Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

Background Report Reference

AP-42 Section Number: 9.11.1

Background Chapter: 2

Reference Number: 15

Title: Particulate and Metals Pooled Source Tests, Western Cotton Services Corporation

BTC Environmental Inc.

BTC Environmental, Inc.

April/May 1990

AP-42 Section
Reference
Report Sect. 2
Reference 15

RANCHER COTTON OIL
P.O. BOX 2596
Fresno, Ca. 93745

(Gilkey's Cotton Oil)

PM-10 PARTICULATE TEST

WESTERN COTTON SERVICES CORPORATION
Chowchilla, Calif.

April 30-May 1, 1990

Prepared By:

BTC ENVIRONMENTAL, INC.
1536 EASTMAN AVENUE
Ventura, CA 93003

Job Number
18010

Laboratory Report Number
A0-074

Test Team Leader
Tom Porter

Results Verified By:
Tom Porter - Field Operations Manager

BTC ENVIRONMENTAL INCORPORATED

INTRODUCTION

SAMPLING AND ANALYTICAL PROCEDURES

On April 30 & May 1, 1990, BTC Environmental performed source emissions tests for PM-10 particulate matter on cyclone #2 of the linters system and cyclone #1 on the seed cleaner. The cyclones were located at the Western Cotton Services Corporation Chowcilla facility.

STACK GAS ANALYSIS: The stack gas was assumed to be ambient air. The oxygen was assumed to be 20.9% and the carbon dioxide was 0.05%.

STACK GAS VELOCITY: The stack gas velocity was determined using an "S" type pitot tube connected to a magnehelic gauge. The "S" type pitot was used to determine the stack velocity profile for each run. Twelve points (six in each direction) were used for the velocity traverse. The velocity traverse was done in the horizontal and the vertical planes.

The stack temperature was determined using a thermocouple and an indicating pyrometer. The proportion of water was determined gravimetrically and the dry molecular weight of the stack gas determined by E.P.A. Method 3, equation 3-2. Stack velocities were calculated using E.P.A. Method 2, equation 2-9; gas volumetric flow rate was determined by equation 2-10.

PM-10 PARTICULATE EMISSIONS: Duplicate particulate samples were collected using a GII Cascade Impactor sampler system that conforms to CARB requirements for PM-10 particulate sampling. The system consists of cyclone separator two impactor plates, a backup filter and cooled impingers. The cyclone and the first plate arw +10µ and the backup filter and impingers are -10µ. Six (6) sample points were taken in the horizontal port. Blanks for the DI water and acetone were analyzed and substracted from the weight.

LEAK CHECKS: Leak rates were conducted on the sampling train and the pitot tubes before and after each test. The leak check for the sampling train was done at the nozzle. Any leak rate greater than 0.02 cfm was corrected for in the volume calculations.

All calculations for lb/hr were done by using the flow rate of the stack gas. All values were calculated by using CARB standard conditons (68°F & 29.92 in Hg).

If you have any questions concerning this test or if we can be of further assistance, please contact the undersigned at (805) 644-1095.

Respectfully submitted,

BTC Environmental, INC.

Tom Porter
Air Division Manager
Copies: 4 Ranchers
1 File

CALCULATIONS

PARTICULATE WEIGHTS : DATA & CALCULATIONS

Ranchers Cotton Oil
Anderson Clayton
Linter Cyclone #2
2-PM 10

Date : 4/30/90
Job #: 18010
Lab #: A0-074

BLANKS

Acetone — Gross: 65.7022 gms. Tare: 65.7017 gms. Volume: 100 ml Residue: 0.0005 gms.

DI Water — Gross: 73.1106 gms. Tare: 73.1103 gms. Volume: 100 ml Residue: 0.0003 gms.

WEIGHTS & VOLUMES

Filter(2) -Gross: 0.1024 gms. Tare: 0.1001 gms. Net: 0.0023 gms.
Filter(1) -Gross: 0.0978 gms. Tare: 0.0972 gms. Net: 0.0006 gms.

+10 µ Rinse -
Acetone: 50 ml * 5E-06 gms./ml = Net: -0.0003 gms.
DI Water: 150 ml * 3E-06 gms./ml = Net: -0.0005 gms.
Gross: 63.4850 gms. Tare: 63.4442 gms. Net: 0.0408 gms.

+10µ Total Weight = 0.0430 gms.

Filter(12) Gross: 0.1230 gms. Tare: 0.1181 gms. Net: 0.0049 gms.

-10 µ Rinse
DI Water: 300 ml * 3E-06 gms./ml = Net: -0.0009 gms.
Acetone : 50 ml * 5E-06 gms./ml = Net: -0.0003 gms.
Total: 350 ml Aliquot: 350 ml
Gross: 67.4562 gms. Tare: 67.4471 gms. Net: 0.0079 gms.

-10µ Total Weight = 0.0117 gms.

Total Weight = 0.0547 gms.

+ 10 µ 78.6 %
- 10 µ 21.4 %

PARTICULATE WEIGHTS : DATA & CALCULATIONS

Ranchers Cotton Oil
Anderson Clayton
Linter Cyclone #2
1-PM 10

Date : 4/30/90
Job #: 18010
Lab #: A0-074

BLANKS

Acetone — Gross: 65.7022 gms. Tare: 65.7017 gms. Volume: 100 ml Residue: 0.0005 gms.

DI Water — Gross: 73.1106 gms. Tare: 73.1103 gms. Volume: 100 ml Residue: 0.0003 gms.

WEIGHTS & VOLUMES

Filter(10) Gross: 0.1049 gms. Tare: 0.1005 gms. Net: 0.0044 gms.
Filter(13) Gross: 0.0861 gms. Tare: 0.0850 gms. Net: 0.0011 gms.

+10 µ Rinse -
Acetone: 50 ml * 5E-06 gms./ml = Net: -0.0003 gms.
DI Water: 150 ml * 3E-06 gms./ml = Net: -0.0005 gms.
Gross: 69.0594 gms. Tare: 69.0198 gms. Net: 0.0396 gms.

+10µ Total Weight = 0.0444 gms.

Filter(8) Gross: 0.1216 gms. Tare: 0.1157 gms. Net: 0.0059 gms.

-10 µ Rinse
DI Water: 300 ml * 3E-06 gms./ml = Net: -0.0009 gms.
Acetone : 50 ml * 5E-06 gms./ml = Net: -0.0003 gms.
Total: 400 ml Aliquot: 400 ml
Gross: 70.4237 gms. Tare: 70.4047 gms. Net: 0.0178 gms.

-10µ Total Weight = 0.0226 gms.

Total Weight = 0.0670 gms.

+ 10 µ 66.3 %
- 10 µ 33.7 %

PARTICULATE WEIGHTS : DATA & CALCULATIONS

Ranchers Cotton Oil
Anderson Clayton
Seed Cleaner #1
1-PM 10

Date : 5/1/90
Job #: 18010
Lab #: A0-074

BLANKS

Acetone — Gross: 65.7022 gms. Tare: 65.7017 gms. Volume: 100 ml Residue: 0.0005 gms.

DI Water — Gross: 73.1106 gms. Tare: 73.1103 gms. Volume: 100 ml Residue: 0.0003 gms.

WEIGHTS & VOLUMES

Filter(3) Gross: 0.0858 gms. Tare: 0.0858 gms. Net: 0.0000 gms.
Filter(7) Gross: 0.1008 gms. Tare: 0.1007 gms. Net: 0.0001 gms.

+10 µ Rinse -
Acetone: 50 ml * 5E-06 gms./ml = Net: -0.0003 gms.
DI Water: 150 ml * 3E-06 gms./ml = Net: -0.0005 gms.
Gross: 68.5806 gms. Tare: 68.5749 gms. Net: 0.0057 gms.

+10µ Total Weight = 0.0051 gms.

Filter(10) Gross: 0.1163 gms. Tare: 0.1157 gms. Net: 0.0006 gms.

-10 µ Rinse
DI Water: 300 ml * 3E-06 gms./ml = Net: -0.0009 gms.
Acetone: 50 ml * 5E-06 gms./ml = Net: -0.0003 gms.
Total: 350 ml Aliquot: 350 ml
Gross: 70.1041 gms. Tare: 70.0932 gms. Net: 0.0097 gms.

-10µ Total Weight = 0.0092 gms.

Total Weight = 0.0143 gms.

+ 10 µ 35.7 %
- 10 µ 64.3 %

PARTICULATE WEIGHTS : DATA & CALCULATIONS

Ranchers Cotton Oil
Anderson Clayton
Seed Cleaner #1
2-PM 10

Date : 5/1/90
Job #: 18010
Lab #: A0-074

BLANKS

Acetone — Gross: 65.7022 gms. Tare: 65.7017 gms. Volume: 100 ml Residue: 0.0005 gms.

DI Water — Gross: 73.1106 gms. Tare: 73.1103 gms. Volume: 100 ml Residue: 0.0003 gms.

WEIGHTS & VOLUMES

Filter(19) Gross: 0.1002 gms. Tare: 0.1002 gms. Net: 0.0000 gms.
Filter(20) Gross: 0.1003 gms. Tare: 0.1002 gms. Net: 0.0001 gms.

+10 µ Rinse -
Acetone: 50 ml * 5E-06 gms./ml = Net: -0.0003 gms.
DI Water: 150 ml * 3E-06 gms./ml = Net: -0.0005 gms.
Gross: 74.0360 gms. Tare: 74.0250 gms. Net: 0.0110 gms.

+10µ Total Weight = 0.0104 gms.

Filter(9) -Gross: 0.1156 gms. Tare: 0.1148 gms. Net: 0.0008 gms.

-10 µ Rinse
DI Water: 300 ml * 3E-06 gms./ml = Net: -0.0009 gms.
Acetone : 50 ml * 5E-06 gms./ml = Net: -0.0003 gms.
Total: 350 ml Aliquot: 350 ml
Gross: 67.0915 gms. Tare: 67.0820 gms. Net: 0.0083 gms.

-10µ Total Weight = 0.0080 gms.

Total Weight = 0.0184 gms.

+ 10 µ 56.5 %
- 10 µ 43.5 %

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Linter Cyclone #2

Date: 4/30/90
Type: *T std = 68 F*
Run: 1-PM10

FIELD DATA & CALCULATIONS SUMMARY

Wc	Water Condensate Weight	7.7	g		
Vlc	Water Condensate Volume	7.7	ml		
Vm	Metered Sample Gas Volume	22.258	dcf		
Lp	Avg. Leak Rate	0.000	cf		
Vn	Leak Corrected Sample Gas Volume	22.258	dcf		
Y	Dry Gas Meter Calibration Factor	0.999			
Pbar	Barometric Pressure	29.92	in. Hg		
Pg	Static Pressure	-0.17	in. H2O		
Ps	Stack Pressure, Absolute	29.91	in. Hg		
Del. H	Dry Gas Meter Press. Differential, Average	1.017	in. H2O		
Tm	Dry Gas Meter Temperature, Average	73.0	deg. F	533.0	deg. R
Vm(std)	Sample Gas Volume	22.0910	dscf		
Vm(wet)	Sample Gas Volume, Wet	22.4547	scf		
Vw(std)	Water Vapor Volume	0.3637	scf		
Bws	Water Content of Stack Gas	0.016			
CO2	Carbon Dioxide, Dry	0.1	%		
O2	Oxygen, Dry	20.9	%		
N2	Nitrogen, Dry	79.1	%		
Md	Molecular Wt. of Stack Gas, Dry	28.844	lb/lb mole		
Ms	Molecular Wt. of Stack Gas, Wet	28.668	lb/lb mole		
Cp	Pitot Calibration Factor	0.832			
Del. P	Velocity Head, Average Square Root	0.626	in. H20		
Ts	Stack Gas Temperature, Average	70.3	deg. F	530.3	deg. R
As	Area of Stack	4.28	sq ft	28.0	in. dia.
Vs	Stack Gas Velocity	35.01	ft/sec		
Qa	Actual Flow Rate	8,982	cfm		
Qad	Actual Flow Rate, Dry	8,836	dcfm		
Q(std)	Stack Gas Flow Rate	8,794	dscfm		
An	Nozzle Area	0.0002592	sq ft	0.218	in. dia.
Theta	Sampling Time	42	min.		
I	Isokinetics	98.7	%		

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Linter Cyclone #2

Date: 4/30/90
Type: *T std = 68 F*
Run: 2-PM10

FIELD DATA & CALCULATIONS SUMMARY

Wc	Water Condensate Weight	2.8	g		
Vlc	Water Condensate Volume	2.8	ml		
Vm	Metered Sample Gas Volume	21.982	dcf		
Lp	Avg. Leak Rate	0.000	cf		
Vn	Leak Corrected Sample Gas Volume	21.982	dcf		
Y	Dry Gas Meter Calibration Factor	0.999			
Pbar	Barometric Pressure	29.92	in. Hg		
Pg	Static Pressure	-0.17	in. H2O		
Ps	Stack Pressure, Absolute	29.91	in. Hg		
Del. H	Dry Gas Meter Press. Differential, Average	1.017	in. H2O		
Tm	Dry Gas Meter Temperature, Average	83.4	deg. F	543.4	deg. R
Vm(std)	Sample Gas Volume	21.3996	dscf		
Vm(wet)	Sample Gas Volume, Wet	21.5318	scf		
Vw(std)	Water Vapor Volume	0.1323	scf		
Bws	Water Content of Stack Gas	0.006			
CO2	Carbon Dioxide, Dry	0.1	%		
O2	Oxygen, Dry	20.9	%		
N2	Nitrogen, Dry	79.1	%		
Md	Molecular Wt. of Stack Gas, Dry	28.844	lb/lb mole		
Ms	Molecular Wt. of Stack Gas, Wet	28.777	lb/lb mole		
Cp	Pitot Calibration Factor	0.832			
Del. P	Velocity Head, Average Square Root	0.628	in. H20		
Ts	Stack Gas Temperature, Average	77.5	deg. F	537.5	deg. R
As	Area of Stack	4.28	sq ft	28.0	in. dia.
Vs	Stack Gas Velocity	35.18	ft/sec		
Qa	Actual Flow Rate	9,025	cfm		
Qad	Actual Flow Rate, Dry	8,970	dcfm		
Q(std)	Stack Gas Flow Rate	8,807	dscfm		
An	Nozzle Area	0.0002592	sq ft	0.218	in. dia.
Theta	Sampling Time	42	min.		
I	Isokinetics	95.5	%		

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Seed Cleaner #1

Date: 5/1/90
Type: *T std = 68 F*
Run: 1-PM10

FIELD DATA & CALCULATIONS SUMMARY

Wc	Water Condensate Weight	2.4	g		
Vlc	Water Condensate Volume	2.4	ml		
Vm	Metered Sample Gas Volume	24.802	dcf		
Lp	Avg. Leak Rate	0.000	cf		
Vh	Leak Corrected Sample Gas Volume	24.802	dcf		
Y	Dry Gas Meter Calibration Factor	0.999			
Pbar	Barometric Pressure	29.98	in. Hg		
Pg	Static Pressure	-0.02	in. H2O		
Ps	Stack Pressure, Absolute	29.96	in. Hg		
Del. H	Dry Gas Meter Press. Differential, Average	0.958	in. H2O		
Tm	Dry Gas Meter Temperature, Average	77.2	deg. F	537.2	deg. R
Vm(std)	Sample Gas Volume	24.4533	dscf		
Vm(wet)	Sample Gas Volume, Wet	24.5667	scf		
Vw(std)	Water Vapor Volume	0.1134	scf		
Bws	Water Content of Stack Gas	0.005			
CO2	Carbon Dioxide, Dry	0.1	%		
O2	Oxygen, Dry	20.9	%		
N2	Nitrogen, Dry	79.1	%		
Md	Molecular Wt. of Stack Gas, Dry	28.844	lb/lb mole		
Ms	Molecular Wt. of Stack Gas, Wet	28.794	lb/lb mole		
Cp	Pitot Calibration Factor	0.832			
Del. P	Velocity Head, Average Square Root	0.205	in. H20		
Ts	Stack Gas Temperature, Average	66.2	deg. F	526.2	deg. R
As	Area of Stack	2.76	sq ft	22.5	in. dia.
Vs	Stack Gas Velocity	11.38	ft/sec		
Qa	Actual Flow Rate	1,686	cfm		
Qad	Actual Flow Rate, Dry	1,677	dcfm		
Q(std)	Stack Gas Flow Rate	1,886	dscfm		
An	Nozzle Area	0.000767	sq ft	0.375	in. dia.
Theta	Sampling Time	48	min.		
I	Isokinetics	97.3	%		

Client: Ranchers Cotton Oil
Site: Andersen Clayton
Unit: Seed Cleaner #1

Date: 5/1/90
Type: *T std = 68 F*
Run: 2-PM10

FIELD DATA & CALCULATIONS SUMMARY

Wc	Water Condensate Weight	1.6	g		
Vlc	Water Condensate Volume	1.6	ml		
Vm	Metered Sample Gas Volume	30.576	dcf		
Lp	Avg. Leak Rate	0.000	cf		
Vn	Leak Corrected Sample Gas Volume	30.576	dcf		
Y	Dry Gas Meter Calibration Factor	0.999			
Pbar	Barometric Pressure	29.92	in. Hg		
Pg	Static Pressure	-0.02	in. H2O		
Ps	Stack Pressure, Absolute	29.92	in. Hg		
Del. H	Dry Gas Meter Press. Differential, Average	0.958	in. H2O		
Tm	Dry Gas Meter Temperature, Average	93.0	deg. F	553.0	deg. R
Vm(std)	Sample Gas Volume	29.2449	dscf		
Vm(wet)	Sample Gas Volume, Wet	29.3205	scf		
Vw(std)	Water Vapor Volume	0.0756	scf		
Bws	Water Content of Stack Gas	0.003			
CO2	Carbon Dioxide, Dry	0.1	%		
O2	Oxygen, Dry	20.9	%		
N2	Nitrogen, Dry	79.1	%		
Md	Molecular Wt. of Stack Gas, Dry	28.844	lb/lb mole		
Ms	Molecular Wt. of Stack Gas, Wet	28.816	lb/lb mole		
Cp	Pitot Calibration Factor	0.832			
Del. P	Velocity Head, Average Square Root	0.205	in. H20		
Ts	Stack Gas Temperature, Average	79.0	deg. F	539.0	deg. R
As	Area of Stack	2.76	sq ft	22.5	in. dia.
Vs	Stack Gas Velocity	11.52	ft/sec		
Qa	Actual Flow Rate	1,909	cfm		
Qad	Actual Flow Rate, Dry	1,904	dcfm		
Q(std)	Stack Gas Flow Rate	1,865	dscfm		
An	Nozzle Area	0.000767	sq ft	0.375	in. dia.
Theta	Sampling Time	60	min.		
I	Isokinetics	94.1	%		

LABORATORY ANALYSIS

Run Set Up Sheet

Client : Ranchers Cotton Oil
Site : Anderson Clayton
Unit: Linter Cyclone #2

Date : 4/30/90
Job #: 18010
Lab #: A0-074

Method#: 5-PM 10
Run#: 1
Hot box#: -

Probe#: 5-3
Stack box#: E
Cold box#: 9

Pryo#: T-4
Nozzle#: 0.218
Pitot#: 0.832

Imp. #1:	gross	646.7
	tare	599.4
	final	47.3
Imp. #2:	gross	538.0
	tare	584.4
	final	-46.4
Imp. #3:	gross	442.9
	tare	441.9
	final	1.0
Imp. #4:	gross	651.4
	tare	645.6
	final	5.8
Total		7.7

Probe blank ____ ml
Probe rinse ____ ml

Solution blank: DI
Solution blank: Acetone

Filter No: #10/13/8
Filter Tare wt. ____

	#	date
Solution Container		
Solution Container		

Sample Vol:	start	150.0	ml
Imp#1	finsh	197.0	ml
Amount Gained:		47.0	ml
Sample Vol:	start	150.0	ml
Imp #2	finsh	104.0	ml
Amount Gained:		-46.0	ml

Total Vol #1 #2 & Rinse 400.0 ml

Comments:

BTC Enviromental, Inc. - 1989

Run Set Up Sheet

Client : Ranchers Cotton Oil
Site : Anderson Clayton
Unit: Linter Cyclone #2

Date : 4/30/90
Job #: 18010
Lab #: A0-074

Method#: 5-PM 10 | Probe#: S-3 | Pryo#: T-1
Run#: 2 | Stack box#: E | Nozzle#: 0.218
Hot box#: - | Cold box#: 9 | Pitot#: 0.832

Imp. #1:	gross	564.5
	tare	564.6
	final	-0.1
Imp. #2:	gross	564.8
	tare	565.6
	final	-0.8
Imp. #3:	gross	442.5
	tare	442.9
	final	-0.4
Imp. #4:	gross	655.5
	tare	651.4
	final	4.1
	Total	2.8

Probe blank		ml
Probe rinse		ml
Solution blank	DI	
Solution blank	Acetone	
Filter No:	#2/1/12	
Filter Tare wt.		

