: Williams Lake
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1565958**
Control Number:
Date Received: Apr 20, 2022
Date Reported: Apr 26, 2022
Report Number: 2739410

Reference Number	1565958-7	1565958-8	1565958-9
Sample Date	Apr 14, 2022	Apr 14, 2022	Apr 14, 2022
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Dryer Stack 3 / Test 1 / S45	Dryer Stack 3 / Test 2 / S46	Dryer Stack 3 / Test 3 / S47
Matrix	Water	Water	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Oil and Grease	Total	mg/sample	3	3	5	2
Volume	Sample volume	mL	340	320	320	
pH adjustment	required prior to O&G extraction		Yes	Yes	Yes	

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Analytical Report

Bill To: McCall Environmental
6733 Buchanan Road
Coldstream, BC, Canada
V1B 3C5
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name: Pinnacle Pellet
Project Location: Williams Lake
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1565958**
Control Number:
Date Received: Apr 20, 2022
Date Reported: Apr 26, 2022
Report Number: 2739410

Reference Number	1565958-10	1565958-11	1565958-12
Sample Date	Apr 14, 2022	Apr 14, 2022	Apr 14, 2022
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Dryer Stack 4 / Test 1 / S53	Dryer Stack 4 / Test 2 / S54	Dryer Stack 4 / Test 3 / S55
Matrix	Water	Water	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Oil and Grease	Total	mg/sample	5	5	5	2
Volume	Sample volume	mL	330	330	330	
pH adjustment	required prior to O&G extraction		Yes	Yes	Yes	

Approved by:

Max Hewitt
Operations Manager

Data have been validated by Analytical Quality Control and Element's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Methodology and Notes

Bill To: McCall Environmental
6733 Buchanan Road
Coldstream, BC, Canada
V1B 3C5
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name: Pinnacle Pellet
Project Location: Williams Lake
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1565958**
Control Number:
Date Received: Apr 20, 2022
Date Reported: Apr 26, 2022
Report Number: 2739410

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, Oil & Grease	Apr 20, 2022	Element Vancouver
Oil and Grease in water (VAN)	BCELM	*	Oil & Grease in Water - Direct Hexane Extraction, Oil & Grease	Apr 20, 2022	Element Vancouver

** Reference Method Modified*

References

BCELM	B.C. Environmental Laboratory Manual

Client Name:	Pinnacle Pellet Williams Lk.
Process:	Dryer Stack 1
Test Number:	1
Date:	Apr. 14/22
Start Time	847
Finish Time	949
Starting Vol.	300
Final Vol.	315
Flask:	542
Console:	1021
Stack Diameter	

BP	28.24
DN	.300
CP	0.83829
MF	0.9981
Moist.	2%
PM	28.35
AS	
Ko	0.6643
Pitot	140
Port	
Static	-.19
PS	28.23

CO_2	O_2	CO	N_2
0	21		

Personnel: NA/CB/ISS

Leakage Rate @ 15 inches

Load:

Duct Diameters
Up-Stream

Duct Diameters
Downstream

Mean Yaw Angle

Start: .009 Finish: .007

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.18	1.64	44	44	79	66.80	2	270	Iced	
11	.17	1.60	61	56	77	68.47				
10	.17	1.60	65	56	77	70.13				
9	.15	1.42	69	57	77	71.86				
8	.14	1.33	72	60	78	73.48				
7	.15	1.43	74	61	79	75.03				
6	.17	1.62	76	62	80	76.66				
5	.18	1.72	78	65	80	78.29				
4	.18	1.73	81	66	79	80.00	2			
3	.19	1.83	83	69	80	81.81				
2	.21	2.03	85	70	82	83.65				
1	.20	1.95	87	72	79	85.59				
B-12	.25	2.44	89	74	80	87.50				
11	.21	2.06	91	78	80	89.61				
10	.21	2.06	93	77	80	91.60				
9	.19	1.87	94	79	80	93.58				
8	.19	1.88	96	81	80	95.45				
7	.18	1.78	96	82	81	97.29				
6	.17	1.69	98	84	80	99.15				
5	.17	1.69	99	85	80	101.05	2			
4	.18	1.79	100	87	81	102.90				
3	.18	1.79	100	88	83	104.64				
2	.19	1.89	101	88	82	106.40				
1	.20	1.99	103	89	83	108.25				
						110.20				