	#	date
Solution Container		
Solution Container		

Sample Vol:	start	150.0	ml
Imp#1	finsh	150.0	ml
Amount Gained:		0.0	ml
Sample Vol:	start	150.0	ml
Imp #2	finsh	149.0	ml
Amount Gained:		-1.0	ml

Total Vol #1 #2 & Rinse 400.0 ml

Comments:

BTC Enviromental, Inc. - 1989

Run Set Up Sheet

Client : Ranchers Cotton Oil
Site : Anderson Clayton
Unit: Seed Cleaner #1

Date : 5/1/90
Job #: 18019
Lab #: A0-074

Method#: 5-PM10
Run#: 1
Hot box#: -

Probe#: 5-3
Stack box#: E
Cold box#:

Pryo#: T-1
Nozzle#: 0.375
Pitot#: 0.832

Imp. #1:	gross	568.8
	tare	569.8
	final	-1.0
Imp. #2:	gross	545.5
	tare	546.4
	final	-0.9
Imp. #3:	gross	444.5
	tare	443.9
	final	0.6
Imp. #4:	gross	659.2
	tare	655.5
	final	3.7

Total 2.4

Probe blank ml
Probe rinse ml

Solution blank DI
Solution blank Acetone

Filter No: #3/7/10
Filter Tare wt.

	#	date
Solution Container		
Solution Container		

Sample Vol:	start	150.0	ml
Imp#1	finish	149.0	ml
Amount Gained:		-1.0	ml

Sample Vol:	start	150.0	ml
Imp #2	finish	149.0	ml
Amount Gained:		-1.0	ml

Total Vol #1 #2 & Rinse 400.0 ml

Comments:

BTC Enviromental, Inc. - 1989

Run Set Up Sheet

Client : Ranchers Cotton Oil
Site : Anderson Clayton
Unit: Seed Cleaner #1

Date : 5/1/90
Job #: 18010
Lab #: A0-074

Method#: 5-PM10
Run#: 2
Hot box#: -

Probe#: 5-3
Stack box#: E
Cold box#: 9

Pryo#: T-1
Nozzle#: 0.375
Pitot#: 0.832

Imp. #1:	gross	585.0
	tare	586.5
	final	-1.5
Imp. #2:	gross	550.5
	tare	551.4
	final	-0.9
Imp. #3:	gross	443.5
	tare	443.7
	final	-0.2
Imp. #4:	gross	663.4
	tare	659.2
	final	4.2

Total 1.6

Probe blank ml
Probe rinse ml

Solution blank DI
Solution blank Acetone

Filter No: #19/20/9
Filter Tare wt.

	#	date
Solution Container		
Solution Container		

Sample Vol:	start	150.0	ml
Imp#1	finish	148.0	ml
Amount Gained:		-2.0	ml
Sample Vol:	start	150.0	ml
Imp #2	finish	149.0	ml
Amount Gained:		-1.0	ml

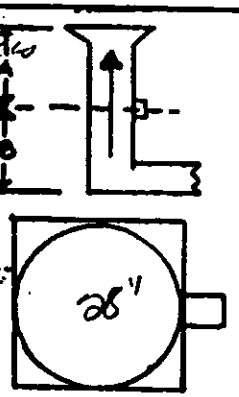
Total Vol #1 #2 & Rinse 400.0 ml

Comments:

BTC Enviromental, Inc. - 1989

FIELD DATA &
STRIP CHARTS

PLANT: Anderson Clayton/Kennedale
LOCATION: Cleburne
COUNTY: Fannin
UNIT: Fluid Cracking #2
DATE: 4/30/90
RUN NO./METHOD: 1 - Particulate Manual
COLD BOX NO.: 9
METER BOX NO.: E
METER FACTOR: 0.9971
PITOT #/ FACTOR: #5-3 0.852
PYROMETER #: T-4
MAGNEHELIC FACTOR: ΔP: ΔH 11.10



FILTER NO. Direct #10 #13 #8
AMBIENT TEMP.: 55
BAROMETRIC PRESS.,IN.HG.: 24.92
ASSUMED MOISTURE: 5
HEATER BOX SETTING: ON
PROBE LENGTH,FT. 5
NOZZLE DIAMETER,IN.: 0.216 #3
PROBE HEATER SETTING:
APPROX.WIND VEL.,MPH: Calm
SAMPLE BOX TEMP.,(F): +200
STATIC PREASURE: -0.17 "H2O
OFFSET: — In. PORT DIA.: 3 In.

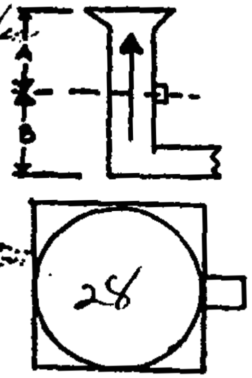
TRAVERSE POINT NUMBER	DISTANCE INCHES	O2 (%)	CO2 (%)	SAMPLE TIME MIN.	STACK TEMP. (Ts), F	VELOCITY HEAD IN. H2O ΔP	VELOCITY HEAD IN. H2O √ΔP	PRESSURE DIFF ORIFICE METER (ΔH) IN.H2O	DRY GAS SAMPLE VOLUME (VM),FT.	GAS SAMPLE TEMP. @DRY GAS METER INLET (Tm),	GAS SAMPLE TEMP. @DRY GAS METER OUTLET (TM)	PUMP VACUUM IN.HG	TEMP. LAST IMPINGER (F)
1		Anal	Anal	9:01 0	68	0.46		0.67	411.102	59	60	8	
2				7	69	0.42		1.05	419.5	73	61		
3				14	71	0.46		1.12	427.0	81	66	13	
4				21	71	0.46		1.12	426.3	83	68		
5				28	71	0.475		1.16	420.8	86	72		
6				35	72	0.37		0.92	435.1	88	76		
TOT				42					438.363				
	ZERO												
	SPAN												
AVERAGE		20.9	0.1	42	70.3		0.626	1.017	22.738	73.0			

PITOT LEAK CHECK:
BEFORE: TOP ΔP= ____ BOTTOM ΔP= ____
ΔP= ____ ΔP= ____
AFTER: TOP ΔP= ____ BOTTOM ΔP= ____
ΔP= ____ ΔP= ____

SAMPLE TRAIN LEAK:
BEFORE- 0.005 CFM@ 15 IN. HG.
AFTER- 0.005 CFM@ 13 IN. HG.

COMMENTS: PURGE ____

PLANT: [illegible]
LOCATION: [illegible]
COUNTY: Fresno
UNIT: [illegible] #2
DATE: 11/20/90
RUN NO./METHOD: 2 - M-10
COLD BOX NO.: 9
METER BOX NO.: F
METER FACTOR: 1
PITOT #/ FACTOR: S-2 - 0.832
PYROMETER #: T-1
MAGNEHELIC FACTOR: ΔP: [illegible] ΔH M-10



FILTER NO. #2, #4, #12
AMBIENT TEMP.: 65
BAROMETRIC PRESS.,IN.HG.: 29.42
ASSUMED MOISTURE: 3
HEATER BOX SETTING: 300
PROBE LENGTH,FT.: 5
NOZZLE DIAMETER,IN.: 0.218 #3
PROBE HEATER SETTING: 8
APPROX.WIND VEL.,MPH: Calm
SAMPLE BOX TEMP.,(F): ±200
STATIC PREASURE: -0.17 "H2O
OFFSET: ____ in. PORT DIA.: 3 in. (___ F)

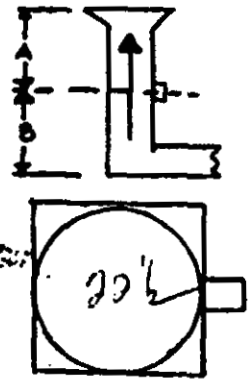
TRAVERSE POINT NUMBER	DISTANCE INCHES	O2 (%)	CO2 (%)	SAMPLE TIME MIN.	STACK TEMP. (Ts), F	VELOCITY HEAD IN. H2O ΔP	VELOCITY HEAD IN. H2O √ΔP	PRESSURE DIFF ORIFICE METER (ΔH) IN.H2O	DRY GAS SAMPLE VOLUME (VM),FT.	GAS SAMPLE TEMP. @DRY GAS METER INLET (Tm)	GAS SAMPLE TEMP. @DRY GAS METER OUTLET (TM)	PUMP VACUUM IN.HG	TEMP. LAST IMPINGER (F)
1		Ambient	1K	10:40	76	0.265		0.67	438.622	72	70	8	
2				7	77	0.42		1.05	443.2	80	76	10	
				14	78	0.46		1.12	445.6	90	76		
				21	78	0.46		1.15	449.6	93	80	13	
				28	78	0.48		1.18	453.7	96	83		
				35	78	0.37		[illegible]	457.6	97	86		
				42					460.609				
	ZERO												
	SPAN												
AVERAGE		20.4	0.05	42	77.5		0.626	1.011	21.982	83.4			

PITOT LEAK CHECK:
BEFORE: TOP ΔP= ____ ΔP= ____ BOTTOM ΔP= ____ ΔP= ____
AFTER: TOP ΔP= ____ ΔP= ____ BOTTOM ΔP= ____ ΔP= ____

SAMPLE TRAIN LEAK:
BEFORE= 0.005 CFM@ 15 IN. HG.
AFTER= 0.005 CFM@ 14 IN. HG.

COMMENTS:
PURGE ____

PLANT: Anderson Clayton
LOCATION: Church Hill
COUNTY: Freestone
UNIT: #1 Sand Dryer
DATE: 5/1/90
RUN NO./METHOD: 1 - TM-10
COLD BOX NO.:
METER BOX NO.: 1
METER FACTOR: 1.1994
PITOT # FACTOR: 5.73 - .8532
PYROMETER #: 1
MAGNEHELIC FACTOR: ΔP ΔH 14.10



FILTER NO. #3, #7, #10
AMBIENT TEMP.: 67
BAROMETRIC PRESS.,IN.HG.: 29.96
ASSUMED MOISTURE: 5
HEATER BOX SETTING: ON
PROBE LENGTH,FT. 5
NOZZLE DIAMETER,IN.: 0.375 - .25
PROBE HEATER SETTING: 4
APPROX.WIND VEL.,MPH: Calm
SAMPLE BOX TEMP.,(F): + 200
STATIC PREASURE: - 0.02 "H2O
OFFSET: — In. PORT DIA.: 3 In. (~~M~~ F)

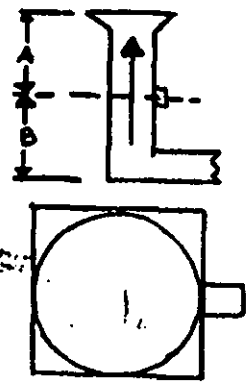
TRAVERSE POINT NUMBER	DISTANCE INCHES	O2 (%)	CO2 (%)	SAMPLE TIME MIN.	STACK TEMP. (Ts), F	VELOCITY HEAD IN. H2O ΔP	VELOCITY HEAD IN. H2O √ΔP	PRESSURE DIFF ORIFICE METER (ΔH) IN.H2O	DRY GAS SAMPLE VOLUME (VM),FT.	GAS SAMPLE TEMP. @DRY GAS METER INLET (Tm),	GAS SAMPLE TEMP. @DRY GAS METER OUTLET (TM)	PUMP VACUUM IN.HG	TEMP. LAST IMPINGER (F)
1		20.9	0	0:00	61	0.03		0.45	460.905	69	61		
2				8	67	0.045		0.97	465.1	77	65	10	
3				16	69	0.052		1.12	470.1	84	70	13	
4				24	69	0.05		1.12	475.1	86	75		
5				32	66	0.05		1.09	480.1	91	77		
6				40	66	0.037		0.80	484.1	92	82		
STOP				48					486.105				
	ZERO												
	SPAN												
AVERAGE		20.9	0.0	48	66.2		0.045	0.855	24.802	77.2			

PITOT LEAK CHECK:
BEFORE: TOP ΔP= ____ BOTTOM ΔP= ____
ΔP= ____ ΔP= ____
AFTER: TOP ΔP= ____ BOTTOM ΔP= ____
ΔP= ____ ΔP= ____

SAMPLE TRAIN LEAK:
BEFORE= 0.012 CFM@ 15 IN. HG.
AFTER= 0.016 CFM@ 13 IN. HG.

COMMENTS: PURGE ____

PLANT: [illegible]
LOCATION: [illegible]
COUNTY: [illegible]
UNIT: #1 [illegible]
DATE: [illegible]
RUN NO./METHOD: [illegible]
COLD BOX NO.: [illegible]
METER BOX NO.: [illegible]
METER FACTOR: [illegible]
PITOT #/ FACTOR: [illegible]
PYROMETER #: [illegible]
MAGNEHELIC FACTOR: ΔP [illegible] ΔH [illegible]



FILTER NO.: #19, #20, #9
AMBIENT TEMP.: 76
BAROMETRIC PRESS.,IN.HG.: 30.12
ASSUMED MOISTURE: [illegible]
HEATER BOX SETTING: [illegible]
PROBE LENGTH,FT.: [illegible]
NOZZLE DIAMETER,IN.: 0.[illegible] #5
PROBE HEATER SETTING: [illegible]
APPROX.WIND VEL.,MPH: [illegible]
SAMPLE BOX TEMP.,(F): [illegible]
STATIC PREASURE: [illegible] "H2O
OFFSET: _____ in. PORT DIA.: 2 in. (M / F)

TRAVERSE POINT NUMBER	DISTANCE INCHES	O2 (%)	CO2 (%)	SAMPLE TIME MIN.	STACK TEMP. (Ts), F	VELOCITY HEAD IN. H2O ΔP	VELOCITY HEAD IN. H2O √ΔP	PRESSURE DIFF ORIFICE METER (ΔH) IN.H2O	DRY GAS SAMPLE VOLUME (VM),FT.	GAS SAMPLE TEMP. @DRY GAS METER INLET (Tm),	GAS SAMPLE TEMP. @DRY GAS METER OUTLET (TM)	PUMP VACUUM IN.HG	TEMP. LAST IMPINGER (F)
1		[illegible]	[illegible]	9:48	89	0.62		0.65	485.920	80	80	7	
2				10	90	0.045		0.97	490.3	93	91	10	
4				20	78	0.052		1.12	495.2	99	86	13	
3				30	78	0.052		1.12	500.8	102	89		
2				40	77	0.05		1.4	506.2	106	94		
1				50	77	0.037		0.70	511.2	108	97		
				60					516.503				
	ZERO												
	SPAN												
AVERAGE		20.9	0.3	60	79.0		0.205	0.858	30.526	95.0			

PITOT LEAK CHECK:
BEFORE: TOP ΔP= _____ BOTTOM ΔP= _____
ΔP= _____ ΔP= _____
AFTER: TOP ΔP= _____ BOTTOM ΔP= _____
ΔP= _____ ΔP= _____

SAMPLE TRAIN LEAK:
BEFORE= 0.015 CFM@ 15 IN. HG.
AFTER= 0.015 CFM@ 13 IN. HG.

COMMENTS: PURGE _____

RANCHER COTTON OIL
P.O. BOX 2596
Fresno, Ca. 93745

PARTICULATE & METALS
POOLED SOURCE TESTS
WESTERN COTTON SERVICES CORPORATION
Chowchilla, Calif.

April 30-May 1, 1990

Prepared By:

BTC ENVIRONMENTAL, INC.
1536 EASTMAN AVENUE
Ventura, CA 93003

Job Number
18010

Laboratory Report Number
A0-074

Test Team Leader
Tom Porter

Results Verified By:
Tom Porter - Field Operations Manager

BTC ENVIRONMENTAL INCORPORATED

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EMISSION SUMMARY

Linter cyclone #2

CONSTITUENT	RUN #1	RUN #2	RUN #3	AVERAGE
Total Particulate				
gr/DSCF	0.0423	0.0404	0.0508	*0.0445*
lbs/hr	3.20	3.05	3.83	*3.36*
Metals (lb/hr)				
Arsenic	0.00001	0.00002	<0.00001	*0.00001*
Beryllium	<0.00004	<0.00004	<0.00004	*<0.00004*
Cadmium	0.00029	0.00036	0.00012	*0.00026*
Chromium	*0.00157*	*0.00064*	*0.00063*	*0.00095*
Hex Chromium	0.00001	0.00001	0.00001	*0.00001*
Copper	0.00060	0.00058	0.00034	*0.00051*
Lead	0.00052	0.00039	0.00020	*0.00037*
Manganese	0.00062	0.00033	0.00044	*0.00046*
Nickel	0.00211	0.00111	0.00134	*0.00152*
Zinc	0.00285	0.00201	0.00162	*0.00216*
Mercury	0.00604	0.03289	0.00053	*0.01315*
Selenium	<0.00001	<0.00001	<0.00001	*<0.00001*
Crystalline Silica				
Alpha Quartz, %	0.5-0.7	0.7-1.1	0.2-0.5	*0.4-0.8*
lb/hr	0.0192	0.0274	0.0134	*0.0200*

EMISSION SUMMARY

Seed Cleaner #1

CONSTITUENT	RUN #1	RUN #2	RUN #3	AVERAGE
Total Particulate				
gr/DSCF	0.0061	0.0049	0.0066	*0.0059*
lbs/hr	0.10	0.08	0.10	*0.09*
Metals (lb/hr)				
Arsenic	<0.00001	<0.00001	<0.00001	*<0.00001*
Beryllium	<0.00002	<0.00001	<0.00001	*<0.00001*
Cadmium	0.00003	0.00004	0.00001	*0.00003*
Chromium	0.00007	0.00004	0.00006	*0.00006*
Hex Chromium	<0.00001	<0.00001	<0.00001	*<0.00001*
Copper	0.00008	0.00012	0.00010	*0.00010*
Lead	0.00004	0.00004	0.00006	*0.00005*
Manganese	0.00005	0.00003	0.00006	*0.00005*
Nickel	0.00016	0.00014	0.00020	*0.00017*
Zinc	0.00032	0.00025	0.00077	*0.00045*
Mercury	0.00006	0.00003	0.00004	*0.00004*
Selenium	<0.00001	<0.00001	<0.00001	*<0.00001*
Crystalline Silica				
Alpha Quartz, %	4.5-5.0	3.5-4.3	8.0-9.2	*6.0-6.2*
lb/hr	0.0047	0.0031	0.0086	*0.0055*

I. INTRODUCTION

SAMPLING AND ANALYTICAL PROCEDURES

On April 30 & May 1, 1990, BTC Environmental performed source emissions tests for particulate matter, metals and crystalline silica on cyclone #2 of the linters system and cyclone #1 on the seed cleaner. The cyclones were located at the Western Cotton Services Corporation Chowcilla facility.

STACK GAS ANALYSIS: The stack gas was assumed to be ambient air. The oxygen was assumed to be 20.9% and the carbon dioxide was 0.05%.

STACK GAS VELOCITY: The stack gas velocity was determined using an "S" type pitot tube connected to a magnehelic gauge. The "S" type pitot was used to determine the stack velocity profile for each run. Twelve points (six in each direction) were used for the velocity traverse. The velocity traverse was done in the horizontal and the vertical planes.

The stack temperature was determined using a thermocouple and an indicating pyrometer. The proportion of water was determined gravimetrically and the dry molecular weight of the stack gas determined by E.P.A. Method 3, equation 3-2. Stack velocities were calculated using E.P.A. Method 2, equation 2-9; gas volumetric flow rate was determined by equation 2-10.

PARTICULATE EMISSIONS: Triplicate particulate samples were collected using a Lace Model 31 stack sampler system that conforms to E.P.A. requirements for particulate sampling. The system consists of a heated probe, heated filter, and cooled impingers (see E.P.A. Method 5). Six (6) sample points were taken in the horizontal port. After the weight of the particulates on the filter and in the probe is determined, the total dissolved solids in the impingers is determined and added to the particulate weight in order to comply with Fresno County regulations. Blanks for the DI water and acetone were analyzed and substracted from the total particulate weight.

METALS ANALYSIS: The probe residues and the filters were analyzed for metals. The filter was halved and split for metals analysis and for hex chromium analysis. The probe residue was redissolved in 80ml of a 2%NaOH/3%Na2CO3 solution. 40 ml of the solution was analyzed for hex chrome and 40 ml analyzed for metals.

The filter was digested in aqua regia solution to dissolve the metals. The probe solution was digested in HNO3 solution. The resultant solutions were analyzed by ICP for beryllium, cadmium, chromium, copper, lead, manganese, nickel and zinc. The asrsenic and selenium were analyzed by grafite furnace atomic absortion. Mercury was analyzed by cold vapor atomic absortion. The hex chrome was analyzed according to CARB method 425 (colorimetrically). The values were in milligrams and the results reported in lb/hr based on the flow rate of the exhaust stack.

CRYSTALLINE SILICA ANALYSIS: Triplicate samples of the exhaust gas were taken on cassettes containing 37mm polypropylene filters. The sampling was done at a rate of approximately 1 liter/min. for 30 minutes. The samples were weighed and sent to Technology of Materials for analysis by X-Ray diffraction. The values were reported in % and lb/hr. The report from Technology of material is included.

LEAK CHECKS: Leak rates were conducted on the sampling train and the pitot tubes before and after each test. The leak check for the sampling train was done at the nozzle. Any leak rate greater than 0.02 cfm was corrected for in the volume calculations.

All calculations for lb/hr were done by using the flow rate of the stack gas. All values were calculated by using CARB standard conditons (68°F & 29.92 in Hg).

If you have any questions concerning this test or if we can be of further assistance, please contact the undersigned at (805) 644-1095.

Respectfully submitted,

BTC Environmental, INC.

Tom Porter
Air Division Manager

Copies: 4 Ranchers
1 File

II. WET TEST METHODS DATA SUMMARIES

RANCHERS COTTON OIL-Linter Cyclone #2, 4/30/90

Field Data Summary	Run#1	Run#2	Run#3
Vlc - Volume of water collected, ml	12.1	9.3	2.9
Vm - Gas volume, meter cond., dcf	53.078	54.209	54.705
Y - Meter calibration factor	1.003	1.003	1.003
Pbar - Barometric pressure, in. Hg	29.92	29.92	29.87
Pg - Stack static pressure, in. H2O	-0.17	-0.17	-0.17
ΔH - Avg. meter press. diff., in. H2O	1.182	1.182	1.182
Tm - Absolute meter temperature, °R	529.7	541.0	550.8
Vm(std) - Standard sample gas vol., dscf	53.2116	53.2086	52.6506
Bws - Water vapor part in gas stream	0.011	0.008	0.003
CO2 - Dry concentration, volume %	0.10	0.10	0.10
O2 - Dry concentration, volume %	20.90	20.90	20.90
Md - Mol wt. stack gas, dry, g/gmole	28.844	28.844	28.844
Ms - Mol wt. stack gas, wet, g/gmole	28.729	28.755	28.816
Cp - Pitot tube coef., dimensionless	0.832	0.832	0.832
Δp - Avg. of sq. roots of each Δp	0.626	0.626	0.626
Ts - Absolute stack Temp. °R	530.8	537.0	541.0
A - Area of stack, square feet	4.3	4.3	4.3
Qstd - Volumetric flow rate, dscfm	8830	8787	8797
An - Area of nozzle, square feet	0.0002786	0.0002786	0.0002786
ø - Sampling time, minutes	90	90	90
I - Isokinetic variation, percent	102.5	102.9	101.8

RANCHERS COTTON OIL-Seed Cleaner #1, 5/1/90

Field Data Summary	Run#1	Run#2	Run#3
Vlc - Volume of water collected, ml	2.7	2.3	2.7
Vm - Gas volume, meter cond., dcf	59.482	81.305	81.702
Y - Meter calibration factor	1.003	1.003	1.003
Pbar - Barometric pressure, in. Hg	29.96	29.92	29.80
Pg - Stack static pressure, in. H2O	-0.02	-0.02	-0.02
ΔH - Avg. meter press. diff., in. H2O	1.455	1.455	1.455
Tm - Absolute meter temperature, °R	535.1	547.4	555.8
Vm(std) - Standard sample gas vol., dscf	59.1472	78.9231	77.8024
Bws - Water vapor part in gas stream	0.002	0.001	0.002
CO2 - Dry concentration, volume %	0.10	0.10	0.10
O2 - Dry concentration, volume %	20.90	20.90	20.90
Md - Mol wt. stack gas, dry, g/gmole	28.844	28.844	28.844
Ms - Mol wt. stack gas, wet, g/gmole	28.821	28.829	28.826
Cp - Pitot tube coef., dimensionless	0.832	0.832	0.832
Δp - Avg. of sq. roots of each Δp	0.205	0.205	0.205
Ts - Absolute stack Temp. °R	525.8	539.7	543.8
A - Area of stack, square feet	2.8	2.8	2.8
Qstd - Volumetric flow rate, dscfm	1890	1866	1854
An - Area of nozzle, square feet	0.0009439	0.0009439	0.0009439
ø - Sampling time, minutes	90	120	120
I - Isokinetic variation, percent	101.4	102.8	102.0

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Linter Cyclone #2

Date: 4/30/90
Type: *T std = 68 F*
Run: 1-Part

FIELD DATA & CALCULATIONS SUMMARY

Wlc	Water Condensate Weight	12.1	g		
Vlc	Water Condensate Volume	12.1	ml		
Vm	Metered Sample Gas Volume	53.078	dcf		
Lp	Avg. Leak Rate	0.000	cf		
Vn	Leak Corrected Sample Gas Volume	53.078	dcf		
Y	Dry Gas Meter Calibration Factor	1.003			
Pbar	Barometric Pressure	29.92	in. Hg		
Pg	Static Pressure	-0.17	in. H2O		
Ps	Stack Pressure, Absolute	29.91	in. Hg		
Del. H	Dry Gas Meter Press. Differential, Average	1.182	in. H2O		
Tm	Dry Gas Meter Temperature, Average	69.7	deg. F	529.7	deg. R
Vm(std)	Sample Gas Volume	53.2116	dscf		
Vm(wet)	Sample Gas Volume, Wet	53.7831	scf		
Vw(std)	Water Vapor Volume	0.5715	scf		
Bws	Water Content of Stack Gas	0.011			
CO2	Carbon Dioxide, Dry	0.1	%		
O2	Oxygen, Dry	20.9	%		
N2	Nitrogen, Dry	79.1	%		
Md	Molecular Wt. of Stack Gas, Dry	28.844	lb/lb mole		
Ms	Molecular Wt. of Stack Gas, Wet	28.729	lb/lb mole		
Cp	Pitot Calibration Factor	0.832			
Del. P	Velocity Head, Average Square Root	0.626	in. H20		
Ts	Stack Gas Temperature, Average	70.8	deg. F	530.8	deg. R
As	Area of Stack	4.28	sq ft	28.0	in. dia.
Vs	Stack Gas Velocity	34.99	ft/sec		
Qa	Actual Flow Rate	8,976	cfm		
Qad	Actual Flow Rate, Dry	8,881	dcfm		
Q(std)	Stack Gas Flow Rate	8,830	dscfm		
An	Nozzle Area	0.0002786	sq ft	0.226	in. dia.
Theta	Sampling Time	90	min.		
I	Isokinetics	102.5	%		

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Linter Cyclone #2

Date: 4/30/90
Type: T std = 68 F
Run: 2-Part

FIELD DATA & CALCULATIONS SUMMARY

Wc	Water Condensate Weight	9.3	g		
Vlc	Water Condensate Volume	9.3	ml		
Vm	Metered Sample Gas Volume	54.209	dcf		
Lp	Avg. Leak Rate	0.000	cf		
Vn	Leak Corrected Sample Gas Volume	54.209	dcf		
Y	Dry Gas Meter Calibration Factor	1.003			
Pbar	Barometric Pressure	29.92	in. Hg		
Pg	Static Pressure	-0.17	in. H2O		
Ps	Stack Pressure, Absolute	29.91	in. Hg		
Del. H	Dry Gas Meter Press. Differential, Average	1.182	in. H2O		
Tm	Dry Gas Meter Temperature, Average	81.0	deg. F	541.0	deg. R
Vm(std)	Sample Gas Volume	53.2086	dscf		
Vm(wet)	Sample Gas Volume, Wet	53.6479	scf		
Vw(std)	Water Vapor Volume	0.4393	scf		
Bws	Water Content of Stack Gas	0.008			
CO2	Carbon Dioxide, Dry	0.1	%		
O2	Oxygen, Dry	20.9	%		
N2	Nitrogen, Dry	79.1	%		
Md	Molecular Wt. of Stack Gas, Dry	28.844	lb/lb mole		
Ms	Molecular Wt. of Stack Gas, Wet	28.755	lb/lb mole		
Cp	Pitot Calibration Factor	0.832			
Del. P	Velocity Head, Average Square Root	0.626	in. H20		
Ts	Stack Gas Temperature, Average	77.0	deg. F	537.0	deg. R
As	Area of Stack	4.28	sq ft	28.0	in. dia.
Vs	Stack Gas Velocity	35.17	ft/sec		
Qa	Actual Flow Rate	9,024	cfm		
Qsd	Actual Flow Rate, Dry	8,950	dcfm		
Q(std)	Stack Gas Flow Rate	8,797	dscfm		
An	Nozzle Area	0.0002786	sq ft	0.226	in. dia.
Theta	Sampling Time	90	min.		
I	Isokinetics	102.9	%		

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Linter Cyclone #2

Date: 4/30/90
Type: T std = 68 F
Run: 3-Part

FIELD DATA & CALCULATIONS SUMMARY

Wc	Water Condensate Weight	2.9	g		
Vlc	Water Condensate Volume	2.9	ml		
Vm	Metered Sample Gas Volume	54.705	dcf		
Lp	Avg. Leak Rate	0.000	cf		
Vn	Leak Corrected Sample Gas Volume	54.705	dcf		
Y	Dry Gas Meter Calibration Factor	1.003			
Pbar	Barometric Pressure	29.87	in. Hg		
Pg	Static Pressure	-0.17	in. H2O		
Ps	Stack Pressure, Absolute	29.86	in. Hg		
Del. H	Dry Gas Meter Press. Differential, Average	1.182	in. H2O		
Tm	Dry Gas Meter Temperature, Average	90.8	deg. F	550.8	deg. R
Vm(std)	Sample Gas Volume	52.6506	dscf		
Vm(wet)	Sample Gas Volume, Wet	52.7876	scf		
Vw(std)	Water Vapor Volume	0.1370	scf		
Bws	Water Content of Stack Gas	0.003			
CO2	Carbon Dioxide, Dry	0.1	%		
O2	Oxygen, Dry	20.9	%		
N2	Nitrogen, Dry	79.1	%		
Md	Molecular Wt. of Stack Gas, Dry	28.844	lb/lb mole		
Ms	Molecular Wt. of Stack Gas, Wet	28.816	lb/lb mole		
Cp	Pitot Calibration Factor	0.832			
Del. P	Velocity Head, Average Square Root	0.626	in. H20		
Ts	Stack Gas Temperature, Average	81.0	deg. F	541.0	deg. R
As	Area of Stack	4.28	sq ft	28.0	in. dia.
Vs	Stack Gas Velocity	35.30	ft/sec		
Qa	Actual Flow Rate	9,056	cfm		
Qad	Actual Flow Rate, Dry	9,032	dcfm		
Q(std)	Stack Gas Flow Rate	8,797	dscfm		
An	Nozzle Area	0.0002766	sq ft	0.226	in. dia.
Theta	Sampling Time	90	min.		
I	Isokinetics	101.8	%		

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Seed Cleaner #1

Date: 5/1/90
Type: T std = 68 F
Run: 1-Part

FIELD DATA & CALCULATIONS SUMMARY

Wc	Water Condensate Weight	2.7	g		
Vlc	Water Condensate Volume	2.7	ml		
Vm	Metered Sample Gas Volume	59.482	dcf		
Lp	Avg. Leak Rate	0.000	cf		
Vh	Leak Corrected Sample Gas Volume	59.482	dcf		
Y	Dry Gas Meter Calibration Factor	1.003			
Pbar	Barometric Pressure	29.96	in. Hg		
Pg	Static Pressure	-0.02	in. H2O		
Ps	Stack Pressure, Absolute	29.96	in. Hg		
Del. H	Dry Gas Meter Press. Differential, Average	1.455	in. H2O		
Tm	Dry Gas Meter Temperature, Average	75.1	deg. F	535.1	deg. R
Vm(std)	Sample Gas Volume	59.1472	dscf		
Vm(wet)	Sample Gas Volume, Wet	59.2747	scf		
Vw(std)	Water Vapor Volume	0.1275	scf		
Bws	Water Content of Stack Gas	0.002			
CO2	Carbon Dioxide, Dry	0.1	%		
O2	Oxygen, Dry	20.9	%		
N2	Nitrogen, Dry	79.1	%		
Md	Molecular Wt. of Stack Gas, Dry	28.844	lb/lb mole		
Ms	Molecular Wt. of Stack Gas, Wet	28.821	lb/lb mole		
Cp	Pitot Calibration Factor	0.832			
Del. P	Velocity Head, Average Square Root	0.205	in. H20		
Ts	Stack Gas Temperature, Average	65.8	deg. F	525.8	deg. R
As	Area of Stack	2.76	sq ft	22.5	in. dia.
Vs	Stack Gas Velocity	11.37	ft/sec		
Qa	Actual Flow Rate	1,884	cfm		
Qad	Actual Flow Rate, Dry	1,880	dcfm		
Q(std)	Stack Gas Flow Rate	1,890	dscfm		
An	Nozzle Area	0.0009439	sq ft	0.416	in. dia.
Theta	Sampling Time	90	min.		
I	Isokinetics	101.4	%		

Client: **Ranchers Cotton Oil**
Site: **Anderson Clayton**
Unit: **Seed Cleaner #1**

Date: **5/1/90**
Type: ***T std = 68 F***
Run: **2-Part**

FIELD DATA & CALCULATIONS SUMMARY

Wc	Water Condensate Weight	2.3	g		
Vlc	Water Condensate Volume	2.3	ml		
Vm	Metered Sample Gas Volume	81.305	dcf		
Lp	Avg. Leak Rate	0.000	cf		
Vn	Leak Corrected Sample Gas Volume	81.305	dcf		
Y	Dry Gas Meter Calibration Factor	1.003			
Pbar	Barometric Pressure	29.92	in. Hg		
Pg	Static Pressure	-0.02	in. H2O		
Ps	Stack Pressure, Absolute	29.92	in. Hg		
Del. H	Dry Gas Meter Press. Differential, Average	1.455	in. H2O		
Tm	Dry Gas Meter Temperature, Average	87.4	deg. F	547.4	deg. R
Vm(std)	Sample Gas Volume	78.9231	dscf		
Vm(wet)	Sample Gas Volume, Wet	79.0318	scf		
Vw(std)	Water Vapor Volume	*0.1086*	*scf*		
Bws	Water Content of Stack Gas	0.001			
CO2	Carbon Dioxide, Dry	0.1	%		
O2	Oxygen, Dry	20.9	%		
N2	Nitrogen, Dry	79.1	%		
Md	Molecular Wt. of Stack Gas, Dry	28.844	lb/lb mole		
Ms	Molecular Wt. of Stack Gas, Wet	28.829	lb/lb mole		
Cp	Pitot Calibration Factor	0.832			
Del. P	Velocity Head, Average Square Root	0.205	in. H20		
Ts	Stack Gas Temperature, Average	79.7	deg. F	539.7	deg. R
As	Area of Stack	2.76	sq ft	22.5	in. dia.
Vs	Stack Gas Velocity	11.53	ft/sec		
Qa	Actual Flow Rate	1,910	cfm		
Qad	Actual Flow Rate, Dry	1,907	dcfm		
Q(std)	Stack Gas Flow Rate	1,866	dscfm		
An	Nozzle Area	0.0009439	sq ft	0.416	in. dia.
Theta	Sampling Time	120	min.		
I	Isokinetics	102.8	%		

Client: **Ranchers Cotton Oil**
Site: **Anderson Clayton**
Unit: **Seed Cleaner #1**

Date: **5/1/90**
Type: ***T std = 68 F***
Run: **3-Part**

FIELD DATA & CALCULATIONS SUMMARY

Wc	Water Condensate Weight	2.7	g		
Vlc	Water Condensate Volume	2.7	ml		
Vm	Metered Sample Gas Volume	81.702	dcf		
Lp	Avg. Leak Rate	0.000	cf		
Vh	Leak Corrected Sample Gas Volume	81.702	dcf		
Y	Dry Gas Meter Calibration Factor	1.003			
Pbar	Barometric Pressure	29.80	in. Hg		
Pg	Static Pressure	-0.02	in. H2O		
Ps	Stack Pressure, Absolute	29.80	in. Hg		
Del. H	Dry Gas Meter Press. Differential, Average	1.455	in. H2O		
Tm	Dry Gas Meter Temperature, Average	95.8	deg. F	555.8	deg. R
Vm(std)	Sample Gas Volume	77.8024	dscf		
Vm(wet)	Sample Gas Volume, Wet	77.9299	scf		
Vw(std)	*Water Vapor Volume*	*0.1275*	*scf*		
Bws	Water Content of Stack Gas	0.002			
CO2	Carbon Dioxide, Dry	0.1	%		
O2	Oxygen, Dry	20.9	%		
N2	Nitrogen, Dry	79.1	%		
Md	Molecular Wt. of Stack Gas, Dry	28.844	lb/lb mole		
Ms	Molecular Wt. of Stack Gas, Wet	28.826	lb/lb mole		
Cp	Pitot Calibration Factor	0.832			
Del. P	Velocity Head, Average Square Root	0.205	in. H20		
Ts	Stack Gas Temperature, Average	83.8	deg. F	543.8	deg. R
As	Area of Stack	2.76	sq ft	22.5	in. dia.
Vs	Stack Gas Velocity	11.59	ft/sec		
Qa	Actual Flow Rate	1,921	cfm		
Qad	Actual Flow Rate, Dry	1,918	dcfm		
Q(std)	Stack Gas Flow Rate	1,864	dscfm		
An	Nozzle Area	0.0009439	sq ft	0.416	in. dia.
Theta	Sampling Time	120	min.		
I	Isokinetics	102.0	%		

III. WET TEST METHODS CALCULATIONS

Client: Ranchers Cotton Oil
Site: Andersen Clayton
Unit: Linter Cyclone #2

Date: 4/30/90
Type: T std = 68 F
Run: 1-Part

CALCULATED EMISSION RESULTS

Ws	Particulate Weight	0.1460	g
Cs	Particulate Emissions	0.0423	grain/dscf
CFs	Particulate Flow Rate	3.20	lb/hr

Client: Ranchers Cotton Oil
Site: Andersen Clayton
Unit: Linter Cyclone #2

Date: 4/30/90
Type: *T std = 68 F*
Run: 2-Part

CALCULATED EMISSION RESULTS

Ws	Particulate Weight	0.1394	g
Cs	Particulate Emissions	0.0404	grain/dscf
CFs	Particulate Flow Rate	3.05	lb/hr

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Linter Cyclone #2

Date: 4/30/80
Type: T std = 68 F
Run: 3-Part

CALCULATED EMISSION RESULTS

Ws	Particulate Weight	0.1735	g
Cs	Particulate Emissions	0.0508	grain/dscf
CFs	Particulate Flow Rate	3.83	lb/hr

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Seed Cleaner #1

Date: 5/1/90
Type: *T std = 68 F*
Run: 1-Part

CALCULATED EMISSION RESULTS

Ws	Particulate Weight	0.0232	g
Cs	Particulate Emissions	0.0061	grain/dscf
CFs	Particulate Flow Rate	0.10	lb/hr

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Seed Cleaner #1

Date: 5/1/90
Type: *T std = 68 F*
Run: 2-Part

CALCULATED EMISSION RESULTS

Ws	Particulate Weight	0.0249	g
Cs	Particulate Emissions	0.0049	grain/dscf
CFs	Particulate Flow Rate	0.08	lb/hr

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Seed Cleaner #1

Date: 5/1/90
Type: *T std = 68 F*
Run: 3-Part

CALCULATED EMISSION RESULTS

Ws	Particulate Weight	0.0333	g
Cs	Particulate Emissions	0.0066	grain/dscf
CFs	Particulate Flow Rate	0.10	lb/hr