Client Name: Pinnacle Pellet Williams Lk.
Process: Dryer Stack 1
Test Number: 2
Date: Apr. 14/22
Start Time 952
Finish Time 1054
Starting Vol. 300
Final Vol. 311
Flask: S43
Console: 1021
Stack Diameter

BP 28.24
DN 0.300
CP 0.893829
MF 0.9981
Moist. 2%
PM 28.35
AS
Ko 0.6643
Pitot 140
Port
Static -0.19
PS 28.23

CO_2	O_2	CO	N_2
0	21		

Personnel: NA / KS / CB
Leakage Rate @ 15 inches

Duct Diameters Up-Stream

Duct Diameters Downstream

Mean Yaw Angle

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	.17	1.65	86	85	85	10.85	2	270	ICED	
11	.17	1.68	93	87	81	12.50				
10	.16	1.59	97	89	80	14.26				
9	.16	1.61	100	92	79	16.02				
8	.15	1.50	100	90	81	17.81				
7	.14	1.41	101	91	80	19.45				
6	.16	1.60	101	91	81	21.10				
5	.17	1.71	103	93	80	22.87				
4	.18	1.81	105	94	80	24.60	2			
3	.20	2.02	105	94	80	26.42				
2	.21	2.13	107	95	79	28.33				
1	.21	2.13	108	96	79	30.30				
B-12	.24	2.44	109	97	80	32.31				
11	.22	2.23	110	98	81	34.47				
10	.19	1.93	110	100	81	36.61				
9	.18	1.83	111	100	80	38.46				
8	.18	1.83	111	101	80	40.28				
7	.17	1.73	112	101	80	42.11				
6	.17	1.73	112	101	81	43.85	2			
5	.18	1.84	113	102	81	45.59				
4	.18	1.84	113	102	81	47.42				
3	.19	1.94	113	102	81	49.23		V	V	
2	.20	2.04	114	103	81	51.14				
1	.19	1.94	114	103	81	53.08				
						55.02				

Client Name: Pinnacle Pellet Williams Lk.
Process: Dryer Stack 1
Test Number: 3
Date: Apr 14/22
Start Time 1055
Finish Time 1157
Starting Vol. 300
Final Vol. 313
Flask: S44
Console: 1021
Stack Diameter

BP 28.24
DN 0.300
CP 0.83829
MF 0.9981
Moist. 2%
PM 28.35
AS
Ko 0.6643
Pitot 140
Port
Static -0.19
PS 28.23

CO_2	O_2	CO	N_2
0	21		

Personnel: NA/KS/CB
Leakage Rate @ 15 inches
Load:

Duct Diameters Up-Stream
Duct Diameters Downstream
Mean Yaw Angle
Start: .002 Finish: .003

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A - 12	.18	1.80	100	99	84	55.38	2	270	ICED	
11	.17	1.70	104	99	85	57.20				
10	.16	1.61	107	100	85	59.01				
9	.16	1.61	110	101	86	60.75				
8	.14	1.42	112	101	85	62.50				
7	.14	1.42	113	102	83	64.21				
6	.15	1.52	113	102	83	65.93				
5	.16	1.63	113	102	83	67.72				
4	.18	1.83	112	102	83	69.54				
3	.19	1.93	112	103	83	71.45				
2	.21	2.14	111	103	82	73.40	2			
1	21	2.13	111	102	82	75.47				
B - 12	.24	2.44	112	102	81	77.53				
11	.23	2.34	112	102	81	79.86				
10	.20	2.04	112	102	80	82.02				
9	.18	1.84	113	102	80	83.99				
8	.18	1.84	113	102	80	85.88				
7	.17	1.74	113	103	81	87.78				
6	.17	1.73	112	102	81	89.58				
5	.17	1.73	112	102	81	91.40	2			
4	.18	1.84	113	103	80	93.23				
3	.20	2.06	113	103	80	95.15				
2	.19	1.94	114	103	81	97.11				
1	.19	1.94	114	103	81	99.00				
						100.88				