METALS

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Linter Cyclone #2

Run#: 1

Date: 4/30/90
Job: 18010
Lab# A0074

METALS	Sample wt, mg	Sample Vol dscf	Metal grain/dscf	Flow Rate dscfm	Metal lb/hr
Cadmium	0.013130	53.2116	*0.00000*	8830	*0.00029*
Copper	0.027500	53.2116	*0.00001*	8830	*0.00060*
Lead	0.023760	53.2116	*0.00001*	8830	*0.00052*
Zinc	0.129800	53.2116	*0.00004*	8830	*0.00285*
Nickel	0.096000	53.2116	*0.00003*	8830	*0.00211*
Beryllium	<0.0016	53.2116	*<0.00001*	8830	*<0.00004*
Arsenic	0.000528	53.2116	*0.00000*	8830	*0.00001*
Selenium	<0.0004	53.2116	*<0.00001*	8830	*<0.00001*
Mercury	0.275200	53.2116	*0.00008*	8830	*0.00604*
Manganese	0.028360	53.2116	*0.00001*	8830	*0.00062*
Total Chromium	0.071600	53.2116	*0.00002*	8830	*0.00157*
Hexa-Chromium	0.000540	53.2116	*0.00000*	8830	*0.00001*

Equation
Metal grain/dscf= Sample Wt*0.01543/Sample Vol
Metal, lb/hr= (grain/dscf*60*Flow rate)/7000

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METALS

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Linter Cyclone #2

Run#: 2

Date: 4/30/90
Job: 18010
Lab#: A0074

METALS	Sample wt, mg	Sample Vol dscf	Metal grain/dscf	Flow Rate dscfm	Metal lb/hr
Cadmium	0.016320	53.2086	0.00000	8797	0.00036
Copper	0.026400	53.2086	0.00001	8797	0.00058
Lead	0.018000	53.2086	0.00001	8797	0.00039
Zinc	0.091700	53.2086	0.00003	8797	0.00201
Nickel	0.050600	53.2086	0.00001	8797	0.00111
Beryllium	<0.0016	53.2086	<0.00001	8797	<0.00004
Arsenic	0.000976	53.2086	0.00000	8797	0.00002
Selenium	<0.0004	53.2086	<0.00001	8797	<0.00001
Mercury	1.504000	53.2086	0.00044	8797	0.03289
Manganese	0.014900	53.2086	0.00000	8797	0.00033
Total Chromium	0.029280	53.2086	0.00001	8797	0.00064
Hexa-Chromium	0.000360	53.2086	0.00000	8797	0.00001

Equation
Metal grain/dscf= Sample Wt*0.01543/Sample Vol
Metal, lb/hr= (grain/dscf*60*Flow rate)/7000

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METALS

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Linter Cyclone #2

Run#: 3

Date: 4/30/90
Job: 18010
Lab#: A0074

METALS	Sample wt, mg	Sample Vol dscf	Metal grain/dscf	Flow Rate dscfm	Metal lb/hr
Cadmium	0.005360	52.6506	0.00000	8797	0.00012
Copper	0.015360	52.6506	0.00000	8797	0.00034
Lead	0.008900	52.6506	0.00000	8797	0.00020
Zinc	0.073200	52.6506	0.00002	8797	0.00162
Nickel	0.060600	52.6506	0.00002	8797	0.00134
Beryllium	<0.0016	52.6506	<0.00001	8797	<0.00004
Arsenic	<0.0004	52.6506	<0.00001	8797	<0.00001
Selenium	<0.0004	52.6506	<0.00001	8797	<0.00001
Mercury	0.024200	52.6506	0.00001	8797	0.00053
Manganese	0.019700	52.6506	0.00001	8797	0.00044
Total Chromium	0.028400	52.6506	0.00001	8797	0.00063
Hexa-Chromium	0.000540	52.6506	0.00000	8797	0.00001

Equation
Metal grain/dscf= Sample Wt*0.01543/Sample Vol
Metal, lb/hr= (grain/dscf*60*Flow rate)/7000

BTC Environmental, Inc. - 1990

METALS

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Seed Cleaner #1

Run#: 1

Date: 5/1/90
Job: 18010
Lab# A0074

METALS	Sample wt, mg	Sample Vol	Metal grain/dscf	Flow Rate dscfm	Metal lb/hr
Cadmium	0.007920	59.1472	*0.00000*	1890	*0.00003*
Copper	0.017760	59.1472	*0.00000*	1890	*0.00008*
Lead	0.008400	59.1472	*0.00000*	1890	*0.00004*
Zinc	0.076310	59.1472	*0.00002*	1890	*0.00032*
Nickel	0.036800	59.1472	*0.00001*	1890	*0.00016*
Beryllium	<0.0016	59.1472	*<0.00001*	1890	*<0.00002*
Arsenic	<0.0004	59.1472	*<0.00001*	1890	*<0.00001*
Selenium	<0.0004	59.1472	*<0.00001*	1890	*<0.00001*
Mercury	0.014800	59.1472	*0.00000*	1890	*0.00006*
Manganese	0.013000	59.1472	*0.00000*	1890	*0.00005*
Total Chromium	0.015520	59.1472	*0.00000*	1890	*0.00007*
Hexa-Chromium	0.000180	59.1472	*0.00000*	1890	*0.00000*

Equation
Metal grain/dscf= Sample Wt*0.01543/Sample Vol
Metal, lb/hr= (grain/dscf*60*Flow rate)/7000

BTC Environmental, Inc. - 1990

METALS

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Seed Cleaner #1

Run#: 2

Date: 5/1/90
Job: 18010
Lab# A0074

METALS	Sample wt, mg	Sample Vol	Metal grain/dscf	Flow Rate dscfm	Metal lb/hr
Cadmium	0.011680	78.9231	0.00000	1866	0.00004
Copper	0.039420	78.9231	0.00001	1866	0.00012
Lead	0.013690	78.9231	0.00000	1866	0.00004
Zinc	0.079430	78.9231	0.00002	1866	0.00025
Nickel	0.043520	78.9231	0.00001	1866	0.00014
Beryllium	<0.0016	78.9231	<0.00001	1866	<0.00001
Arsenic	<0.0004	78.9231	<0.00001	1866	<0.00001
Selenium	<0.0004	78.9231	<0.00001	1866	<0.00001
Mercury	0.010620	78.9231	0.00000	1866	0.00003
Manganese	0.007920	78.9231	0.00000	1866	0.00002
Total Chromium	0.012320	78.9231	0.00000	1866	0.00004
Hexa-Chromium	0.000360	78.9231	0.00000	1866	<0.00001

Equation
Metal grain/dscf= Sample Wt*0.01543/Sample Vol
Metal, lb/hr= (grain/dscf*60*Flow rate)/7000

BTC Environmental, Inc. - 1990

METALS

Client: Ranchers Cotton Oil
Site: Anderson Clayton
Unit: Seed Cleaner #1

Run#: 3

Date: 5/1/90
Job: 18010
Lab# A0074

METALS	Sample wt, mg	Sample Vol	Metal grain/dscf	Flow Rate dscfm	Metal lb/hr
Cadmium	0.001700	77.8024	0.00000	1854	0.00001
Copper	0.033100	77.8024	0.00001	1854	0.00010
Lead	0.020260	77.8024	0.00000	1854	0.00006
Zinc	0.243200	77.8024	0.00005	1854	0.00077
Nickel	0.064960	77.8024	0.00001	1854	0.00020
Beryllium	<0.0016	77.8024	<0.00001	1854	<0.00001
Arsenic	0.000400	77.8024	0.00000	1854	<0.00001
Selenium	<0.0004	77.8024	<0.00001	1854	<0.00001
Mercury	0.012360	77.8024	0.00000	1854	0.00004
Manganese	0.017750	77.8024	0.00000	1854	0.00006
Total Chromium	0.041650	77.8024	0.00001	1854	0.00013
Hexa-Chromium	0.000180	77.8024	0.00000	1854	<0.00001

Equation
Metal grain/dscf= Sample Wt*0.01543/Sample Vol
Metal, lb/hr= (grain/dscf*60*Flow rate)/7000

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STC ENVIRONMENTAL
EPA methods 2, 3, 4, 5, 6, 8

CONSTANTS & CONVERSIONS

Tstd = 60, 68, or 70 °F
Pstd = 29.92 in. Hg
R = 21.85(in. Hg-cu ft/lb mole-°R)
Dw = 0.9982(g/ml)
MW(H2O) = 18.0 lb/lb mole
MW(Sulfur) = 32.03 lb/lb mole
M(H2SO4) = 98.08 lb/lb mole
MW(SO2) = 64.06 lb/lb mole
K(H2SO4) = 0.5 mg-g mole/g-meq
K(SO2) = 0.5 mg-g mole/g-meq

1 in. Hg = 13.6 in. H2O
1 lb = 453.6 g
1 lb = 7000 grain
1 g = 15.432 grain
1 mg = 0.001 g
1 hr = 60 min.
1 part/vol X = 1*10^6 ppmv X
1 bbl = 42 gal
M = 1000
La = 0.02 cfm

Kp = 85.49(ft/sec(sqrt(lb/lb mole-in.Hg/°R-in. H2O))
Kw,[cu ft/g-°R] = R / (453.6*MW(H2O)*Pstd)
Kf,[scf-ppm/lb mole] = R * (Tstd+460) * (1*10^6) / Pstd

INTERMEDIATE CALCULATIONS

F,[scf/MMBtu] = F Factor * (Tstd + 460) / 528
Ph,[in. Hg] = Pbar + (ΔH / 13.6)
N2,[%] = 100 - (O2% + CO2%)
Vlc,[ml] = Ww / Dw
Qa,[cfm] = 60 * Vs * As
Qad,[dcfm] = Qa * (1 - Bws)

CFR 40 - EPA EQUATIONS

eq. 2-8 T[°R] = T[°F]+460
eq. 2-6 Ps, [in. Hg] = Pbar+(Pg/13.6)
eq. 5-3 Bws, [%] = Vw(std) / (Vw(std) + Vm(std))
eq. 3-2 Md, [lb/lb-mole] = 0.44*CO2%+0.32*O2%+0.28*(N2%+CO%)
eq. 2-5 Ms, [lb/lb mol] = Md*(1-Bws)+(MW(H2O)*Bws)
eq. 5-2 Vw(std), [scf] = Ww * Kw * (Tstd+460)
eq. 5-1 Vn, [cf] = Vm - ((Lp-La) * Theta)
eq. 5-1 Vm(std), [sdcf] = Vm * Y * ((Tstd+460) / (Tm+460)) * Ph / Pstd
eq. 2-9 Vs, [ft./sec.] = Kp*Cp*(ΔP*(Ts+460)/(Ps*Ms))^0.5
eq. 2-10 Qstd, [dscfm] =Qad*(Tstd+460)*Ps/((Ts+460)*Pstd)
eq. 5-8 I,[%] =100*(Ts+460)*Vm(std)*Pstd/(60*Vs*Theta*An*Ps*(1-Bws)*(Tstd+460))
eq. 5-6 Cx, [grain/dscf] = Wx,g*15.432/Vm(std)
eq. 8-2,3 Wx, [mg] = (Vt-Vtb)*N(std)*(Vsoln/Valq)*MWx*Kx
Cx, [grain/dscf] = Wx,mg*0.001*15.432/Vm(std)
CWx, [grain/scf] = Cx*(1-Bws)
CCx, [grain/dscf @ 12% CO2] = Cx*12.0/CO2%
CWCx, [grain/scf @ 12% CO2%] = CCx
CPx, [ppmv dry] = Cx*Kf/(MWx*7000)
CPCx, [ppmv @ N% O2] = CPX* ((20.9-N%)/(20.9-O2%))
CFx, [lb/hr] = Cx*Q(std)*60/7000
CEx, [lb/MMBtu] = F*(Cx/7000)*(20.9/(20.9-O2%))
CBx, [lb/bbl] = CEx*(Fuel Btu/MM)*(Fuel lb/gal)*42
CEsx, [lb S/MMBtu] = CEx*(MW(S) / MWx)

Where x represents, Particulate, Sulfuric Acid, Sulfate, or Sulfur Dioxide respectively.

IV. CONTINUOUS TEST METHODS DATA

V. LABORATORY ANALYSIS

Run Set Up Sheet

Client : Ranchers Cotton Oil
Site : Anderson Clayton
Unit: Linter Cyclone #2

Date : 4/30/90
Job #: 16010
Lab #: A0-074

Method#: 5
Run#: 1
Hot box#: -

Probe#: 5-3
Stack box#: A
Cold box#: 2

Pryo#: T-4
Nozzle#: 0.226
Pitot#: 0.832

Imp. #1:	gross	623.5
	tare	621.8
	final	1.7
Imp. #2:	gross	625.8
	tare	624.9
	final	0.9
Imp. #3:	gross	378.2
	tare	377.9
	final	0.3
Imp. #4:	gross	632.1
	tare	622.9
	final	9.2

Total 12.1

Probe blank ml
Probe rinse ml

Solution blank DI
Solution blank Acetone

Filter No: C-1
Filter Tare wt.

	#	date
Solution Container		
Solution Container		

Sample Vol:	start	150.0	ml
Imp#1	finsh	152.0	ml
Amount Gained:		2.0	ml
Sample Vol:	start	150.0	ml
Imp #2	finsh	151.0	ml
Amount Gained:		1.0	ml

Total Vol #1 #2 & Rinse 400.0 ml

Comments:

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Run Set Up Sheet

Client : Ranchers Cotton Oil
Site : Anderson Clayton
Unit: Linter Cyclone #2

Date : 4/30/90
Job #: 18010
Lab #: A0-074

Method#: 5
Run#: 3
Hot box#: -

Probe#: 5-3
Stack box#: A
Cold box#: 3

Pryo#: T-4
Nozzle#: 0.226
Pitot#: 0.832

Imp. #1:	gross	598.9
	tare	608.6
	final	-9.7
Imp. #2:	gross	646.9
	tare	639.7
	final	7.2
Imp. #3:	gross	481.0
	tare	480.0
	final	1.0
Imp. #4:	gross	640.4
	tare	636.0
	final	4.4
Total		2.9

Probe blank		ml
Probe rinse		ml
Solution blank	DI	
Solution blank	Acetone	
Filter No:	C-2	
Filter Tare wt.		

	#	date
Solution Container		
Solution Container		

Sample Vol:	start	150.0	ml
Imp#1	finsh	140.0	ml
Amount Gained:		-10.0	ml
Sample Vol:	start	150.0	ml
Imp #2	finsh	157.0	ml
Amount Gained:		7.0	ml

Total Vol #1 #2 & Rinse 400.0 ml

Comments:

BTC Enviromental, Inc. - 1989

Run Set Up Sheet

Client : Ranchers Cotton Oil
Site : Anderson Clayton
Unit: Linter Cyclone #2

Date : 4/30/90
Job #: 18010
Lab #: A0-074

Method#: 5
Run#: 2
Hot box#: -

Probe#: 5-3
Stack box#: A
Cold box#: 10

Pryo#: T-1
Nozzle#: 0.226
Pitot#: 0.832

Imp. #1:	gross	623.6
	tare	622.8
	final	0.8
Imp. #2:	gross	607.5
	tare	607.8
	final	-0.3
Imp. #3:	gross	447.2
	tare	446.7
	final	0.5
Imp. #4:	gross	636.6
	tare	628.3
	final	8.3

Total 9.3

Probe blank ml
Probe rinse ml

Solution blank DI
Solution blank Acetone

Filter No: RT-90
Filter Tare wt.

	#	date
Solution Container		
Solution Container		

Sample Vol:	start	150.0	ml
Imp#1	finsh	151.0	ml
Amount Gained:		1.0	ml
Sample Vol:	start	150.0	ml
Imp #2	finsh	150.0	ml
Amount Gained:		0.0	ml

Total Vol #1 #2 & Rinse 400.0 ml

Comments:

BTC Enviromental, Inc. - 1989

Run Set Up Sheet

Client : Ranchers Cotton Oil
Site : Anderson Clayton
Unit: Seed Cleaner #1

Date : 5/1/90
Job #: 16010
Lab #: A0-074

Method#:	5	Probe#:	5-3	Pryo#:	T-1
Run#:	1	Stack box#:	A	Nozzle#:	0.416
Hot box#:	-	Cold box#:	2	Pitot#:	0.832

Imp. #1:	gross	560.7	
	tare	565.6	
	final	-4.9	
Imp. #2:	gross	561.6	
	tare	562.4	
	final	-0.8	
Imp. #3:	gross	378.6	
	tare	378.8	
	final	-0.2	
Imp. #4:	gross	640.7	
	tare	632.1	
	final	8.6	
Total		2.7	

Probe blank			ml
Probe rinse			ml
Solution blank	DI		
Solution blank	Acetone		
Filter No:	C-3		
Filter Tare wt.			
	#	date	
Solution Container			
Solution Container			
Sample Vol:	start	150.0	ml
Imp#1	finish	145.0	ml
Amount Gained:		5.0	ml
Sample Vol:	start	150.0	ml
Imp #2	finish	149.0	ml
Amount Gained:		-1.0	ml
Total Vol #1 #2 & Rinse		400.0	ml

Comments:

BTC Enviromental, Inc. - 1989

Run Set Up Sheet

Client : Ranchers Cotton Oil
Site : Anderson Clayton
Unit: Seed Cleaner #1

Date : 5/1/90
Job #: 18010
Lab #: A0-074

Method#:	5	Probe#:	5-3	Pryo#:	T-4
Run#:	2	Stack box#:	A	Nozzle#:	0.416
Hot box#:	-	Cold box#:	10	Pitot#:	0.832

Imp. #1:	gross	573.9	
	tare	579.0	
	final	-5.1	
Imp. #2:	gross	561.7	
	tare	562.5	
	final	-0.8	
Imp. #3:	gross	447.4	
	tare	447.2	
	final	0.2	
Imp. #4:	gross	644.6	
	tare	636.6	
	final	8.0	
	Total	2.3	

Probe blank			ml
Probe rinse			ml
Solution blank	DI		
Solution blank	Acetone		
Filter No:	C-4		
Filter Tare wt.			
	#	date	
Solution Container			
Solution Container			
Sample Vol:	start	150.0	ml
Imp#1	finsh	145.0	ml
Amount Gained:		5.0	ml
Sample Vol:	start	150.0	ml
Imp #2	finsh	149.0	ml
Amount Gained:		-1.0	ml
Total Vol #1 #2 & Rinse		400.0	ml

Comments:

BTC Enviromental, Inc. - 1989

Run Set Up Sheet

Client : Ranchers Cotton Oil
Site : Anderson Clayton
Unit: Seed Cleaner #1

Date : 5/1/90
Job #: 18010
Lab #: A0-074

Method#: 5
Run#: 3
Hot box#: -

Probe#: 5-3
Stack box#: A
Cold box#: 3

Pryo#: T-1
Nozzle#: 0.416
Pitot#: 0.832

Imp. #1:	gross	589.2
	tare	581.0
	final	8.2
Imp. #2:	gross	570.9
	tare	581.3
	final	-10.4
Imp. #3:	gross	480.9
	tare	481.4
	final	-0.5
Imp. #4:	gross	645.8
	tare	640.4
	final	5.4

Total 2.7

Probe blank ml
Probe rinse ml

Solution blank DI
Solution blank Acetone

Filter No: C-5
Filter Tare wt.

	#	date
Solution Container		
Solution Container		

Sample Vol:	start	150.0	ml
Imp#1	finsh	158.0	ml
Amount Gained:		8.0	ml
Sample Vol:	start	150.0	ml
Imp #2	finsh	140.0	ml
Amount Gained:		-10.0	ml

Total Vol #1 #2 & Rinse 400.0 ml

Comments:

BTC Enviromental, Inc. - 1989

PARTICULATE WEIGHTS : DATA & CALCULATIONS

Client : Rancher Cotton Oil
Site : Anderson Clayton
Unit : Linter Cyclone #2

Run #: 1
Box #: A
Filter #: C-1

Date : 4/30/90
Job #: 18010
Lab #: A0-074

SOLUTION BLANKS

Acetone -	Gross: 65.7022 g	Tare: 65.7017 g	Volume: 100 ml	
			Residue: 0.0005 g	
Alcohol -			Volume: NA ml	
(80% ISO)	Gross: NA g	Tare: NA g	Residue: NA g	
Freon -			Volume: NA ml	
	Gross: NA g	Tare: NA g	Residue: NA g	
DI Water -			Volume: 100 ml	
	Gross: 73.1106 g	Tare: 73.1103 g	Residue: 0.0003 g	
Probe -			Volume: NA ml	
	Gross: NA g	Tare: NA g	Residue: NA g	
		(less DI blank) =	Net: NA g	

WEIGHTS & VOLUMES

A : Filter Catch -(C-1)
Gross: 0.5021 g Tare: 0.4033 g Net: 0.0988 g

C : Probe Catch -

Probe Blank:				0.0000 g
Acetone:	100 ml	* 5E-06 g/ml		-0.0005 g
DI Water:	100 ml	* 3E-06 g/ml		-0.0003 g
Gross:	72.3364 g	Tare: 72.2939 g		0.0425 g
			Net:	0.0417 g

E : Impinger Catch -

DI Water:	300 ml	* 3E-06 g/ml		-0.0009 g
Alcohol :	NA ml	* NA g/ml		0.0000 g
Total:	400 ml	Aliquot: 400 ml		
Gross:	67.8720 g	Tare: 67.8656 g		0.0064 g
			Net:	0.0055 g

G : Organic Extract -

Freon:	NA ml	* NA g/ml		0.0000 g
Gross:	NA g	Tare: NA g		0.0000 g
			Net:	0.0000 g

Total Particulate Weight, (A+C+E+G) = 0.1460 g

BTC Environmental, Inc. - 1989

PARTICULATE WEIGHTS : DATA & CALCULATIONS

Client : Rancher Cotton Oil
Site : Anderson Clayton
Unit : Linter Cyclone #2

Run #: 2
Box #: A
Filter #: RT-90

Date : 4/30/90
Job #: 18010
Lab #: A0-074

SOLUTION BLANKS

Acetone -	Gross: 65.7022 g	Tare: 65.7017 g	Volume: 100 ml	Residue: 0.0005 g
Alcohol - (80% ISO)	Gross: NA g	Tare: NA g	Volume: NA ml	Residue: NA g
Freon -	Gross: NA g	Tare: NA g	Volume: NA ml	Residue: NA g
DI Water -	Gross: 73.1106 g	Tare: 73.1103 g	Volume: 100 ml	Residue: 0.0003 g
Probe -	Gross: NA g	Tare: NA g (less DI blank) =	Volume: NA ml	Residue: NA g Net: NA g

WEIGHTS & VOLUMES

A : Filter Catch -(RT-90)
Gross: 0.6164 g Tare: 0.5886 g Net: 0.0278 g

C : Probe Catch -

Probe Blank:					0.0000 g
Acetone:	100 ml	* 5E-06 g/ml			-0.0005 g
DI Water:	100 ml	* 3E-06 g/ml			-0.0003 g
Gross:	70.3183 g	Tare: 70.2115 g			0.1068 g
				Net:	0.1060 g

E : Impinger Catch -

DI Water:	300 ml	* 3E-06 g/ml			-0.0009 g
Alcohol :	NA ml	* NA g/ml			0.0000 g
Total:	400 ml	Aliquot: 400 ml			
Gross:	71.7698 g	Tare: 71.7633 g			0.0065 g
				Net:	0.0056 g

G : Organic Extract -

Freon:	NA ml	* NA g/ml			0.0000 g
Gross:	NA g	Tare: NA g			0.0000 g
				Net:	0.0000 g

Total Particulate Weight, (A+C+E+G) = 0.1394 g

BTC Environmental, Inc. - 1989

PARTICULATE WEIGHTS : DATA & CALCULATIONS

Client : Rancher Cotton Oil
Site : Anderson Clayton
Unit : Linter Cyclone #2

Run #: 3
Box #: A
Filter #: C-2

Date : 4/30/90
Job #: 18010
Lab #: A0-074

SOLUTION BLANKS

Acetone -	Gross: 65.7022 g	Tare: 65.7017 g	Volume: 100 ml	Residue: 0.0005 g
Alcohol - (80% ISO)	Gross: NA g	Tare: NA g	Volume: NA ml	Residue: NA g
Freon -	Gross: NA g	Tare: NA g	Volume: NA ml	Residue: NA g
DI Water -	Gross: 73.1106 g	Tare: 73.1103 g	Volume: 100 ml	Residue: 0.0003 g
Probe -	Gross: NA g	Tare: NA g (less DI blank) =	Volume: NA ml	Residue: NA g Net: NA g

WEIGHTS & VOLUMES

A : Filter Catch -(C-2)
Gross: 0.5231 g Tare: 0.4017 g Net: 0.1214 g

C : Probe Catch -

Probe Blank:					0.0000 g
Acetone:	100 ml	* 5E-06 g/ml			-0.0005 g
DI Water:	100 ml	* 3E-06 g/ml			-0.0003 g
Gross:	70.9813 g	Tare:	70.9374 g		0.0439 g
				Net:	0.0431 g

E : Impinger Catch -

DI Water:	300 ml	* 3E-06 g/ml			-0.0009 g
Alcohol :	NA ml	* NA g/ml			0.0000 g
Total:	400 ml	Aliquot:	400 ml		
Gross:	67.5316 g	Tare:	67.5217 g		0.0099 g
				Net:	0.0090 g

G : Organic Extract -

Freon:	NA ml	* NA g/ml			0.0000 g
Gross:	NA g	Tare:	NA g		0.0000 g
				Net:	0.0000 g

Total Particulate Weight, (A+C+E+G) = 0.1735 g

BTC Environmental, Inc. - 1989

PARTICULATE WEIGHTS : DATA & CALCULATIONS

Client : Rancher Cotton Oil
Site : Anderson Clayton
Unit : Seed Cleaner #1

Run #: 1
Box #: A
Filter #: C-3

Date : 5/1/90
Job #: 18010
Lab #: A0-074

SOLUTION BLANKS

	Gross		Tare		Volume		Residue	
Acetone -	65.7022	g	65.7017	g	100	ml	0.0005	g
Alcohol - (80% ISO)	NA	g	NA	g	NA	ml	NA	g
Freon -	NA	g	NA	g	NA	ml	NA	g
DI Water -	73.1106	g	73.1103	g	100	ml	0.0003	g
Probe -	NA	g	NA	g	NA	ml	NA	g
			(less DI blank) =		Net:		NA	g

WEIGHTS @ VOLUMES

A : Filter Catch -(C-3)
Gross: 0.4030 g Tare: 0.3998 g Net: 0.0032 g

C : Probe Catch -

Probe Blank:					0.0000	g
Acetone:	100 ml	*	5E-06	g/ml	-0.0005	g
DI Water:	100 ml	*	3E-06	g/ml	-0.0003	g
Gross:	70.8362 g	Tare:	70.8160	g	0.0202	g
					Net: 0.0194	g

E : Impinger Catch -

DI Water:	300 ml	*	3E-06	g/ml	-0.0009	g
Alcohol :	NA ml	*	NA	g/ml	0.0000	g
Total:	400 ml	Aliquot:	400	ml		
Gross:	71.0134 g	Tare:	71.0119	g	0.0015	g
					Net: 0.0006	g

G : Organic Extract -

Freon:	NA ml	*	NA	g/ml	0.0000	g
Gross:	NA g	Tare:	NA	g	0.0000	g
					Net: 0.0000	g

Total Particulate Weight, (A+C+E+G) = 0.0232 g

BTC Environmental, Inc. - 1989

PARTICULATE WEIGHTS : DATA & CALCULATIONS

Client : Rancher Cotton Oil
Site : Anderson Clayton
Unit : Seed Cleaner #1

Run #: 2
Box #: A
Filter #: C-4

Date : 5/1/90
Job #: 18010
Lab #: A0-074

SOLUTION BLANKS

Acetone -	Gross: 65.7022 g	Tare: 65.7017 g	Volume: 100 ml	
			Residue: 0.0005 g	
Alcohol -			Volume: NA ml	
(80% ISO)	Gross: NA g	Tare: NA g	Residue: NA g	
Freon -			Volume: NA ml	
	Gross: NA g	Tare: NA g	Residue: NA g	
DI Water -			Volume: 100 ml	
	Gross: 73.1106 g	Tare: 73.1103 g	Residue: 0.0003 g	
Probe -			Volume: NA ml	
	Gross: NA g	Tare: NA g	Residue: NA g	
		(less DI blank) =	Net: NA g	

WEIGHTS @ VOLUMES

A : Filter Catch -(C-4)
Gross: 0.4000 g Tare: 0.3965 g Net: 0.0035 g

C : Probe Catch -

Probe Blank:					0.0000 g
Acetone:	100 ml	* 5E-06 g/ml			-0.0005 g
DI Water:	100 ml	* 3E-06 g/ml			-0.0003 g
Gross:	68.1604 g	Tare:	68.1382 g		0.0222 g
				Net:	0.0214 g

E : Impinger Catch -

DI Water:	300 ml	* 3E-06 g/ml			-0.0009 g
Alcohol :	NA ml	* NA g/ml			0.0000 g
Total:	400 ml	Aliquot:	400 ml		
Gross:	65.9930 g	Tare:	65.9921 g		0.0009 g
				Net:	0.0000 g

G : Organic Extract -

Freon:	NA ml	* NA g/ml			0.0000 g
Gross:	NA g	Tare:	NA g		0.0000 g
				Net:	0.0000 g

Total Particulate Weight, (A+C+E+G) = 0.0249 g

BTC Environmental, Inc. - 1989

PARTICULATE WEIGHTS : DATA & CALCULATIONS

Client : Rancher Cotton Oil
Site : Anderson Clayton
Unit : Seed Cleaner #1

Run #: 3
Box #: A
Filter #: C-5

Date : 5/1/90
Job #: 18010
Lab #: A0-074

SOLUTION BLANKS

Acetone -	Gross: 65.7022 g	Tare: 65.7017 g	Volume: 100 ml	Residue: 0.0005 g
Alcohol - (80% ISO)	Gross: NA g	Tare: NA g	Volume: NA ml	Residue: NA g
Freon -	Gross: NA g	Tare: NA g	Volume: NA ml	Residue: NA g
DI Water -	Gross: 73.1106 g	Tare: 73.1103 g	Volume: 100 ml	Residue: 0.0003 g
Probe -	Gross: NA g	Tare: NA g	Volume: NA ml	Residue: NA g
		(less DI blank) =		Net: NA g

WEIGHTS & VOLUMES

A : Filter Catch -(C-5)
Gross: 0.4021 g Tare: 0.4002 g Net: 0.0019 g

C : Probe Catch -

Probe Blank:				0.0000 g
Acetone:	100 ml	* 5E-06 g/ml		-0.0005 g
DI Water:	100 ml	* 3E-06 g/ml		-0.0003 g
Gross:	70.4411 g	Tare: 70.4149 g		0.0262 g
			Net:	0.0254 g

E : Impinger Catch -

DI Water:	300 ml	* 3E-06 g/ml		-0.0009 g
Alcohol :	NA ml	* NA g/ml		0.0000 g
Total:	400 ml	Aliquot: 400 ml		
Gross:	74.1249 g	Tare: 74.1180 g		0.0069 g
			Net:	0.0060 g

G : Organic Extract -

Freon:	NA ml	* NA g/ml		0.0000 g
Gross:	NA g	Tare: NA g		0.0000 g
			Net:	0.0000 g

Total Particulate Weight, (A+C+E+G) = 0.0333 g

BTC Environmental, Inc. - 1989

ID METH BLK SEQ 5974 13:36 14 MAY 90
SEQUENTIAL MULTI PROGRAM B CAM METALS

	AVG	S.D.	1	2	3	4	5
CD1	-.001	.001	.001	-.002	-.002		
CU1	-.077	.009	-.077	-.068	-.086		
PB1	-.018	.048	-.006	.021	-.071		
ZN1	-.002	.002	-.001	-.005	-.000		
NI3	-.034	.011	-.022	-.046	-.034		
CR1	-.012	.023	.012	-.032	-.016		
BE1	-.001	.000	-.001	-.002	-.001		

ID 05DD-1 SEQ 5975 13:48 14 MAY 90
SEQUENTIAL MULTI PROGRAM B CAM METALS

	AVG	S.D.	1	2	3	4	5
CD1	.005	.002	.002	.004	.008		
CU1	-.006	.003	-.010	-.005	-.003		
PB1	.032	.063	.070	-.041	.067		
ZN1	.132	.001	.132	.134	.131		
NI3	-.015	.018	-.004	-.037	-.005		
CR1	.018	.017	.004	.012	.038		
BE1	-.002	.000	-.002	-.002	-.001		

ID 05DD-2 SEQ 5976 13:52 14 MAY 90
SEQUENTIAL MULTI PROGRAM B CAM METALS

	AVG	S.D.	1	2	3	4	5
CD1	.006	.003	.005	.010	.002		
CU1	-.029	.006	-.023	-.035	-.027		
PB1	.006	.064	-.067	.042	.045		
ZN1	.090	.004	.088	.087	.096		
NI3	-.006	.008	.002	-.013	-.008		
CR1	.008	.041	-.007	-.022	.054		
BE1	-.002	.000	-.002	-.002	-.001		

D 05DD-3 SEQ 5977 13:55 14 MAY 90
EQUENTIAL MULTI PROGRAM B CAM METALS

	AVG	S.D.	1	2	3	4	5
D1	.003	.003	.007	.002	.000		
CU1	-.007	.011	-.019	-.007	.003		
PB1	.042	.055	.097	.042	-.012		
ZN1	.147	.001	.148	.146	.146		
I3	-.027	.015	-.027	-.013	-.043		
CR1	.014	.009	.003	.019	.020		
BE1	-.002	.000	-.002	-.002	-.002		

ID 05DD-4 SEQ 5978 13:59 14 MAY 90
SEQUENTIAL MULTI PROGRAM B CAM METALS

	AVG	S.D.	1	2	3	4	5
CD1	.023	.001	.021	.023	.025		
CU1	-.015	.003	-.013	-.019	-.012		
PB1	-.031	.011	-.033	-.042	-.019		
ZN1	.100	.016	.088	.094	.119		
NI3	-.015	.019	.004	-.034	-.016		
CR1	.009	.013	.024	.000	.002		
BE1	-.002	.000	-.002	-.003	-.002		

ID 05DD-5 SEQ 5979 14:02 14 MAY 90
SEQUENTIAL MULTI PROGRAM B CAM METALS

	AVG	S.D.	1	2	3	4	5
CD1	-.000	.001	-.001	.000	-.001		
CU1	.358	.003	.359	.355	.361		
PB1	.053	.026	.065	.022	.070		
ZN1	.139	.001	.140	.140	.137		
NI3	-.011	.012	-.001	-.007	-.026		
CR1	.006	.009	.012	.010	-.003		
BE1	-.002	.000	-.002	-.003	-.002		

ID 05DD-6 SEQ 5980 14:05 14 MAY 90
SEQUENTIAL MULTI PROGRAM B CAM METALS

	AVG	S.D.	1	2	3	4	5
CD1	-.000	.000	.000	-.000	-.000		
CU1	-.047	.004	-.051	-.042	-.047		
PB1	.034	.019	.040	.051	.012		
ZN1	.048	.006	.041	.049	.054		
NI3	-.017	.005	-.023	-.011	-.017		
CR1	.029	.003	.031	.031	.025		
BE1	-.002	.000	-.003	-.002	-.002		

ID 05DD-7 SEQ 5981 14:07 14 MAY 90
SEQUENTIAL MULTI PROGRAM B CAM METALS

	AVG	S.D.	1	2	3	4	5
CD1	.001	.001	.001	.003	.001		
CU1	-.015	.008	-.005	-.018	-.021		
PB1	-.023	.001	-.025	-.023	-.022		
ZN1	.094	.004	.095	.099	.089		
NI3	-.016	.014	-.006	-.010	-.032		
CR1	.017	.022	.026	-.007	.034		
BE1	-.002	.000	-.001	-.001	-.002		

SEQ 5901 42 14 MAY 90
SEQUENTIAL MULTI PROGRAM B CAM METALS

UPDATE 1

	AVG	S.D.	CORR	OLD	NEW	STND
CD1	-.000	.002	.000	-.000	.000	.000
CU1	.033	.016	-.033	-.004	.000	.000
PB1	-.019	.016	.019	-.006	.000	.000
ZN1	-.037	.007	.037	-.007	-.000	.000
NI3	.007	.006	-.007	-.000	.000	.000
AG1	-.030	.017	.030	.004	-.000	.000
CR1	.002	.029	-.002	-.018	.000	.000
TL1	-.018	.010	.018	-.008	-.000	.000
CO1	-.006	.010	.006	.002	-.000	.000
MO1	.021	.042	-.021	.021	-.000	.000
V 1	-.033	.008	.033	-.001	.000	.000
SB1	-.079	.161	.079	-.005	.000	.000
BE1	.001	.000	-.001	-.000	-.000	.000
BA2	.006	.000	-.006	-.000	.000	.000

SEQ 5904 7:55 14 MAY 90
SEQUENTIAL MULTI PROGRAM B CAM METALS

UPDATE 2

	AVG	S.D.	CORR	OLD	NEW	STND
CD1	11.1	.054	-10.0%	9.99	10.0	10.0
CU1	11.9	.111	-16.5%	9.71	10.0	10.0
PB1	10.8	.098	-7.90%	9.94	10.0	10.0
ZN1	12.1	.027	-17.5%	9.86	10.0	10.0
NI3	11.0	.034	-9.41%	9.93	10.0	10.0
AG1	11.2	.079	-11.1%	9.86	10.0	10.0
CR1	11.7	.048	-14.8%	9.94	10.0	10.0
TL1	10.9	.040	-8.56%	9.97	10.0	10.0
CO1	11.3	.082	-11.8%	10.0	10.0	10.0
MO1	12.7	.061	-21.6%	10.0	10.0	10.0
V 1	11.9	.052	-16.4%	9.78	10.0	10.0
SB1	11.8	.403	-15.6%	9.69	10.0	10.0
BE1	11.8	.016	-15.5%	9.85	10.0	10.0
BA2	12.5	.067	-20.5%	9.87	10.0	10.0

ID 10PPM SEQ 5905 7:59 14 MAY 90
SEQUENTIAL MULTI PROGRAM B CAM METALS

	AVG	S.D.	1	2	3	4	5
CD1	9.98	.090	10.0	9.88	10.0		
CU1	9.81	.112	9.85	9.89	9.68		
PB1	9.85	.156	9.68	9.98	9.89		
ZN1	9.93	.120	9.82	9.90	10.0		
NI3	10.0	.122	10.0	10.1	9.89		
AG1	10.0	.088	10.0	9.92	10.0		
CR1	10.0	.035	10.0	10.1	10.0		
TL1	9.99	.035	10.0	9.95	9.99		
CO1	9.97	.049	10.0	9.96	9.93		
MO1	10.0	.100	9.95	9.94	10.1		
V 1	9.85	.104	9.73	9.90	9.92		
SB1	10.0	.068	10.0	9.99	10.1		
BE1	10.0	.072	10.1	10.0	9.97		
BA2	9.94	.075	9.99	9.98	9.85		

ID 1PPM SEQ 5906 8:07 14 MAY 9
SEQUENTIAL MULTI PROGRAM B CAM METAL

	AVG	S.D.	1	2	3	4
CD1	.994	.008	1.00	.992	.987	
CU1	1.18	.016	1.20	1.16	1.19	
PB1	1.08	.084	1.11	.991	1.15	
ZN1	1.12	.011	1.13	1.11	1.11	
NI3	.990	.019	.972	1.01	.986	
AG1	1.00	.009	1.01	.999	.997	
CR1	1.04	.015	1.02	1.04	1.05	
TL1	1.01	.014	1.03	1.00	1.01	
CO1	1.00	.010	1.01	1.00	.998	
MO1	.935	.065	.932	.870	1.00	
V 1	.966	.012	.955	.980	.963	
SB1	1.11	.085	1.19	1.02	1.10	
BE1	.984	.015	.992	.993	.966	
BA2	.940	.011	.952	.930	.938	

ID 1PPM SEQ 5909 8:12 14 MAY
SEQUENTIAL MULTI PROGRAM B CAM METAL

	AVG	S.D.	1	2	3	4
CU1	1.08	.006	1.09	1.07	1.08	
ZN1	1.02	.009	1.03	1.01	1.01	
SB1	.970	.066	1.00	.894	1.01	

ID CAL-3 SEQ 5910 8:25 14 MAY 9
SEQUENTIAL MULTI PROGRAM B CAM METAL

	AVG	S.D.	1	2	3	4
CD1	.941	.006	.949	.936	.938	
CU1	1.01	.012	1.03	1.00	1.01	
PB1	.922	.041	.878	.928	.961	
ZN1	1.02	.035	1.00	1.05	.991	
NI3	.966	.017	.955	.986	.958	
CR1	.987	.031	1.00	.951	1.00	
CO1	.972	.008	.962	.977	.976	
MO1	.885	.027	.904	.853	.898	
V 1	.950	.033	.911	.967	.971	
SB1	1.07	.053	1.07	1.13	1.02	
BE1	.997	.012	1.00	1.00	.982	
BA2	.922	.003	.924	.923	.918	

ID CAL-3 SEQ 5911 8:26 14 MAY 9
SEQUENTIAL MULTI PROGRAM B CAM METAL

	AVG	S.D.	1	2	3	4
MO1	.927	.047	.885	.920	.978	

ID CAL-2 SEQ 5912 8:27 14 MAY 9
SEQUENTIAL MULTI PROGRAM B CAM METAL

	AVG	S.D.	1	2	3	4
AG1	1.00	.018	.997	.988	1.02	

CHAIN OF CUSTODY RECORD

PROJ. NO. AD-074 | PROJECT NAME: Ranchers

SAMPLERS: (Signature) Tom Porter

NO.	DATE	TIME	COMP	GRAB	SAMPLE I.D.	NO. OF CONTAINERS	T-Residue	Gross Wt	REMARKS
7	4/30		X		Run #1 Part Filter (C-1)		X	X	Save filters for metal
8			↓		" " " Probe		X		analysis
9					" " " Imps		X		
10	"				" #2 " Filter (B-9D)			X	Save Probe residue for
11					" #2 " Probe		X		metal analysis
12					" " " Imps		X		
13					" #3 " Filter (C-2)			X	Return the above
14					" " " Probe		X		to TP when completed
15					" " " Imps		X		
16					Run #1 PM-10 Filters (9)			X	
17					Run #1 " Imps		X		
18					Run #2 " Filters (7)			X	
19					" " " Imps		X		
20				X	DI Blank		X		
21				X	Acetone Blank		X		

CHECK IF RUSH: ☐

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Tom Porter	12:15 5/2				

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	
				NAME ADDRESS PHONE NO.