Client Name:	Pinnacle Pellet Williams LLC
Process:	Dryer Stack 2
Test Number:	1
Date:	Apr. 14/22
Start Time	850
Finish Time	953
Starting Vol.	300
Final Vol.	321
Flask:	S50
Console:	955
Stack Diameter	

BP	28.24
DN	1.300
CP	0.84182
MF	0.9918
Moist.	2%
PM	28.35
AS	
Ko	0.6971
Pitot	707
Port	
Static	-.16
PS	28.23

CO_2	O_2	CO	N_2
0	21		

Personnel: NA/CB/KS

Leakage Rate @ 15 inches

Load:

Duct Diameters Up-Stream

Duct Diameters Downstream

Mean Yaw Angle

Start: 1010 Finish: 1010

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.20	1.63	55	53	100	82.20	3	270	Iced	
11	.19	1.56	59	53	99	83.94				
10	.16	1.33	66	54	97	85.67	2			
9	.14	1.17	73	55	98	87.40				
8	.15	1.26	79	61	102	88.69	2			
7	.15	1.27	85	64	102	90.29				
6	.15	1.28	90	63	99	91.78	2			
5	.14	1.19	92	65	104	93.31				
4	.14	1.20	93	67	102	94.78	2			
3	.16	1.36	94	67	103	96.29				
2	.17	1.45	94	67	102	97.86	2			
1	.16	1.36	94	68	105	99.50				
B-12	.18	1.55	93	67	99	101.11	2			
11	.19	1.64	94	69	100	102.81				
10	.19	1.65	102	72	101	104.52	2			
9	.18	1.58	105	73	98	106.45				
8	.17	1.50	107	75	96	108.19	2			
7	.16	1.41	108	76	98	109.84				
6	.16	1.41	110	79	99	111.46	2			
5	.15	1.33	110	81	99	113.20				
4	.16	1.41	111	81	101	114.73	2			
3	.15	1.33	113	83	100	116.40				
2	.13	1.16	113	84	97	118.06	2			
1	.14	1.25	113	84	95	119.58				
						121.16				

Client Name:	Pinnacle Pellet Williams Lake
Process:	Dryer stack 2
Test Number:	2
Date:	April 24 2022
Start Time	10.05
Finish Time	11.07
Starting Vol.	300
Final Vol.	318
Flask:	551
Console:	955
Stack Diameter	

BP	28.24
DN	.300
CP	.84182
MF	.9918
Moist.	2%
PM	28.35
AS	
Ko	6971
Pitot	107
Port	
Static	-.16
PS	28.23

CO_2	O_2	CO	N_2
0	21		

Duct Diameters
Up-Stream

Duct Diameters
Downstream

Personnel: CB NA KS

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
A12	.19	1.66	90	84	96	22.19	1	270	ICED	
11	.18	1.57	95	81	97	23.98				
10	.18	1.56	98	80	102	25.82	1			
9	.17	1.48	103	80	103	27.55				
8	.16	1.40	107	80	102	29.22	1			
7	.16	1.41	111	82	101	31.00				
6	.15	1.30	112	84	110	32.57	1			
5	.15	1.31	114	86	110	34.19				
4	.14	1.25	114	87	98	35.82	1			
3	.15	1.33	113	87	99	37.37				
2	.18	1.60	112	86	99	39.03	1			
1	.16	1.42	112	86	99	40.82				
B12	.19	1.69	113	86	100	42.48	1			
11	.19	1.69	114	87	101	44.29				
10	.18	1.60	114	88	100	46.09	1			
9	.18	1.60	114	88	100	47.91				
8	.17	1.52	113	88	98	49.70	1			
7	.16	1.41	111	87	102	51.45				
6	.15	1.32	110	88	103	53.12	1			
5	.15	1.34	111	87	97	54.78				
4	.16	1.44	112	87	91	56.41	1			
3	.15	1.36	112	87	89	58.18				
2	.14	1.26	111	86	89	59.80	1			
1	.15	1.36	110	86	88	61.46				
						63.12				