WHITE COPY________ CANARY COPY________ PINK COPY________

SEQ 6587 10:16 22 MAY 90
SEQUENTIAL MULTI PROGRAM B CAM METALS

UPDATE 1

	AVG	S.D.	CORR	OLD	NEW	STND
CD1	-.001	.001	.001	-.001	.000	.000
CU1	-.055	.007	.055	.006	.000	.000
PB1	-.041	.090	.041	.002	.000	.000
ZN1	-.039	.007	.039	.002	.000	.000
NI3	-.024	.004	.024	.006	.000	.000
CR1	.001	.039	-.001	.025	-.000	.000
BE1	-.003	.000	.003	-.000	.000	.000

SEQ 6590 10:25 22 MAY 90
SEQUENTIAL MULTI PROGRAM B CAM METALS

UPDATE 2

	AVG	S.D.	CORR	OLD	NEW	STND
CD1	10.5	.035	-4.94%	10.0	10.0	10.0
CU1	12.2	.121	-18.1%	9.88	10.0	10.0
PB1	10.4	.021	-3.86%	10.0	10.0	10.0
ZN1	11.1	.034	-10.6%	10.1	10.0	10.0
NI3	11.2	.019	-11.1%	9.96	10.0	10.0
CR1	10.9	.089	-8.91%	10.0	10.0	10.0
BE1	12.6	.073	-20.7%	9.91	10.0	10.0

ID 10PPM SEQ 6591 10:27 22 MAY 90
SEQUENTIAL MULTI PROGRAM B CAM METALS

	AVG	S.D.	1	2	3	4	5
CD1	9.99	.017	9.97	9.99	10.0		
CU1	10.0	.091	10.1	10.0	9.97		
PB1	9.92	.130	10.0	9.93	9.79		
ZN1	9.96	.131	9.84	10.1	9.96		
NI3	10.1	.049	10.1	10.1	10.0		
CR1	10.0	.035	10.1	10.0	10.1		
BE1	10.1	.107	10.2	10.0	10.1		

ID 1PPM SEQ 6592 10:35 22 MAY 90
SEQUENTIAL MULTI PROGRAM B CAM METALS

	AVG	S.D.	1	2	3	4	5
CD1	.959	.006	.955	.966	.956		
CU1	1.11	.011	1.12	1.12	1.10		
PB1	1.00	.013	.999	1.02	1.00		
ZN1	1.05	.011	1.03	1.04	1.06		
NI3	1.05	.007	1.05	1.05	1.06		
CR1	1.00	.035	1.03	1.01	.967		
BE1	1.02	.007	1.01	1.02	1.03		

ID CAL-3 SEQ 6595 10:41 22 MAY
SEQUENTIAL MULTI PROGRAM B CAM META

	AVG	S.D.	1	2	3	4
CD1	.952	.008	.955	.959	.943	
CU1	1.05	.014	1.06	1.03	1.05	
PB1	1.03	.105	1.15	.946	1.00	
ZN1	1.03	.016	1.05	1.02	1.02	
NI3	1.06	.024	1.03	1.07	1.08	
CR1	.966	.052	.951	1.02	.924	
BE1	1.02	.006	1.03	1.01	1.01	

ID 1PPM SEQ 6594 10:38 22 MAY
SEQUENTIAL MULTI PROGRAM B CAM METAL

	AVG	S.D.	1	2	3	4
CU1	1.07	.012	1.08	1.06	1.07	

ID CITRATE SEQ 6596 10:45 22 MAY 9
SEQUENTIAL MULTI PROGRAM B CAM METAL

	AVG	S.D.	1	2	3	4
CD1	-.001	.002	-.003	-.001	.000	
CU1	-.001	.007	-.003	.005	-.008	
PB1	.023	.103	-.011	.139	-.058	
ZN1	-.004	.004	-.000	-.008	-.004	
NI3	.005	.004	.009	.001	.003	
CR1	-.000	.014	-.016	.008	.007	
BE1	.000	.000	.000	.000	-.000	

ID DI WATER SEQ 6597 10:48 22 MAY 9
SEQUENTIAL MULTI PROGRAM B CAM METAL

	AVG	S.D.	1	2	3	4
CD1	-.001	.004	.000	.002	-.006	
CU1	-.010	.004	-.011	-.006	-.014	
PB1	-.037	.031	-.033	-.069	-.007	
ZN1	.001	.010	.001	-.008	.011	
NI3	-.010	.011	-.020	.002	-.012	
CR1	-.005	.002	-.002	-.008	-.004	
BE1	.000	.000	.000	-.000	.000	

```
                    SEQ 6630 13:13 22 MAY 90
SEQUENTIAL MULTI    PROGRAM C GEN MIN

UPDATE 1
      AVG    S.D. CORR     OLD    NEW  STND
MN1 -.000   .000  .000   -.000   .000  .000


                    SEQ 6633 13:16 22 MAY 90
SEQUENTIAL MULTI    PROGRAM C GEN MIN

UPDATE 2
      AVG    S.D. CORR     OLD    NEW  STND
MN1   10.9   .084 -8.26%   9.94   10.0  10.0

ID 10PPM            SEQ 6634 13:18 22 MAY 90
SEQUENTIAL MULTI    PROGRAM C GEN MIN

      AVG   S.D.   1     2     3     4     5
MN1  9.97   .040 10.0 9.98 9.93

ID 1PPM             SEQ 6635 13:21 22 MAY 90
SEQUENTIAL MULTI    PROGRAM C GEN MIN

      AVG    S.D.   1     2     3     4     5
MN1   .963   .002 .964  .959  .965

ID CAL-3            SEQ 6639 13:25 22 MAY 90
SEQUENTIAL MULTI    PROGRAM C GEN MIN

      AVG    S.D.   1     2     3     4     5
MN1   .950   .002 .950  .949  .953


ID METH BLK         SEQ 6640 13:27 22 MAY 90
SEQUENTIAL MULTI    PROGRAM C GEN MIN

      AVG    S.D.   1     2     3     4     5
MN1 -.012   .000-.012-.011-.013
```

ID 05DD-11 SEQ 6650 13:50 22 MAY 90
SEQUENTIAL MULTI PROGRAM C GEN MIN

	AVG	S.D.	1	2	3	4	5
MN1	.163	.001	.162	.165	.163		

ID 05DD-9 SEQ 6651 13:52 22 MAY 90
SEQUENTIAL MULTI PROGRAM C GEN MIN

	AVG	S.D.	1	2	3	4	5
MN1	.166	.000	.166	.165	.167		

ID 05DD-10 SEQ 6652 13:54 22 MAY 90
SEQUENTIAL MULTI PROGRAM C GEN MIN

	AVG	S.D.	1	2	3	4	5
MN1	.180	.000	.180	.180	.181		

ID 05DD-12 SEQ 6653 13:56 22 MAY 90
SEQUENTIAL MULTI PROGRAM C GEN MIN

	AVG	S.D.	1	2	3	4	5
MN1	.099	.007	.092	.101	.105		

ID 05DD-8 SEQ 6654 13:57 22 MAY 90
SEQUENTIAL MULTI PROGRAM C GEN MIN

	AVG	S.D.	1	2	3	4	5
MN1	.278	.018	.259	.281	.295		

ID METH BLK SEQ 6648 13:44 22 MAY 90
SEQUENTIAL MULTI PROGRAM C GEN MIN

	AVG	S.D.	1	2	3	4	5
MN1	-.005	.002	-.002	-.006	-.007		

ID 05DD-13 SEQ 6649 13:46 22 MAY 90
SEQUENTIAL MULTI PROGRAM C GEN MIN

	AVG	S.D.	1	2	3	4	5
MN1	.201	.002	.204	.202	.198		

ID 05DD-1 SEQ 6641 13:29 22 MAY 90
SEQUENTIAL MULTI PROGRAM C GEN MIN

	AVG	S.D.	1	2	3	4	5
MN1	.123	.015	.113	.140	.115		

ID 05DD-2 SEQ 6642 13:31 22 MAY 90
SEQUENTIAL MULTI PROGRAM C GEN MIN

	AVG	S.D.	1	2	3	4	5
MN1	.032	.001	.034	.032	.031		

ID 05DD-3 SEQ 6643 13:33 22 MAY 90
SEQUENTIAL MULTI PROGRAM C GEN MIN

	AVG	S.D.	1	2	3	4	5
MN1	.106	.002	.108	.106	.104		

ID 05DD-4 SEQ 6644 13:34 22 MAY 90
SEQUENTIAL MULTI PROGRAM C GEN MIN

	AVG	S.D.	1	2	3	4	5
MN1	-.005	.001	-.003	-.006	-.006		

ID 05DD-5 SEQ 6645 13:36 22 MAY 90
SEQUENTIAL MULTI PROGRAM C GEN MIN

	AVG	S.D.	1	2	3	4	5
MN1	-.004	.000	-.003	-.004	-.004		

ID 05DD-6 SEQ 6646 13:38 22 MAY 90
SEQUENTIAL MULTI PROGRAM C GEN MIN

	AVG	S.D.	1	2	3	4	5
MN1	.033	.001	.031	.035	.033		

ID 05DD-7 SEQ 6647 13:39 22 MAY 90
SEQUENTIAL MULTI PROGRAM C GEN MIN

	AVG	S.D.	1	2	3	4	5
MN1	.013	.001	.014	.012	.014		

Hexavalent Chromium

Probes

Slope 0.0111

$ug = [(\frac{Abs}{slope})/aliquots] \times$ extract volume in mls

Sample	Total Mls Extract Volume	Aliquot mls	Abs	Air #from cc	Conc in ug per 80 ml
Run 1	80	40	.003	8	0.54 ug = .0054 mg
Run 2	80	40	.002	11	0.36 = .0003%
Run 3	80	40	.0013	14	0.54 = .00054
Run 4	80	40	.001	23	0.18 = .00018
Run 2	80	40	.001	23	0.36 = .0003%
Run 3	80	40	.001	29	0.18 = .00018
Std	1.5mls of	5ug/ml	.084		7.5 → 7.57

Hexavalent Chromiums

Filter ug

[redacted] ug = [(Abs/Slope)/aliquot] × Extract Volume in mls =

Slope = .0111

per 80 mls

Sample	Amount of Filter	Total mls Extract Volume	(mls) Aliquot	Abs.	Conc. in [redacted] ug	Na
Run 1 (FC-1)	1/2	80	80	0.000	< 0.09 ug	7
Run 2 (RT90)	1/2	80	80	0.000	< 0.09	10
Run 3 (C-2)	1/2	80	80	0.000	< 0.09	13
Run 4 (C-3)	1/2	80	80	0.000	< 0.09	22
Run 2 (C-4)	1/2	80	80	0.000	< 0.09	25
Run 3 (C-5)	1/2	80	80	0.000	< 0.09	28
Filter Blank	1/2	80	80	0.000	< 0.09	39

Det limit:
ug/ml
[(.001/.0111)/80] × 80 ml
= .09 ug

For entire filter Multiply by 2

Technology of Materials
721 East Gutierrez
Santa Barbara, California 93103

Report No.:	098150
Prepared For:	BTC Environmental Inc. 1536 Eastman Ave. Ventura, CA 93003
Submitted To:	Tom Porter
Subject:	X-Ray Diffraction for % Crystalline Silica in Dust Samples
Authority:	Project # AO-074
Date:	May 18, 1990

REPORT

TECHNOLOGY of MATERIALS

721 East Guterrez Santa Barbara, California 93103 (805) 965-0815

THE X-RAY DIFFRACTION FOR % CRYSTALLINE SILICA IN 6 DUST SAMPLES

INTRODUCTION

Six dust samples were received for X-ray diffraction analysis. It was requested that the samples be studied by X-ray diffraction methods to determine the amounts of crystalline silica as alpha quartz, cristobalite, and tridymite. The following report represents the results of these studies and is submitted respectfully.

Samples

Project #AO-074
Samples 1 through 6

SAMPLE PREPARATION AND STUDY METHODS

X-ray diffraction is a crystal structure analysis method using the atomic arrays within the crystals as a three dimensional diffraction grating to diffract a monochromatic beam of X-rays. The angles at which the beam is diffracted are used to calculate the interplanar atomic spacings (d-spacings) giving information about how the atoms are arranged within the crystalline compounds. These patterns are compared to over 55,000 data entries in the powder diffraction file. Phase analysis was made by manual and computer search using the Boolean algebra algorithms of the Powder Diffraction File, published by The International Center for Diffraction Data on a CD-ROM.

The samples were first prepared by fine grinding under acetone to 20 micron particle size, then packing the powders into micro-sample holders which were run on a Philips Electronics X-ray diffractometer equipped with a crystal monochrometer. The operating conditions are marked on the enclosed charts.

Initial studies were made by scanning from 10-50 2θ to obtain the qualitative data and to get a rough estimate of the quantitative composition. These survey scans showed trace to minor amounts of the Q-quartz form of silica to be present.

Quantification of the quartz was made by making high resolution step-counting scans over the peaks to provide more accurate integrated count values. Triplicate repacking and runs were made to increase the accuracy. Standards covering the range of 1%-5% quartz were made using an amorphous silicic acid matrix with carefully weighed amounts of pure quartz along with the addition of 10% calcite added to the synthetic standards and samples to act as an internal standard.

Due to the small amounts of crystalline silica found in these samples, they were rerun using the more sensitive step-counting method to reproducibly determine the low alpha-quartz levels. This was done by using the high resolution, highly statistically accurate but time consuming, step counting method. This method uses a goniometer with a computer controlled stepping motor. The step increment and the resident counting time at each step are controlled by the computer, while the data is accumulated at each step and stored. The accumulated counts collected at each step are corrected and recalculated to obtain average count per second values, plotted, extrapolated for sloped background correction, re-plotted, and the peak-to-background ratios calculated. By this means, sufficient statistical accuracy is obtained to define quartz levels in the range of 0.05 - 5.0 weight percent. Calibration was made using reference standards of 5%, 2%, 1%, .5%, and 0.5% alpha-quartz in silicic acid. It was found on the initial runs that samples 1-3 were very low in crystalline content. They were then concentrated using ashing techniques to remove the organic content. They were weighed before and after heating in a muffle furnace to 550°C. , then rerun and quantified as above. It was found that over 50% of the sample weights for these dusts were due to organic materials.

DISCUSSION

The enclosed X-ray diffraction charts are marked with the interplanar atomic spacing measurements (d-spacings) in angstrom units and with the corresponding Miller Index (hkl) of the crystallographic plane causing each reflection. Phase identification was made by comparison with standard data in the JCPDS/ASTM diffraction files published on CDROM.

Some of these samples have significant amounts of a feldspar mineral and α-quartz. The presence of the feldspar indicates that the quartz contamination is most likely due to soil dust, as both quartz and feldspar are the major constituents of most soils. The quantitative data below, indicates the compositional range of all of the crystalline material in the six samples. No cristobalite or other crystalline forms of silica are present in these samples (less than .1%). Minor amounts of calcium sulfate may be present in the form of gypsum or anhydrite in some of the dusts.

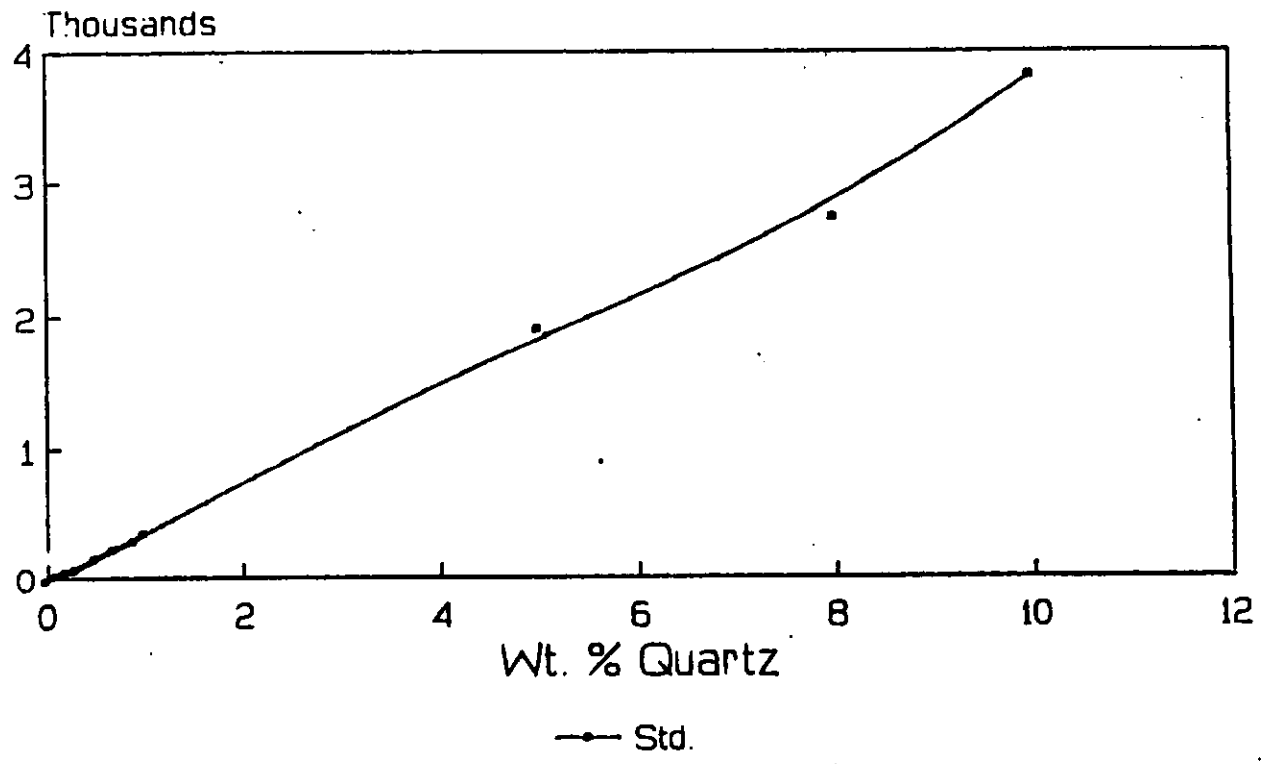
SUMMARY OF THE X-RAY DIFFRACTION DATA

Weight percents

Sample	*α-Quartz*	*Feldspar*	*Other*
No. 1	*0.5-0.7*	*n.d.*	-
No. 2	*0.7-1.1*	*n.d.*	-
No. 3	*0.2-0.5*	*n.d.*	-
No. 4	*4.5-5.*	*4-5*	*$CaSO_4$-2%?*
No. 5	*3.5-4.3*	*3.5-4.5*	*$CaSO_4$?*
No. 6	*8.0-9.2*	*4-5.5*	*unknown?*

Alpha-Quartz Calibration

Percent vs Counts



3-1161 JCPDS-ICDD Copyright (c) 1988 Quality: *

SiO
2

Silicon Oxide

Quartz, low, syn

Rad: CuKa1 Lambda: 1.540598 Filter: Mono. d-sp: Diff.
Cutoff: Int: Diffractometer I/Icor: 3.6
Ref: Nat. Bur. Stand. (U.S.) Monogr. 25, (1981)

Sys: Hexagonal S.G.: P3121 (152)
a: 4.9133(2) b: c: 5.4053(4) A: C: 1.1001
A: B: C: Z: 3 mp:
Ref: Ibid.

Dx: 2.65 Dm: 2.66 SS/FOM: F(30)=76.6(.0126,31)

ea: nwb: 1.544, ey: 1.553, Sign: + 2V:
Ref: Swanson, Fuyat, Natl. Bur. Stand. (U.S.), Circ. 539, 3 24 (1954)

Color: Colorless
Pattern at 25 C. Sample from the Glass Section at the National Bureau of Standards; ground single crystals of optical quality. Quartz group. Silicon used as internal standard. PSC: hP9. To replace 5-490. Plus 6 reflections to 0.9089.

d A	Int.	h k l
4.257	22	1 0 0
3.342	100	1 0 1
2.457	8	1 1 0
2.282	8	1 0 2
2.237	4	1 1 1
2.127	6	2 0 0
1.9792	4	2 0 1
1.8179	14	1 1 2
1.8021	<1	0 0 3
1.6719	4	2 0 2
1.6591	2	1 0 3
1.6082	<1	2 1 0
1.5418	9	2 1 1
1.4536	1	1 1 3
1.4189	<1	3 0 0
1.3820	6	2 1 2
1.3752	7	2 0 3
1.3718	8	3 0 1
1.2880	2	1 0 4
1.2558	2	3 0 2
1.2285	1	2 2 0
1.1999	2	2 1 3
1.1978	1	2 2 1
1.1843	3	1 1 4
1.1804	3	3 1 0
1.1532	1	3 1 1
1.1405	<1	2 0 4
1.1143	<1	3 0 3
1.0813	2	3 1 2
1.0635	<1	4 0 0
1.0476	1	1 0 5
1.0438	<1	4 0 1
1.0347	<1	2 1 4
1.0150	1	2 2 3
0.9898	1	4 0 2
0.9873	1	3 1 3
0.9783	<1	3 0 4
0.9762	1	3 2 0
0.9636	<1	2 0 5

Strong lines: 3.34/X 4.26/2 1.82/1 1.54/1 2.46/1 2.28/1 1.37/1 1.38/1

445 JCPDS-ICDD Copyright (c) 1988 Quality:

(Ca,Na)(Si,Al) O
4 8

FELDSPAR

Sodium Calcium Aluminum Silicate

Anorthite, sodian, low

Rad: CoKa Lambda: 1.7902 Filter: Fe d-sp:
Cutoff: Int: Visual I/Icor:
Ref: Goodyear, Duffin, Mineral. Mag., 30 306 (1954)

Sys: Triclinic S.G.: P-1 (2)
a: 8.1648 b: 12.859 c: 7.0973 A: C:
A: 93.57 B: 116.1 C: 89.78 Z: 4 mp:
Ref: Cole et al., Acta Crystallogr., 4 20 (1951)

Dx: 2.68 Dm: 2.70 SS/FOM: F(19)=3.0(0.073,86)

ωa: 1.5606, nωB: 1.5639, εγ: 1.5683, Sign: +, 2V: 66-86½
Ref: Emmons, Mem. Geol. Soc. Am., 52 26 (1953)

Specimen occurs in anorthosite from Grand Marais, Minnesota, USA. Chemical composition (wt.%): albite=32.7; anorthite=64.5; orthoclase=2.8. Photograph calibrated with NaCl. Probably of low-temperature origin. Indexed by analogy with labradorite with 55% anorthite with dimensions by Cole, Sorum and Taylor, Acta Crystallogr., 4, 20-29 (1951). Feldspar group, plagioclase subgroup. C.D. Cell: a=8.127, b=12.859, c=7.097, alpha=93.57, beta=115.55, gamma=67.10, a/b=0.6320, c/b=0.5519. PSC: aP52.

d A	Int.	h k l
6.48	40	-1 1 0
4.66	40	0 -2 1
4.04	80	-2 0 1
3.89	50	1 -1 1
3.75	80	-1 3 0
3.64	70	-1 -3 1
3.47	50	-1 -1 2
3.43	30	-2 -2 1
3.37	60	-1 1 2
3.26	50	-2 2 0
3.23	80	[0 4 0]
3.20	100	-2 0 2
3.18	90	0 0 2
3.14	70	-2 -1 2
3.02	50	-1 2 2
2.95	70b	0 -4 1
2.66	60	-3 1 1
2.53	70	-2 -4 1
2.51	60	-2 3 2

Strong lines: 3.20/X 3.18/9 4.04/8 3.75/8 3.23/8 3.64/7 3.14/7 2.95/7

This Report No. 098150 is hereby respectfully submitted to BTC Environmental Inc. and has been authorized by Project #AO-074.

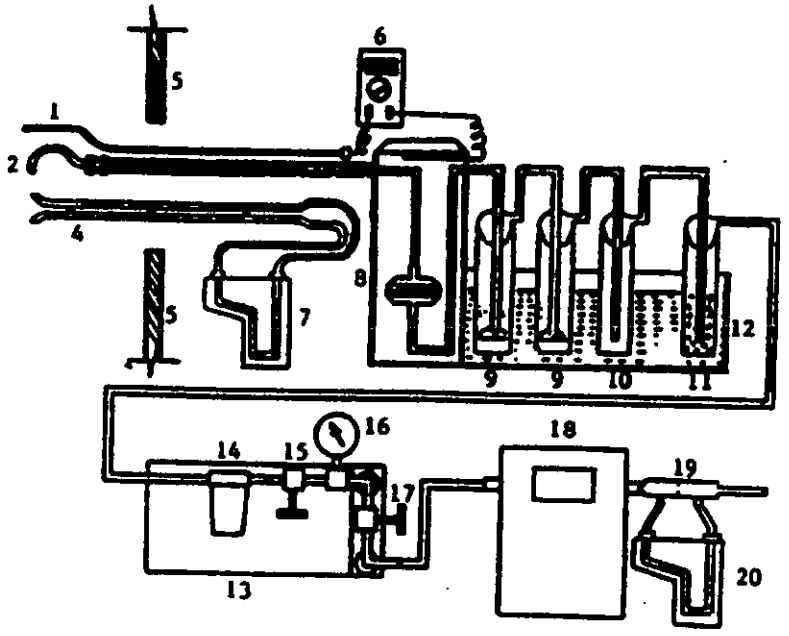
TECHNOLOGY OF MATERIALS

By _____
William E. Gardner
Laboratory Director

WEG/jb

May 18, 1990.

VI. METHODOLOGY



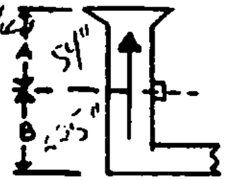
1. Temperature Sensor
2. Nozzle
3. Glass lined Stainless Steel Probe-Heated
4. S-type Pitot Tube
5. Stack Wall
6. Temperature Sensor Meter
7. Pitot Tube Inclined Manometer
8. Heated Box with Filter
9. Impinger with 100 ml H_2O
10. Empty Bubbler
11. Bubbler with Silica Gel
12. Ice Bath
13. Sealed Pump (Leak Free)
14. Filter for Pump
15. Metering Valve
16. Vacuum Gauge
17. By-pass Valve
18. Temperature Compensated Dry Gas Meter
19. Orifice
20. Orifice Inclined Manometer

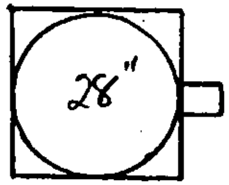
Figure 5.2-1

Particulate Sampling Train Set-up with Heated Probe and Heated Filter

VII. RAW DATA

PLANT: [illegible]
LOCATION: [illegible]
COUNTY: [illegible]
UNIT: Linter Cyclone #2
DATE: [illegible]
RUN NO./METHOD: [illegible]
COLD BOX NO.: 2
METER BOX NO.: [illegible]
METER FACTOR: 1.0028
PITOT #/ FACTOR: #53 0.882
PYROMETER #: T-4
MAGNEHELIC FACTOR: ΔP [illegible] ΔH [illegible]





FILTER NO.: C-1
AMBIENT TEMP.: 55
BARAMETRIC PRESS.,IN.HG.: 29.92
ASSUMED MOISTURE: 5
HEATER BOX SETTING: ON
PROBE LENGTH,FT.: 5
NOZZLE DIAMETER,IN.: #22 0.226
PROBE HEATER SETTING: 4
APPROX.WIND VEL.,MPH: Calm
SAMPLE BOX TEMP.,(F): +200
STATIC PREASURE: -0.11 "H2O
OFFSET: 0 In.
PORT DIA.: 3 In. (M F)

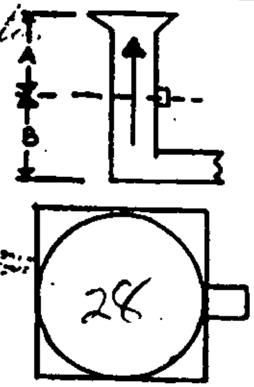
TRAVERSE POINT NUMBER (63)	DISTANCE INCHES	O2 (%)	CO2 (%)	SAMPLE TIME MIN.	STACK TEMP. (Ts), F	VELOCITY HEAD IN. H2O ΔP	$\sqrt{\Delta P}$	PRESSURE DIFF ORIFICE METER (ΔH) IN.H2O	DRY GAS SAMPLE VOLUME (VM), FT.	GAS SAMPLE TEMP. @DRY GAS METER INLET (Tm)	OUTLET (TM)	PUMP VACUUM IN.HG	TEMP. LAST IMPINGER (F)
1	1.23	[illegible]	[illegible]	[illegible]	68	0.265		0.77	198.600	60	59	4	
2	4.12			15	69	0.42		1.22	200.0	67	65	5	
3	8.26			[illegible]	71	0.48		1.31	204.2	70	67	6	
4	19.74			[illegible]	73	0.46		1.33	213.7	74	73		
5	23.88			[illegible]	72	0.475		1.38	223.3	76	74		
6	26.77			[illegible]	72	0.37		1.09	233.3	77	75		
[illegible]				[illegible]					246.678				
						TOP							
1						0.215							
2						0.32							
3						0.38							
4						0.455							
5	ZERO					0.49							
6	SPAN					0.43							
AVERAGE		20.9	0.05	90	70.8		0.626	1.182	53.078	69.7			

PITOT LEAK CHECK:
BEFORE: TOP ΔP= 2.5 ΔP= 2.5 BOTTOM ΔP= 1.8 ΔP= 1.8
AFTER: TOP ΔP= ____ ΔP= ____ BOTTOM ΔP= ____ ΔP= ____

BEFORE= 0.005 CFM@ 15 IN. HG. 19.2 Tois/h
AFTER= 0.010 CFM@ 6 IN. HG.
SAMPLE TRAIN LEAK:

COMMENTS: Si [illegible] [illegible] MIN 35
PURGE: [illegible]
START: 11:07

PLANT: Anderson Clayton/Kraft [illegible]
LOCATION: [illegible]
COUNTY: [illegible]
UNIT: [illegible] #2
DATE: 11/20/90
RUN NO./METHOD: 2 [illegible] (5)
COLD BOX NO.: 10
METER BOX NO.: 14
METER FACTOR: 1.0028
PITOT # / FACTOR: 5-3 / 0.832
PYROMETER #: T-1
MAGNEHELIC FACTOR: ΔP: ΔH: M-2



FILTER NO.: RT-90
AMBIENT TEMP.: 65
BAROMETRIC PRESS., IN.HG.: 29.92
ASSUMED MOISTURE: 1
HEATER BOX SETTING: [illegible]
PROBE LENGTH, FT.: 5
NOZZLE DIAMETER, IN.: 0.336 #12
PROBE HEATER SETTING: 8
APPROX. WIND VEL., MPH: Calm
SAMPLE BOX TEMP., (F): +200
STATIC PREASURE: -0.17 H2O
OFFSET: — In.
PORT DIA.: 3 In. (~~M + F~~)

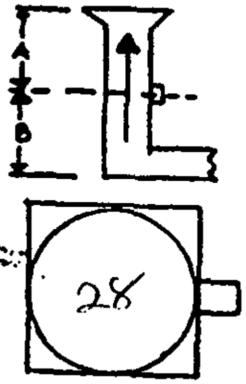
TRAVERSE POINT NUMBER	DISTANCE INCHES	O2 (%)	CO2 (%)	SAMPLE TIME MIN.	STACK TEMP. (Ts), F	VELOCITY HEAD IN. H2O ΔP	√ΔP	PRESSURE DIFF ORIFICE METER (ΔH) IN.H2O	DRY GAS SAMPLE VOLUME (VM), FT.	GAS SAMPLE TEMP. @DRY GAS METER INLET (Tm)	OUTLET (TM)	PUMP VACUUM IN.HG	TEMP. LAST IMPINGER (F)
1		[illegible]	[illegible]	10:40	71	0.265		0.77	242.107	78	72		
2				15	72	0.42		1.22	245.3	79	74	6	
3				30	76	0.45		1.31	255.0	81	80	9	
4				45	76	0.46		1.33	268.5	80	81		
5				60	79	0.425		1.34	277.7	94	82		
6				75	79	0.32		1.08	287.9	85	84		
				90					296.513				
	ZERO												
	SPAN												
AVERAGE		20.9	0.05	90	77.0		0.626	1.182	54.209	81.0			

PITOT LEAK CHECK:
BEFORE: TOP ΔP= ___ ΔP= ___ BOTTOM ΔP= ___ ΔP= ___
AFTER: TOP ΔP= ___ ΔP= ___ BOTTOM ΔP= ___ ΔP= ___

SAMPLE TRAIN LEAK:
BEFORE= 0.018 CFM@ 15 IN. HG.
AFTER= 0.013 CFM@ 9 IN. HG.

COMMENTS: S #2 [illegible] 30
PURGE: [illegible] 12:20 Cassette #2

PLANT: [illegible]
LOCATION: [illegible]
COUNTY: [illegible]
UNIT: [illegible] Cyclone #2
DATE: 4/24/90
RUN NO./METHOD: 3-[illegible]
COLD BOX NO.: 3
METER BOX NO.: A
METER FACTOR: 1.0026
PITOT #/ FACTOR: 3 0.832
PYROMETER #: 7-1
MAGNEHELIC FACTOR: ΔP: ΔH: [illegible]



FILTER NO. C-2
AMBIENT TEMP.: 70
BAROMETRIC PRESS.,IN.HG.: 29.80
ASSUMED MOISTURE: 3
HEATER BOX SETTING: ON
PROBE LENGTH,FT.: 5
NOZZLE DIAMETER,IN.: 0.224 #22
PROBE HEATER SETTING: [illegible]
APPROX.WIND VEL.,MPH: Calm
SAMPLE BOX TEMP.,(F): [illegible]
STATIC PREASURE: -0.17 "H2O
OFFSET: — in.
PORT DIA.: 3 in. (M/F)

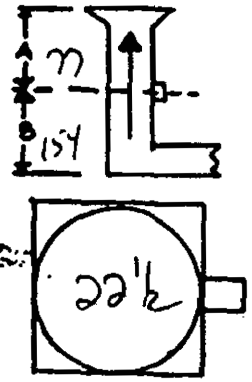
TRAVERSE POINT NUMBER (65)	DISTANCE INCHES	O2 (%)	CO2 (%)	SAMPLE TIME MIN.	STACK TEMP. (Ts), F	VELOCITY HEAD IN. H2O ΔP	√ΔP	PRESSURE DIFF ORIFICE METER (ΔH) IN.H2O	DRY GAS SAMPLE VOLUME (VM),FT.	GAS SAMPLE TEMP. @DRY GAS METER INLET (Tm)	OUTLET (TM)	PUMP VACUUM IN.HG	TEMP. LAST IMPINGER (F)
		14.[illegible]	1.[illegible]	12:15 (0)	73	0.265		0.77	296.623	65	84	4	
				15	92	0.47		1.49	305.0	79	88		
				30	82	0.35		1.31	314.3	91	90		
				45	92	0.48		1.33	323.7	92	90	6	
				60	93	0.47		1.46	332.4	94	92		
				75	94	0.37		1.18	342.7	96	93	7	
				90					351.328		96		
	ZERO												
	SPAN												
AVERAGE		20.9	0.05	90	91.0		0.626	1.182	54.705	90.8			

PITOT LEAK CHECK:
BEFORE: TOP ΔP= ____ ΔP= ____ BOTTOM ΔP= ____ ΔP= ____
AFTER: TOP ΔP= ____ ΔP= ____ BOTTOM ΔP= ____ ΔP= ____

SAMPLE TRAIN LEAK:
BEFORE= 0.005 CFM@ 15 IN. HG.
AFTER= 0.005 CFM@ 7 IN. HG.

COMMENTS: S1 #3 [illegible]=45 PURGE Start 12:52 [illegible] #3

PLANT: [illegible]
LOCATION: [illegible]
COUNTY: [illegible]
UNIT: #1 [illegible]
DATE: 5/1/90
RUN NO./METHOD: 1-Part
COLD BOX NO.: 2
METER BOX NO.: 4
METER FACTOR: 1.0028
PITOT #/ FACTOR: #[illegible] 0.832
PYROMETER #: T-1
MAGNEHELIC FACTOR: ΔP: ΔH: M1-2



FILTER NO. C-3
AMBIENT TEMP.: 55
BARAMETRIC PRESS.,IN.HG.: 29.96
ASSUMED MOISTURE: 5
HEATER BOX SETTING: on
PROBE LENGTH,FT.: 5
NOZZLE DIAMETER,IN.: 0.416 #48
PROBE HEATER SETTING: 8
APPROX.WIND VEL.,MPH: calm
SAMPLE BOX TEMP.,(F): 120
STATIC PREASURE: -0.02 "H2O
OFFSET: — In. PORT DIA.: 3 In. (M F F)

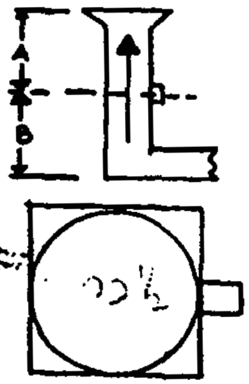
TRAVERSE POINT NUMBER	DISTANCE INCHES	O2 (%)	CO2 (%)	SAMPLE TIME MIN.	STACK TEMP. (Ts), F	VELOCITY HEAD IN. H2O ΔP	√ΔP	PRESSURE DIFF ORIFICE METER (ΔH) IN.H2O	DRY GAS SAMPLE VOLUME (VM),FT.	GAS SAMPLE TEMP. @DRY GAS METER INLET (Tm)	OUTLET (TM)	PUMP VACUUM IN.HG	TEMP. LAST IMPINGER (F)
(8)	30	Amb	Amb	2:55 0	64	0.03		0.98	360.347	66	69	4	
	3.31			15	67	0.045		1.48	369.1	72	50		
	6.64			30	64	0.052		1.1	376.9	75	74		
	15.86			45	66	0.052		1.1	388.6	79	78	6	
	19.19			60	66	0.05		1.15	399.6	81	79		
	21.5			75	67	0.037		1.22	410.6	82	81		
				90		TOT			419.829				
						0.032							
						0.04							
						0.048							
						0.05							
						0.042							
	ZERO					0.03							
	SPAN												
AVERAGE		20.9	0.05	90	65.6		0.205	1.455	59.482	75.1			

PITOT LEAK CHECK:
BEFORE: TOP ΔP= ____ ΔP= ____ BOTTOM ΔP= ____ ΔP= ____
AFTER: TOP ΔP= ____ ΔP= ____ BOTTOM ΔP= ____ ΔP= ____

SAMPLE TRAIN LEAK:
BEFORE= 0.005 CFM@ 15 IN. HG.
AFTER= 0.005 CFM@ 10 IN. HG.