Client Name:	Pinnacle Pellet Williams Lake
Process:	Dryer Stack 2
Test Number:	3
Date:	April 14 2022
Start Time	11.11
Finish Time	12.13
Starting Vol.	300
Final Vol.	325
Flask:	552
Console:	955
Stack Diameter	

BP	28.24
DN	.275
CP	.84182
MF	.9918
Moist.	2%
PM	28.35
AS	
Ko	.6971
Pitot	107
Port	
Static	-.16
PS	28.23

CO_2	O_2	CO	N_2
0	21		

Personnel: CB KS HB

Leakage Rate @ 15 inches

Load:

Duct Diameters
Up-Stream

Duct Diameters
Downstream

Mean Yaw Angle

Start: .004 Finish: .006

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	.20	1.74	87	82	97	64.94	1	270	ICED	
11	.18	1.58	101	81	101	66.78				
10	.17	1.48	102	81	103	68.67	1			
9	.15	1.32	104	81	99	70.38				
8	.16	1.41	103	80	97	71.97	1			
7	.15	1.31	104	80	100	73.62				
6	.15	1.31	103	79	101	75.22	2			
5	.14	1.23	103	79	98	76.85				
4	.14	1.22	103	78	103	78.43	2			
3	.15	1.31	103	79	99	79.98				
2	.17	1.48	102	78	100	81.60	2			
1	.15	1.32	103	77	95	83.35				
B12	.18	1.58	102	77	96	84.94	2			
11	.19	1.67	103	77	97	86.70				
10	.20	1.76	103	78	96	88.57	2			
9	.19	1.68	103	76	95	90.41				
8	.17	1.50	103	76	93	92.21	2			
7	.16	1.41	103	76	93	93.94				
6	.15	1.32	102	76	94	95.63	2			
5	.15	1.32	102	75	95	97.30				
4	.16	1.40	102	75	95	98.89	2			
3	.14	1.23	102	76	93	100.47				
2	.13	1.14	102	76	94	102.17	2			
1	.14	1.23	102	76	95	103.78				
						105.29				

Client Name:	Pinnacle Pellet Williams Lk
Process:	Dryer Stack 3
Test Number:	1
Date:	Apr. 14/22
Start Time	1224
Finish Time	126
Starting Vol.	300
Final Vol.	315
Flask:	545
Console:	1021
Stack Diameter	

BP	28.24
DN	0.285
CP	0.83829
MF	0.9981
Moist.	2 %
PM	28.35
AS	
Ko	0.6643
Pitot	140
Port	
Static	-0.15
PS	28.23

CO_2	O_2	CO	N_2
0	21		

Personnel: NA/CB/KS

Leakage Rate @ 15 inches

Load:

Duct Diameters Up-Stream

Duct Diameters Downstream

Mean Yaw Angle

Start: .002 Finish: .002

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.21	1.64	86	86	93	1.23	2	270	ICED	
11	.18	1.42	86	86	87	3.02				
10	.17	1.34	86	86	87	4.57				
9	.16	1.27	88	86	86	6.19				
8	.18	1.43	90	86	88	7.74				
7	.14	1.12	91	86	88	9.34				
6	.13	1.03	92	86	88	10.80				
5	.14	1.11	92	86	88	12.23				
4	.15	1.19	93	86	89	13.67				
3	.16	1.27	93	87	89	15.15	2			
2	.19	1.51	94	87	90	16.66				
1	.19	1.51	94	87	90	18.28				
B-12	.16	1.27	94	87	89	20.01				
11	.18	1.43	95	87	90	21.56				
10	.16	1.27	96	88	89	23.16				
9	.17	1.36	97	89	87	24.65				
8	.18	1.44	97	89	87	26.30				
7	.19	1.52	98	90	88	27.86				
6	.20	1.61	99	90	87	29.54				
5	.16	1.29	99	91	86	31.36	2			
4	.15	1.21	100	92	86	32.82				
3	.13	1.05	101	92	85	34.34				
2	.13	1.05	102	93	85	35.87				
1	.14	1.13	103	93	86	37.33				
						38.81				

Client Name:	Pinnacle Pellet Williams Lk.
Process:	Dryer stack 3
Test Number:	2
Date:	Apr. 14/22
Start Time	128
Finish Time	236
Starting Vol.	300
Final Vol.	314
Flask:	S46
Console:	1021
Stack Diameter	

BP	28.24
DN	0.286
CP	0.838829
MF	0.9981
Moist.	2 %
PM	29.35
AS	
Ko	0.6643
Pitot	140
Port	
Static	-0.15
PS	28.23

CO_2	O_2	CO	N_2
0	21		

Personnel: NA/CB/KS

Leakage Rate @ 15 inches

Load:

Duct Diameters Up-Stream

Duct Diameters Downstream

Mean Yaw Angle

Start: .003 Finish: .002

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.20	1.61	94	93	85	39.66	2	270	ICED	
11	.19	1.53	95	94	85	41.32				
10	.17	1.37	97	94	86	43.02				
9	.17	1.37	99	95	86	44.57				
8	.16	1.30	100	96	85	46.13				
7	.19	1.54	100	96	85	47.65				
6	.15	1.22	101	96	85	49.36				
5	.15	1.22	101	97	84	50.95				
4	.13	1.06	101	98	84	52.47				
3	.14	1.14	102	98	83	53.91				
2	.17	1.39	102	98	84	55.32				
1	.19	1.54	101	97	86	56.84	2			
B-12	.17	1.38	101	97	86	58.56				
11	.17	1.38	101	97	87	60.09				
10	.18	1.46	101	97	84	61.64				
9	.18	1.46	102	97	86	63.31				
8	.20	1.62	102	97	87	64.96				
7	.19	1.54	103	97	88	66.70				
6	.17	1.38	104	97	88	68.44				
5	.15	1.22	104	98	87	69.98	3		↓	
4	.13	1.06	105	98	87	71.42		↓		
3	.13	1.06	105	98	86	72.81				
2	.14	1.14	106	98	86	74.23				
1	.15	1.22	106	98	86	75.64				
						77.20				

Client Name:	Pinnacle Pellet Williams Lk.
Process:	Dryer Stack 3
Test Number:	3
Date:	Apr. 14/22
Start Time	232
Finish Time	334
Starting Vol.	300
Final Vol.	314
Flask:	S47
Console:	1021
Stack Diameter	

BP	28.24
DN	0.285
CP	0.83829
MF	0.9981
Moist.	2.1.
PM	28.35
AS	
Ko	0.6643
Pitot	140
Port	
Static	-0.15
PS	28.23

CO_2	O_2	CO	N_2
0	21		

Personnel: NA/KS/CB

Leakage Rate @ 15 inches

Load:

Duct Diameters Up-Stream

Duct Diameters Downstream

Mean Yaw Angle

Start: .004 Finish: .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	.19	1.54	98	99	85	77.51	2	270	ICED	
11	.20	1.62	99	99	87	79.30				
10	.18	1.46	100	99	89	81.10				
9	.17	1.38	102	100	89	82.79				
8	.15	1.21	103	100	90	84.36				
7	.16	1.30	104	100	91	85.90				
6	.18	1.45	104	100	91	87.46				
5	.16	1.29	105	101	92	89.07				
4	.14	1.13	106	101	92	90.62				
3	.13	1.05	107	102	93	92.11				
2	.14	1.13	107	102	93	93.55	2			
1	.15	1.21	108	102	93	95.03				
B-12	.16	1.30	109	102	93	96.58				
11	.17	1.38	110	102	93	98.14				
10	.18	1.46	110	102	92	99.79				
9	.19	1.55	111	103	92	101.45				
8	.20	1.63	111	103	91	103.21				
7	.18	1.47	112	103	90	105.03				
6	.18	1.47	112	103	90	106.71				
5	.16	1.31	113	103	90	108.44				
4	.14	1.15	113	104	90	110.04				
3	.13	1.07	113	104	89	111.58				
2	.13	1.07	114	104	90	113.02	2			
1	.15	1.23	113	104	92	114.50				
						116.06				

Client Name:	Pinnacle Pellet Williams Lk
Process:	Dryer Stack 4
Test Number	1
Date:	Apr. 14/22
Start Time	12.31
Finish Time	1.33
Starting Vol.	300
Final Vol.	317
Flask:	553
Console:	955
Stack Diameter	

BP	28.24
DN	.300 .275
CP	.84188
MF	.9918
Moist.	2%
PM	28.35
AS	
Ko	.6971
Pitot	107
Port	
Static	- .15
PS	28.22

CO_2	O_2	CO	N_2
0	21		

Personnel: NA/CB/KS

Leakage Rate @ 15 inches

Load:

Duct Diameters Up-Stream 30.24

Duct Diameters Downstream

Mean Yaw Angle

Start: .002 Finish: .004

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.19	1.57	63	66	104	6.70	1	270	ICED	
11	.18	1.49	76	67	111	8.54				
10	.18	1.50	82	67	111	10.18	1			
9	.15	1.25	86	67	110	11.90				
8	.12	1.00	87	66	110	13.47	1			
7	.12	1.00	88	66	110	14.92				
6	.12	1.00	89	66	110	16.30	1			
5	.13	1.09	91	67	110	17.70				
4	.14	1.18	92	67	110	19.16	1			
3	.14	1.18	93	67	107	20.70				
2	.15	1.27	94	67	106	22.23	1			
1	.15	1.27	95	68	107	23.94				
B-12	.14	1.18	95	68	108	25.52	1			
11	.15	1.27	95	68	108	27.10				
10	.15	1.27	95	69	108	28.70	1			
9	.16	1.36	96	69	108	30.30				
8	.15	1.28	96	70	105	31.92	1			
7	.15	1.28	96	70	106	33.48				
6	.14	1.19	96	70	106	35.19	1			
5	.14	1.20	97	70	104	36.81				
4	.13	1.11	97	70	106	38.30	1			
3	.15	1.28	97	70	105	39.75				
2	.18	1.54	97	71	104	41.37	1			
1	.20	1.72	98	71	103	43.13				
						45.00				

Client Name:	Pinnacle Pellet Williams lake
Process:	Dryer Stack H
Test Number:	2
Date:	April 14/22
Start Time	1.36
Finish Time	2.38
Starting Vol.	300
Final Vol.	317
Flask:	5.54
Console:	955
Stack Diameter	

BP	28.24
DN	.306
CP	0.84182
MF	.9918
Moist.	2%
PM	28.35
AS	
Ko	0.6971
Pitot	107
Port	
Static	-.15
PS	28.22