COMMENTS: [illegible] Min = 60
PURGE [illegible] #1 Cannister #4 START [illegible]

PLANT: [illegible]
LOCATION: [illegible]
COUNTY: [illegible]
UNIT: #1 Seed Cleaner
DATE: [illegible]
RUN NO./METHOD: [illegible]
COLD BOX NO.: [illegible]
METER BOX NO.: [illegible]
METER FACTOR: [illegible]
PITOT #/ FACTOR: [illegible]
PYROMETER #: T-9
MAGNEHELIC FACTOR: ΔP [illegible] ΔH [illegible]



FILTER NO.: [illegible]-4
AMBIENT TEMP.: 72
BAROMETRIC PRESS.,IN.HG.: 29.92
ASSUMED MOISTURE: 5
HEATER BOX SETTING: ON
PROBE LENGTH,FT.: 5
NOZZLE DIAMETER,IN.: 0.416 #98
PROBE HEATER SETTING: [illegible]
APPROX.WIND VEL.,MPH: Calm
SAMPLE BOX TEMP.,(F): +20%
STATIC PREASURE: -0.02 "H2O
OFFSET: — In.
PORT DIA.: 3 In.

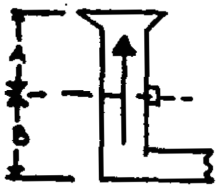
TRAVERSE POINT NUMBER	DISTANCE INCHES	O2 (%)	CO2 (%)	SAMPLE TIME MIN.	STACK TEMP. (Ts), F	VELOCITY HEAD IN. H2O ΔP	√ΔP	PRESSURE DIFF ORIFICE METER (ΔH) IN.H2O	DRY GAS SAMPLE VOLUME (VM),FT.	GAS SAMPLE TEMP. @DRY GAS METER INLET (Tm)	OUTLET (TM)	PUMP VACUUM IN.HG	TEMP. LAST IMPINGER (F)
(6)													
1		[illegible]	[illegible]	[illegible] 0	82	0.03		0.66	420.083	72	71	7	
2				20	82	0.045		1.48	434.4	85	84	10	
3				40	79	0.052		1.7	445.1	90	86	11	
4				[illegible]	77	0.052		1.7	459.4	90	88		
5				[illegible]	78	0.05		1.65	474.5	94	91		
6				[illegible]	78	0.05		1.22	488.6	92	91		
				[illegible]					501.336				
	ZERO												
	SPAN												
AVERAGE		20.9	0.05	120	79.7		0.205	1.465	81.305	87.7			

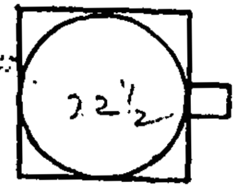
PITOT LEAK CHECK:
BEFORE: TOP ΔP= ____ ΔP= ____ BOTTOM ΔP= ____ ΔP= ____
AFTER: TOP ΔP= ____ ΔP= ____ BOTTOM ΔP= ____ ΔP= ____

BEFORE= 0.005 CFM@ 15 IN. HG.
AFTER= 0.005 CFM@ 11 IN. HG.
SAMPLE TRAIN LEAK:

COMMENTS: [illegible] 60 [illegible] Cassette #5
PURGE ____

PLANT: Anderson Clayton
LOCATION: Oroville
COUNTY: Butte
UNIT: [illegible]
DATE: 5/11/90
RUN NO./METHOD: 3 - [illegible]
COLD BOX NO.: 3
METER BOX NO.: A
METER FACTOR: 1.0026
PITOT # FACTOR: 2 - 0.836
PYROMETER #: T-1
MAGNEHELIC FACTOR: ΔP ____ ΔH 1/1-2





FILTER NO. C-5
AMBIENT TEMP.: 75
BAROMETRIC PRESS.,IN.HG.: 29.80
ASSUMED MOISTURE: 5
HEATER BOX SETTING: ON
PROBE LENGTH,FT.: 5
NOZZLE DIAMETER,IN.: 0.116 #78
PROBE HEATER SETTING: 8
APPROX.WIND VEL.,MPH: Calm
SAMPLE BOX TEMP.,(F): ~200
STATIC PREASURE: -0.02 "H2O
OFFSET: — In.
PORT DIA.: 3 In.

TRAVERSE POINT NUMBER	DISTANCE INCHES	O2 (%)	CO2 (%)	SAMPLE TIME MIN.	STACK TEMP. (Ts), F	VELOCITY HEAD IN. H2O ΔP	√ΔP	PRESSURE DIFF ORIFICE METER (ΔH) IN.H2O	DRY GAS SAMPLE VOLUME (VM),FT.	GAS SAMPLE TEMP. @DRY GAS METER INLET (Tm)	OUTLET (TM)	PUMP VACUUM IN.HG	TEMP. LAST IMPINGER (F)
1		Ambient	Ambient	11:40 0	90	0.03		0.98	501.338	92	92	5	
2				20	86	0.045		1.48	512.6	92	99		
3				40	82	0.088		1.7	526.0	97	96	8	
4				60	92	0.082		1.7	541.1	97	96	8	
5				80	87	0.05		1.65	554.0	98	96		
6				100	81	0.057		1.22	571.0	98	97		
									583.010				
	ZERO												
	SPAN												
AVERAGE		20.9	0.0	120	83.8		0.205	1.455	81.702	95.8			

PITOT LEAK CHECK:
BEFORE: TOP ΔP= ____ ΔP= ____ BOTTOM ΔP= ____ ΔP= ____
AFTER: TOP ΔP= ____ ΔP= ____ BOTTOM ΔP= ____ ΔP= ____

SAMPLE TRAIN LEAK:
BEFORE= 0.013 CFM@ 15 IN. HG.
AFTER= 0.018 CFM@ 7 IN. HG.

PURGE ____

COMMENTS:
"C" Min 60 [illegible]

VIII. QUALITY ASSURANCE

DRY GAS METER CALIBRATION
EPA

Standard Pressure _____ in. hg.
Standard Temperature _____ F
Initial Dry Gas Meter reading _____ cu. ft.
Initial Wet Gas Meter reading _____ cu. ft.
Ambient pressure 30.15 in. hg.
Ambient temperature 60 F
Reference Meter ID WET TEST METER

Unit Number A
Date: 12/18/89

Scheduled Calibration:
initial _____
other _____

Pre-test leak check: pre-pump P F post-pump P F
(circle one) *(circle one)*

ΔH In. H20	TIME min.	WET GAS VOL. cf	DRY GAS VOL. in/out cf	Temperature W.G. AVG F	Temperature D.G. IN F	Temperature D.G. OUT F	Temperature D.G. AVG. F	*Y	†ΔH@ In. H20
			682.100	58	63.0	63.0			
0.50	12.77	5	687.176	58.0	67.0	66.0	64.8	0.9966	1.7645
			687.600	58.0	68.0	67.0			
1.00	9.27	5	692.687	58.0	70.0	69.0	68.5	1.0004	1.8464
			694.400	58.0	71.0	69.0			
1.50	7.61	5	699.479	58.0	72.0	71.0	70.8	1.0050	1.8586
			700.900	58.0	72.0	71.0			
2.00	6.64	5	705.964	58.0	73.0	72.0	72.0	1.0091	1.8823
						AVERAGE		1.0028	1.8380

Validity checks:

* Y(max - min) ≤.02 ?
† | ΔH@ - ΔH@ avg. | ≤ .20 in. H20 ?

Meter Factor: 1.0028

ΔH@ : 1.8380

Calibration by: RTR Reviewed by: _____

EQUATIONS USED:
Y= (VWG*PBAR*(TDGavg.+460))/((VDG*(PBAR+(ΔH/13.6))*(TWGavg.+460))
ΔH@ = ((0.0319*ΔH)/(PBAR*(TDGavg+460))*(((TWG+460)*T)/VWG)^2

BTC Environmental, Inc. - 1989

PITOT TUBE CALIBRATION

Ambient Conditions

DATE: 9/20/89

UNIT NUMBER: #5-3'

TEMPERATURE 79 F

RH: ____ %

BAROMETER: 30.05 in. hg.

Run #	Velocity fpm	ΔP (std) in. H2O	ΔP (s) in. H2O		Cp(s)	| Dev |	Cp(s)	| Dev |
			A	B	A	A	B	B
1	4084	*1.04*	*1.44*	*1.43*	0.841	0.000	0.844	0.002
2		*1.04*	*1.44*	*1.44*	0.841	0.000	0.841	0.001
3		*1.04*	*1.44*	*1.44*	0.841	0.000	0.841	0.001
Avg		1.04	1.44	1.44	~0.841	0.000*	~0.842	0.001*

AVERAGE: (Cp(s)A+Cp(s)B)/2 = 0.842

| ~Cp(s)A-~Cp(s)B | = 0.001 *

1	4424	*1.22*	*1.75*	*1.72*	0.827	0.000	0.827	0.000
2		*1.22*	*1.75*	*1.70*	0.827	0.000	0.827	0.000
3		*1.22*	*1.75*	*1.71*	0.827	0.000	0.827	0.000
Avg		1.22	1.75	1.71	~0.827	0.000*	~0.827	0.000*

AVERAGE: (Cp(s)A+Cp(s)B)/2 = 0.827

| ~Cp(s)A-~Cp(s)B | = 0.000 *

1	4688	*1.37*	*1.96*	*1.94*	0.828	0.000	0.828	0.000
2		*1.37*	*1.96*	*1.94*	0.828	0.000	0.828	0.000
3		*1.37*	*1.96*	*1.93*	0.828	0.000	0.828	0.000
Avg		1.37	1.96	1.94	~0.828	0.000*	~0.828	0.000*

AVERAGE: (Cp(s)A+Cp(s)B)/2 = 0.828

|~Cp(s)A-~Cp(s)B | = 0.000 *

PITOT CALIBRATION VALUE: 0.832

~ Denotes average value

* Denotes values which must be ≤ to 0.01 for calibration to be valid.

Calibrated by: RTR *Reviewed by:* ____

BTC Environmental, Inc. - 1989

PYROMETER CALIBRATION

Date: 9/20/89 Unit: T-4

Point	* Standard Temperature *Tstd* deg. F	Pyrometer Temperature *Tpyr* deg. F	Error % ** *(Tstd-Tpyr)/Tstd*
1 Ambient	80.6	80.0	0.11%
2 Ice	32.0	28.0	0.81%
3 Boil	186.8	186.0	0.12%
4 Oil	474.0	473.0	0.11%

Std. Corr. Factor 1.052

Calibration by: RTR

* Standard ID: Labcraft #227-694

Reviewed by: ___

** In deg. K

PYROMETER CALIBRATION

Date: 9/20/89 Unit: T-1

Point	* Standard Temperature *Tstd* deg. F	Pyrometer Temperature *Tpyr* deg. F	Error % ** *(Tstd-Tpyr)/Tstd*
1 Ambient	80.6	80.0	0.11%
2 Ice	32.0	28.0	0.81%
3 Boil	186.8	186.0	0.12%
4 Oil	477.0	475.0	0.21%

Std. Corr. Factor 1.052

Calibration by: RTR

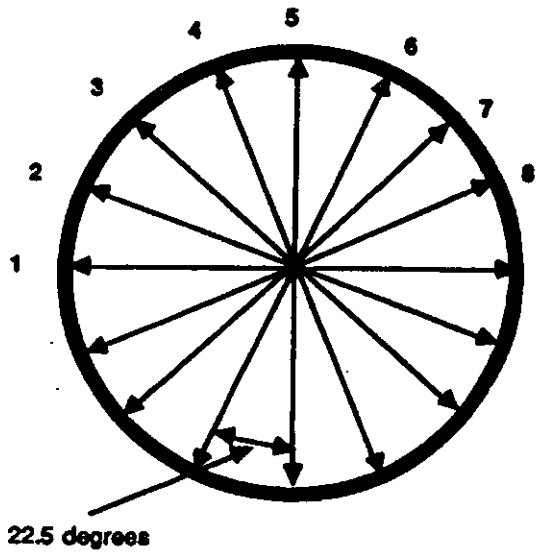
* Standard ID: Labcraft #227-694

Reviewed by: ___

** In deg. K

Nozzle Calibration

Nozzle I.D. : #48 Date : 7/27/89



Points	
1-	0.415
2-	0.415
3-	0.417
4-	0.421
5-	0.418
6-	0.413
7-	0.414
8-	0.416

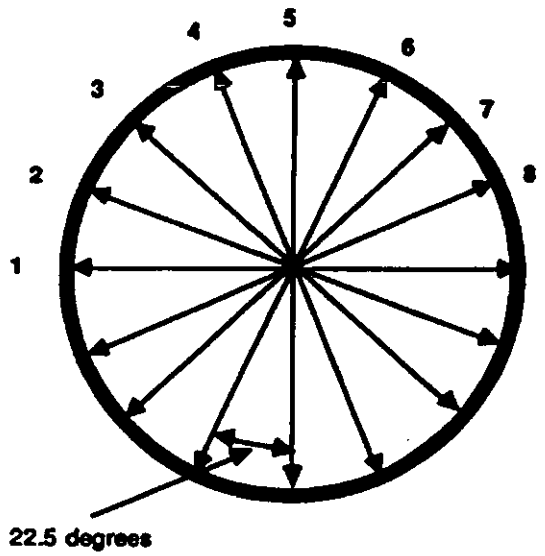
Average Nozzle Diameter = 0.416

Analyst : CDD Reviewed : MRP

BTC Environmental, Inc. - 1989

Nozzle Calibration

Nozzle I.D. : #22 Date : 9/8/89



Points	
1-	0.226
2-	0.226
3-	0.225
4-	0.225
5-	0.225
6-	0.225
7-	0.226
8-	0.227

Average Nozzle Diameter = 0.226

Analyst : RIB Reviewed : MRP

BTC Environmental, Inc. - 1989

MAGNEHELIC CALIBRATION

DATE: 8/23/89
GAGE ID # M-1
RANGE 0-5 in. H20

SCHEULED CALIBRATION:
SEMI-ANNUAL [X]
BI-MONTHLY [ ]
OTHER [ ]

REFERENCE
ID # Dwyer #424 0-10

LEAK CHECK :

System:	† Set @ 10 in. H20	vacuum 10 in. P F	pressure 10 in. P F
Point:	†† Set @ 90 % FS in. H20	vacuum in. P F	pressure in. P F

Point	Incline Delta P *Pinc*	Magnehelic Delta P *Pmag*	% Deviation *(Pinc-Pmag)/Pinc x 100*
1	1.000	1.00	0.000%
	1.000	1.00	0.000%
	1.000	1.00	0.000%
average	1.00	1.00	** 0.000%
2	2.000	2.00	0.000%
	2.000	2.00	0.000%
	2.000	2.00	0.000%
average	2.00	2.00	** 0.000%
3	3.000	3.00	0.000%
	3.000	3.00	0.000%
	3.000	3.00	0.000%
average	3.00	3.00	** 0.000%
4	4.000	4.00	0.000%
	4.000	4.00	0.000%
	4.000	4.00	0.000%
average	4.00	4.00	** 0.000%
5	5.000	5.05	1.000%
	5.000	5.05	1.000%
	5.000	5.05	1.000%
average	5.00	5.05	** 1.000%

STANDARD CORRECTION FACTOR	0.998
AVERAGE DEVIATION	0.002
STANDARD DEVIATION	0.004
95% CONFIDENCE INTERVAL	0.010
PRECISION(within +/- 3%)	-1.00

† If pressure or vacuum decreases by more than 1 in. in 5 minutes then remove from service.
†† If pressure or vacuum decreases by more than 5% in 5 minutes then remove from service.
** These values must be within +/- 5% before the magnehelic can be put into operation.

Calibration by: RTR *Reviewed by:* MRP

(56)

BTC Environmental, Inc. - 1989

MAGNEHELIC CALIBRATION

DATE: 8/23/89
GAGE ID # M-2
RANGE 0-2 in. H20

SCHEULED CALIBRATION:
SEMI-ANNUAL [ ]
BI-MONTHLY [X]
OTHER [ ]

REFERENCE
ID # #424 0-10

LEAK CHECK :

System:	† Set @ 10 in. H20	vacuum 10 in. P F	pressure 10 in. P F
Point:	†† Set @ 90 % FS in. H20	vacuum in. P F	pressure in. P F

Point	Incline Delta P *Pinc*	Magnehelic Delta P *Pmag*	% Deviation *(Pinc-Pmag)/Pinc x 100*
1	0.400	0.41	2.500%
	0.400	0.41	2.500%
	0.400	0.41	2.500%
average	*0.400*	*0.41*	** 2.500%
2	0.800	0.80	0.000%
	0.800	0.80	0.000%
	0.800	0.80	0.000%
average	*0.800*	*0.80*	** 0.000%
3	1.200	1.20	0.000%
	1.200	1.20	0.000%
	1.200	1.20	0.000%
average	*1.200*	*1.20*	** 0.000%
4	1.600	1.60	0.000%
	1.600	1.60	0.000%
	1.600	1.60	0.000%
average	*1.600*	*1.60*	** 0.000%
5	2.000	2.00	0.000%
	2.000	2.00	0.000%
	2.000	2.00	0.000%
average	*2.000*	*2.00*	** 0.000%

STANDARD CORRECTION FACTOR	0.995
AVERAGE DEVIATION	0.005
STANDARD DEVIATION	0.010
95% CONFIDENCE INTERVAL	0.025
PRECISION(within +/- 3%)	-0.99

† If pressure or vacuum decreases by more than 1 in. in 5 minutes then remove from service.
†† If pressure or vacuum decreases by more than 5% in 5 minutes then remove from service.
** These values must be within +/- 5% before the magnehelic can be put into operation.

Calibration by: RTR *Reviewed by:* CDD

BTC Environmental, Inc. - 1989

[redacted]

Ventura, CA 93003
(805) 644-1095

C005DD

CHAIN OF CUSTODY RECORD

PROJ. NO. A0-074 | PROJECT NAME Rancheros

SAMPLERS: (Signature) Tom Portley

NO.	DATE	TIME	COMP	GRAB	SAMPLE I.D.	NO. OF CONTAINERS	ANALYSES Metals *	REMARKS
7	4/30		*		Run #1 Part Filter (C-1)	1		* As, Be, Cd, Cr, Cr^{+6}, Cu, Pb, Mn, Ni, Zn, Hg, Se
8	"				" " " Probe	1		
10					" #2 " Filter (C-2)	1		Singl
11					" " " Probe	1		Record volume after digestion. Report results in mg/L.
13					" #3 " Filter (C-3)	1		
14					" " " Probe	1		
22					Run #1 Part Filter (C-3)	1		
23					" " " Probe	1		No need to weigh filters or beakers
25					" #2 " Filter (C-4)	1		
26					" " " Probe	1		
28					" #3 " Filter (C-5)	1		
29					" " " Probe			
39					Filter Blanks			Need results in 7 working days.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Tom Portley	5/9 4:02	Gena Dimmick			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	NAME	
				ADDRESS	
				PHONE NO.	

WHITE COPY_____ CANARY COPY_____ PINK COPY_____

BTC ... INCORPORATED

53... Ventura, CA 93003
(805) 644-1095

CHAIN OF CUSTODY RECORD

PROJ. NO.: A-0-074 | PROJECT NAME: Ranchers

SAMPLERS: (Signature) Tom Porter

ANALYSES: Crystalline Silica

NO.	DATE	TIME	COMP	GRAB	SAMPLE I.D.	NO. OF CONTAINERS	Crystalline Silica	REMARKS
1	4/30		X		Rem #1 Si Cassette #1	1 (...)		Need results in %
2	"		X		" #2 Si " #2	1 (70 ...)		of Silica. Please have
3	"		X		" #3 " " #3	1 (70 ...)		results in 10 working days.
4	5/1		X		" #4 " " #4	1 (30 ...)		Run by X-Ray Diffraction
5	"		X		" #5 " " 5	1 (100 ...)		Filters are polypropylene
6	"		X		" #6 " " "	1 (75 ...)		

REMARKS (continued):
Send to Technology Materials

Send Results to Attn: Tom Porter

Please send copy of signed chain of custody. Thanks

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Tom Porter	5/2 11:45	M. E. Gardner (JB) 5/7			

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	NAME / ADDRESS / PHONE NO.

WHITE COPY____ CANARY COPY____ PINK COPY____

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