CO_2	O_2	CO	N_2
0	21		

Duct Diameters Up-Stream

Duct Diameters Downstream

Personnel: KS RCB

Mean Yaw Angle

Leakage Rate @ 15 inches Start: .002 Finish: .004

Load: 17

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	.20	1.62	71	67	119	46.40	1	270	ICED	
11	.19	1.59	87	68	112	48.19				
10	.19	1.60	90	68	108	49.91				
9	.16	1.35	92	68	107	51.71				
8	.13	1.10	92	68	106	53.37	1			
7	.13	1.10	93	69	105	54.86				
6	.12	1.02	94	69	104	56.32	1			
5	.14	1.19	95	69	105	57.82				
4	.15	1.28	95	69	105	59.37	1			
3	.14	1.20	96	70	104	61.02				
2	.16	1.37	97	70	102	62.66				
1	.15	1.28	97	71	107	64.35				
B12	.15	1.27	97	71	110	65.95	1			
11	.16	1.36	98	71	110	67.57				
10	.16	1.36	99	72	108	69.21	1			
9	.17	1.46	99	72	104	70.88				
8	.16	1.38	99	74	104	72.54	1			
7	.16	1.38	99	73	103	74.20				
6	.15	1.29	99	73	104	75.84	1			
5	.15	1.29	98	73	106	77.52				
4	.14	1.20	98	72	105	79.08	1			
3	.16	1.37	98	72	105	80.68				
2	.18	1.54	98	72	105	82.35	1			
1	.20	1.71	98	72	105	84.05				
						85.95				

Client Name:	Pinnacle Pellet Williams Lake
Process:	Dryer Stack 4
Test Number:	3
Date:	April 14/22
Start Time	2.40
Finish Time	342
Starting Vol.	300
Final Vol.	319
Flask:	$ 55
Console:	955
Stack Diameter	

BP	28.24
DN	0.300
CP	0.84182
MF	0.9918
Moist.	2%
PM	28.35
AS	
Ko	0.6971
Pitot	107
Port	
Static	-.15
PS	28.22

CO_2	O_2	CO	N_2
0	21		

Duct Diameters
Up-Stream

Duct Diameters
Downstream

Personnel: KS / CB

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 Volnme	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A 12	.19	1.60	82	70	104	87.34	1	270	ICED	
11	.20	1.69	90	71	109	89.21				
10	.18	1.52	93	71	109	91.20	1			
9	.17	1.44	95	71	110	93.00				
8	.12	1.02	96	71	107	94.77	1			
7	.13	1.11	96	71	105	96.14				
6	.13	1.11	96	71	103	97.55	1			
5	.15	1.29	97	71	101	99.02				
4	.16	1.37	97	71	105	100.61	1			
3	.14	1.20	98	71	105	102.24				
2	.17	1.46	99	72	102	103.76	1			
1	.15	1.29	99	72	101	105.56				
B 12	.14	1.21	99	72	100	107.24	1			
11	.15	1.30	101	72	100	108.84				
10	.16	1.39	102	73	100	110.48	1			
9	.17	1.48	103	72	100	112.26				
8	.16	1.39	104	73	99	114.10	1			
7	.15	1.31	104	73	99	115.87				
6	.15	1.30	103	73	101	117.47	1			
5	.14	1.21	104	73	104	119.04				
4	.14	1.21	104	74	104	120.57	1			
3	.16	1.38	104	74	104	122.12				
2	.19	1.64	105	75	105	123.87	1			
1	.20	1.72	105	75	107	125.66				
						127.62				

Drax
Williams Lake

Daily production rate April 14th	26.5 MT/hr
Average for the previous calendar month	24.0 MT/hr
90th percentile production rate	26.6 MT/hr

Average Dryer Fan 1 exit gas temperature	Included in Stack Test
Average Dryer Fan 2 exit gas temperature	Included in Stack Test
Average Dryer Fan 3 exit gas temperature	Included in Stack Test
Average Dryer Fan 4 exit gas temperature	Included in Stack Test
Average Cyclofilter exit gas temperature, [°C]	Included in Stack Test
Volumetric emission flow rates, [m^3/hour]	Included in Stack Test
TPM, [mg/m^3]	Included in Stack Test
PM, [mg/m^3]	Included in Stack Test